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It's About Time:
Understanding How Negotiators Manage Socio-Temporal Conflicts in Sustainability Negotiations

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This thesis consists of six chapters. In the opening Chapter 1, I present the rationale of my thesis, discuss its contributions, and identify avenues for future research. Chapter 2 comprises a theoretical article which has been published in *Sustainability*. Chapter 3 includes an original research article which was submitted to *Current Research in Social and Ecological Psychology*, peer reviewed, and rejected for publication. A revised version of the manuscript is now under review at *Journal of Experimental Psychology: Applied*. Chapter 4 includes a research article which was invited for revision and resubmission at *Organizational Behavior and Human Decision Processes*. Chapter 5 includes a research article which is currently under review at *Group and Organization Management*. Chapter 6 comprises a theoretical article which was submitted to *Academy of Management Review*. All manuscripts are presented in the originally published or submitted form except for changes in format and layout.

Content	**Publication Status of Manuscript**
Chapter 2	Trötschel, R.*, van Treek, M.*, Heydenbluth, C., Zhang, K., & Majer, J.M. (2022). From Claiming to Creating Value: The Psychology of Negotiations on Common Resource Dilemmas. *Sustainability*, 14(9): 5257. https://doi.org/10.3390/su14095257
Chapter 3	Heydenbluth, C., Aaldering, H., Zhang, H., Majer, J.M., & Trötschel, R. (2024). Doing the Right Thing at the Right Time: How Negotiators Manage Resources in Sequential Allocation Negotiations. The manuscript is currently under review at *Journal of Experimental Psychology: Applied*.
Chapter 4	Schauer, M., Majer, J.M., Heydenbluth, C., & Trötschel, R. (2024). Playing it Safe: How Negotiators Create Value for Uncertain Outcomes. The manuscript was submitted to *Organizational Behavior and Human Decision Processes*, peer reviewed and invited for revise and resubmit (major revision).
Chapter 5	Heydenbluth, C., Aaldering, H., & Trötschel, R. (2024). Balancing Intra-Constituency Outcome Conflicts in Representative Negotiations. The manuscript is currently under review at *Group and Organization Management*.
Chapter 6	Trötschel, R., Schauer, M.[#], & Heydenbluth, C.[#] (2024). The Manager as a Sustainability Negotiator: Psychological Drivers and Barriers in Navigating Complex Conflicts of Interest. The manuscript was submitted to *Academy of Management Review*.

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Chapter 1: General Rationale

General Abstract

The transformation to sustainability is one of our society's greatest challenges, requiring large-scale, coordinated, collaborative efforts among interdependent individuals, groups, organizations, and nations. Managing sustainability challenges involves navigating complex conflicts of interests, where social conflicts between different stakeholders' interests are intertwined with temporal conflicts between the interests of the present and the future. Reconciling these socio-temporal conflicts requires collective decision-making through negotiation processes. In the context of sustainability, such negotiations often involve a wide range of stakeholders, including direct decision-makers at the table, represented interest groups behind the table, and external parties beyond the table who are not formally represented in negotiations. If successful, negotiations can facilitate mutually beneficial solutions that integrate the present and future interests of all stakeholders, thereby contributing to the transformation to sustainability.

Although interwoven socio-temporal conflicts are prevalent in many real-world negotiation contexts, previous research has mostly studied social and temporal conflicts in isolation. This dissertation aims to investigate socio-temporal conflicts in sustainability negotiations, with the goal of understanding how negotiators manage the complex interplay of social and temporal interests among various stakeholders. Specifically, in a series of five theoretical and empirical research articles, we first theorize on the relevance of socio-temporal conflicts in sustainability contexts and analyze associated psychological challenges that influence negotiators' mindsets (Article 1). Subsequently, three empirical lines of studies operationalize socio-temporal conflicts at the negotiation table (Articles 2 and 3) and behind the table (Article 4), investigating negotiators' concrete trade-off behaviors and negotiation outcomes. Finally, we address socio-temporal negotiations involving external parties beyond the table (Article 5) and propose a process-oriented model of sustainability negotiations that provides a foundation for future empirical research on socio-temporal conflicts beyond the table and points directions for further study on sustainability negotiations.

Overall, our empirical findings show that negotiators tend to handle socio-temporal conflicts in a biased and myopic manner. Specifically, their immediate social conflicts at the negotiation table take precedence over all other dimensions (i.e., the temporal dimension) and levels (i.e., conflicts involving stakeholders behind or beyond the table) of socio-temporal

conflicts. As a result, negotiators systematically disregard or even exploit their own and others' future interests, opting for short-term conflict settlements rather than pursuing superior long-term agreements. Insights from our theoretical articles contribute to a deeper understanding negotiators' decision-making processes and offer starting points for altering these processes to foster more holistic sustainability agreements. I conclude by discussing the contributions and implications of this dissertation and proposing areas for future research.

Introduction

Current sustainability challenges present urgent conflicts that, if not resolved in a forward-looking way, can hinder the collective transition to sustainability and result in severe consequences both now and in the future (IPCC, 2023; see also Battisti & Naylor, 2009; Thuiller et al., 2005). Achieving sustainable solutions inherently requires a consideration of the time perspective (Brundtland, 1987) and the management of difficult temporal conflicts between present and future interests (e.g., Hauser et al., 2014; Huckelba & Van Lange, 2020).

Importantly, temporal conflicts in sustainability challenges typically involve multiple stakeholders with divergent interests, and therefore manifest as *socio-temporal conflicts* at different levels of society (e.g., Avelino & Wittmayer, 2016; Dopfer et al., 2004). When interdependent stakeholders face such conflicts of interests, a common way for them to resolve these conflicts is to meet at the negotiation table and jointly search for acceptable solutions (e.g., Bazerman et al., 2000; Pruitt & Carnevale, 1993; Thompson, 2015). From a sustainability perspective (Brundtland, 1987), these solutions must not only address the immediate concerns of negotiators at the table, but also account for negotiation parties' future interests. Additionally, they must consider the present and future interests of stakeholders who do not sit at the table but are affected by the negotiated agreements—such as constituents behind the table who are only represented at the table, or external parties beyond the table who are not represented at the negotiation table (i.e., holistic socio-temporal agreements).

Until today, traditional negotiation research has, however, primarily focused on how parties at the table resolve their immediate social conflicts through interactive joint decision-making, and mostly neglected more complex socio-temporal conflicts (Jang et al., 2018; for exceptions, see Majer et al., 2021; Van Treek et al., 2023). Research on mere social conflicts has shown that integrative agreements—mutually beneficial solutions that create value for all involved parties (e.g., Bazerman et al., 2000; Gelfand et al., 2011; Thompson, 2015)—are oftentimes possible. In other words, social conflicts are rarely zero-sum, and often offer opportunities for integrative problem-solving.

In contrast, how individuals resolve temporal conflicts (i.e., decisions between conflicting present and future interests) has primarily been studied in individual decision-making research, neglecting the social conflict aspect (e.g., Frederick et al., 2002; Van Lange & Joireman, 2008). This research highlights the psychological difficulty of balancing present and future interests, showing that individuals tend to prioritize their immediate over long-term (collective) interests (e.g., Brewer & Kramer, 1986; Gächter et al., 2017; Hardin, 1968; Ostrom,

1990; for a review see Van Lange et al., 2013). However, temporal conflicts in sustainability contexts typically extend beyond individual decision-making: they are embedded in broader social conflicts that involve multiple parties (at, behind, and beyond the negotiation table) and require joint resolution (i.e., socio-temporal conflicts).

To fully understand how parties resolve sustainability conflicts, it is therefore neither sufficient to examine only how individuals handle temporal conflicts (while neglecting the level of social conflict), nor how parties jointly resolve immediate social conflicts (while neglecting the level of temporal conflict). Instead, for holistic solutions to sustainability conflicts, parties must aim for integrative agreements that consider the interests of various stakeholders (i.e., value creation at the social level) *and* timepoints (i.e., value creation at the temporal level). This means reconciling the present and future interests of those at the table—and, potentially, their constituents' or external parties' interests—to achieve balanced, long-term resolutions of socio-temporal conflicts. But how do negotiators address such complex socio-temporal conflicts? To what extent do they succeed in reaching holistic agreements that integrate both social and temporal interests of different stakeholder groups? And how do the collective problem-solving processes of parties vary depending on whose interests are at stake: their own, their constituents', or those of external others?

In this dissertation, I examine how parties manage socio-temporal conflicts in negotiations. In Chapter 1, I begin with a brief review of the relevant literature on social and temporal conflicts and discuss the concept of value creation in social, temporal, and socio-temporal conflicts. Accounting for the complexity and scope of socio-temporal conflicts in sustainability negotiations, I propose a conceptual *Model of Socio-Temporal Conflicts in Sustainability Negotiations*, which organizes socio-temporal conflicts across three levels. Specifically, this model extends previous understandings of negotiations as merely affecting the current decision-makers at the table (e.g., Brett & Thompson, 2016; Pruitt & Rubin, 1986) by incorporating two additional levels of socio-temporal conflict: First, conflicts driven by the interests of constituents behind the negotiation table; and second, conflicts that involve the interests of external parties beyond the table who are not formally represented in negotiations, yet are still impacted by the outcomes. I will then locate each of two theoretical articles (Chapter 2 and Chapter 6) and three empirical research projects (Chapters 3-5) of this thesis within the proposed model and reflect on their contributions to understanding negotiators' perceptions and behaviors in sustainability negotiations. I conclude by discussing the empirical findings, their implications, and avenues for future research based on the proposed conceptual model and remaining open questions.

Sustainability Challenges Entail Socio-Temporal Conflicts of Interest

Global societal challenges such as climate change, loss of biodiversity, and resource depletion pose significant immediate threats to our planet and civilization but are especially worrisome when looking into the future (IPCC, 2023). Sustainability challenges, by their nature, involve temporal conflicts, where present interests collide with those of the future (e.g., Huckelba & Van Lange, 2020; Trötschel et al., 2022). For example, the current overconsumption of natural resources exceeds nature's regenerative capacity (e.g., Lin et al., 2023), and is therefore at conflict with the need to preserve resources for the future and maintain a livable planet (Meadows et al., 1972, 1993, 2004; Wade-Benzoni, 1999).

To pursue sustainability[1], defined as meeting "the needs of the present without compromising the ability of future generations [stakeholders] to meet their needs" (Brundtland, 1987, p. 292), ways must be found to balance and resolve these temporal conflicts. Because sustainability conflicts are societal in nature, resolving them impacts multiple interdependent parties, rather than independent individuals (e.g., Majer et al., 2021; Majer & Trötschel, 2022; Trötschel et al., 2022). Consequently, the temporal conflicts inherent in sustainability challenges are embedded within social conflicts and arise as nested socio-temporal conflicts. This means that different individuals, social groups, organizations, or nations have conflicting interests regarding how sustainability challenges should be resolved, who should contribute, and when (e.g., Ciplet & Harrison, 2020; Masood et al., 2022). Crucially, resolving sustainability conflicts requires addressing temporal conflicts (balancing present and future interests), and social conflicts (reconciling the interests of various stakeholders) alike. Often, these conflicts are negotiated by few direct decision-makers 'at the table' but they also involve the interests of diverse constituents 'behind the table' (e.g., De Dreu et al., 2014; Halevy, 2008), or additional external parties 'beyond the table' who may lack a voice in the current decision-making process (Menkel-Meadow, 2009; Wade-Benzoni, 1999). Only by holistically addressing all stakeholders' temporal and social conflicts can solutions that strive for sustainability be found.

Negotiating Sustainability Challenges

To address the complex socio-temporal conflicts inherent in sustainability challenges, different parties typically engage in negotiations (e.g., Jang et al., 2018; Majer et al., 2021;

[1] Note that striving for sustainability is an ongoing process requiring continuous effort and adjustment, rather than a final, attainable state (cf. chronic goal; Gollwitzer & Moskowitz, 1996; Srull & Wyer, 1986).

Majer & Trötschel, 2022). Negotiation "is a process that [parties at all societal levels] use to exchange, plan for the future, resolve disputes, and solve complex problems" (Jang et al., 2018, p. 318). In particular, negotiations facilitate resolving incompatible interests of multiple interdependent parties (e.g., De Dreu, 2010; Pruitt & Carnevale, 1993) and timepoints (Majer et al., 2021; Thompson, 2015). Therefore, negotiations play a crucial role in managing both the social and temporal interdependencies involved in sustainability conflicts, helping parties reach shared sustainability goals (Majer & Trötschel, 2022; Trötschel et al., 2022). Specifically, through the interactive-communicative process of negotiations, parties have the opportunity to explore solutions that integrate the present and future interests of various stakeholders at, behind, and beyond the table (i.e., integrative agreements, e.g., De Dreu et al., 2000; Gelfand et al., 2011; Thompson et al., 2010). This process of value creation can prevent negotiation parties from prematurely claiming value for themselves and instead help facilitate the development of holistic, mutually beneficial solutions to sustainability conflicts.

However, real-world negotiations concerning sustainability challenges often result in suboptimal agreements that fail to adequately consider the interests of certain timepoints or social groups (e.g., Dannenberg & Barrett, 2018; Masood et al., 2022; Stoddard et al., 2021), leaving opportunities for value creation on both the social and temporal dimension of conflict unutilized. Hence, it is important to understand when, how, and why parties succeed or fail in reaching holistic, integrative agreements for socio-temporal conflicts, to what extent negotiators manage to create value between different stakeholders and across timepoints, and how the outcomes of negotiations can ultimately be improved.

Value Creation in Immediate Social Conflicts. Traditional negotiation research has primarily examined how *multiple parties* resolve immediate social conflicts by exploring and integrating their respective interests (i.e., social value creation; e.g., Thompson, 2015). Opportunities to create value and achieve integrative agreements exist whenever negotiations involve multiple issues that parties prioritize differently. In such cases, parties can integrate their interests by, for example, allowing each party to fulfill their high priorities, while conceding on lower priorities (social trade-offs; see e.g., Lax & Sebenius, 1986; Lewicki & Litterer, 1985; Thompson, 1990). These integrative agreements offer higher-quality outcomes for the involved parties compared to 50-50 compromise solutions or victory-for-one solutions (De Dreu et al., 2007). As a result, integrative agreements provide more durable solutions to parties' social conflicts and reduce the likelihood of future conflicts (for reviews, see e.g., Gelfand et al., 2011; Jang et al., 2018; Thompson, 2015).

For example, imagine two fishing associations negotiating the distribution of fishing rights for eel and trout in their shared fishing area. While association A can sell eel at a higher margin, association B has customers who are more interested in trout. Since the associations have different priorities (A: eel; B: trout), their negotiation contains integrative potential. A 50-50-compromise solution (i.e., each association receives 50% of eel and 50% of trout) disregards the parties' priorities, yielding lower joint outcomes than an integrative solution that allows each association to realize their high priority, while conceding on their low priority (i.e., A gets all eel rights and B gets all trout rights).

Value Creation in Socio-Temporal Conflicts. While integrating the interests of multiple parties may help resolve immediate social conflicts, negotiations that involve a time perspective additionally require an integration of interests across *multiple timepoints* (i.e., present and future interests) to resolve socio-temporal conflicts. Despite the ubiquitous relevance of the time dimension in many negotiations, and especially in sustainability negotiations, only very little negotiation research has started to address socio-temporal conflicts with limited insights on whether, how, and why parties succeed or fail in reaching holistic, integrative agreements between parties and over time (see Majer et al., 2021; Mannix et al., 1995; Van Treek et al., 2023)[2].

First evidence on how *individual* stakeholders balance their own immediate and future interests stems from the related field of experimental game research. This research has shown that individuals faced with temporal (but not social) conflicts tend to prioritize present interests over future interests (for a review, see Van Lange et al., 2013), leading to resource depletion (e.g., Brewer & Kramer, 1986; Gächter et al., 2017; Ostrom, 1990), or disadvantaged future generations (e.g., Fischer et al., 2004; Hauser et al., 2014). However, findings from individual decision-making studies are only partially applicable to sustainability negotiations, as they disregard key characteristics of the *joint* problem-solving process that define negotiations (e.g., De Dreu & Carnevale, 2003; Kelley et al., 2003; Majer et al., 2022). While experimental games focus on individual decision-making in isolated temporal conflicts, sustainability negotiations involve highly interdependent parties who must reconcile their interests through communicative-interactive joint decision-making. This process allows parties to discover and exploit mutually beneficial conflict solutions. Because experimental game research does not

[2] In negotiation research, temporal aspects of negotiations have mostly been investigated in terms of the effects of time on negotiations, for instance, how timing (e.g., Olekalns et al., 1996), time pressure (e.g., De Dreu, 2003; Stuhlmacher et al., 1998; Thompson, 2015; Thompson et al., 2010), or outcome delays (e.g., Henderson et al., 2006; Okhuysen et al., 2003) affect the quality of negotiation outcomes, negotiator relationships, or can be used as negotiation strategy in one-shot negotiations (Carnevale, 2019).

consider the value-creation opportunities that usually exist in real-world conflicts, findings from this field offer limited insights into how negotiations unfold and when, how, and why parties can reach mutually beneficial solutions for socio-temporal conflicts (De Dreu & Carnevale, 2003; Pruitt & Carnevale, 1993).

In fact, similar to social conflicts, it is highly likely that additional temporal conflicts in (sustainability) negotiations offer value creation opportunities that can be exploited through temporal trade-offs between immediate and future outcomes. As Carnevale (2019) notes, "perhaps the most valuable aspect of time in negotiation is that it can be used for producing creative, win–win, optimal, integrative agreements that are mutually beneficial" (p. 109). For example, in the fishing associations' negotiation, the parties not only face a social conflict over the distribution of fishing rights but also a temporal conflict: maximizing immediate profits through overfishing versus preserving fish stocks to sustain their businesses in the long term. A solution solely focused on immediate interests would increase short-term gains but deplete fish stocks, ultimately harming both associations in the future. By considering the regenerative capacity of the fish stocks, however, the parties could reach an integrative solution over time that optimizes immediate outcomes while preserving fish stocks for the future.

Crucially, since temporal conflicts are intertwined with social conflicts, negotiators must navigate both temporal and social trade-offs simultaneously. By exploring opportunities for combined *socio-temporal trade-offs*, negotiators can develop holistic solutions that balance the interests of all affected parties and timepoints. Specifically, efficient socio-temporal trade-offs allow negotiators to create agreements that resolve social conflicts in an integrative way, while also integrating immediate and future interests. In the fishing association example, socio-temporal trade-offs could involve allocating fishing rights according to each association's present priority (i.e., A receives fishing rights for eel and B for trout), all the while keeping the total amount of caught fish within their regenerative capacities (i.e., maximum sustainable yield, Council of the EU, 2024b). This would ensure that both associations' long-term interests (i.e., being able to fish in the future) are also addressed.

Taken together, while socio-temporal conflicts in sustainability negotiations pose complex challenges to negotiators, they also offer valuable opportunities for reaching agreements that contribute to sustainability. Through socio-temporal trade-offs, parties can resolve their social and temporal interdependencies in mutually beneficial ways that meet the needs of the present without compromising future needs. However, whether, how, and why negotiators successfully exploit these trade-offs to reach holistic solutions for socio-temporal conflicts (or why they often don't) remains a largely open question in negotiation research.

Value Creation At, Behind, and Beyond the Negotiation Table. How do negotiators balance immediate and future interests while managing social conflicts? To what extent do they explore and exploit socio-temporal trade-off opportunities? And when do negotiators reach holistic agreements? The answers to these questions likely depend on *whose* interests must be integrated to resolve a specific socio-temporal conflict. Traditionally, most negotiation research has focused on the interests of parties directly involved *at the negotiation table* (e.g., Brett & Thompson, 2016; Pruitt & Rubin, 1986). However, this perspective overlooks two important layers of conflict that often exist in sustainability negotiations and may decisively impact negotiation processes and outcomes: conflicts involving the interests of stakeholders who are either *behind* or *beyond* the negotiation table.

First, sustainability conflicts often arise as intergroup conflicts, where negotiators act as representatives of groups, such as organizations, political parties, or governments. These representatives are confronted with socio-temporal conflicts that affect their constituents *behind the negotiation table* (e.g., De Dreu et al., 2014; Jang et al., 2018; Putnam, 1988). Research has shown that representative negotiators advocating for their constituents' interests experience accountability pressures, which can make them less cooperative and more competitive than individuals negotiating on their own behalf (e.g., De Dreu et al., 2007; Druckman, 1994; Pruitt & Carnevale, 1993; Steinel et al., 2009). This more aggressive negotiation approach (Benton & Druckman, 1974; Druckman, 1994) may stand in the way of reaching holistic agreements at the table, especially when such agreements require concessions on the interests of their constituents behind the table. When constituencies are heterogeneous, representatives face an additional level of conflict, as they must balance intra-constituency disagreements behind the table while simultaneously negotiating an acceptable agreement with other parties at the table (e.g., De Dreu, 2010; Druckman, 1994, 2015). For instance, some members of a fishing association may advocate for maximizing immediate profits through higher catch limits, while others advocate for stricter catch limits to ensure long-term business viability. Integrating such conflicting behind-the-table interests into holistic agreements with other parties poses significant psychological challenges for representative negotiators (e.g., Aaldering & De Dreu, 2012; Aaldering & Kopelman, 2022; Aaldering & Ten Velden, 2018; De Dreu et al., 2014; Steinel et al., 2009, 2010), likely affecting the quality of socio-temporal negotiation outcomes.

Second, agreements in sustainability negotiations typically have consequences *beyond the table*, impacting external parties who are not formally represented in negotiations: "what seems like a 'two-party' problem is, in fact, much more complicated and often affects many

other parties" (Menkel-Meadow, 2009, p. 421; see also Trötschel et al., 2022). Returning to the fishing associations' negotiation, the catch quotas they agree upon may also affect unrepresented parties, such as other fisheries, local communities that depend on fishing for their livelihoods, or future generations who will bear the environmental and economic consequences of the agreement. To reach holistic solutions that account for the present and future interests of these external parties, negotiators must try to create value at the table in ways that do not harm (and ideally improve) the outcomes for stakeholders beyond the table. While some initial research has begun to investigate parties' joint decision-making on behalf of absent future generations (Majer et al., 2021; Van Treek et al., 2023), a more systematic investigation of conflicts involving external parties beyond the negotiation table and their associated psychological challenges is needed to fully understand negotiators' decision-making in these situations. For example, when the (future) interests of external parties are involved, psychological processes, such as the heightened psychological distance of these interests (e.g., Brügger, 2020; Trope & Liberman, 2010), may trigger devaluation processes (e.g., Babcock & Loewenstein, 1997; Frederick et al., 2002; Majer et al., 2021) and reduce negotiators' willingness and ability to consider and integrate the interests of these parties, hindering holistic solutions to socio-temporal conflicts.

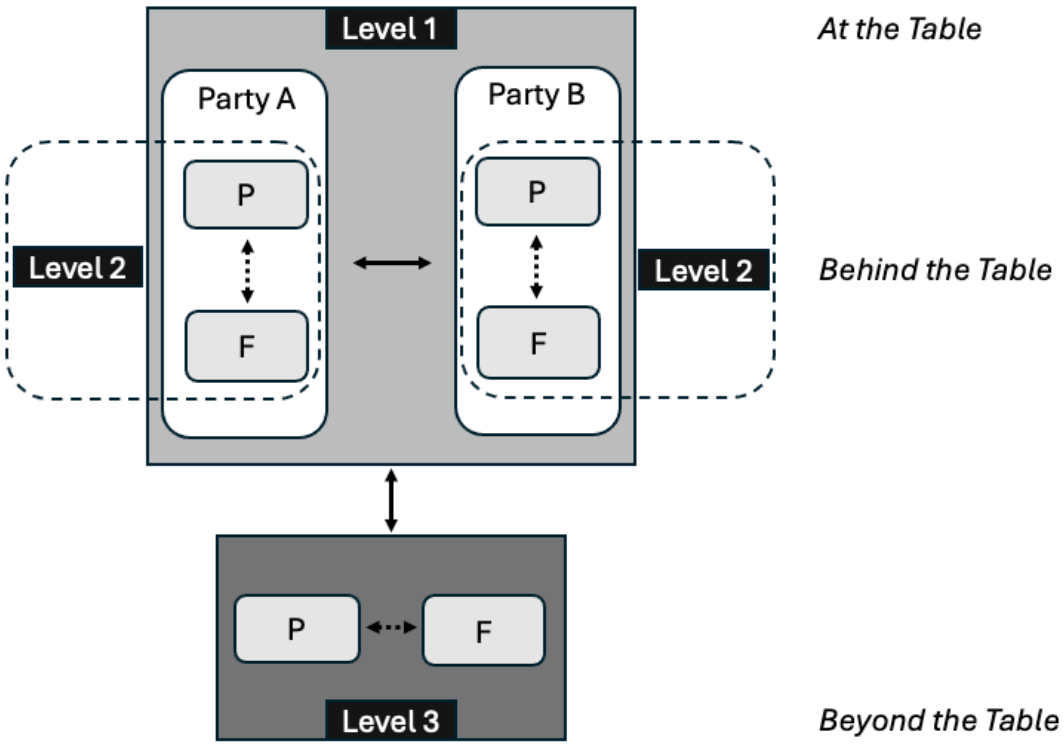
Taken together, when negotiations involve a broad range of stakeholders with divergent and potentially conflicting interests, achieving holistic socio-temporal agreements may become (even) more challenging. The quality of agreements may vary depending on whether 'merely' negotiators own immediate and future interests (at the table), the immediate and future interests of their constituents (behind the table), or the interests of absent external parties (beyond the table) must be considered.

A Systematic Investigation of Socio-Temporal Conflicts in Sustainability Negotiations

It is time to acknowledge the scope and complexity of conflicts in sustainability negotiations and to gain a more structured and systematic understanding of when, how, and why negotiators succeed or fail in reaching integrative, holistic agreements that extend beyond their own immediate interests. Since parties often struggle to resolve these conflicts in holistic ways (e.g., Dannenberg & Barrett, 2018; Masood et al., 2022; Stoddard et al., 2021), such understanding is key to develop targeted interventions that improve negotiation outcomes from a sustainability perspective. As a foundation for systematically investigating negotiators' perceptions, behaviors, and outcomes in the joint resolution of socio-temporal conflicts, I propose the conceptual *Model of Socio-Temporal Conflicts in Sustainability Negotiations*.

Model of Socio-Temporal Conflicts in Sustainability Negotiations. The *Model of Socio-Temporal Conflicts in Sustainability Negotiations* aims to offer a parsimonious framework that categorizes the various levels and constellations of socio-temporal conflicts within sustainability negotiations. Building on psychological research on negotiations (e.g., De Dreu, 2010; Druckman, 2015; Jang et al., 2018; Majer et al., 2021; Menkel-Meadow, 2009), sustainability (e.g., Bazerman et al., 1999; Wade-Benzoni, 1999), and temporal decision-making (e.g., Aaldering et al., 2024; Kamijo et al., 2017; Sherstyuk et al., 2016), the model conceptualizes sustainability negotiations as complex socio-temporal conflict structures (Figure 1). Recognizing the far-reaching and long-lasting impact of agreements in sustainability negotiations, the model further identifies three core levels of socio-temporal conflict: at the table (Level 1), behind the table (Level 2), and beyond the table (Level 3). Specifically, it illustrates how conflicts at the negotiation table can span across time, interacting with and being influenced by the interests of stakeholders behind and beyond the table. This comprehensive model broadens current understandings of negotiations, moving beyond the immediate social conflict at the table. Thereby, it allows to structure negotiators' complex realities and offers entry points for a systematic investigation of how negotiators handle different socio-temporal conflicts.

Figure 1. *Model of Socio-Temporal Conflicts in Sustainability Negotiations.*



Note. Model illustration depicting the three levels of socio-temporal conflicts in sustainability negotiations: at the table (Level 1), behind the table (Level 2), and beyond the table (Level 3). At Level 1, socio-temporal conflicts are driven by the present (P) and future (F) interests of direct negotiators (Party A and Party B). At Level 2, socio-temporal conflicts additionally involve the present and/or future interests of (potentially heterogeneous) constituents behind the table. At Level 3, socio-temporal conflicts additionally involve the present and/or future interests of external parties beyond the table who are not formally represented in negotiations. Solid arrows represent potential social conflicts. Dashed arrows represent potential temporal conflicts. Any given negotiation may involve both Level 2 and Level 3 conflicts in addition to Level 1, only one of them, or neither.

The central element of the *Model of Socio-Temporal Conflicts in Sustainability Negotiations* is the omnipresent and fundamental conflict at the negotiation table. A social conflict at the table is the basis of any negotiation process (Gelfand et al., 2011; Thompson, 2015). Whenever immediate social conflicts entail negative temporal interdependencies[3], for example when today's agreements on catch quotas limit tomorrow's availability of fish, negotiators face socio-temporal conflicts. If socio-temporal conflicts involve the negotiators' own interests, meaning they themselves are affected by the short- and long-term consequences of their agreements, they constitute socio-temporal conflicts *at the table* (Level 1 in Figure 1).

As soon as the interests of other stakeholders besides the negotiating individuals at the table are involved, nested conflict structures emerge (i.e., [negatively] interdependent conflicts across levels). Specifically, Level 2 illustrates the potential for socio-temporal conflicts that are shaped by the interests of constituencies behind the negotiation table. These constituencies can drive conflicts in various ways. For example, one party's future-oriented (present-oriented) constituency might have a conflict of interest with another party's present-oriented (future-oriented) constituency. Or a single party might face intra-constituency conflicts if one faction of their constituency is present-oriented, and another faction is future-oriented. Such internal conflicts place additional pressures on representatives, who must balance their constituencies' divergent priorities as they negotiate with other parties. Moreover, socio-temporal conflicts at Level 2 may also arise if there is a misalignment between the interests of a constituency and

[3] In some cases, social conflicts involve a time dimension without involving temporal conflict. For example, if parties negotiate an agreement that takes effect in the future, time plays a role but there is no conflict between present and future interests. Some studies have investigated the impact of such temporal distance on negotiation outcomes (Henderson et al., 2006; Okhuysen et al., 2003). This dissertation is mainly focused on negotiations involving (socio-)temporal conflict.

the representative's own interests in the negotiation. In all these cases, negotiators must manage the complex task of addressing their constituencies' interests while also searching for acceptable agreements with other parties at the table.

Finally, Level 3 captures the potential for socio-temporal conflicts that extend to external parties beyond the negotiation table. These conflicts can involve the present and future interests of social groups absent from the table. Or they can even involve the interests of future generations that are not represented in today's negotiations. Conflicts at Level 3 can occur independently of or in conjunction with conflicts at Level 2, adding further complexity to negotiations and necessitating parties to consider the broader, long-term consequences of their joint decisions on absent others.

Structure and Aims of the Thesis

In this dissertation, I systematically examine the processes, behaviors, and outcomes of negotiations that involve socio-temporal conflicts, which, despite their importance in many negotiation contexts, have frequently been overlooked in the negotiation literature. Through the *Model of Socio-Temporal Conflicts in Sustainability Negotiations*, this thesis addresses two guiding research questions: (1) How do negotiators navigate and resolve socio-temporal conflicts? And (2) (how) does this conflict resolution differ depending on whose interests are at stake?

In two theoretical and three empirical contributions, we first establish the role of socio-temporal conflicts in sustainability negotiations (theoretical Article 1). Then, we investigate how negotiators handle socio-temporal conflicts at the negotiation table (empirical Articles 2 and 3) and how negotiation processes and outcomes are affected when stakeholders behind the table are introduced (empirical Article 4). Finally, based on these insights and a synthesis of conflict management and sustainability science literature, we address socio-temporal conflicts extending beyond the table (theoretical Article 5), paving the way for future research on sustainability negotiations.

Article 1 introduces the concept of socio-temporal conflicts in the context of resource management negotiations. We present a theoretical framework in which we discuss the unique structural challenges of negotiations on the management of common resources (i.e., resource characteristics, socio-temporal conflicts) and elaborate on resulting psychological processes that may hinder (i.e., myopic mindset) or facilitate (i.e., holistic mindset) holistic integrative agreements that account for the present and future interests of negotiators, their represented groups, and external parties (i.e., the collective; across Levels 1-3).

Article 2 comprises a first empirical investigation of socio-temporal conflicts at the table (Level 1). We operationalize these conflicts in the context of sequential resource allocation negotiations, where two parties negotiate over the allocation of resources at subsequent, interdependent timepoints. To understand parties' value creation behavior within (i.e., social value creation) and across timepoints (i.e., temporal value creation), we analyze their socio-temporal trade-off behaviors. We also investigate the role of (dis)trust between negotiation parties as a potential psychological driver (or barrier) to achieving integrative socio-temporal trade-offs in sequential negotiations that involve high levels of social uncertainty.

In **Article 3**, we attempt to gain a better understanding of how the inherent uncertainty of the future affects negotiators' value creation behavior in socio-temporal conflicts at the table (Level 1). Specifically, we empirically investigate parties' trade-off behaviors concerning immediate (certain) outcomes versus future (uncertain) outcomes and examine the role of uncertainty avoidance as an underlying mechanism for inferior future versus present outcomes.

In **Article 4**, we shift the focus to socio-temporal conflicts driven by conflicts of interest behind the negotiation table (Level 2) within the context of organizational (sustainability) negotiations. Through a series of five experiments, we investigate how representatives balance socio-temporal conflicts within their constituencies behind the table, and how they handle intra-constituency conflicts in the presence of additional social conflicts at the negotiation table.

Ultimately, theoretical **Article 5** focuses on negotiations involving socio-temporal conflicts that extend beyond the table to include external parties (Level 3). Taking a process-oriented approach, we discuss how decision-makers in sustainability negotiations—whose decisions have both immediate and long-term economic, ecological, and social implications for unrepresented external parties—must navigate the stages of preparation, joint decision-making, and implementation to achieve sustainability outcomes. We emphasize the role of external outcomes' characteristics (i.e., their tangibility, reconcilability, and dynamics) as potential facilitators or barriers in forming intentions, exploring (socio-temporal) trade-offs, and achieving outcomes that contribute to sustainability. Beyond focusing on socio-temporal conflicts, this article further introduces novel criteria for evaluating sustainability agreements, pointing directions for future research on sustainability negotiations.

In a final discussion, I synthesize and reflect on the results of the different articles, discuss from an overarching perspective how our findings contribute to answering the research questions of this thesis, and suggest potential areas for future research.

(1) Psychological Challenges in Negotiations Involving Socio-Temporal Conflicts

Among the most important challenges in the transition to sustainability is the careful and forward-looking management of common resources such as the air, seas, land, and biodiversity that sustain our ecosystems (e.g., Meadows et al., 1993, 2004). Managing these resources inevitably entails socio-temporal conflicts: the interests of different social groups (e.g., allocation of resources between different stakeholders) at different time points (e.g., short-term consumption vs. long-term preservation of common resources) often clash. This conflict structure, conceptualized as 'common resource dilemmas' (e.g., Vlek & Steg, 2007), requires stakeholders to negotiate the allocation of resources to resolve their socio-temporal conflicts. While such negotiations may be powerful problem-solving tools that offer the potential for holistic sustainability agreements through socio-temporal trade-offs, they also present significant structural and psychological challenges that may prevent negotiators from fully exploring and exploiting these trade-offs, thereby limiting the likelihood of reaching integrative, holistic agreements that span across parties and time.

In a first theoretical article, we illustrate these structural and psychological challenges of resource allocation negotiations by developing the *Framework of Structural Barriers and Psychological Processes for Negotiating Common Resource Dilemmas* (Chapter 2). As a foundation for understanding how negotiators manage the inherent socio-temporal conflicts in these negotiations, we analyze which psychological processes (i.e., barriers and drivers) may shape parties' (*here*: agents') perceptions and behaviors. Building on the definition of common resource dilemmas (Vlek & Steg, 2007), we describe these negotiations as situations involving socio-temporal conflicts between the (short-term) interests of agents at the table—who negotiate as group representatives accountable to their constituencies behind the table—and (long-term) collective interests of external parties beyond the table, incorporating all three levels of conflict in the *Model of Socio-Temporal Conflicts in Sustainability Negotiations*.

Drawing from the fields of social dilemma and individual decision-making (e.g., Balliet et al., 2009; Dawes, 1980; Frederick et al., 2002; Van Lange et al., 2013), negotiation (e.g., Bazerman et al., 2000; De Dreu et al., 2007; De Dreu & Carnevale, 2003; Thompson et al., 2010), social psychology (e.g., Oettingen & Gollwitzer, 2010; Tajfel & Turner, 1979), and sustainability science (e.g., Jerneck et al., 2011; Ostrom, 1990; Sherstyuk et al., 2016; Vlek & Steg, 2007), we argue that the socio-temporal conflicts in resource allocation negotiations, combined with the structural challenges of limited, restricted, and dynamically changing resources, induce a destructive psychological orientation in agents: a myopic negotiation

mindset. This mindset is characterized by intergroup bias (triggered by limited availability of common resources), selfish motivation (triggered by restricted accessibility of common resources), and temporal short-sightedness (triggered by dynamic alterability of common resources). These psychological processes affect how agents approach their negotiations and likely hinder integrative solutions for socio-temporal conflicts. Specifically, heightened intergroup bias and selfish motivation may lead negotiators to be less cooperative (e.g., Balliet et al., 2014; Hewstone et al., 2002; Tajfel & Turner, 1979) and express more self-serving behaviors (e.g., De Dreu & Carnevale, 2003; Messick & McClintock, 1968), impeding value creation at the social level. Similarly, temporal short-sightedness causes negotiators to prioritize their short-term interests and disregard long-term consequences of their agreements (e.g., Frederick et al., 2002; Henderson et al., 2006), impeding value creation at the temporal level. Consequently, within the *Model of Socio-Temporal Conflicts in Sustainability Negotiations*, we predict that agents with a myopic mindset fail to explore and exploit efficient socio-temporal trade-offs and reach negotiation outcomes that serve their own (or their constituents') immediate interests at the table but neglect future interests as well as the interests of other stakeholders beyond the table (i.e., long-term collective interests). For instance, in the negotiation on catch quotas, myopically oriented fishing associations would focus on reaching an immediate agreement, even if this agreement harms their own, their constituents', or external parties' future interests.

To mitigate the detrimental effects of a myopic mindset and assist agents' socio-temporal value creation, we propose a three-part psychological mindset-shift intervention to promote a holistic negotiation mindset. This intervention encourages negotiators to adopt a holistic social identity (i.e., superordinate in-group identity), a holistic prosocial motivation, and a holistic time perspective. Enhancing negotiators' awareness of their social ties with other groups (i.e., collective interest, e.g. Fritsche et al., 2018; Turner et al., 1987) and common fate with these groups in achieving shared sustainability goals (Campbell, 2007) should foster cooperative behavior and value creation at the social level. Similarly, promoting a holistic time perspective should heighten negotiators' consideration of future consequences, facilitating value creation at the temporal level (Kirk et al., 2011, 2013; Oettingen et al., 2001). Overall, a holistic negotiation mindset is expected to facilitate holistic agreements that address present and future interests at the table (Level 1), within constituencies (Level 2), and for external parties (Level 3). In the fishing association example, this could mean that parties take the dynamic development and availability of fish stocks over time into account, and balance both their constituents' and external parties' (e.g., local residents) interests with their own interests

when negotiating present agreements. We argue that the holistic mindset stimulates effective, innovative, and integrative problem-solving strategies that address both social and temporal dimensions of sustainability challenges and enable agents to achieve more sustainable and integrative negotiation agreements.

In sum, our theoretical framework provides an important first step toward understanding how negotiators handle sustainability negotiations involving socio-temporal conflicts that exceed parties' own immediate interests. We highlight the structural challenges of these negotiations, including their complex social context (i.e., socio-temporal conflicts) and the characteristics of the resources at stake (i.e., limited availability, restricted accessibility, dynamic alterability). We analyze how these complexities can trigger detrimental psychological processes that influence negotiators' perceptions and behaviors in sustainability negotiations and foster a myopic mindset that hinders socio-temporal value creation and holistic sustainability agreements. Grounded in well-established theories from social psychology (e.g., social motivation theory, social identity theory), our framework not only helps predict and explain, but also offers insights into how to potentially alter negotiators' perceptions and behaviors in sustainability negotiations.

(2) Socio-Temporal Conflicts At the Negotiation Table: Value Creation in Sequential Resource Allocation Negotiations

In the previous theoretical article, we explored the challenges stakeholders face in negotiating sustainable resource allocations and identified psychological and structural factors that can either facilitate or hinder these processes. As a first empirical step, in the second article of the present thesis, we examine how parties actually manage socio-temporal conflicts at the negotiation table, specifically addressing Level 1 of the *Model of Socio-Temporal Conflicts in Sustainability Negotiations*.

To address resource allocation conflicts, stakeholders often employ sequential joint decision-making processes conducted at regular intervals, rather than one-shot negotiations. For instance, ministers from the European Agriculture and Fisheries Council conduct annual negotiations to set total allowable catches and quotas for fish stocks in the Baltic Sea (Council of the EU, 2022, 2023, 2024a). As opposed to one-shot negotiations, sequential negotiations allow parties to regularly refine their agreements and respond to the changing availability and dynamic development of resources over time (e.g., Constantino & Weber, 2021; Trötschel et al., 2022). By their nature, sequential negotiations involve socio-temporal conflicts: at each point in time parties need to resolve their immediate social conflict (e.g., determining fishing rights and catch quotas) while also considering their own future interests (e.g., preserving fish stocks for upcoming seasons)[4]. To achieve holistic agreements that benefit all negotiation parties from a long-term perspective, negotiators thus need to simultaneously make social trade-offs about resource distribution among parties and temporal trade-offs about resource use over time. In Chapter 3, we investigate how negotiators handle this complex task of managing socio-temporal conflicts at the table, reconciling their negative social interdependence with other parties and the temporal interdependence between their present and future interests.

As compared to traditional negotiations on social conflicts, the additional layer of temporal interdependence in sequential negotiations on socio-temporal conflicts increases the fuzziness and uncertainty parties face (De Dreu et al., 2007). Specifically, while negotiators always lack information on the interests, goals, and motives of other parties (i.e., social uncertainty), in sequential negotiations, this social uncertainty not only affects negotiators'

[4] I am aware that particularly in negotiations about the allocation of limited natural resources not only the present and future interests of parties at the table (Level 1) are at stake, but most likely also interests of parties that are not directly represented at the negotiation table (e.g., subsequent generations; Level 3). However, as a starting point for our empirical investigation of how parties deal with socio-temporal conflicts in sustainability negotiations, we focus on Level 1 first, and address Levels 2 and 3 later (Chapters 5 and 6).

immediate interaction, but especially upcoming negotiation sequences (Mannix et al., 1995). For example, the fishing associations are uncertain whether own cooperative behavior in current negotiations (e.g., sacrificing immediate own benefits for the advantage of others) will be reciprocated by the other association in future negotiation sequences. We argue that negotiators facing such heightened levels of social uncertainty may aim to reduce their uncertainty through self-protective, risk-averse behaviors, such as claiming large immediate resource shares to secure short-term gains. Such a myopic focus on short-term gains may undermine creative, cooperative behaviors between parties (i.e., impeding integrative social trade-offs), and cause negotiators to lose sight of their future interests (i.e., impeding integrative temporal trade-offs). As a result, both parties' (future) outcomes and their ability to create integrative socio-temporal trade-offs to achieve holistic sustainability agreements diminish.

Whereas distributive-consumptive behaviors such as high immediate resource claims (Trötschel et al., 2022) are one way for negotiators to reduce social uncertainty, other ways that are less detrimental to sustainability may exist. From a psychological perspective, trust between negotiators may alleviate social uncertainty and promote more holistic integrative agreements (e.g., Balliet & Van Lange, 2013; Kong et al., 2014; Lu et al., 2017). Specifically, a trustful relationship between negotiators may facilitate "risky" socio-temporal trade-offs that involve short-term sacrifices in favor of larger future gains, by fostering reliance on mutual cooperation and reciprocity (e.g., Mannix et al., 1995; Weingart et al., 1993). To test this, we examined the role of trust (and distrust) as facilitator (or barrier) to integrative socio-temporal trade-offs.

In a line of four interactive, face-to-face negotiation experiments ($N = 448$), we provide initial insights into how negotiators manage social-temporal conflicts of interest at the negotiation table (Level 1). We developed a novel two-party and two-sequence resource allocation negotiation task employing a socio-temporal conflict at the table. Mirroring real-world negotiation processes, we operationalized distinct negotiation sequences instead of having negotiators decide upon all their present and future interests in a single, all-encompassing decision (see e.g., Van Treek et al., 2023). This task allowed for both social and temporal value creation, with optimal outcomes achievable through socio-temporal trade-offs that integrated parties' priorities (i.e., social interests) within and across different time points (i.e., temporal interests).

Our findings revealed that negotiators acted in temporally short-sighted ways and heavily concentrated on their immediate social conflicts. In fact, negotiators agreed on large immediate resource distributions (Studies 1-3) or contributions (Study 4) in their initial negotiation sequence, showing a substantial failure to make efficient, mutually beneficial

socio-temporal trade-offs in both resource distribution and resource contribution contexts (Majer et al., 2022). By focusing on resolving their immediate social conflict at the table, parties destroyed (socio-)temporal value creation opportunities that would have allowed for more beneficial agreements from a joint long-term perspective. Put differently, negotiators immediately made large concessions on their future interests (i.e., allocating resources that would have given larger gains in the upcoming negotiation sequence) and thereby destroyed opportunities to create value over time. Analyses of trade-off behaviors showed that parties generally succeeded more in resolving their *social* conflict in an integrative way than their *temporal* conflict. Higher levels of social uncertainty exacerbated negotiators' short-sighted decision-making and reduced their trade-off efficiency. Despite our manipulation of different trust levels, high (low) trust did not serve as antidote to (promoter of) negotiators' detrimental temporal short-sightedness.

These initial findings suggest that when facing socio-temporal conflicts at the table (Level 1), negotiators primarily address their immediate social conflict at the expense of their own (and joint) future interests. Put differently, while parties were moderately successful in creating value at the social level in an initial negotiation sequence, they largely failed to create value on the temporal dimension and instead often showed distributive-consumptive resource allocation behaviors to resolve their immediate social interdependence. This present-focused behavior led to inefficient resource management and diminished the quality of both individual and joint outcomes from a long-term perspective as well as chances for holistic, sustainable conflict solutions.

(3) Creating Value for an Uncertain Future

The previous empirical project investigated parties' joint decision-making on socio-temporal conflicts at the negotiation table (Level 1) and showed that negotiators struggle to explore and exploit integrative socio-temporal trade-offs, and particularly to create value on the temporal conflict level (i.e., for the future). To further understand how negotiators deal with key characteristics of socio-temporal conflicts, we conducted a second empirical project and examined the impact of outcome uncertainty on negotiators' ability to create value over time.

A core characteristic of conflicts with a temporal dimension is that conflict parties must deal with the unpredictability of the future. Future outcomes are prone to bear uncertainty, for instance due to the dynamic development of external conditions or negotiation (e.g., resources, profits; e.g., Schauer et al., 2023). Thus, in socio-temporal conflicts, parties' present outcomes are generally (more) certain, whereas future outcomes usually are (more) uncertain in terms of whether, when and how they will materialize (e.g., Will the marine ecosystem of the Baltic Sea remain stable and sustain fish stocks in sufficient amounts?; e.g., Bottom, 1998; Jang et al., 2018). In the first empirical project, we have seen that the implicit uncertainty about a counterpart's future behavior, interests, and goals (i.e., social uncertainty) reduced negotiators' ability to create value for the future and caused inefficient trade-off behaviors (Chapter 3). Such social uncertainty made it difficult for negotiators to predict their future outcomes.

In the present project, we used a more explicit approach and manipulation of outcome uncertainty[5] (see below), to systematically investigate how negotiators' value creation behaviors (i.e., integrative trade-offs) are affected by the uncertainty of future outcomes (Chapter 4). Specifically, we examined how and why the uncertainty of future outcomes might hinder or potentially help negotiators to create value for the future (versus for present outcomes) at the negotiation table (Level 1). Previous research allows mixed predictions on the effects of uncertainty in negotiations. On one hand, the uncertainty of future outcomes might trigger parties' risk aversion and impede value creation for future outcomes in socio-temporal conflicts (i.e., Uncertainty-Avoidance Hypothesis , see e.g., Essa et al., 2018; Fox et al., 2015; Schauer et al., 2023). On the other hand, from a dyadic negotiation perspective, preference differences *between* parties become more visible for uncertain outcomes (as compared to certain outcomes with the same expected value), making integrative trade-off opportunities

[5] The term uncertainty is used as a general term describing non-certain outcomes associated with probabilities.

more apparent and thereby potentially aiding negotiators in creating value for the future (i.e., Value-Insight Hypothesis, e.g., Warsitzka et al., 2022).

To gain a better understanding of the effects of uncertain future outcomes in socio-temporal negotiations, we investigated parties' value creation behaviors for immediate certain versus future uncertain outcomes in two interactive experiments (N = 310). Our novel negotiation task employed four negotiation issues that materialized immediately and therefore had certain outcomes, and four negotiation issues that materialized in the future and therefore had uncertain outcomes. Whereas parties' agreement options for each of the four issues providing immediate outcomes varied in terms of their values but not in terms of their probabilities (i.e., always 100% certain), the agreement options for each of the four issues providing future outcomes varied in terms of their values and probabilities (i.e., higher values associated with lower probabilities)—with expected values being identical to the values of the certain outcome options. For example, a corresponding pair of issues would offer 10 points with 100% probability (certain immediate outcome) or 20 points with 50% probability (uncertain future outcome). Thus, expected values for immediate and future outcomes were equivalent, isolating the impact of uncertainty itself on parties' value creation behaviors.

We operationalized two different conflict scenarios: In Study 1, negotiating dyads faced a socio-temporal conflict where each party's immediate (certain) interests were at odds with the respective other party's future (uncertain) interests. We systematically varied whether socio-temporal trade-offs that account for each parties' present priorities or socio-temporal trade-offs that consider each parties' future priorities allowed for integrative solutions. Findings showed that negotiators' value creation was more successful in the former case than the latter, suggesting that higher-quality socio-temporal trade-offs were made for negotiators' present (versus future) interests.

In Study 2, we removed the direct temporal conflict between parties and manipulated their interests in a way that both parties' immediate interests and both parties' future interests were at conflict (but not one party's immediate interests and the other party's future interests). Even in absence of a direct temporal conflict between immediate and future outcomes (i.e., no negative temporal interdependence), negotiators created less value and reached lower joint outcomes for future (uncertain) outcomes than for immediate (certain) outcomes.

Analyses of parties' trade-off behaviors revealed that negotiators avoided uncertainty, and therefore reached less valuable agreements on uncertain future outcomes than certain immediate outcomes. Specifically, for their future outcomes, negotiators made trade-offs that gave them more certainty but lower (expected) value, leading to lower-quality agreements for

future compared to immediate outcomes. Overall, parties favored joint agreements of lower value and lower levels of uncertainty (i.e., compromise solutions which are suboptimal from a joint perspective) over agreements of higher value and higher levels of uncertainty.

Our findings demonstrate that negotiators seem to be more influenced by the uncertainty (i.e., associated risk) of future negotiation outcomes, than their expected profits. We offer insights into a potential mechanism underlying parties' failure to create value for the future as efficiently as for the present in socio-temporal conflicts: uncertainty avoidance. Our findings that outcome uncertainty impedes negotiators' value creation and use of integrative tactics (see also Essa et al., 2018) suggest far-reaching implications for the outcomes of real-world sustainability negotiations, which are inherently uncertain. Staying with the fishing association example, where each year's availability of fish and catch rate is uncertain, negotiators' value creation for their uncertain fishing outcomes is likely suboptimal, hindering efficient, holistic sustainability agreements.

(4) Balancing Conflicting Time Preferences of Constituents Behind the Table

The previous studies in this thesis examined socio-temporal conflicts at the negotiation table and explored negotiators' trade-off behaviors for present and future outcomes in these conflicts. In the third empirical project, we shifted focus to socio-temporal conflicts that arise behind the table (Chapter 5). In other words, addressing Level 2 of the *Model of Socio-Temporal Conflicts in Sustainability Negotiations*, we investigated how parties handle socio-temporal conflicts where not their own conflicting present and future interests are at stake, but the interests of a group they represent.

Traditional negotiation research and theories (e.g., Barry & Oliver, 1996; Gelfand et al., 2006) "typically impose a highly limiting specification about party structure [… presuming] dyads consist of two unitary actors each seeking to pursue a coherent set of interests" (Jang et al., 2018, p. 335). However, there are many cases of more complex conflict constellations, where negotiators at the table act as representatives and must reconcile heterogeneous, potentially conflicting interests within their constituency *behind the table* (e.g., Aaldering & De Dreu, 2012; De Dreu et al., 2014; Steinel et al., 2009). Oftentimes, such conflicts behind the negotiation table occur in political or organizational contexts, where delegations, teams, or subgroups endorse divergent socio-temporal interests and goals for the negotiation at the table. For example, EU fisheries ministers from different countries negotiating international pacts on catch quotas may face intra-constituency conflict between more present-oriented fisheries who strive to maximize their immediate economic returns and more future-oriented environmental activists who strive to protect the marine ecosystem in the long-term (e.g., Council of the EU, 2024b). Managing such intra-constituency conflicts requires representatives to make temporal trade-offs between the different time preferences of their constituency subgroups behind the table (Level 2), while searching for integrative social trade-off opportunities with their negotiation counterparts at the table (Level 1). How will representatives behave in such complex conflict situations entailing socio-temporal conflicts that span across multiple conflict levels (e.g., social conflict at Level 1 and temporal conflict at Level 2)?

Regarding the intra-constituency conflict (Level 2 only), evidence from individual decision-making studies (for reviews, see e.g., Frederick et al., 2002; Van Lange et al., 2013) and our own findings for negotiations at the table (Chapters 3 and 4) suggest that those constituents who advocate for immediate benefits might have an advantage over constituents advocating for the future. However, in distinction to these findings, *representatives* who balance behind the table conflicts (1) do not negotiate about their own personal interests and

outcomes but on behalf of their constituents, and (2) are accountable to their entire constituency regardless of different subgroups' time preferences (e.g., Ben-Yoav & Pruitt, 1984; Druckman, 2015). Hence, they might weigh their present-focused and future-oriented subgroups' interests in a more balanced way, aiming to satisfy their entire constituency.

When representatives facing conflicts behind the table (Level 2) enter interactive negotiations with other parties at the negotiation table (Level 1), previous research suggests that representatives may strongly focus on defending the interests of their constituents behind the table and reach a negotiation outcome that the constituents are willing to accept (e.g., a fair solution for their temporal conflict). Specifically, accountability pressures lead representatives to negotiate in competitive and non-conciliatory ways focused on claiming value (Benton & Druckman, 1974; Aaldering & Kopelman, 2022; Aaldering & Ten Velden, 2018; De Dreu et al., 2014; Trötschel et al., 2010), which might impede value creation with other parties (i.e., integrative social trade-offs at Level 1). However, representatives' need to resolve their social interdependence with other parties (e.g., Majer et al., 2021; Raiffa, 1982) might also induce a primary focus on reaching an agreement at Level 1 (i.e., exploring integrative trade-off opportunities with the other party), with the potential consequence of less balanced or fair outcomes at the temporal conflict level (at Level 2).

To gain a better understanding of how temporal and social conflicts at different levels interact, we conducted a line of five experiments (N = 1269) investigating representatives' balancing of an intra-constituency temporal conflict behind the table (isolated Level 2), and representatives' management of a simultaneous temporal conflict behind, and a social conflict at the table (i.e., nested socio-temporal conflict Level 1 and 2) in organizational negotiation contexts. First, in scenarios where representatives faced only an intra-constituency temporal conflict without facing a social conflict with a negotiation counterpart, we found that representatives handle their constituents' temporal conflict in a biased way and tend to weigh the interests of present-focused subgroups heavier than the interests of future-oriented subgroups. This bias vanished under certain boundary conditions (i.e., experienced distance of the future, sustainability salience of negotiation), suggesting that sustainability salience may prompt representatives to adopt a more balanced approach to their intra-constituency conflict.

However, facing an additional social conflict at Level 1 fundamentally changed representatives decision-making. In fact, representatives primarily concentrated on resolving the social conflict at the table, and instrumentalized their constituents' divergent present and future interests behind the table to do so. Specifically, they used the temporal conflict behind the table to create integrative social trade-offs at the table—by strategically selecting and

advocating for those constituency interests that offered integrative trade-off potential with the interests of their counterpart, while reaching unbalanced outcomes for their constituency subgroups. Although representatives always prioritized the interests of the (present- or future-oriented) subgroup that enabled integrative agreements with their counterpart at Level 1, their social trade-offs at the table were still of higher quality when the conflict structure offered integrative potential between the interests of the present-focused subgroup and the counterpart and not between the future-oriented subgroup and the counterpart, than vice versa. This suggests that even when representatives attempt to pursue integrative solutions, there still seems to be a structural tendency to prioritize immediate interests.

These findings contribute to our understanding of how negotiators deal with socio-temporal conflicts in several ways. When looking at representatives' isolated decision-making behind the table (Level 2), we largely found a similar present-focused decision-making tendency as previously observed at the table (Level 1). However, when the interests of future-oriented constituents were salient sustainability interests, representatives were willing to prioritize these interests over non-sustainable present interests. Importantly though, any decision tendency of representatives behind the table became secondary when representatives additionally faced a social conflict at the table, where they pragmatically prioritized those constituents, whose interests allowed for integrative agreements with their counterpart. These findings suggest that representatives tend to treat different levels of conflict in a hierarchical way, prioritizing the resolution of (social) conflicts at the negotiation table (Level 1) over balanced outcomes for (temporal) conflicts behind the table (Level 2). This hierarchical approach is a potential limitation in achieving holistic negotiation outcomes when negotiators represent constituencies with conflicting time preferences.

(5) Moving Beyond the Negotiation Table

In the final theoretical project of the present dissertation, we addressed the third and last level of the *Model of Socio-Temporal Conflicts in Sustainability Negotiations*: socio-temporal conflicts that involve the interests of external parties beyond the negotiation table (Level 3).

Sustainability negotiations and their outcomes are rarely limited to the individuals sitting at the table. Instead, they usually concern and have consequences for external parties, and affect other people, potentially at other timepoints, who are not formally represented in negotiations (Menkel-Meadow, 2009; Trötschel et al., 2022). For instance, a negotiation agreement between parties at the table (e.g., fisheries setting high catch quotas to maximize their immediate economic gains) may have short- and long-term consequences for interdependent external parties beyond the table (e.g., depletion of fish stocks causing ecological damage and economic harm for other fisheries or future generations).

Despite their significance in many real-world conflicts, and particularly in sustainability contexts, negotiation research has given little attention to conflicts where parties must not only address the interdependencies between themselves and their counterpart(s) (i.e., Level 1), but additionally integrate the interests of external stakeholders who are not represented at the table (i.e., Level 3; Jang et al., 2018; Menkel-Meadow, 2009; for theoretical exceptions, see Majer et al., 2021; Trötschel et al., 2022; for an empirical exception, see Van Treek et al., 2023). Given the importance of considering the interests of external parties—especially future stakeholders—to achieve socially just agreements that contribute to sustainability and prevent future conflict (e.g., Brundtland, 1987; Majer et al., 2021), this theoretical project aims to (1) further our understanding of how, when, and why negotiators manage to resolve these conflicts in holistic ways, and (2) provide practical guidance and strategies for the parties navigating these negotiations (Chapter 6).

In the applied context of organizational sustainability transformation negotiations, we develop the *Integrative Model of Sustainability Negotiations* (IMSuN), a process-based model outlining the unique challenges negotiators encounter throughout the typical sequence of (sustainability) negotiations: the stages of preparation, negotiation, and implementation (e.g., Druckman & Wagner, 2016; Jang et al., 2018). For each stage, we explore from a psychological perspective how and why negotiators may succeed or fail in reaching sustainability agreements that integrate their own and external parties' short- and long-term interests.

Next to social conflicts (between multi-lateral interests at and beyond the negotiation table) and temporal conflicts (between multi-temporal interests at present and future time

points), we introduce dimensional conflicts (between multi-dimensional economic, ecological, and social interests) as a third kind of conflict that shapes sustainability negotiations. In fact, the short- and long-term interests of different stakeholders at and beyond the table are often multi-dimensional, meaning they concern different, qualitatively distinct negotiation outcomes (i.e., economic, ecological, and social outcomes that are non-fungible; Thaler, 1990). For example, in the fishing associations' negotiation, present economic objectives (of parties at the table) may conflict with future ecological health (affecting parties at and beyond the table). For a thorough understanding of how negotiators navigate socio-temporal sustainability conflicts, it is therefore important to recognize this multi-dimensionality of sustainability negotiation outcomes and its associated psychological challenges for negotiators.

Our broadened perspective on sustainability negotiations as involving social, temporal, *and* dimensional conflicts implies that sustainability agreements must not only account for the socio-temporal interests of different parties (i.e., the present and future interests of stakeholders at, behind, and beyond the table), but additionally consider outcomes on different dimensions including economic prosperity, ecological vitality, and social responsibility (Brundtland, 1987; De Lange et al., 2012; Gladwin et al., 1995; Schaltegger et al., 2016; Thomas & Lamm, 2012). To account for these multi-faceted interests and outcomes from a methodological perspective, we propose novel criteria of quality assessment for sustainability agreements that allow to examine sustainability negotiations more thoroughly. Beyond Pareto efficiency (e.g., Nash, 1953; Tripp & Sondak, 1992), which is a traditional criterion to evaluate (economic) negotiation agreements, we introduce sustainable scale (e.g., Costanza, 2020; Daly, 2014) and distributive justice (e.g., Costanza, 2020; Trötschel et al., 2022) as additional criteria to evaluate sustainability agreements. In our fishing example, these criteria allow to not only assess the quality of parties' trade-offs in terms of their efficiency, but also whether negotiators were able to reach agreements that stay within the regenerative capacities of fish stocks (sustainable scale) and do not disproportionately disadvantage one stakeholder group now or in the future over others (distributive justice).

Achieving agreements that are efficient, sustainably scaled, and just, is, however, psychologically challenging. It requires negotiators to balance present and future interests (i.e., temporal trade-offs) of various stakeholders (social trade-offs)—at, behind, or beyond the table—across multiple outcome dimensions (dimensional trade-offs) throughout different negotiation stages. In the *Integrative Model of Sustainability Negotiations* (IMSuN), we identify psychological drivers and barriers that can either help or hinder negotiators to (1) commit to sustainability agreement intentions during the preparation stage, (2) explore holistic

trade-offs (i.e., trade-offs that balance the multi-dimensional short- and long-term interests of stakeholders at and beyond the table) during the negotiation stage, and (3) translate their agreements into actual sustainability outcomes during the implementation stage. We further analyze contextual challenges, such as the tangibility, reconcilability, and dynamics of external parties' outcomes, that support or impede holistic socio-temporal (and dimensional) trade-offs.

Regarding the *Model of Socio-Temporal Conflicts in Sustainability Negotiations*, the present theoretical contribution allows to make predictions on how negotiators manage socio-temporal conflicts involving external parties beyond the negotiation table. Recognizing and addressing the interests of external stakeholders can be difficult, for example due to the lower tangibility of their interests compared to the interests of the parties at the table (or behind the table). Particularly when conflicts arise between the present interests of negotiators at the table and the future interests of external parties (i.e., intergenerational conflicts; e.g., Fischer et al., 2004; Van Treek et al., 2023; Wade-Benzoni, 1999), additional challenges associated with dynamic decision environments and uncertain negotiation outcomes (see e.g., Chapters 2-4) come into play. These may cause negotiators to overlook value creation opportunities beyond the table or to neglect the interests of external parties at Level 3 altogether.

In sum, the present theoretical paper advances our understanding of socio-temporal conflicts beyond the table and simultaneously makes a broader contribution to the field of sustainability research. Complementing the negotiation mindset approach of Article 1 and the empirical insights from Articles 2-4, this last contribution analyzes each stage of sustainability negotiation processes, reflecting on how psychological research can assist parties in finding more sustainable agreements for complex socio-temporal, multi-dimensional conflicts. The current paper contributes to a better understanding of our previous empirical findings and observations from real-world sustainability negotiations. In addition, its theoretical and methodological advancements suggest new directions and offer innovative approaches for future research on sustainability negotiation behavior and processes, as well as for evaluating the quality of holistic sustainability agreements.

Discussion

In the face of pressing societal challenges such as climate change, negotiators are required to resolve complex socio-temporal conflicts that span the present and future interests of stakeholders at, behind, and beyond the negotiation table. Inherently, solutions to these conflicts can only be sustainable when they holistically account for—and ideally integrate—stakeholders' conflicting interests across temporal and social dimensions (Brundtland, 1987; Majer & Trötschel, 2022). Taking a joint decision-making perspective, this dissertation examined to what extent, how, and why negotiators succeed or fail to reach such holistic agreements for socio-temporal conflicts. Specifically, we approached these questions with a focus on negotiators' value creation behaviors to understand under which conditions conflict parties manage to integrate conflicting social interests (i.e., through integrative social trade-offs), temporal interests (i.e., through integrative temporal trade-offs), and their interplay (i.e., through integrative socio-temporal trade-offs), and reach mutually beneficial, long-term conflict resolutions (i.e., holistic sustainability agreements). Further, this dissertation started to explore the important boundary condition of 'conflict level' by investigating how negotiation processes, behaviors, and outcomes are affected by *whose* interests are involved in socio-temporal conflicts: exclusively parties' own concerns (at the negotiation table, Level 1), the interests of (heterogeneous) constituents they represent (behind the negotiation table, Level 2), or the interests of external parties who are not formally represented in negotiations (beyond the negotiation table, Level 3).

The theoretical considerations and empirical findings of the present thesis make important contributions to our understanding of how parties manage socio-temporal conflicts at, behind, and beyond the negotiation table. Contributions from two theoretical research projects shed light on the psychological factors that shape negotiators' mindset (Article 1) and influence their negotiation processes throughout the stages of preparation, joint decision-making, and implementation (Article 5) in sustainability negotiations involving diverse stakeholders. Findings from three empirical research projects (Articles 2-4, in total eight interactive laboratory negotiation experiments, $N = 1270$, and three online scenario studies, $N = 757$) show negotiators navigate different levels of socio-temporal conflict and provide a robust view of their actual decision-making and trade-off behaviors in these conflicts. Across studies and conflict levels, our findings consistently indicate that negotiators handle socio-temporal conflicts in a biased manner focused at resolving their *immediate social conflicts at the table*. Specifically, negotiators adopt a present-focused, myopic negotiation approach which

obstructs efficient socio-temporal trade-offs, and particularly value creation on the temporal dimension, ultimately hindering holistic sustainability agreements that (also) account for the interests of the future.

In their joint process of resolving socio-temporal conflicts at the table (Level 1), negotiators tended to *overlook* (S2 Article 3, Article 4), or even to *destroy* value creation opportunities on the temporal dimension (Article 2 & S1 Article 3). Specifically, negotiators seem to have *'exploited'* the temporal conflict dimension to resolve immediate social conflicts. They did so by sacrificing their individual and joint future interests to reach agreements for their present social conflict, accepting overall lower-valued, less integrative outcomes (Article 2). In other words, instead of systematically exploring and exploiting social *and* temporal value creation opportunities that consider parties interests holistically, parties myopically concentrated on their immediate social conflict and opted for mutually beneficial immediate outcomes—even if that meant prematurely claiming value from the future and harming own outcomes from a long-term perspective.

When socio-temporal conflicts were negotiated by representatives on behalf of their constituents behind the table (Level 2; Article 4), representatives also 'used' the temporal conflict (behind the table) to resolve their immediate social conflict (at the table). However, this did not equal a systematic neglect of future interests as found in Article 2. Instead, representatives were more pragmatic and *utilized* both present and future interests of their constituents to create value with the negotiation counterparts. While representatives prioritized those constituency interests that allowed for integrative agreements at the table, negotiations still concluded with higher joint outcomes when prioritizing constituents' immediate interests (and conceding on future interests) facilitated value creation opportunities, than vice versa. This suggests that representatives, like individual negotiators, are more successful in creating value when focusing on the present.

Together, these findings indicate that regardless of the presence of a constituency, negotiators primarily focus on resolving their social conflicts at Level 1 and are willing to utilize or exploit their temporal conflicts (at Level 1 or 2) to secure immediate agreements with their negotiation counterparts. This is behavior is particularly surprising for representatives who typically rigorously defend their constituents' interests (e.g., Benton & Druckman, 1974; De Dreu et al., 2007; Druckman, 1994), but prioritized integrative solutions with other parties over a balanced outcome for their constituents in our studies (Article 4).

On an overarching level, when facing socio-temporal conflicts, negotiators consistently treated their immediate social conflict at the table as their primary 'reference conflict', while

temporal conflicts were treated as 'trade-off conflicts' where negotiators readily conceded on future interests—especially if such concessions helped reach immediate agreements. Problematically, negotiators conceded on future interests not only when this facilitated immediate integrative agreements with a negotiation counterpart (as under specific conditions Article 4). Instead, parties also needlessly compromised on future interests leaving unclaimed value on the table (in Article 3), or even destroyed superior future value creation opportunities in favor of inferior immediate compromise solutions (in Article 2). This fundamental failure of negotiators to manage socio-temporal conflicts in a way that integrates social and temporal interests alike prevented the achievement of holistic sustainability agreements that adequately account for both the present and future interests of stakeholders at and behind the negotiation table.

Future Research

While this dissertation has made significant contributions to understanding socio-temporal negotiations, systematic future research covering four main issues is needed. First, studies should continue to explore the boundary condition of 'conflict level', particularly examining how conflicts involving stakeholders behind and beyond the table influence parties at the table in socio-temporal negotiations. Second, research should delve deeper into the underlying mechanisms that drive negotiators' behaviors across different conflict constellations. Third, from a methodological perspective, future studies aiming to advance socio-temporal conflict research should employ accurate operationalizations of these conflicts and continue to account for the social-interactive contexts of negotiations. Fourth and finally, future research is warranted to develop and test intervention approaches that help negotiators achieve higher-quality outcomes and (more) holistic sustainability agreements.

For planning and designing future experiments, the *Model of Socio-Temporal Conflicts in Sustainability Negotiations* provides a helpful structure. However, besides negotiation experiments and online scenario studies, a broader range of empirical research methods (e.g., expert interviews with practitioners on their perceptions of negotiation outcomes for external parties; observations of real-world socio-temporal negotiations such as COP conferences) and samples (e.g., politicians; managers negotiating corporate sustainability transformations; environmental activists) could yield valuable insights complementing the methods (e.g., laboratory experiments; online studies) and samples (i.e., laboratory convenience samples; online recruitment platforms) used in this dissertation.

Exploring Boundary Conditions

Taking a stepwise approach to examine socio-temporal negotiations, the empirical projects in this dissertation have primarily focused on how negotiators manage socio-temporal conflicts *at the table* (Level 1), and only begun to investigate how additional interests behind or beyond the negotiation table affect negotiations at the table (i.e., the boundary condition of 'conflict level'). Specifically, we provided initial empirical insights into how negotiation behaviors and outcomes at the table may change when socio-temporal conflicts involve stakeholders *behind the negotiation table* (Level 2). Furthermore, we began addressing the question of how it affects negotiation processes and outcomes when socio-temporal conflicts involve external parties' interests *beyond the table* who are not represented in negotiations (Level 3). However, due to a lack of sound empirical and theoretical foundations on this topic (for few exceptions, see Majer et al., 2021; Van Treek et al., 2023), we have so far approached this question from a theoretical point of view only, developing a structured foundation for designing future empirical studies on socio-temporal conflicts at Level 3 (Article 5).

Building on our initial findings concerning socio-temporal conflicts at and behind the table (Articles 2-4) and our suggestions for investigating conflicts beyond the table (Article 5), future research may further examine the effects and interactions of different conflict levels in sustainability negotiations. For example, at Level 2, representing constituencies is not a homogeneous endeavor. In fact, representatives may be elected through different means (e.g., direct election by constituencies vs. indirect appointment), which may influence the relationship between constituency (subgroups) and representatives (e.g., Klimoski & Ash, 1974), and in turn representatives' handling of socio-temporal conflicts. Additionally, constituency composition (e.g., constituency subgroups of unequal size advocating for present versus future interests) may be a relevant boundary condition to investigate (Bonner et al., 2011). At Level 3, where external parties are not formally represented in negotiations (Menkel-Meadow, 2009; Trötschel et al., 2022), one important question for future research is under which conditions parties at the table recognize external parties beyond the table as legitimate stakeholders in negotiations (e.g., tangibility, Article 5). By exploring these boundary conditions, future studies will contribute to a more detailed understanding of how negotiators manage different levels of socio-temporal conflicts in sustainability negotiations and how these conflict levels interact.

Understanding Mechanisms

While our empirical findings clearly show negotiators' failure to achieve high-quality agreements that create value on both the social *and* temporal dimensions in socio-temporal conflicts, it is less clear *why* parties fail to do so and prioritize their immediate social conflict at the negotiation table over all other types and levels of conflict. Given the complexity of socio-temporal conflicts in sustainability negotiations, it is likely that the underlying reasons for negotiators' decision-making are multi-causal, and that the interfering psychological processes are manifold (see Article 1, Article 5). The core question arises whether or to what extent it is negotiators' *willingness* (e.g., their present-bias, egoistic motivation, impatience, or ignorance) versus their *ability* (e.g., mastering the cognitive challenge of dealing with highly complex, nested conflict situations) that causes their myopic negotiation focus.

As a starting point to answer this question, the empirical findings of this dissertation point to negotiators' uncertainty avoidance as a potentially relevant psychological mechanism that may affect both their ability (i.e., limited understanding of uncertain future outcomes) and willingness (i.e., intrinsic desire to reduce uncertainty) to pursue holistic agreements. Specifically, in Article 2, negotiators became less efficient and reached agreements of lower quality when faced with greater social uncertainty. Their trade-off behaviors suggested that they sought to reduce this uncertainty by securing as many resources as possible early on (i.e., in the immediate negotiation sequence)—at the expense of future resource availability and superior future integrative agreements. Findings from Article 3 confirmed and further substantiated the role of uncertainty avoidance in negotiators' failure to create value for future outcomes in socio-temporal conflicts. These results are in line with previous research indicating that uncertainty can limit future-oriented contributions (Barrett & Dannenberg, 2012; Tavoni et al., 2011), and that uncertainty avoidance may deteriorate individuals' rational temporal decisions (Hardisty & Pfeffer, 2017), as well as impede value creation in negotiations (Essa et al., 2018), or even be a cause of negotiation failure (Underdal, 1983). However, uncertainty avoidance only accounts for part of negotiators' behaviors in our studies and can, for instance, not fully explain representatives' 'pragmatic' value creation for present *and* future interests as observed in Article 4 (S2-S4). Thus, other psychological mechanisms likely play a role, too.

Which specific other mechanisms guide negotiators' decisions at the table (e.g., negotiation mindset, Article 1) and which additional mechanisms—like immediate conflict bias (focusing on the most salient negotiation counterpart) or selection of reference outcome (determining which interests to prioritize in trade-offs)—come into play when stakeholders behind or beyond the table are involved warrants exploration in future studies. Identifying and

examining these mechanisms will provide deeper insights into the psychological drivers that shape negotiators' decisions in complex socio-temporal conflicts.

Advancing Socio-Temporal Conflict Research

On a more general level, the overarching empirical findings and theoretical contributions of this dissertation suggest two key aspects that future studies on socio-temporal conflicts should address. Specifically, to further our understanding of the boundary conditions and psychological processes that shape negotiators' joint decisions in socio-temporal negotiations, future studies should (1) ensure an accurate implementation of socio-temporal conflicts, and (2) continue to investigate the *interaction* of social and temporal conflicts in social-interactive negotiation contexts.

Accurate Implementation of Socio-Temporal Conflicts. The first key insight that should guide future research is that a sound operationalization of socio-temporal conflicts, as they occur in real-world settings, is crucial and has thus far been underrepresented in the empirical negotiation literature. Building on research that calls for embracing the complexity of real-world negotiations in negotiation research (e.g., Boothby et al., 2023; Jang et al., 2018; Menkel-Meadow, 2009), theoretical Articles 1 and 5 elaborate on the importance to conceptualize and examine sustainability negotiations in a way that accounts for their complex and nested conflicts of interests (i.e., socio-temporal conflicts at, behind, and beyond the table). Specifically, to genuinely understand when and why negotiators succeed or fail in resolving socio-temporal conflicts holistically, negotiation scholars should operationalize these conflicts in ways that capture their unique properties and associated psychological challenges (see also Boothby et al., 2023). Our empirical contributions underline this importance by showing that negotiators' handling of socio-temporal conflicts—for example, whether negotiators neglect or utilize temporal conflicts—depends on how they are operationalized (e.g., at or behind the table, with interdependent or independent time points).

While developing sophisticated negotiation paradigms that capture socio-temporal conflicts more realistically is desirable, designing and implementing such paradigms remains challenging. For instance, in the decision-making literature, temporal conflicts have often been operationalized in ways that disregard core characteristics of these conflicts in real-world negotiations, such as by providing present decision-makers with artificial certainty about their contributions to the future (e.g., Aaldering et al., 2024; Hauser et al., 2014; Jacquet et al., 2013; Tavoni et al., 2011). Other research on intergenerational conflicts often disregards the effects of interactive, joint decision-making processes (e.g., Fischer et al., 2004; Kamijo et al., 2017;

Shahen et al., 2021). Across the empirical projects in this dissertation, we introduced different methods to operationalize temporal conflicts by for example, means of separate but interdependent negotiation sequences (Article 2) or outcome uncertainty (Article 3). However, the fact that we employed different operationalizations highlights the difficulty of investigating socio-temporal conflicts comprehensively. Because varying operationalizations likely affect how negotiators perceive, process, and handle socio-temporal conflicts, future studies should aim for a more holistic operationalization that encompasses all core aspects of these conflicts. This will enable a better understanding and comparability of findings across different studies. Precisely, future research may implement and examine socio-temporal conflicts a) more *systematically*, for instance by systematically manipulating specific characteristics such as the uncertainty of the future (e.g., Barrett & Dannenberg, 2012; Hardisty & Pfeffer, 2017; Wade-Benzoni et al., 2008) or who the future beneficiaries are (Aaldering et al., 2024); and b) more *thoroughly*, by combining crucial conflict characteristics to better reflect the complexity of real-world sustainability conflicts. This way, relevant mechanisms that guide socio-temporal negotiations can be discovered, how they unfold and interact in negotiation situations can be assessed, and real-world challenges can be better understood, allowing for the development of tailored intervention approaches.

Importance of Social-Interactive Context. The second key insight from this dissertation highlights the exceptional role of the social context of negotiations. Specifically, we theorized (Article 1 and 5) and demonstrated (Articles 2-4) how the social aspects of *joint* decision-making contexts fundamentally shape parties' behaviors, dominating their negotiations on socio-temporal conflicts (e.g., in Article 4, where representatives' decisions fundamentally changed in social-interactive negotiations at the table vs. behind the negotiation table). Our research clearly demonstrates the importance of investigating socio-temporal conflicts as interdependent conflicts, rather than examining social (e.g., De Dreu, 2010; Pruitt & Carnevale, 1993; Pruitt & Rubin, 1986) and temporal conflicts (e.g., Hauser et al., 2014; Kamijo et al., 2017) in isolation, and illustrates the crucial role of social-interactive decision-making processes in shaping how these conflicts unfold.

Future research should further explore when and why the social-interactive nature of negotiations contributes to high- or low-quality outcomes in socio-temporal conflicts. To what extent does the mere presence of a joint decision-making context (as opposed to individual or group decision-making contexts) influence negotiators' motivations? Under what conditions does this context encourage collaborative problem-solving behavior (as seen in Article 4)? And when does it foster more competitive approaches (as seen in Article 2)? Why does resolving

social conflicts seem to 'override' the resolution of temporal conflicts when both conflict dimensions coexist? While a recent theoretical paper offers some potential answers for the latter question in the context of intergenerational negotiations (Majer et al., 2021), a need for empirical research that systematically explores when and why negotiators prioritize immediate social conflict at the table—and under what conditions this tendency might shift—remains. Since social conflicts are at the heart of every (sustainability) negotiation, and social-interactive decision processes are thus inevitable, such research should aim at optimizing negotiation processes in ways that enable more sustainable, holistic resolutions to socio-temporal conflicts.

Developing Intervention Approaches

Finally, once boundary conditions and underlying mechanisms are better understood, the goal should be to facilitate conflict solutions that contribute to sustainability and holistically integrate the present and future interests of parties at and stakeholders behind or beyond the negotiation table. Prior research has begun to explore psychological, behavioral, and structural intervention approaches that can support individuals in integrating short- and long-term interests (e.g., social norms; Lindenberg & Steg, 2007; Nolan et al., 2008; Schultz et al., 2007; see also Kramer & Petzoldt, 2022) and to resolve intergenerational conflicts in more balanced ways (e.g., appointing a representative for future generations; Bogacki & Letmathe, 2021; Kamijo et al., 2017; thinking about commonalities with future generations; Meleady & Crisp, 2017; tailoring future beneficiaries to individuals' current group-based social preferences; Aaldering et al., 2024). However, previous interventions have primarily targeted individual decision-making processes, which, as this thesis illustrates (see also e.g., Boothby et al., 2023), differ decisively from joint decision-making processes due to the influence of the social context on negotiation processes and outcomes. Therefore, future studies should focus on developing and testing tailored intervention approaches that address the unique psychological and structural challenges of socio-temporal conflicts in negotiations. Although developing effective interventions ideally follows the identification of relevant mechanisms, the present thesis' contributions offer some starting points for intervention approaches that may assist parties in achieving integrative, holistic agreements in socio-temporal conflicts.

Negotiation Mindset. As a first psychological intervention approach, we suggest addressing parties' negotiation mindset (Article 1) through a mindset-shift intervention designed to shift negotiators' myopic into a holistic negotiation mindset. Specifically, increasing negotiators' awareness of social ties and common fate with (future) others, and enhancing their future-orientation, may be powerful ways to facilitate socio-temporal value

creation processes (Trötschel et al., 2022). Shifting negotiators' focus from myopic value claiming to holistic value creation may, in turn, foster the exploration of integrative sustainability negotiation agreements. Based on our suggestions in Article 1, future studies could start to explore ways of implementing and evaluating this mindset-shift intervention.

Dealing with Uncertainty. As discussed above, the empirical Articles 2 and 3 identified uncertainties as an important barrier to achieving holistic sustainability agreements. Specifically, negotiators' strong desire to reduce uncertainty—whether related to social uncertainty (Article 2) or outcome uncertainty, (Article 3)—impeded value creation, particularly for future outcomes. Given that negotiations, and especially socio-temporal sustainability negotiations, will always be "fuzzy situations that are full of uncertainties and ambiguities" (De Dreu et al., 2007, p. 608), intervention approaches that support negotiators in dealing with the great challenge of uncertainty seem promising (see e.g., Sondak et al., 2013; Thompson, 1991). Importantly, for the development of concrete and effective interventions, a clear understanding of the particular source and type of uncertainty at play is needed (Schauer et al., 2023; Sondak et al., 2013). For example, while the use of contingency contracts (e.g., Bazerman & Gillespie, 1999; Hüffmeier et al., 2019; Moran et al., 2008), wherein certain conditions of a negotiation agreement are tied to future developments of the negotiation issues on the table, may be a suitable approach to help negotiators deal with outcome uncertainties, such contracts may be less helpful for addressing social uncertainty. By contrast, psychological interventions that for example aim at promoting reciprocal cooperative behavior between negotiators and over time might be more effective approaches for managing social uncertainty (e.g., positive cycles of trust; Olekalns et al., 2002).

Structuring Negotiation Processes. Finally, building on insights from Articles 2, 4 and 5, intervention approaches that alter negotiation processes and, for example, structure the order of negotiated conflicts, may help negotiators to reach more holistic agreements that integrate social and temporal interests. For instance, as an antidote to parties' tendency to focus narrowly on their immediate social conflicts at the table, a procedural intervention could be designed to move parties' temporal conflict more into the foreground of the negotiation process. To give an example, before parties start to negotiate the allocation of current fishing rights between them, they might first agree on how many fish should be preserved for the future. Embedding the novel evaluative criteria for sustainability agreements proposed in Article 5, such a procedural intervention might prioritize sustainable scale and distributive justice in agreements before optimizing agreement efficiency. This approach could help negotiators to keep the interests of the future (including their own future interests) more prominently in mind and be more resistant

to concede on the temporal dimension (i.e., establishing the temporal dimension of conflict as 'reference conflict'). Just as a procedural intervention may install parties' temporal conflict as 'reference conflict', adaptations of such an intervention might promote a more holistic consideration of the interests of stakeholders behind and beyond the table. Specifically, also in conflicts at Levels 2 or 3, the principles of sustainable scale and fair distribution may be applied first, before parties start focusing on optimizing the efficiency of their agreements at the table.

Concluding Thoughts

Our research shows how negotiators manage—and often fundamentally struggle with—the complex socio-temporal conflicts that sustainability negotiations entail. When social and temporal conflicts converge, it is parties' social conflict at the negotiation table that moves into the spotlight, and the temporal conflict that negotiators disregard or exploit to reach immediate, but not forward-looking, conflict settlements. This myopic negotiation focus impedes the creation of sustainability agreements that holistically integrate the present and future interests of all stakeholders at, behind, and beyond the table.

With this dissertation, I hope to offer insights that help and motivate both scholars and practitioners to better understand the scope and complexity of socio-temporal conflicts in negotiations, and not simply reject it. I further hope to have demonstrated the importance of examining and the need to discover how to effectively manage these conflicts in sustainability negotiations, for example through innovative, forward-thinking problem-solving strategies that address both social *and* temporal dimensions of conflict. In this way, negotiators can be supported in working toward solutions that ensure there will be enough fish in the sea for everyone, now and in the future.

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Chapter 2: From Claiming to Creating Value: The Psychology of Negotiations on Common Resource Dilemmas

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Abstract

Current sustainability challenges often reflect common resource dilemmas where peoples' short-term self-interests are at odds with collective interests in the present and future. In this article, we highlight the key role of joint decision-making processes in negotiations to facilitate the management of common resource dilemmas and to promote the transition toward sustainability. By reflecting on psychological drivers and barriers, we argue that the limited availability, the restricted accessibility, and the dynamic alterability of resources in negotiations on common resource dilemmas may cause a myopic mindset that fosters value claiming strategies and, ultimately, results in distributive-consumptive negotiation outcomes. To promote value creation in negotiations on common resource dilemmas, we argue that agents must perform a mindset shift with an inclusive social identity on a superordinate group level, an embracive prosocial motivation for other parties' interests at and beyond the table, and a forward-looking cognitive orientation towards long-term consequences of their joint decisions. By shifting their mindset from a myopic towards a holistic cognitive orientation, agents may explore negotiation strategies to create value through increasing the availability, improving the accessibility, and using the alterability of resources. Applying these value creation strategies may help achieve integrative-transformative negotiation outcomes and promote sustainable agreements aimed at intersectional, interlocal, and intergenerational justice. We conclude by discussing additional psychological factors that play a pivotal role in negotiations on common resource dilemmas as well as further developments for future research.

Keywords: negotiation; common resource dilemma; sustainability; creating value; claiming value; problem-solving; social justice; mindset; strategies

Sustainability challenges such as climate change, water pollution, or biodiversity loss are shaped by humanity through conserving and exploiting common resources. These challenges appear as common resource dilemmas in which agents face social conflicts between their short-term self-interests and the long-term collective interests [1–3]. Although agents in common resource dilemmas often decide individually on their preferred course of action (for reviews, see [4–6]), many real-world dilemmas require them to find mutually acceptable agreements on how to manage the conflict of interests between short term self-interests versus long-term collective interests by interacting, communicating, and jointly deciding with others. Whenever decision-makers seek to solve their conflicts of interests through joint, interactive decision-making processes to achieve mutually acceptable agreements one refers to these decision processes as a negotiation (e.g., [7,8]). We argue that negotiations on common resource dilemmas reflect exactly this joint decision-making process. However, in these specific common resource dilemma negotiations, parties seek to find mutual agreements on how to manage resources with limited availability, restricted accessibility, or dynamic alterability. By managing these challenging resource characteristics wisely, agents can jointly resolve the social conflict between short-term self-interests and collective long-term interests. The collective interest in common resource dilemma negotiations goes beyond the present parties' interests at the table. It also includes the interests of external parties absent from the negotiation whose interests would also be affected by the negotiating parties' agreement. We propose a new framework to structure key psychological processes in common resource dilemma negotiations, highlight psychological barriers to solving these dilemmas, and, ultimately, provide guidelines to apply innovative negotiation strategies that are geared towards creating value in negotiations on common resource dilemmas.

Traditional psychological research on negotiations has predominantly focused on classic transaction negotiations (e.g., buyer-seller negotiations or B2B-negotiations; for reviews see, e.g., [7,9,10]). By contrast, negotiations on common resource dilemmas have received far less attention (for exceptions see [11–14]). Given the ecological, economic, and social impact of negotiation processes across all levels of society, it is remarkable how little is known about psychological processes that shape agents' perceptions and behaviors in negotiations on common resource dilemmas (as the term 'agent' is widely used in sustainability science (e.g., change agents; [15], juristic agents, [16]; governance agents; [17]), we specify the term 'agent' in our framework concerning the psychological dimension. We refer to agents in negotiations on common resource dilemmas as group representatives who psychologically perceive social ties with their group constituency (perceived social identification, e.g., [18]),

are provided with a mandate to negotiate on behalf of the interests of their group constituency (perceived mandate, e.g., [19]) and perceive a feeling of accountability concerning the agreements they have reached with their counterparts (perceived accountability, e.g., [20]). We focus on the psychological processes and first describe barriers that foster the tendency to claim value by using distributive and competitive negotiation strategies (e.g., [21–30]). Given these barriers, the superordinate goal of our proposed framework is to provide negotiating agents with guidelines on how to create value in common resource dilemmas. We identify innovative and integrative strategies that aim to promote sustainable agreements. By introducing a framework on psychological processes in negotiations on common resource dilemmas, we seek to contribute to sustainability science, psychology, and negotiation research in several important ways: First, from the perspective of sustainability science, the present framework highlights a micro-level perspective and elucidates the pivotal role of psychological processes in the transition towards sustainability. Second, from the perspective of psychology, we introduce specific psychological processes that affect joint, interactive decision-making in common resource dilemmas and that play a pivotal role in driving sustainable change. Third, from the perspective of negotiation research, we provide insights into a socially relevant negotiation setting that requires strategies that have received little attention in the negotiation literature thus far. Finally, from a practical perspective, we propose hands-on guiding principles that may help agents to apply problem-solving and value creation strategies to foster sustainable agreements.

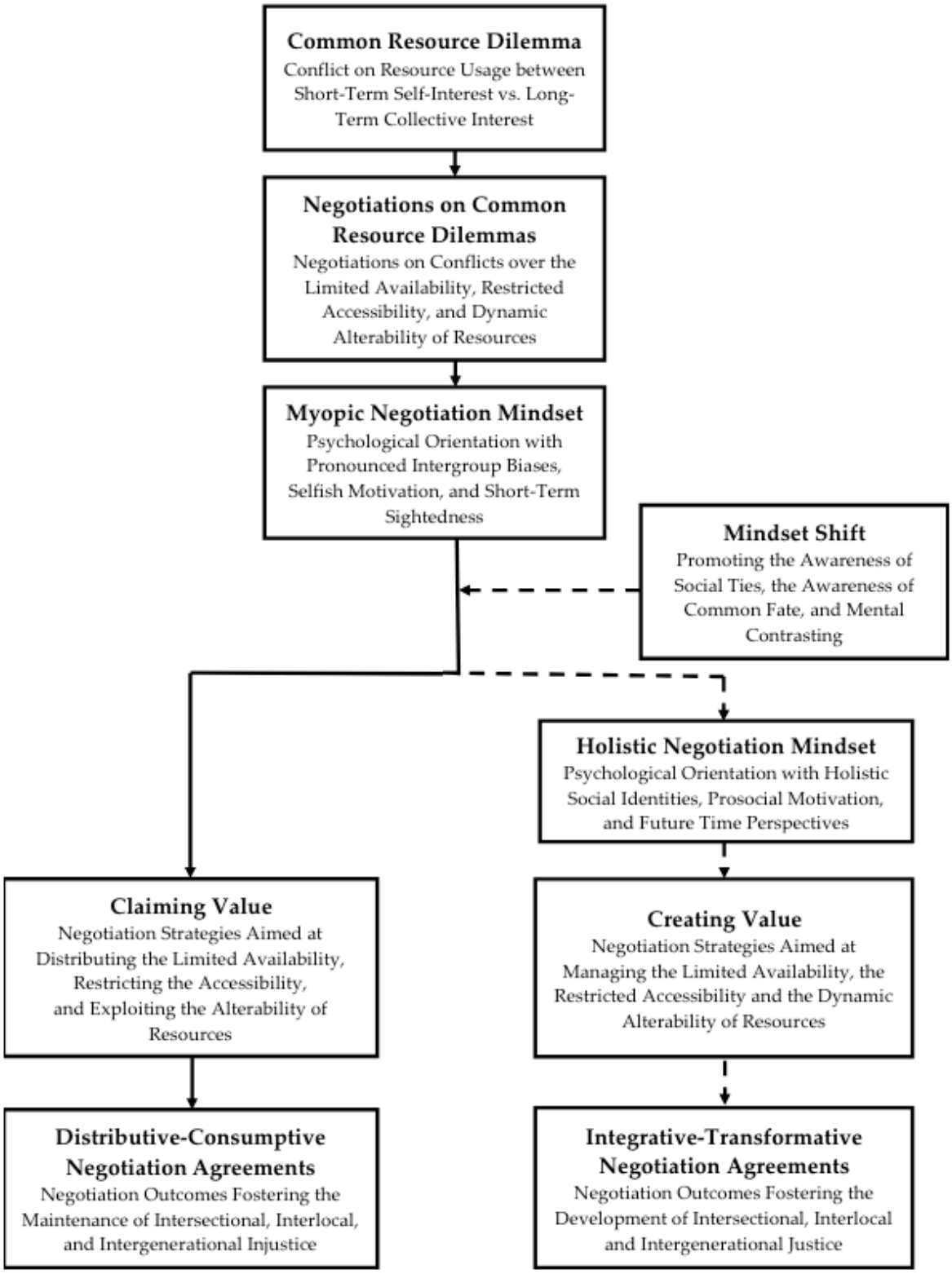
A Framework of Structural Barriers and Psychological Processes for Negotiating Common Resource Dilemmas

Building on experimental games research (for reviews, see [4–6]), we argue that psychological research must kick-start research on the communicative, interactive, and joint decision-making processes in common resource dilemmas to offer new insights on how to overcome barriers to value creation. Figure 1 introduces our proposed framework for negotiations on common resource dilemmas that we outline in the following. Particularly in negotiations, agents can solve their conflicts of interest by exploring opportunities to create value. Therefore, those agents who seek to create value must apply innovative and integrative strategies that systematically address the limited availability (e.g., limited freshwater in arid areas), the restricted accessibility (e.g., restricted access to vaccines), or the dynamic alterability (e.g., mutation of nuclear resources into radiant waste) of the negotiated resources.

If agents fail to systematically address these resource-related challenges, they become trapped in a psychological orientation that is characterized by increased levels of egoistic motivation (e.g., [13,14,31–33]), a reduced sense of collective identification (e.g., [34–36]), and an enhanced focus on short-term outcomes (e.g., [37–39]). We refer to this psychological orientation as a 'myopic mindset'. We further predict that such a myopic mindset fosters strategies of claiming value and obstructs strategies of creating value [24,40,41]. Agents with a myopic mindset demand resources of limited availability (e.g., claiming fresh water in arid areas), confine the sharing of resources with restricted accessibility (e.g., defending mining rights for rare resources), and disregard the dynamic alterability of resources (e.g., neglecting waste products from nuclear energy production). Consequently, negotiators with a myopic mindset are therefore likely to settle on unsustainable, consumptive, and distributive agreements that ultimately may contribute to existing intersectional, interlocal, and intergenerational injustice. To prevent agents from entering a vicious circle of destructive strategies and claiming value, we propose that agents must be encouraged to perform a mindset shift that induces a feeling of shared belonging based on their common-ingroup identities (e.g., [42–44]), increase their prosocial motivation based on the awareness of mutual interdependencies and common fate (e.g., [45,46]), and strengthen their future-oriented decision-making based on the comparison of future developments and the current status quo (e.g., [47–49]). A shifted mindset with a holistic psychological orientation may help negotiating agents to apply innovative and integrative strategies that directly address the limited availability, restricted accessibility, and dynamic alterability of resources. By applying novel integrative negotiation strategies such as resource compensating, resource-sharing, resource-scaling, resource re- or upcycling, resource-inventing, or resource-converting, they may discover unexplored opportunities to create value. (In our framework, we describe value claiming and value creating as two independent and unrelated strategic approaches to negotiation, and thereby highlight their distinct functions in negotiations on common resource dilemmas. From an applied perspective, however, creating value and claiming value are strongly associated: "Value creating and value claiming are linked parts of negotiation. […] value that has been created must be claimed." ([24], p. 33). Accordingly, the separation of claiming and creating value in this framework serves the description of their different functions rather than their practical dissociation). Negotiators may solve (part of) their social conflicts in common resource dilemmas by either (a) increasing the availability of limited resources, (b) improving the accessibility of restricted resources, and/or (c) managing the alterability of dynamically changing resources. Ultimately, negotiators may reach integrative and

transformative agreements that do not only serve parties' short-term self-interests, but also take the long-term interests of the collective into consideration.

Figure 1. *Structural Barriers and Psychological Processes in Negotiations on Common Resource Dilemmas.*



Research on Psychological Processes in Common Resource Dilemmas

In the transition toward sustainability, decision-makers must constantly manage the use of limited, restricted, and dynamically changing resource conditions to solve the social conflicts between short-term self-interests and long-term collective interests [1,50–52]. This conflict of interests is referred to as a common resource dilemma, which is "[...] a situation where a collective cost or risk is incurred or generated through the combined negative external effects of various individuals who act (relatively) independently of one another" ([2] p. 286). Such social conflicts may refer to many different resource dilemmas, for instance, with ecological resources (e.g., preservation of biodiversity, groundwater, and primeval forest land), economic resources (e.g., distribution of natural resources, farmland, and fishing grounds), or social-cultural resources (e.g., retention of cultural monuments and sharing of technological knowledge). In these common resource dilemmas, agents must either determine individual decisions (i.e., consume or preserve resources without knowing the other agents' individual decisions) or they must engage in social interactions of joint decision-making to reach agreements over their decisions (i.e., consume or preserve resources based on the mutually accepted agreements reached between the agents). Even though both decision situations share several commonalities (e.g., mixed-motive situations), they also differ in important aspects from each other and, thus, reflect different lines of psychological research.

Experimental Game Research versus Negotiation Research

Research on individual decision-making in resource-dilemma games has provided important insights into how psychological processes affect defection and cooperation in different types of experimental games (e.g., sender-receiver games—e.g., [53]; public goods games—e.g., [54]; intergenerational games; e.g., [55]). Defection refers to a situation in which an individual decision-maker chooses to maximize short-term self-interests at the cost of the collective long-term interests (e.g., [5,56]). Contrarily, cooperation refers to a situation in which an individual decision-maker chooses to maximize long-term collective interests at the cost of short-term self-interests (e.g., [57,58]). Even though communication processes have not been the major focus of experimental game research, several studies started to investigate how different types of communication affect defection and cooperation in experimental games (e.g., cheap talk: [59–61]; binding talk: [62–64]). A part of these studies also investigated whether communication increases trust in the counterparts' promises (i.e., cheap talk—[59–61]), while

other studies examined whether communication increases compliance to own promises (i.e., binding talk—[62–64]).

Even though the role of communication has already been addressed in experimental game research, the role of communication in negotiations goes beyond the effects of cheap or binding talks. As opposed to experimental game research, decision-makers in negotiations commonly lack knowledge of their counterparts' pay-offs, priorities, and interests [41,65]. Therefore, decision-makers in negotiations must communicate with each other to uncover missing information and explore opportunities to create value through integrative and innovative negotiation strategies. Communication between the negotiation parties, however, does not only serve the exploration of opportunities to create value, but is also an indispensable and integral part of the interactive and joint decision-making process in negotiations. In particular, mutually acceptable agreements in negotiations can only be reached through the ongoing process of communication. To differentiate between experimental games and negotiations, experimental games have, thus, been described as 'games of coordination' or 'games of moves' based on the agents' individual decisions, whereas negotiations have been referred to as 'games of agreements' based on the agents' joint decisions [32,41]. Given the important differences between decision-making processes in experimental games versus negotiations, several authors have warned against a simple generalization of findings from one field of research to the other (e.g., [32,41]).

Negotiations on Common Resource Dilemmas

The solution of conflicts of interests through negotiations has been an important topic in psychological research for decades (e.g., [8,9,32,41,66,67]). Unlike in experimental game research, where defection versus cooperation is well investigated, the sustainable solution of conflicts between short-term self-interest versus long-term collective interests has gained far less attention in negotiation research. Applying the idea of negotiations on common resource dilemmas to the field of sustainability may, however, require a broader reconsideration of the concept of 'collective interest', as it has been commonly used in experimental game research. Specifically, the concept of collective interest refers to the effect of 'externalities' in the context of sustainability (e.g., [68–70]). Externalities are indirect costs or benefits to an uninvolved but interdependent external party that arise as an effect of other parties' activities or decisions (e.g., [71,72]). In negotiations on common resource dilemmas, externalities occur when agents make decisions on managing and using resources that affect not only the interests of the negotiating parties but also the interests of external parties living at other locations (interlocal externalities),

belonging to different groups (intersectional externalities), or being part of future generations (intergenerational externalities). Thus, the investigation of psychological processes in negotiations on common resource dilemmas in the realm of sustainability affords that external parties' interests that are affected by the agreements are incorporated into research on collective long-term interests. Menkel-Meadow [73] raised awareness of the pivotal role of externalities in the context of many negotiations: "What seems like a 'two-party' problem is, in fact, much more complicated and often affects many other parties [...]. We can almost never assume that a bilateral agreement of two parties will be sufficient to solve anything but perhaps the most simple buyer-seller agreement" (pp. 421–422).

Different types of externalities pose a highly challenging task to negotiators in common resource dilemmas. Specifically, agents must not only solve their conflicting short-term self-interests at the negotiation table, but further must take the interest of different social groups (e.g., different ethnical, political, or religious groups), at different locations (e.g., locally near or far), at different times (e.g., short-, intermediate-, or long-term consequences) into consideration (e.g., [73,74]). Despite the key role of externalities in the transition towards sustainability, only very little is known about (1) the psychological barriers to sustainable agreements that negotiators face and (2) how they can be encouraged to apply strategies that aim for integrative-transformative and sustainable agreements.

The Myopic Mindset as a Psychological Barrier to Sustainable Agreements

We argue that the social context of negotiations on common resource dilemmas (i.e., exploiting resources in agents' short-term self-interest vs. conserving resources for the long-term collective interest) fosters a destructive psychological orientation: negotiators tend to claim value in their short-term self-interest while neglecting opportunities to create value in the long-term collective interest. This cognitive orientation is, in turn, reinforced by the inherent struggle over the challenging characteristics of common resources, namely, their limited availability, restricted accessibility, and dynamic alterability. We refer to this psychological orientation as a 'myopic mindset'. The concept of the mindset was first introduced as the sum of cognitive procedures that constitute a cognitive orientation to achieve task completion (e.g., [75,76]). Building on this, Gollwitzer [77,78] describes mindsets as a cognitive orientation that helps individuals to solve certain tasks such as setting goals or implementing goal-directed behaviors. Accordingly, mindsets can be defined as psychological orientations that determine the way how individuals handle certain tasks or challenges on the

cognitive, affective, and behavioral levels. A plethora of research has shown that mindsets affect individuals' behaviors and strategies in various social contexts (e.g., [78,79]), including negotiations [80–82].

Noteworthy, mindsets do not always facilitate task accomplishment but may also trap individuals in self-defeating cycles [83]. In most negotiations on common resource dilemmas, agents must deal with limited or scarce resources. The scarcity of resources plays a decisive role in the emergence of social conflicts (e.g., [33,84–86]). For instance, people who perceive resource scarcity mainly focus on the satisfaction of their short-term self-interest (e.g., [84,87]), reveal more self-serving behaviors (e.g., [13]), and are less cooperative [33,88]. In conclusion, we assume that the limited availability of resources will induce an egoistic psychological orientation that constitutes a fundamental part of agents' myopic mindset ([89–91]; see also: [92,93]).

In other cases, sufficient resources are available, but the access to these resources is restricted. For instance, in June 2021, the global alliance of vaccines and immunization (GAVI) negotiated an international agreement that regulated the global production of vaccines. The decision-makers (including China, Germany, Russia, the USA, and others) kept the access to technical knowledge or reproduction rights restricted, and thereby con- tributed to desolate vaccine coverage in African countries, while holding on to a great surplus of vaccine doses [94]. From a psychological perspective, the restricted accessibility of resources promotes an intergroup bias (e.g., [34–36,95]) that is reflected in negative attitudes (prejudice), derogating cognitions (stereotypes [96]), and discriminating behavior (discrimination; e.g., [97]) towards members of other groups. Reflected in intergroup dis-trust, the intergroup bias can either take the form of in-group favoritism (e.g., providing a surplus of vaccines to the in-group) or out-group derogation (e.g., restricting access to vaccines to the out-group). Notably, in-group favoritism and out-group derogation not only occur in actual conflicts over scarce resources (realistic group conflict [101,102]) but also when resource scarcity is not a crucial element of the conflict (e.g., [35,103]). This can be explained by deep-rooted human motives such as the need for positive self-esteem and distinctive-ness [34,35], self-preservation [104], or social dominance [105]. Given these fundamental motives, we assume that the restricted accessibility of resources will foster the intergroup bias and cause conflict escalations in negotiations on common resource dilemmas.

Finally, even without restricted access or limited availability, negotiators may still experience conflicts of interest concerning the dynamic alterability of resources. On the one hand, resources can be unstable and, therefore, alter autonomously through environmental

change, economic transition, or social development (e.g., the thawing of water-covered permafrost releases methane from decomposed plants into the atmosphere). On the other hand, resources can change their quality through active human consumption. Therefore, agents must take the negative long-term consequences of resource consumption into con- sideration (e.g., nuclear waste resulting from the production of nuclear energy). From a psychological perspective and as indicated by an extensive body of psychological research, this dynamic alterability of resources may foster negotiators' tendency to neglect long-term, time-delayed consequences of their decisions, and instead concentrate on immediate outcomes (i.e., temporal discounting [37–39,106]). This tendency can be found across a variety of contexts and outcome domains, such as economic and environmental outcomes (e.g., [37,39,107]). Due to their preference for immediate outcomes, we assume that negotiators fall prey to a two-fold temporal short-sightedness: They (1) primarily focus on the present state of resources and negotiate how they can generate beneficial outcomes for their present interests and (2) ignore the transformation of resources over time and discount potential long-term burdens of their decisions.

Claiming Value in Negotiations on Common Resource Dilemmas

Agents with a myopic mindset are assumed to primarily process the information on the differences between themselves and others (intergroup bias [34,35,42,95]), react with egoistic and self-serving behaviors (egoistic motivation [31,108,109]), and focus on immediate short-term outcomes while neglecting future consequences (temporal discounting; (e.g., [37–39]). A myopic mindset in negotiations on common resource dilemmas is, thus, predicted to have a strong impact on agents' behaviors and strategies.

Negotiation strategies can be classified into two main categories: creating value focuses on the integration of all parties' interests versus claiming value focuses on enforcing the individual interests of the parties [8,24]. While creating value is reflected in cooperative, constructive, and integrative negotiation behaviors aimed at "enlarging the pie" (e.g., logrolling and contingency contracts), claiming value is reflected in distributive, competitive, and contentious behaviors aimed at "slicing the pie" (e.g., self-serving demands and the misrepresentation of interests). The social conflicts in negotiations on common resource dilemmas and the resulting myopic mindset are expected to foster agents' tendency to claim value and obstruct the tendency to create value. Importantly, this may result in conflict escalations as claiming value increases the likelihood that other parties will mirror these

behaviors (e.g., [110]). This tendency to claim value ultimately reinforces each other's fixed-pie assumptions and increases the risk of escalating conflict circles (e.g., [8,9]).

We conclude that a myopic mindset in negotiations on common resource dilemmas will trigger negotiation strategies that primarily serve agents' short-term self-interests. Negotiators with a myopic mindset tend to make contentious demands on limited available resources, restrict the accessibility of resources, and exploit the dynamic alterability of resources. These tendencies can manifest, for instance, in that negotiators apply competitive tactics such as committing themselves to adamant demands (e.g., [29]), hinder other parties to use shared resources [14,111], or devaluate other parties' proposals on how to change future developments (e.g., [112]).

Distributive-Consumptive Outcomes

Through value claiming and the corresponding competitive strategies, agents with a myopic mindset are predicted to pursue negotiation outcomes that serve their short-term self-interests while ignoring the long-term collective interests. While agents' focus on their short-term interests may even help them to find win-win solutions for those at the table [29], negotiators will neglect externalities that result from their decision at the negotiation table, imposing negative effects and harmful consequences on others absent from the table [5,6,50–52]. Ultimately, agents' unsustainable solutions and distributive-consumptive agreements will maintain or even foster intersectional, interlocal, and intergenerational injustice.

Shifting Agents' Mindset in Negotiations on Common Resource Dilemmas

From the perspective of micro-level psychological processes (e.g., human needs, motives, emotions, and cognitions), the transition to sustainability can only progress when agents' myopic mindsets change to a holistic view of the challenges in common resource dilemmas. The importance of this perspective is also reflected in the well-established definition of sustainability as a "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" found in the Brundtland Report [113]. This definition points out that the decision-makers in sustainability-related negotiations are challenged to meet the interests of different social groups within and between generations [106,114]. We, therefore, specify social justice as a normative standard of sustainable agreements in negotiations on common resource dilemmas (for reviews, see [115,116]). It is

important to note that social justice as described in the definitions of sustainability [117] can hardly ever be met in its ultimate sense. Precisely, negotiations on common resource dilemmas take place in an ever-changing environment with multidimensional outcomes, multilateral externalities, and intertemporal dependencies [118,119]. The striving for sustainable agreements in terms of intersectional, interlocal, and intergenerational justice should, therefore, only be understood as a guiding principle that must be constantly and iteratively reassessed in the ongoing process of sustainability-related negotiations. (For instance, in climate change negotiations, agents may adopt normative standards that all parties agree to a certain threshold of temperature or sea-level rise. Such general goals may serve as the guiding principle for intersectional, interlocal, and inter- generational justice on a superordinate level. Even though agents may have agreed on such general goals as guiding principles in their negotiations, they, nevertheless, will face enormous challenges of social injustice when it comes to the concrete implementation of goal-directed measures at the local, regional, or national levels that will force agents to agree to painful trade-offs). Accordingly, from a psychological perspective, the search for sustainable negotiation agreements must be seen as a chronic rather than temporal goal state [120,121].

Inducing a mindset shift has been a very challenging endeavor for psychological research over recent years (e.g., [77,122–124]). Interestingly, interventions to induce a mindset shift have also gained considerable attention in negotiation research (e.g., [80–82,125]). Even though a detailed discussion of factors that may help agents to shift their mindsets goes beyond the scope of the present framework, we would like to summarize different approaches to how a mindset shift could be initiated in sustainability-related negotiations. In general, a mindset shift may either be caused by internal pressure that pushes agents to change their psychological orientations, or by external pressures that pull agents to adjust their maladaptive orientations. For instance, agents may experience an inner pressure to avoid harmful externalities that may promote future social conflicts with external parties resulting in severe conflict escalations [111]. In addition, agents may feel a need to shift their mindset due to negative experiences or learning processes. For instance, agents may experience that the failure to solve their social conflicts in the past may prevent them from reaching their goals in the future. Concerning their learning experience, psychological research has also pointed out the promising role of mindset-trainings (e.g., [77,122,123]) that can also be applied in the context of negotiations (e.g., [80,126]. Moreover, agents can be encouraged to develop a new mindset by observing the behaviors of renowned or successful role models in the field of science, economics, or politics (e.g., [127,128]). Even if agents do not perceive an inner obligation to change their mindset,

external factors may, nevertheless, force them to adjust their psychological orientation to meet the demands of their environment, such as disasters, economic downturns, or social unrest (e.g., [129]). Without the immediate pressure of social, economic, or ecological upheaval, public pressure provoked by social movements, political protest, societal debates, or other forms of collective action may force agents to change their mindset [130–132]. Finally, agents may be encouraged to shift their mindset in negotiations on common resource dilemmas by scientific reports and model projections that call for collective effort to solve pressing economic, social, and ecological challenges and reduce the impact of detrimental developments in the future (e.g., [133]).

Although agents may feel a need for a mindset shift, they may still lack knowledge of the psychological processes that may help them to apply integrative and innovative strategies in negotiations. In this case, various psychological processes may help negotiators to handle the challenges of sustainability (e.g., mindfulness [134,135] and connectedness to nature [136,137]), however, in our framework, we concentrate on the role of three psychological mechanisms. We believe that these could help agents to develop a holistic mindset to deal with the specific challenges of common resource dilemmas. Specifically, we elaborate on the role of social identity processes [35,44,138], prosocial motivation [139,140], and mental contrasting [49,141] as important psychological processes.

Promoting a Holistic Social Identity

Social categorization of own versus other groups (i.e., “we” as the same group vs. “they” as other groups) provokes an intergroup bias [42,95,142], increases intergroup polarization (e.g., [143]), triggers intergroup distrust (e.g., [98]), and increases intergroup greed (e.g., [100]). These detrimental intergroup effects may even occur in ostensible conflicts of interests without resource scarcity (e.g., [44,100,144]). Hence, one of the most crucial challenges in common resource dilemma negotiations is to move agents’ cognitive categorization of the intergroup context towards the perception of a social context, in which different subgroups are embedded in more comprehensive social networks. These superordinate group-memberships include the social ties between these different subgroups. In the common-ingroup identity model, Gaertner and Dovidio [44] propose that agents recategorize themselves and other out-groups as members of one superordinate common group without giving up their identification with their original subgroups. Numerous psychological studies have shown that the awareness of a superordinate in-group identity decreases intergroup biases, increases intergroup trust, and improves social relations (e.g., [145,146]).

Referring to the social-identity approach [138,147,148], the feeling of shared belongingness and the perception of social ties can be strengthened by raising the awareness of similarities between different social groups on the superordinate group level. For instance, agents of different social groups can be made aware of their similarities concerning their basic human needs, or fundamental motives and interests. Previous research shows that perceived similarity between groups improves intergroup relations and reduces intergroup discrimination [149,150]. For instance, research on global identity and identification with humanity (e.g., [43,151]) reveals that agents with a salient social identity on the global level are more concerned about distributive justice, act more cooperatively in social conflicts, or show more pro-environmental behaviors. Given these promising findings, we argue that strengthening the perception of similarities and the awareness of social ties on the superordinate group level might help agents overcome their intergroup bias, distrust, and greed.

Promoting a Holistic Prosocial Motivation

Although promoting agents' holistic social identity can improve intergroup relations, the inherent structural characteristics of negotiations on common resource dilemmas (i.e., limited availability, restricted accessibility, and dynamic alterability of resources) may lead agents to focus on the negative interdependence between their self-interests and the collective interest (e.g., [1,152]). If all agents sought to fulfill their interests regardless of the collective interest, everyone would end up with inferior outcomes in the long run. Despite the prevalent salience of this negative interdependence, however, common resource dilemma negotiations inherently involve common fate and, thus, also imply positive interdependence (i.e., mixed-motive dilemma [152–154]). If all agents managed to use resources cooperatively and considered the collective interest, everyone could benefit from superior outcomes in the long run. Hence, negotiators must resolve their negative interdependencies with respect to their short-term self-interests and, at the same time, manage their positive interdependencies with respect to long-term collective interests (e.g., [74]).

To increase the willingness to cooperate in negotiations on common resource dilemmas, agents must be encouraged to reflect on their common fate in the transition toward sustainability. As mentioned above, agents may become aware of common fate for different reasons, such as negative future consequences due to the neglect of externalities, conflict escalations due to disputes with external parties, or public pressure due to political movements or scientific reports. Becoming aware of the common fate with others at and beyond the table will help agents to take a broader perspective on social interdependencies. Specifically, by

accepting common fate with others, agents reflect on the need for mutual cooperation to manage the transition towards sustainability. In support of these considerations, previous research on common fate has shown that agents who perceive a positive interdependence with others show more cooperative behaviors, are more willing to make integrative trade-offs, and are more likely to explore sustainable conflict solutions (e.g., [46,155,156]). Thus, we suggest that making agents reflect on their common fate will increase their awareness of positive interdependencies and strengthen their willingness to cooperate in negotiations on common resource dilemmas.

Promoting a Holistic Time-Perspective

Raising awareness of agents' social ties with other groups and making them reflect on their common fate may still not suffice to overcome agents' temporal short-sightedness anchored in the present. Specifically, due to the strong human tendency to focus on the present, agents are likely to think only about the immediate consequences of their actions or non-actions, disregarding how their behaviors might affect the collective in the long run (e.g., [157,158]). To counter this tendency, research on individual decision-making suggests that actively thinking about the future can help agents better understand their current decision as part of a sequence of future outcomes. This procedure can increase agents' awareness of potential future risks, reduce temporal discounting, and improve future-oriented decision-making (e.g., [159,160]).

Psychological research on future-oriented goal pursuit, however, suggests that reflecting on the future is not sufficient to promote effective future-oriented decision-making and actions (e.g., [47,49]). To generate a strong commitment to the future and to promote forward-facing behaviors, agents must not only reflect on wanted (or unwanted) future states but should also mentally contrast these future states with present obstacles that may hinder them from approaching (or avoiding) their desired (or undesired) outcomes (e.g., [47–49]). For instance, deliberating on the difference between a wanted future state (e.g., regeneration of fishing grounds or afforestation) and the opposing status quo promotes a systematic reflection on the feasibility and desirability of future outcomes (e.g., [77,161]), increases agents' commitment to their future goals (e.g., [47]), and promotes forward-facing actions and behaviors (e.g., [162,163]). Referring to empirical findings on mental contrasting in negotiations (e.g., [164,165]), we predict that agents who compare (desired or undesired) future states with the status quo will be more likely to consider the future consequences of their agreements in negotiations on common resource dilemmas. Consequently, they will

deliberatively make a joint decision based on the feasibility and (un-)desirability of the future states (e.g., [166]), will commit themselves to these agreements (e.g., [167]), and will engage in agreement-consistent action to implement their joint decision (e.g., [78]).

The Holistic Mindset as a Psychological Driver towards Sustainable Agreements

Reflecting on social ties and shared similarities [26,43,138,148], raising awareness of common fate and positive interdependence [153], and promoting the comparison of current versus future states [47,164] are predicted to turn agents' myopic orientation into a holistic mindset. With a holistic mindset, agents are expected to apply problem-solving strategies that aim to integrate the interests of decision-makers at and the interests of external parties beyond the negotiation table. Notably, negotiation research has already found initial evidence that negotiators with a holistic mindset who use multi-issue offers manage to gain more accurate insights across different interests during the negotiation process enabling them to reach higher joint gains [125]. With regards to negotiations on common resource dilemmas, negotiators with a holistic mindset are predicted to explore sustainable agreements across different groups (i.e., holistic social identity) and to aim for a cooperative and fair distribution of resources within and between these groups (i.e., holistic prosocial motivation). Finally, they will systematically deliberate on the desirability and feasibility of future outcomes, commit themselves to their joint decisions, and plan future-oriented actions aimed at the transition towards sustainability (i.e., holistic time perspective).

Creating Value in Negotiations on Common Resource Dilemmas

To discover and realize the integrative potential in negotiations, research suggests different types of value-creating strategies as a promising approach (e.g., [32,41,81,168]). In bilateral negotiations, creating value refers to all types of problem-solving approaches that support agents to discover mutually beneficial outcomes for the parties at the table [168,169]. In common resource dilemmas revolving around sustainability issues, problem-solving must go beyond the search for integrative solutions at the table and consider various types of externalities. Thus, from a psychological perspective, the process of creating value in negotiations on common resource dilemmas is highly challenging as intersectional, interlocal, and intertemporal externalities must be taken into consideration, and absent stakeholders (e.g., socially or locally distant groups and future generations) cannot speak up for their interests.

Furthermore, the limited availability, the restricted accessibility, and the dynamic alterability of resources require the negotiating agents to develop innovative and integrative strategies that may go beyond those strategies commonly recommended in the traditional negotiation literature. In our framework, we propose three guiding principles for applying problem-solving strategies in negotiations on common resource dilemmas based on the conflict structure in these negotiations: managing the limited availability, the restricted accessibility, and the dynamic alterability of resources. (The provided examples of different problem-solving approaches are intended to illustrate the basic principles of integrative and innovative strategies in negotiations on common resource dilemmas. As the focus is on the applicability of these strategies, the used examples are oversimplified and do not reflect the complexity of the ones in real-world contexts. Specifically, real-world negotiations on common resource dilemmas involve complex interdependencies on various levels of outcomes and, thus, force agents to make trade-offs (i.e., balance costs and benefits) across different outcome dimensions (e.g., ecological vs. economic outcomes), social groups, locations, and generations).

Managing the Limited Availability of Resources

Problem-solving strategies regarding the limited availability of resources (e.g., limited fresh water in arid areas and limited farming land in urban regions) must address the scarcity of resources. (Sometimes agents may perceive resource scarcity even though resources are available in sufficient numbers (e.g., the perceived scarcity of sanitizers or masks in the COVID-19 pandemic despite instantly increased availability). Thus, agents should first analyze the actual resource availability when trying to solve their conflict of interests. The erroneous perception of resource scarcity in negotiations may result in an illusory conflict, which may hinder negotiators to explore integrative conflict solutions ([170]; see also [171–173])). To address the scarcity of resources, agents can solve their conflicts of interests by either (a) trying to increase the number of resources or (b) systematically managing the scarcity of resources.

Agents who try to increase the number of resources may apply a negotiation strategy that we call ‘resource scaling’. Resource scaling refers to agents’ efforts to create conditions that allow parties at and beyond the table to distribute more resources and thereby to (partially) solve the present scarcity of resources. Before parties can distribute the increased number of resources, they must first negotiate on each parties’ contribution to create conditions that allow parties to use more resources in the future. For instance, two parties negotiating on the scarcity of resources for them and others (e.g., two neighboring countries negotiating on the limited availability of fresh water) may solve their conflicts of interest by building up infrastructures

that allow them and others to increase the availability of resources (e.g., building a water reservoir that provides up- and downstream countries with sufficient water throughout the year in the long run). 'Resource scaling', thus, requires agents to negotiate on their different contributions to build up infrastructures as well as on the distribution of the scaled resources.

Another approach to deal with the limited availability is the strategy to explore other alternative resources that serve parties' needs. Specifically, if resources that serve parties' needs are scarce (e.g., fossil resources to serve the need for energy), agents may expand the pie by making joint decisions on the 'innovation' or 'replacement' of resources (e.g., hydrogen energy and biogas). Innovation and replacement aim at creating value through inventing new resources and substituting scarce with alternative resources that serve parties' needs in equal or similar ways. In negotiation research, the strategies of resource innovation and resource replacement have also been described as "bridging" [65]. Bridging always involves some novel and innovative element that has previously not been considered in negotiations (e.g., innovating a new resource or substituting resources with others to fulfill parties' interests and needs).

Whenever agents seek to create value through managing the limited availability of resources, negotiation strategies such as 'scaling', 'inventing', or 'replacing resources' involve preventive investments and, thus, require agents to make joint decisions as to who is going to contribute in what ways to these investments. In other words, joint investments always imply conflicts of interests that must be solved within the negotiation process. In addition, joint investments in terms of scaling, replacing, or inventing resources aim at creating value in the long run (i.e., return of investment, e.g., [174]). The distribution of this created value may cause future conflicts that also must be solved through negotiations [24]. Thus, the management of the limited availability of resources through negotiations requires the consideration of time [175] by anticipating short-term conflicts on the investment as well as long-term conflicts on the 'return on investment'.

Managing the Restricted Accessibility of Resources

In many social conflicts, the scarcity of resources cannot be solved through increasing the availability of resources (scaling resources), inventing new resources (resource innovation), or substituting scarce with alternative resources (resource replacement). In these cases, the consumption and use of resources must be managed by restricting accessibility. An extensive body of research from economics and sustainability science indicates that restricted access to resources plays a pivotal role in social conflicts on commons [50,176–178]. As described in the so-called 'tragedy of commons', the open access to resources without any restrictions may

cause depletion through the uncoordinated use or consumption of these resources [50]. Specifically, the unrestricted access to resources motivates individuals to follow their self-interests by exploiting the resources even when this exploitation counteracts the long-term interests of the collective. In her seminal work on commons, Ostrom [51,176,177] specified these assumptions by suggesting that this resource exploitation is not inevitable. Instead, Ostrom revised the idea of the 'tragedy of commons' by conducting field studies with small, local communities, where their members had unlimited access to shared natural resources (farmland, fisheries, and pastures), while the access to these resources was restricted to other stakeholders that did not belong to these communities. Ostrom's work revealed that members of these communities develop social norms and rules on how to use and maintain resources, even if access to these resources was not restricted within their communities.

Transferring these findings to negotiations may provide important insights into novel negotiation strategies that have not been introduced into the literature thus far. Specifically, in large-scale common resource dilemmas, providing unrestricted access to resources may cause resource overuse or depletion [50,179,180]. In small-scale dilemmas, by contrast, restricting access to resources may cause intragroup or intergroup conflicts [34,35,42,95]. To solve the dilemma of restricting versus unrestricting the accessibility of resources, agents need to negotiate mutually acceptable decisions on how to use or consume resources without causing detrimental externalities through exploitation, depletion, or destruction.

Two different strategies could be used by agents to find mutually acceptable agreements on managing the accessibility of resources. First, agents may negotiate the mutual use of resources through 'resource sharing'. When negotiating agreements on resource sharing, agents make joint decisions on binding rules or even legal regulations on how certain stakeholders would be allowed to use these resources at certain times and/or at certain locations (e.g., stakeholders in certain countries in a certain period of time would be allowed to use pharmaceutical patents and production licenses to manufacture vaccines; [181]). In other words, agents negotiate mutually acceptable decisions on how to 'share the pie'. Second, agents may negotiate the accessibility of resources through 'resource rationing'. While resource sharing refers to the restricted usage of resources, resource rationing refers to the restricted consumption of resources by certain groups (e.g., fishing quota for different countries), at certain times (e.g., seasonal fishing quotas), or at certain locations (e.g., fishing quota in the Northwest Atlantic, e.g., [182]). Importantly, managing the use and consumption through resource sharing or resource rationing must be targeted at protecting the collective interests (e.g., fishing quotas in international waters) to overcome selfish interests (e.g., restricting the

access to national fishing grounds). In terms of negotiation research, strategies aimed at managing the accessibility of resources in favor of the collective interest (e.g., resource sharing or rationing) on a superordinate level could be described as 'protecting the pie'.

Managing the Dynamic Alterability of Resources

Resources that are available in sufficient numbers and are accessible without restrictions may still cause severe social conflicts due to their dynamic alterability. For instance, resources may alter in quality, quantity, or value due to environmental change (e.g., climate change), economic transformation (e.g., digital transformation), or social transition (e.g., immigration). In this process, resources may transform without active consumption (e.g., thawing of water-covered permafrost and the corresponding methane emissions) or may change through active exploitation (e.g., consumption of fossil resources and the corresponding CO2 emissions). When negotiating sustainable agreements, agents must consider these resource developments.

One strategy to deal with the undesired effects of transforming resources is 'resource compensation'. Resource compensation refers to the implementation of countermeasures to outbalance the undesired effects of resource transformation or consumption (e.g., joint investment into resources that counteracts the negative effects of resource consumption such as re- and afforestation against CO2 emissions of fossil fuel consumption, e.g., [183]). In the negotiation literature, a distinction has been determined between specific and non-specific compensation [65]. Specific compensation aims to offset costs and benefits on the same outcome dimension (e.g., a prospective increase in methane emissions due to permafrost thawing would be compensated by an increased effort to reduce current methane emissions in agriculture; see side-agreement at the COP26 in Glasgow). Non-specific compensation aims to compensate the costs through actions in one dimension with benefits of counteractions in another dimension (e.g., compensating fossil fuel emission with afforestation). Negotiating joint agreements on resource compensations is particularly challenging, as the negative effects of resource consumption are commonly delayed (e.g., future temperature rise) and often occur at distant locations (e.g., sea-level rise at distant locations). Thus, specific and non-specific resource compensation often requires prospective agreements over joint investments. Importantly, resource compensation commonly does not create a profitable 'return on investment', but instead aims to offset negative future consequences (e.g., joint investments in afforestation to avoid temperature and sea-level rise). These joint investments to avoid long-term damages will become even more challenging if the required countermeasures must take

place at other locations than those of original resource consumption (e.g., afforestation of farmland as countermeasures against industrial CO2 emissions in rainforest regions). Agents negotiating on resource compensation are, thus, challenged to negotiate their contributions to joint investments without receiving a profitable return of investment in the future that could be distributed between parties.

Another approach to managing the dynamic alterability of resources is the strategy of 'resource re-, up-, or downcycling' (resource-recycling). Resource recycling refers to the renewal or reprocessing of used resources so that the resources reacquire their original functions (e.g., used car batteries are renewed and can be used again as batteries in cars). Resource up- and downcycling refers to the conversion of used resources into other resources that serve alternative functions (e.g., used car batteries are upcycled as energy carriers in non-electrified global regions). Negotiating on the re-, up-, or downcycling of resources requires agents to find mutually acceptable decisions on their investments to build up re-, up-, or downcycling facilities as well as agreements on how to distribute the benefits from resources.

Integrative-Transformative Outcomes

Creating value at and beyond the table ultimately aims at integrative-transformative agreements in negotiations on common resource dilemmas. These agreements can be seen as important steps in the transition towards sustainability and may foster intersectional, interlocal, and intergenerational justice. Agents with a holistic mindset are predicted to strive for these sustainable agreements that integrate their short-term self-interests with the collective's long-term interests. As common resources and the associated social conflicts are subject to constant change, negotiations on common resource dilemmas and reaching integrative-transformative outcomes must be understood as an iterative, enduring process of sustainable development. In addition, this process is reflected in a chronic rather than a temporary goal-striving process that aims at desired end-states that can hardly ever be met (e.g., [121,162]).

Discussion

Within our framework, we explored, analyzed, and established the key role of joint interactive decision making over common resource dilemmas in the transition toward sustainability. First, we highlighted the crucial role of psychological processes at the micro-level and outlined how detrimental psychological processes become barriers to sustainable

agreements (i.e., the myopic mindset) as they facilitate the deconstructive claiming of resources. We proposed how agents who are aware of the need for a mindset shift may use three distinct psychological intervention approaches (i.e., promoting the awareness of social ties, common fate, and future consequences) to perform a shift towards a task-oriented holistic mindset. By introducing this framework, we seek to contribute to a richer understanding of how psychological processes at the micro-level impact sustainability-related processes at the meso- and macro-level. In addition, we provided a novel psychological perspective on decision-making in common resource dilemmas as a joint interactive process shaped by agents' continuous interaction. Moreover, we extended existing research on negotiations by providing novel insights into the under investigated domain of negotiation processes on common resource dilemmas (for exceptions, see [9,14,184]) and into innovative strategies of value-creating and problem-solving unique to such negotiations. Ultimately, we offered practical advice for agents who face the challenging task to negotiate sustainable agreements on common resource dilemmas. In the following, we discuss boundary conditions that may play a pivotal role in negotiations on common resource dilemmas but exceed the scope of the present framework. Particularly, we will discuss the role of uncertainty, cognitive limitations, group processes, power differences, and how future research may incorporate these challenges into common resource dilemma negotiations.

Uncertainty in Negotiations on Common Resource Dilemmas

Agents' experiences of uncertainty are inherent to negotiations on common resource dilemmas and should, therefore, be addressed in-depth in future research. Knowingly, negotiations are "fuzzy situations that are full of uncertainties and ambiguities" ([108], p. 608). While the impact of uncertainty on individual decision-making has been largely investigated (for a review see [185]), only a little is known about the systematic effects of uncertainty on negotiation behaviors and outcomes (for exceptions, see [186,187]). Only a few studies have investigated the use of integrative tactics relative to distributive tactics when payoffs were uncertain [188], uncertainty as a potential cause of negotiation failure [189,190], and emphasized the importance of "a careful assessment of the sources of uncertainty in a negotiation" ([191], p. 109). Managing uncertainty in negotiations appears to be a great challenge (see [192]). Potentially, a high perceived degree of uncertainty alone triggers destructive (myopic) behaviors and serves as a barrier to shifting from a myopic to a holistic mindset. However, based on the concept of agreement fluidity [190], it can be assumed that negotiators react differently to uncertainty. Agreement fluidity is highly related to an

acceptance of uncertainty, because it represents "an expectation of change beyond that which can be readily formulated in a contingent contract" ([190], p.129). Based on this expectation, agents with a high degree of agreement fluidity would regard an agreement as just one step in a more elaborate, flexible, ongoing process. Consequently, those with more fluid agreement expectations would anticipate the necessity of later adjustments and would prepare to cover uncertain outcomes, but with fewer concerns to prepare for all possible future contingencies.

Irrespective of agents' level of agreement fluidity, the complex structural features of negotiations on common resource dilemmas require dealing with multiple types of uncertainty. First, the (future) development of common resources and their characteristics (i.e., availability, accessibility, and alterability) can be uncertain. Due to the dynamic development of (natural) resources, as well as rapid technological progress and innovations, it can be difficult to make straightforward predictions about the future availability, accessibility, and dynamic alterability of a resource, as well as about the need for the resource in the future (e.g., it is uncertain for how long fossil fuels can still be accessed, while at the same time, it is uncertain if future generations will require fossil fuels or could benefit from new energy sources). The uncertainty about the characteristics of common resources may then impact negotiators' psychological orientation (i.e., mindset). For instance, when resource availability is uncertain, agents may consider resource conservation (vs. usage) as more justifiable [193]. Despite agents' consideration, depending on their social value orientation, this perceived uncertainty of resource availability might either promote a more myopic mindset and egoistic behaviors (i.e., when agents are pro-selfs) or motivate a more holistic mindset and sustainable behaviors (i.e., when agents are pro-socials; [194]).

Second, agents at the negotiation table are usually uncertain about the present and future interests and priorities of the external parties that are affected by the agreements reached in negotiations on common resource dilemmas. However, it can be assumed that in many sustainability-related negotiations, the interests of external parties are not completely unknown, as they can be concluded based on the fundamental needs and desires of these external parties (e.g., rapid reduction in carbon emissions to mitigate global warming). To integrate the external parties' assumed needs and desires in agents' joint decision- making, the innovative negotiation strategies proposed in our framework such as resource innovations (e.g., development of commercial e-fuels) or resource compensations (e.g., afforestation) may serve as guiding principles for creating value and finding integrative-transformative negotiation agreements.

A third—in negotiations ever-present—source of uncertainty consists of agents' incomplete information about the other party. In negotiations on common resource dilemmas,

agents may perceive a strong uncertainty about their counterpart's activated mindset (i.e., myopic vs. holistic). Thus, agents must deal with the risk of a mindset-mismatch, where attempts of value creation from a holistically oriented agent may be obstructed or exploited by a myopically oriented agent. We argue that negotiators should, nevertheless, seek to create value through innovative negotiation strategies, as any created value could help to pursue social justice and promote the transition towards sustainability without necessarily hurting the collective. Ultimately, negotiators with a strong myopic mindset may, however, hinder all other parties to realize sustainable agreements. Therefore, the integrative negotiation strategies proposed in our framework should not be considered as the ultima ratio in negotiations on common resource dilemmas. Rather, negotiators must always adapt their envisaged strategies of value creation to the strategies of their counterparts in order to effectively create value.

The Complexity of Negotiations on Common Resource Dilemmas and Cognitive Limitations

Even if agents with a holistic mindset manage to cope with the various sources of uncertainty and strive for social justice, they may still be challenged by a high degree of cognitive complexity as another potential barrier. This complexity is rooted in the necessity to consider various interests when aiming to jointly achieve sustainable and mutually acceptable agreements [192,195–197] and combine a multitude of potential value creation strategies (e.g., resource compensation, resource sharing, and resource re- or upcycling). These interests include the agents' personal interests, their counterparts' interests at the negotiation table, and the interests of other affected external parties. Conclusively, for each of these diverse interests, suitable strategies of value creation need to be identified and implemented. As a second factor, adding another layer of complexity, agents must deal with the multidimensionality of their negotiated outcomes. For instance, agents must not only pay attention to the quality of their agreements at the economic level, but also consider the outcomes on the environmental or social dimension to find sustainable solutions (e.g., [184,198,199]). Presumably, referring to the findings from negotiation research, complexity can represent a major structural obstacle toward integrative-transformative outcomes. Against this backdrop, it has been found that complexity that exceeds agents' cognitive limitations decreases their abilities to make rational choices and to create value [200]. However, to remain capable of acting under these cognitive limitations, agents have been found to rely on different types of heuristics (e.g., [201–204]) that create a focus on fragments of the available information (e.g., agents' economic short-term interests). Thereby, the integration of the collective's multi-dimensional interests may be impeded. Consequently, future conceptual advances, case reports, and experimental research

are needed to shed light on how and why agents' minds and behaviors are affected by the inherent complexity in negotiations on common resource dilemmas.

Power Differences in Negotiations on Common Resource Dilemmas

For different reasons (e.g., valuable alternatives to a negotiation agreement; the amount of prior and/or potential future contribution to the common good) agents who negotiate a common resource dilemma may hold different positions of power (e.g., [13,205]). It is likely that, this divergence can severely impact agents' joint agreements. Negotiation research on power differences has revealed that joint agreements are usually settled in line with the interests of the high power-negotiator (e.g., [11–13,205–207]). Depending on the distribution norm [208] promoted by the high-power negotiator, this orientation may either impede or promote agents' striving for social justice. For instance, a high-power agent with a myopic mindset may claim the majority of resources [206]. Meanwhile, the low-power counterpart's claims for more resources may be subordinated to the high-power agent's preferences and may not be realized. Conversely, a high-power negotiator with a holistic mindset may also promote the striving for social justice by implementing different strategies of value creation aimed at incorporating collective interests. Independent of the high-power party's mindset, specific dominant cues or norms (e.g., the determined goal to not exceed a certain threshold of temperature or sea-level rise) may force agents towards joint agreements aimed at social justice. Thus, the striving for social justice may turn into a normative power that orients agents towards a particular allocation of resources in their joint agreements [209–211]. This dominant normative power stemming from agents' strong belief about a socially fair or just allocation could then balance or even outweigh the impact of individual power positions and thus influence the negotiation outcomes toward social justice.

Group Processes in Negotiations on Common Resource Dilemmas

Importantly, in negotiations on common resource dilemmas, not only power differences between agents require further consideration, but also different types of group processes (e.g., group representation, mandates, ingroup vs. outgroup processes, social identification, constituency, prototypicality, multi-level group dimension, accountability, etc.). In general, we expect that a deviation of such group processes from our assumptions may lead to different extents to a change of effects in our framework. To illustrate the potential impact of specific group processes, we briefly introduced two examples (i.e., the social ties between agents and their constituents; in-group vs. out-group processes). In our framework, we defined "agents"

(i.e., group representatives who psychologically perceive social ties with their group constituency, are provided with a mandate to negotiate the interests of their group constituency and perceive a feeling of accountability) in a way that highlights the important role of perceptions of social ties between agents and their constituent group. However, agents' perceptions of social ties towards their constituent group may deviate from this assumption. For instance, in the context of sustainability-related negotiations, a constituent group with a holistic mindset may confide in agents with their role for different reasons (e.g., hired representatives and politicians juggling the different interests of multiple stakeholders/lobbies). In some cases, agents may not perceive strong social ties with their constituent group. As a consequence of this potential social distance, agents may pursue their interests in addition to the interests of the group they represent [40,212]. The conflict of egoistic motives of an agent and the collective interests of the constituent group might impede agents from developing a holistic mindset despite their constituent group's intentions [213,214]. In summary, we assume that the perceived social ties of an agent with their constituent group likely moderate the effects of our proposed framework, i.e., the stronger the social ties that an agent perceives with a constituent group, the higher the probability to find the expected effects. However, this illustrates the importance of the psychological processes proposed in our framework that aim to develop and promote a holistic mindset for individuals with conflicting interests.

Additionally, we assume that not only agents' perceived relationship to their constituents (i.e., strong vs. weak social ties) may impact the outcome of negotiations on common resource dilemmas, but also the relation of the agents at the table to each other as perceived in-group vs. out-group members. In our framework, we suggested that agents at the table with a myopic mindset perceive each other as in-group members (i.e., those who are present at the table) and perceive others who are members of other social groups, live in other locations, or belong to future generations as out-group members (i.e., those who are absent from the table). Based on the intergroup bias [34–36,95], we argued that agents would neglect the interests of others absent from the table while promoting their respective self-interests through cooperation (i.e., in-group favoritism, e.g., [215–217]). When agents shift their mindset towards a holistic mindset, we expect agents to widen their in-group perception to absent others affected by agents' joint decisions and to behave more cooperatively (e.g., [215]). Deviating from our framework's assumption, agents who are present at the table may perceive each other as members of different out-groups. Reasons may be that the salience of a common in-group identity (i.e., those who participate in the joint-decision process) is not strong enough, or that agents perceive each other as out-group members for historic reasons (e.g., politicians

from antagonized countries). If agents with a myopic mindset perceive each other as out-group members as well, we would expect heightened competition and even less integrative negotiation outcomes [18,218]. This would represent an additional challenge for a mindset shift towards a more holistic mindset and, consequently, towards the finding of sustainable agreements. Future research should, therefore, reflect and investigate how to support the creation of a common-ingroup identity for agents at the negotiation table that will be extended to external parties by shifted holistic mindsets.

Future Research

The boundary conditions (i.e., uncertainty, cognitive limitations, power differences, and group processes) discussed above could potentially limit the applicability of our framework. Future research should, therefore, investigate the extent to which these processes need to be considered in our framework's assumptions. In particular, we expect the investigation of uncertainty and the integration of externalities' interests into agents' joint decision making to be especially challenging and to require novel research approaches. Similar to research on transaction bargaining, for which a variety of instruments, tools, and paradigms have been established (for reviews, see [7,9,10,219,220]), we hope to stimulate the development of new instruments, tools, and paradigms for negotiations on common resource dilemmas (for a starting point, see [14]). These much-needed novel scientific approaches may then be applied to examine agents' disadvantageous strategies of value claiming more closely and to investigate under which circumstances the beneficial and innovative strategies of value creation (e.g., resource compensating, resource sharing, and resource re- or upcycling) occur and how to support them. We hope that we were able to initiate the discussion about the need for novel strategies of value creation tailored to negotiations on common resource dilemmas and that empirical investigations and extensions of the proposed strategies will soon follow.

Conclusions

We developed and introduced a framework of negotiators' structural challenges and psychological processes in common resource dilemmas in the transition towards sustainability. We identified structural barriers (i.e., limited availability, restricted accessibility, and dynamic alterability of common resources) and psychological processes (i.e., the myopic mindset) that lead to unsustainable negotiation agreements. To support negotiators in finding sustainable outcomes that aim at intersectional, interlocal, and intergenerational justice, we proposed a two-fold approach. First, we introduced how to promote a holistic mindset shift of agents'

myopic mindsets toward the exploration of integrative conflict solutions in favor of the collective. Second, we elaborated on a resource-oriented negotiation approach that builds upon innovative strategies of value creation necessary in negotiations on common resource dilemmas (e.g., resource compensating, resource sharing, resource scaling, resource re- or upcycling, or resource-inventing). We believe that our framework can help advance research from individual moves to joint decisions and from selfish maximizing to collective value creation.

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Chapter 3: Doing the Right Things at the Right Time: How Negotiators Manage Resources in Sequential Allocation Negotiations

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Abstract

Managing the earth's limited natural resources is an important sustainability challenge, requiring effective conflict resolution among multiple stakeholders. Since resource management is interdependent across timepoints, humans have established sequential, adaptive negotiation processes to achieve sustainable, forward-looking agreements. However, sustainability negotiations often conclude with suboptimal outcomes, causing harmful environmental consequences. We investigated whether and how negotiators manage to achieve sustainable agreements that are mutually beneficial across timepoints in sequential resource allocation negotiations involving two parties and two subsequent timepoints. As a meaningful promoter for the successful resolution of resource conflicts and integrative negotiation agreements, we manipulated trust between negotiators and stepwise increased its relevance across four interactive, face-to-face negotiation experiments ($N = 448$ participants). Regardless of trust levels, negotiation dyads robustly focused on their initial negotiation sequence, thereby maximizing immediate gains in distribution negotiation contexts (Experiments 1-3) and immediate costs in contribution negotiations (Experiment 4). Exploratory analyses of tradeoff behaviors indicated that negotiators destroyed value by choosing inferior immediate solutions over superior future integrative tradeoffs. This research combines previously isolated elements from environmental, social, and negotiation psychology, offering insights into the dynamics of sequential joint decision-making processes and providing a basis for evidence-based intervention studies to promote higher-quality sustainability agreements.

Keywords: resource allocation negotiation; tradeoffs; trust; social uncertainty; sustainability

Public Significance Statement

Managing natural resources requires complex negotiations, where parties need to balance their own and their counterparts' interests as well as their immediate and future interests. Our research reveals that negotiators make inefficient decisions and overuse resources in the here and now, at the expense of negotiators' own proximate future. The less they know about the actions of the other party, the more negotiators play it safe and focus on their own immediate interests.

The careful and forward-looking use of the earth's limited resources is among the most important challenges in the transition to sustainability (e.g., Meadows et al., 1972, 2004). Managing these resources successfully requires collective collaboration and continuous coordination over time (e.g., Majer et al., 2021). Natural resources are limited and regenerate slowly, which makes decisions about the allocation of these resources dependent on each other: if too many resources are consumed in the present, there won't be enough for the future (e.g., Hilborn et al., 1995; Rosenberg et al., 1993). Resource allocations are often overshadowed by profound social conflict (e.g., Bruch et al., 2019; Schellens & Diemer, 2020), which is why individuals, groups, organizations, or even nations *negotiate* about them to reduce and resolve their conflicts of interest (Jang et al., 2018).

Critically, conflicts about the allocation of natural resources are embedded in dynamic environments under changing pressures due to, for instance, global warming (e.g., Constantino & Weber, 2021; Trötschel et al., 2022). Taking the interdependent, dynamic nature of resource allocations into account, *sequential negotiations* are necessary to resolve conflicts sustainably. As opposed to one-shot negotiations, sequential negotiations allow for continuous consideration and adaptation to the dynamic environment over time. In these severe times for the global commons (IPCC, 2023), sequential negotiations have become institutionalized to govern the earth's limited resources in a forward-looking way (e.g., annual United Nations Climate Change Conferences [COP]). Alarmingly, they often conclude in suboptimal agreements that are detrimental to the transition toward sustainability (e.g., Masood et al., 2022; Stoddard et al., 2021; van der Gaast, 2015). Yet, little negotiation research has addressed the psychological and behavioral processes that might explain such suboptimal outcomes in sequential negotiations or help develop interventions to achieve more sustainable agreements (i.e., agreements that are mutually beneficial for all negotiation parties from a long-term perspective).

The present research examines whether, when, and to what extent negotiators craft integrative tradeoffs and achieve mutually beneficial agreements that consider the interdependence across parties and timepoints in sequential negotiations. Specifically, to reach sustainable agreements, negotiators must make tradeoffs about *who* should be allowed to use a certain resource (and who should not) and *when* resources should be used (and when not). Balancing these tradeoffs is essential but challenging because parties' present conflicting interests (e.g., each party wants to use resources to maximize its own profit immediately) are at odds with their future interests (e.g., preservation of resource availability for future negotiations). This research delves into understanding how negotiators make tradeoffs and how

these tradeoffs help or harm their balancing of present and future interests and the achievement of sustainable agreements.

Given the recurring nature of sequential negotiations, negotiators interact and jointly make decisions repeatedly. Numerous studies indicated that *trust* is crucial for managing resource allocation conflicts, facilitating information exchange, and exploring integrative tradeoff opportunities in negotiations (e.g., Balliet & Van Lange, 2013; Kong et al., 2014; Lu et al., 2017). Over time, initial trust can predict later trust and foster positive cycles of trust (Olekalns et al., 2002). We investigate if trust between parties similarly aids sustainable resource allocation in sequential negotiations, enabling parties to rely on each other over time and make tradeoffs accounting for their present *and* future interests.

Across four interactive experimental negotiation studies ($N = 448$), we investigated how negotiators resolve their conflicts in sequential resource allocation negotiations (i.e., current as well as upcoming negotiations on the same resource allocation issues). We developed a novel negotiation task with two interdependent, yet distinct negotiation sequences, which allowed us to analyze the extent to which negotiators explore and realize integrative tradeoffs that enable them to achieve mutually beneficial agreements across parties and timepoints under varying conditions of trust (i.e., trust, distrust, control).

Our research makes several important contributions to the existing literature: (1) Adding to the field of environmental psychology, we shed light on interactive conflict management processes regarding the allocation of limited resources across subsequent timepoints. Thereby, we integrate empirical negotiation research into the field of environmental psychology. (2) From the perspective of social psychology, we expand research on resource allocation dilemmas by implementing the context of joint decision-making (i.e., games of agreement), complementing existing research on individual decision-making (i.e., games of moves). (3) Furthering negotiation research, we shed light on sequential social conflicts with dependent outcomes in which trust (distrust) should be a relevant psychological driver (barrier) for integrative sustainable agreements. (4) At the methodological level, we introduce a novel research paradigm that allows us to investigate sustainability-related, sequential, and interdependent negotiations over the allocation of limited resources with repeated interaction. (5) From an applied perspective, the present research seeks to provide recommendations that enable negotiators to achieve mutually beneficial negotiation agreements in the present without compromising opportunities for such agreements in the future.

Sustainability-Related Conflicts Require Sequential Decision-Making

Managing natural resources is a dynamic process which requires decision-makers to continually adapt their agreements to changing pressures of the environment. Sustainable decision-making involves reassessing circumstances and realigning decisions with new developments (e.g., Trötschel et al., 2022). Consequently, resource allocation conflicts can often not be resolved sustainably at one discrete point in time but need iterative decision processes such as sequential negotiations. For instance, the EU Council renegotiates fish catch limits in the Baltic Sea annually, based on current conditions in the complex and changing marine environment (Council of the EU, 2022). Similarly, the Conference of the Parties (COP27) in Egypt emphasized the "importance of the periodic review of the long-term global goal [of combatting climate change]" and explicitly welcomed "the [periodic] adoption of decisions" in the Sharm el-Sheik Implementation Plan (UNFCCC, 2022, p. 8).

Existing research on resource allocation negotiations provides limited insights into negotiators' perceptions and behaviors when their decisions affect future decision-making (e.g., Majer et al., 2022; Mannix, Neale, et al., 1995; Sondak et al., 1995, 1999). An exception form studies on intergenerational negotiations which investigated how current decision-makers consider the long-term interests of future generations (Van Treek et al., 2023; Wade-Benzoni et al., 2010). However, these studies focus on the interests of abstract future others and do not operationalize the unique features of sequential negotiations, where negotiators must account for their own future interests when creating agreements over short time intervals.

Simultaneous Consideration of Multiple Negotiation Sequences

While adaptive, iterative decision-processes such as sequential negotiations offer valuable opportunities for sustainable resource management, they also present challenges. In non-sequential negotiations, which dominate the negotiation literature, actors only need to resolve their conflict of interest at one isolated, immediate timepoint (e.g., Jang et al., 2018; Thompson, 1990b). However, an isolated focus on negotiators' interests at one timepoint can inherently not lead to sustainable resource allocations in sequential negotiations (Brundtland, 1987; Constantino & Weber, 2021; Trötschel et al., 2022). Instead, to reach sustainable agreements, actors must consider multiple timepoints simultaneously (whilst actual negotiations take place sequentially) and acknowledge their interdependence by creating

forward-looking agreements that account for future negotiations and "keep options open for the future" (Brundtland, 1987, p. 292).

Whereas this cross-time aspect has not yet been investigated, previous negotiation research has explored the simultaneous (vs. stepwise) consideration of negotiation *issues* at one timepoint. Discussing multiple issues simultaneously can enhance the quality of integrative agreements and reduce impasses (e.g., Mannix et al., 1989; Pruitt, 1981; Weingart et al., 1993). However, it can also become overwhelming and reduce agreement quality (Mannix, Tinsley, et al., 1995; Pruitt, 1981; Weingart et al., 1993). In sequential negotiations, the simultaneous consideration of different *timepoints* (i.e., multiple sequences) adds complexity, creating a social dilemma-like situation (Van Lange et al., 2013). Negotiators must balance their current interests and allocate resources according to their priorities whilst considering their future interests and preserving resources for future agreements. Failure to consider their future interests can lead to negative consequences for negotiators themselves, such as resource scarcity, in subsequent negotiations.

Some insights into actors' behavior when facing social dilemma-like conflicts (and evidence that these conflicts seem hard to balance) stem from the individual decision-making literature on experimental resource allocation games. Individuals generally tend to prioritize their short-term (self-)interests over longer-term (collective) interests—resulting in collective resources being destroyed in a short amount of time (cf. take-some and give-some dilemmas; e.g., Brewer & Kramer, 1986; Dawes, 1980; Gächter et al., 2017; Hardin, 1968; Ostrom, 1990; for a review see, e.g., Van Lange et al., 2013). However, these findings only relate to part of the situation parties in sequential resource allocation negotiations face (De Dreu & Carnevale, 2003; Majer et al., 2022). They disregard that negotiations (i.e., games of agreements), as opposed to experimental games (i.e., games of moves), entail a process of jointly exploring tradeoff opportunities and thus allow for an integration of the interests of different negotiation parties and mutually beneficial conflict resolution (e.g., De Dreu & Carnevale, 2003; Pruitt & Carnevale, 1993)[6].

[6] Further important procedural, structural, and psychological differences between experimental games and negotiations are discussed in Kelley et al. (2003) and Majer et al. (2022).

Integrative Tradeoffs in Sequential Negotiations

Most negotiations involve multiple issues for which parties have conflicting interests[7]. However, negotiators often assign different importance to the different issues at stake (e.g., Fisher et al., 2011; Lax & Sebenius, 1986). When their priorities diverge, parties can integrate their conflicting interests and reach win-win agreements by exploring mutually beneficial tradeoff opportunities (i.e., integrative potential; e.g., Pruitt, 1981; Walton & McKersie, 1965). One common way of doing so is logrolling, where negotiators concede on lower-priority issues while remaining firm on high-priority issues (Lewicki & Litterer, 1985; Thompson, 1990a). This approach of exploring integrative tradeoffs allows to increase gains for both parties, resulting in higher joint negotiation outcomes (i.e., combined outcomes of the negotiating parties) compared to compromise solutions (Bazerman et al., 2000; Lax & Sebenius, 1986).

Different to one-shot negotiations where parties resolve their conflict of interest through preference-based tradeoffs *between parties at one point in time* (e.g., resources are of different value to different parties), in sequential negotiations, preference-based tradeoffs may also be possible *across* different *sequences* of joint decision-making (e.g., resources are of different value at different timepoints; e.g., Mannix, Tinsley, et al., 1995). To achieve integrative agreements within and across timepoints, negotiators must therefore explore tradeoff opportunities on two levels: *within* every negotiation sequence, actors should explore the integrative potential between their own interests and the interests of their counterpart (which may already be challenging, see e.g., Bazerman et al., 1985; Pruitt & Rubin, 1986) without destroying the opportunities for integrative agreements in upcoming negotiations (*across* negotiation sequences). This involves balancing immediate interests with future opportunities, and short-term sacrifices of negotiators (i.e., partly forego immediate gains) in the interest of upcoming negotiations and higher long-term outcomes (Mannix, Tinsley, et al., 1995; Weingart et al., 1993).

Social Uncertainty Provokes Present-Focused Behavior

Importantly, negotiators operate within an environment of interdependence and uncertainty, where they lack clarity about their counterpart's priorities, goals, and reliability

[7] We exclusively focus on integrative negotiations that allow for win-win-solutions (e.g., Pruitt & Carnevale, 1993; Pruitt & Rubin, 1986; Walton & McKersie, 1965). We do not discuss distributive negotiations, in which one party's gain is the other party's loss.

(Mannix, Tinsley, et al., 1995; see also Axelrod, 1984; De Dreu et al., 2007). Whereas such social uncertainty about the counterparts' motives and behavior is inherent in all negotiations, it may be especially pronounced in sequential allocation negotiations, which additionally involve social uncertainty about the future (e.g., the counterpart's cooperation across time). For instance, if one party makes a short-term sacrifice in the interest of more sustainable and beneficial long-term agreements for both sides, it is unsure whether this will be reciprocated by the counterpart or exploited. This uncertainty about the reciprocal, cooperative behavior of the counterpart can deter negotiators from engaging in tradeoffs across negotiation sequences. In fact, we expect that negotiators tend to reduce their perceived social uncertainty and risk of exploitation in sequential negotiations by securing short-term gains and focusing on their immediate personal outcomes, thereby leaving integrative potential across sequences on the table and resulting in less integrative behavior and lower joint outcomes from the long-term perspective (Essa et al., 2018; Sondak et al., 1999; Trötschel et al., 2022; Underdal, 1983). Specifically, we predict that negotiators make tradeoffs resulting in disproportionally large immediate resource claims, through which they will destroy their opportunities for integrative tradeoffs and high-quality joint outcomes in an upcoming negotiation sequence.

H1: Negotiators will focus on their immediate negotiation by overclaiming resources in a current negotiation sequence (H1a) and reaching higher joint outcomes in a current negotiation than in an upcoming negotiation sequence (H1b).

Trust as a Facilitator of Cross-Sequence Tradeoffs

Trust, defined as "the willingness of a party to be vulnerable to the actions of another party based on the expectation [of reciprocity]" (Mayer & Davis, 1995, p. 712; see also Rousseau et al., 1998) has proven to be a powerful facilitator of integrative negotiation agreements and conflict resolution in resource allocation conflicts (e.g., Balliet & Van Lange, 2013; Kong et al., 2014; Lu et al., 2017; Van Lange et al., 2013). For instance, trust enhanced information exchange and communication between negotiators, which are essential for discovering integrative tradeoff opportunities (De Dreu et al., 2007; Kong et al., 2014).

In the context of sequential negotiations, where social uncertainty and repeated interactions are prevalent, mutual trust likely increases negotiators' readiness to make cross-sequence integrative tradeoffs involving short-term sacrifices. We propose that trust fosters a willingness to explore integrative tradeoff opportunities over time, as trusting negotiators should more readily rely on their counterparts' cooperation and reciprocal behavior without

fearing exploitation, and therefore show less risk-avoidant behaviors. Consequently, trust (distrust) should facilitate (impede) integrative tradeoffs between negotiating parties and across sequences. We therefore hypothesize that trust between parties positively affects joint negotiation outcomes and mitigates excessive immediate resource claims in sequential negotiations.[8]

H2: High-trust negotiation dyads show a less pronounced tendency to overclaim resources in a current negotiation sequence (H2a) and will achieve higher joint outcomes within and across negotiation sequences (H2b) than low-trust (control) dyads.

The Current Research

The present research examined negotiators' behaviors, perceptions, and outcomes in sequential resource allocation negotiations. By analyzing negotiators' tradeoff behaviors, we investigated when and to what extent parties succeed or fail in creating mutually beneficial tradeoffs within and across negotiation sequences with their counterparts. Specifically, we focused on parties' tradeoff behaviors in each sequence to understand how they approach sequential negotiations and resolve their conflicts of interest over time. As important psychological factor in sequential joint decision-making processes, we examined the role of trust by manipulating different trust levels (high trust vs. low trust vs. control) and systematically increasing the degree of social uncertainty (and thereby the importance of trust) across four preregistered, incentivized, interactive negotiation experiments.

In Experiments 1 and 2, we introduced a novel negotiation paradigm and examined to what extent negotiators explored integrative tradeoff opportunities within and across sequences. We also assessed whether and how negotiators' mutual (dis)trust influenced the quality of their outcomes. In Experiment 3, we increased social uncertainty by introducing non-binding negotiation agreements, allowing parties to individually implement their decisions that might deviate from their committed agreements after each negotiation sequence. Through this operationalization, we promoted the importance of trust: negotiators now had the possibility to harm their counterpart by claiming more resources than agreed upon- thus, negotiators needed to trust each other regarding the correct implementation of their agreement. In Experiment 4, we expanded our investigation from a *distribution* task, where negotiators allocated resources

[8] We preregistered another prediction about the positive effect of trust on socio-emotional negotiation outcomes. As no conclusive effects occurred across the four studies, we do not report the analyses in this manuscript. They can be found in the supplemental online materials (SOM).

from a shared pool into their exclusive ownerships (i.e., implying a take-frame that emphasizes gains to negotiators), to a *contribution* task, where negotiators had to contribute their exclusively owned resources to a shared pool (i.e., implying a give-frame that emphasizes losses to negotiators, see Majer et al., 2022). The switch from negotiating gains to negotiating losses allowed us to further increase the salience of social uncertainty and the importance of trust between negotiators. We analyzed parties' tradeoff behavior across Experiments 2 to 4 to understand how negotiators fail but also how they can be facilitated to exploit integrative tradeoff opportunities over time in different study contexts (i.e., varying allocation situations), and settings (i.e., online-facilitated interactive negotiations vs. laboratory face-to-face negotiations).

Transparency and Openness

The methods of this paper comply with the Transparency and Openness Promotion Guidelines (Nosek et al., 2015) and the experiments follow JARS (Appelbaum et al., 2018). Sample sizes, all data exclusions, and all manipulations are reported. The hypotheses, designs, and analyses of all four experiments were pre-registered prospectively, before data were collected. Supplemental online materials including all data, analysis code (using IBM SPSS Statistics version 29.0.1.0), pre-registration links, study materials, measures, and additional analyses have been made publicly available at the Open Science Framework and can be accessed at https://osf.io/bs3m9/?view_only=498522595bb14d86b7d679dd4936a428 (herein referred to as SOM).

Experiment 1: Negotiating Sequential Distributions of Resources

In Experiment 1, we introduced our novel paradigm by operationalizing a dyadic sequential allocation negotiation with two distinct negotiation sequences. In their roles as fisher, parties negotiated the distribution of different kinds of fish from a shared resource pool into their exclusive ownerships (i.e., distribution negotiation; see Majer et al., 2022) in two distinct, yet dependent negotiation sequences. For some resources, negotiators could reach integrative solutions by distributing them in sequence 1, and for some resources integrative solutions were possible through distributing them in sequence 2.

We examined negotiators' resource distribution behavior (H1a) and joint negotiation outcomes within and across the negotiation sequences (H1b) and manipulated trust in three experimental conditions (high trust vs. low trust vs. control; H2a, H2b)[9].

Method

Participants and Design

The experiment followed a 2 (location of integrative potential: sequence 1 vs. sequence 2) x 3 (trust: high trust vs. low trust vs. control) mixed-factorial design with repeated measures on the first factor.

An a priori power analysis indicated that 66 participations were required for the study (G*Power, effect size $f = .25$; power = .95; Faul et al., 2007). Since our unit of analyses are pairs of negotiators, a total of $N = 132$ participants were collected. Two negotiation dyads were removed from the data because at least one party did not pass the attention check, resulting in 128 participants ($M_{age} = 24.75$, $SD = 4.57$, 68.0% female). Participants were randomly assigned one of two negotiator roles. Negotiating dyads were randomly assigned to a trust condition.

Participants received €12.00 remuneration or partial course fulfillment for the study. To make the negotiation outcome incentive compatible (Murnighan et al., 1999), participants had the possibility to earn an additional payment which was bound to the quality of their negotiation outcome. Specifically, before receiving the study instructions, participants were orally instructed by the experimenters that they had the chance of winning one of four vouchers with a total value of €40.00 and that the chances of winning depended on their negotiation performance. Specifically, participants' negotiation performance (i.e., quality of the joint outcomes) was ranked afterward, and the vouchers were distributed to the participants with the best overall performance according to their rank (for a similar procedure see Majer et al., 2022).

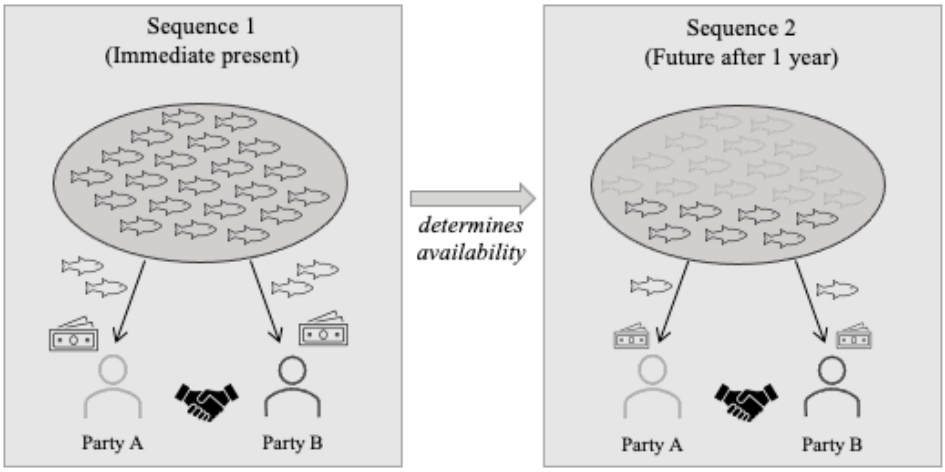
Procedure and Independent Variables: Location of Integrative Potential and Trust

Due to the Covid-19 pandemic, Experiment 1 was an interactive online study facilitated via Qualtrics and Zoom. Participants could sign up for the study online. Once there were two sign-ups for a timeslot, participants were matched into dyads. Upon providing informed consent, participants learned that they were going to negotiate the distribution of nine limited

[9] Of these, H1b and H2b were preregistered. We also preregistered the hypothesis that trust-based differences in joint outcomes are moderated by negotiation sequence. Non-significant findings can be found in the SOM.

resources (i.e., fishing rights for nine kinds of fish) for two timepoints (i.e., immediate fishing season and future fishing season after one year). By distributing different fish from the shared pool into a party's exclusive ownership, parties received specific numbers of points. The distribution of fish in the first negotiation sequence affected negotiators' immediate economic gains (i.e., points), whereas the distribution of fish in the second sequence affected their gains in the subsequent fishing season. Resources harvested by the parties in the first sequence were not available for the second sequence (Figure 1).

Figure 1. *Experiment 1: The Sequential Negotiation Paradigm in a Resource Distribution Setting.*



Note. This figure illustrates the two-party, two-sequence negotiation task in a distribution context. Negotiators allocate resources from a shared pool into their exclusive ownerships.

The participants were explicitly told that the disribution for each timepoint would be negotiated in a distinct negotiation sequence. Importantly, during the first sequence, the negotiators were only allowed to make binding agreements on the distribution of fishing rights for the immediate fishing season. They did so by distributing fish to either party or leaving fish in the shared resource pool for the second sequence. While negotiators could talk about how many and which resources they wanted to keep for the second negotiation sequence, they were not allowed to make binding deals for the future in sequence 1. Such deals could only be negotiated in the next sequence. Participants negotiated the distribution of 20 units of each resource across both sequences (i.e., fishing rights for 20 tons of each kind of fish in total). Resources did not replenish between negotiation sequences.

Each party received payoff charts consisting of two sides, the front side indicating the values of the different kinds of fish for the first negotiation sequence and the back indicating

the values for the second negotiation sequence. According to the values in their payoff chart, negotiators gained points for each resource unit (i.e., ton of fish) they distributed from the shared pool to their exclusive ownership. These values differed both between parties and across time points, thus offering integrative tradeoff opportunities (see Figure 2).

Figure 2. *Experiment 1: Payoffs for Party A and B in the Two-Sequence Distribution Negotiation Task.*

Party A (Fishing Association Lorelei)

Profit Overview Fishing Association *Lorelei* (this season)

Species	Eel	Blue Whitefish	Trout	Carp	Bream	Fingerling	Zander	Luce	Perch
Picture									
Profit per ton **this season**	**94**	32	**120**	42	66	110	68	92	*140*

Profit Overview Fishing Association *Lorelei* (next season)

Species	Eel	Blue Whitefish	Trout	Carp	Bream	Fingerling	Zander	Luce	Perch
Picture									
Profit per ton **next season**	47	64	60	84	**132**	55	**136**	46	*140*

Party B (Fishing Association Neptune

Profit Overview Fishing Association *Neptune* (this season)

Species	Eel	Blue Whitefish	Trout	Carp	Bream	Fingerling	Zander	Luce	Perch
Picture									
Profit per ton **this season**	32	**94**	42	**120**	110	66	92	68	*140*

Profit Overview Fishing Association *Neptune* (next season)

Species	Eel	Blue Whitefish	Trout	Carp	Bream	Fingerling	Zander	Luce	Perch
Picture									
Profit per ton **next season**	64	47	84	60	55	**132**	46	**136**	*140*

Note. The values represent Party A's and Party B's gains (i.e., points) for one unit of a respective resource at sequence 1 ("this season") or sequence 2 ("next season"). Sequence 1 represents the immediate fishing season, sequence 2 represents the fishing season after one year. Eel (1), Blue Whitefish (2), Trout (3), and Carp (4) form resource subset 1. Bream (5), Fingerling (6), Zander (7), and Luce (8) form resource subset 2. Perch is the distributive resource 9. **Bold underlined** font marks the integrative solution for each resource, allowing for the highest joint negotiation outcome. To reach maximum integrative potential, the first four fish (subset 1) should be distributed in the first sequence, and the second four fish (subset 2) in the second sequence. Please note that we sorted Figure 2 by resource subsets for greater clarity and ease of understanding of the payoff structure. In the study materials, however, we presented the resources in a randomly mixed order and did not sort them by resource subset to rule out potential confounding effects caused by the order of resources. Each party received their payoff charts for both fishing seasons before the start of the negotiation. Negotiators did not receive the payoff charts of their counterpart.

Location of Integrative Potential. To manipulate the location of integrative potential, we realized two subsets of four integrative issues within the negotiation: for subset 1 (resources 1-4), the integrative solution could be achieved by distributing the resources according to the negotiators' priorities in sequence 1. To maximize the outcomes of both sides, the two parties thus should *distribute* resources 1-4 from the shared pool into their exclusive ownerships immediately in sequence 1. For subset 2 (resources 5-8), the integrative solution could be achieved by distributing the resources according to negotiators' priorities in sequence 2. Thus, from a rational joint perspective, negotiators should *preserve* resources 5-8 for sequence 2 instead of distributing them already in sequence 1, because higher joint gains can be achieved by distributing these resources only in the second negotiation sequence. However, this implies that negotiators would have to make short-term sacrifices on their immediate gains (i.e., abstain from maximizing immediate gains and preserve resources for sequence 2). This payoff sturcture thus allows to test our hypotheses. The last negotiation issue (resource 9) was a distributive issue that did not offer integrative potential. If parties were able to discover and realize the respective integrative potential in sequences 1 and 2, they could achieve a joint outcome of 22,080 points (8,560 points for subset 1, 10,720 points for subset 2, 2,800 points for the distributive resource 9).

After the participants read the instructions and payoffs, the experimenter summarized the negotiation procedure and answered comprehension questions to ensure participants'

correct understanding of the materials and their task. Experimenters also repeated the negotiation "rules": during the first negotiation sequence, parties could agree on how many and which resources they immediately distribute to either party. Negotiators could further discuss how many and which resources they wanted to preserve for the future and negotiate about in the second negotiation sequence. However, they were not allowed to make any binding agreements for sequence 2 during sequence 1. Those deals needed to be made during the second sequence.

Trust. After participants had understood the task procedure, we implemented the trust manipulation by providing subjects with written instructions illustrated as negotiation strategy advice from an expert. Based on our working definition of trust (Mayer & Davis, 1995, p. 712), we induced a high versus low degree of trust from three perspectives in negotiations: (1) positive expectations about the counterpart's reciprocal behavior (e.g., own concession will be followed by a concession of the other party), (2) expectations about cooperative intentions of the counterpart (e.g., expectation that the other party won't exploit own cooperation), and (3) the willingness to be vulnerable (e.g., share information honestly, make short-term sacrifices). Specifically, we asked participants to form implementation intentions in terms of if-then plans (Gollwitzer, 1999; Gollwitzer & Sheeran, 2006) to promote (high trust condition, HT) or prevent (low trust condition, LT) trustful negotiation behavior. Participants were provided with if-then plans that induce either a high versus a low degree of trust in their counterparts (e.g., "*If* you expect competitive intentions from your counterpart in the negotiation, *then* you should create mutual trust that you and your counterpart have cooperative intentions [HT]"; "*If* you take the risk of making yourself vulnerable by being willing to cooperate, *then* you run the risk that your counterpart takes advantage of your cooperative behavior [LT]"). The control condition (C) received trust-unrelated instructions (e.g., "The morning and evening hours are particularly good for fishing [C]")[10].

Right before the negotiation, participants completed a manipulation check. They then noted their first proposal for sequence 1 (i.e., for each type of fish, the number of units they claim). To start their negotiation, the parties exchanged their first proposals and engaged in a face-to-face negotiation for up to 15 minutes[11]. The parties were then asked to note down their allocation agreement for the first negotiation sequence. Based on this agreement, the

[10] We successfully piloted this trust manipulation in a preregistered study on Prolific with a sample of $N = 159$ participants (see SOM).

[11] A negotiation time of 15 min per negotiation sequence proved to be sufficient to come to an agreement (average duration in minutes sequence 1: $M = 13.13$, $SD = 3.18$; sequence 2: $M = 7.45$, $SD = 3.90$).

experimenter calculated the remaining fish units in the shared resource pool for the second sequence. The participants stayed seated but were not allowed to chat during the short waiting time. Sequence 2 was structured identically to the first: based on the remaining resources, the parties noted and exchanged their first proposals, and negotiated face-to-face for up to 15 minutes over the distribution of the remaining resources for the upcoming fishing season. Finally, participants noted down their agreement for the sequence 2 and completed a post-questionnaire, were paid, thanked, and debriefed. An experimenter was present throughout the task to ensure that participants understood and followed the the experimental procedure and to answer potential questions.

Dependent Variables

Manipulation Check. The trust manipulation check was assessed before and right after the negotiation task, using seven items on a 7-point Likert scale from 1 *don't agree at all* to 7 *fully agree* (e.g., "For the upcoming negotiation/During the negotiation, I trust/ed the other party"; "For the upcoming negotiation/During the negotiation, I expect/ed the other party to reciprocate my concessions."). The answers to all seven items were averaged into one pre-negotiation trust score (Cronbach's $\alpha_{pre} = .83$) and one post-negotiation trust score (Cronbach's $\alpha_{post} = .78$). We used the pre-negotiation scores for the main analyses, because post-negotiation scores are affected by the bargaining process and outcomes.

Distribution Behavior. We operationalized distribution behavior as the total number of resource units distributed from the shared resource pool into both negotiators' exclusive ownerships in each negotiation sequence.

Joint Negotiation Outcomes. Joint outcomes were operationalized as the sum of points achieved by a dyad (a) in the first negotiation sequence, (b) in the second negotiation sequence, and (c) in total across both sequences. For each resource, points were calculated by multiplying the number of units distributed to the parties with the corresponding value in their respective payoff chart. No points were awarded for resource units that remained in the shared resource pool[12].

[12] In line with our preregistration, we also calculated relative scores indicating the exploited integrative potential on each resource subset in the respective "integrative sequence" to facilitate a direct comparison of both negotiation sequences despite payoff asymmetry. Results mirrored the here reported findings on joint outcomes (see SOM). For the sake of brevity and comparability of results across Experiments 1-4, we stick to joint outcomes as our main dependent variable.

Results

The analyses were conducted on the dyadic level. Main analyses were run with and without including the distributive resource 9. As patterns of findings were in all cases similar, we report the results based on all nine resources.

Manipulation Check

Before the negotiation, dyads in the low trust condition reported the lowest trust level (M = 3.39, SD = 0.68), followed by dyads in the control condition (M = 3.81, SD = 0.63), and dyads in the high trust condition (M = 4.63, SD = 0.57), $F(2,61) = 21.685$, $p < .001$, $\eta_p^2 = .416$. Planned post-hoc contrasts revealed significant trust differences between all three trust conditions (HT vs. C: $t(61) = 4.273$, $p < .001$, $g = 1.302$, 95%-CI[.657, 1.983]; HT vs. LT: $t(61) = 6.484$, $p < .001$, $g = 1.954$, 95%-CI[1.263, 2.632]; LT vs. C: $t(61) = 2.161$, $p = .035$, $g = .651$, 95%-CI[.047, 1.250]). We therefore consider the trust manipulation successful.

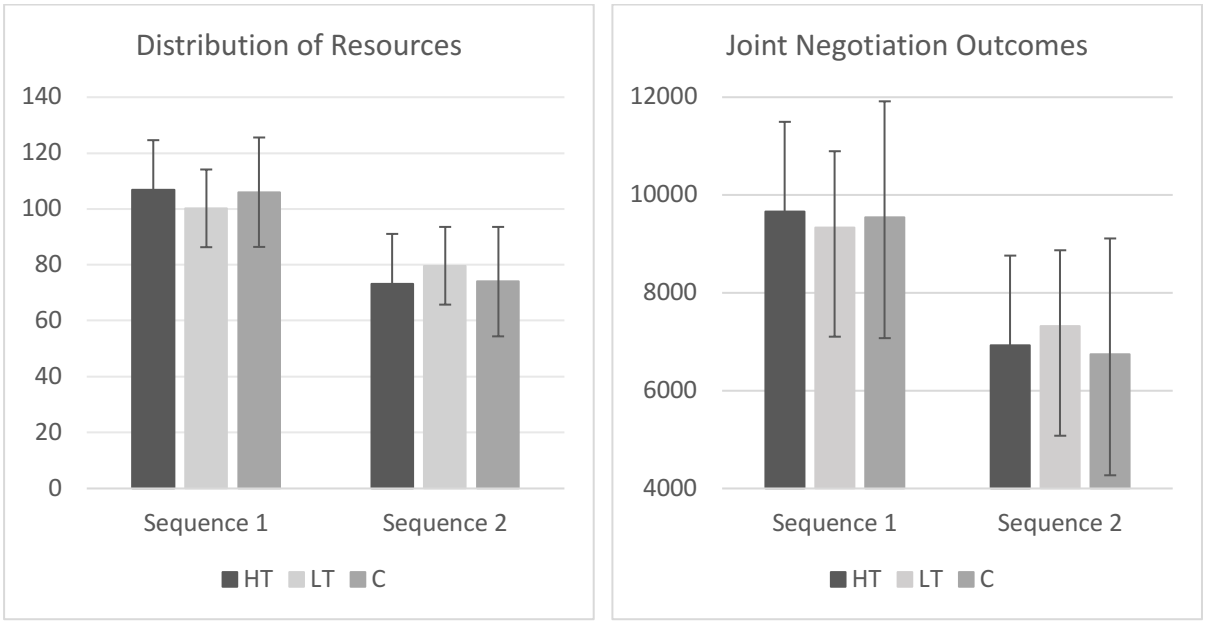
An exploratory 2 (measurement: pre vs. post) x 3 (trust conditions: HT vs. LT vs. C) ANOVA with repeated measures on the first factor revealed that across all conditions, trust levels increased throughout the negotiation and post-negotiation trust[13] levels were significantly higher than pre-negotiation trust levels, $F(1,61) = 143.500$, $p < .001$, $\eta_p^2 = .702$.

Distribution Behavior and Negotiation Outcomes

Given a total of 180 available resource units, dyads distributed on average 103.56 (SD = 16.85) resource units immediately in the first negotiation sequence, whereas 76.41 (SD = 16.85) units were distributed in the later sequence (Figure 3). In support of H1a, a 2 (sequence: 1 vs. 2) x 3 (trust: HT vs. LT vs. C) ANOVA with repeated measures on the first factor confirmed that the share of resources distributed in sequence 1 was substantially larger than the number of resources kept for sequence 2, $F(1,61) = 41.382$, $p < .001$, $\eta_p^2 = .404$. This effect occurred regardless of the trust condition dyads were in (no main effect of trust, $F[2,61] = 2.002$, $p = .144$, $\eta_p^2 = .062$, and no interaction effect $F[2,61] = .639$, $p = .531$, $\eta_p^2 = .021$; H2a not supported).

[13] For all studies, descriptive statistics on post-negotiation trust can be found in the SOM.

Figure 3. *Distribution Behavior (in Resource Units) and Joint Outcomes (in Points) per Negotiation Sequence and Trust Condition in Experiment 1.*



Note. HT = high trust, LT = low trust, C = control condition. Error bars depict standard deviations.

In support of H1b, negotiation dyads also achieved significantly higher joint outcomes in the first negotiation sequence (M = 9514.38, SD = 1916.38) as compared to the second negotiation sequence (M = 7000.67, SD = 2239.74), $F(1,61) = 46.053$, $p < .001$, $\eta_p^2 = .430$ (Figure 2)[14]. Notably, this difference in joint outcomes in favor of the immediate negotiation sequence 1 occurred despite the fact that the maximum achievable outcomes for sequence 2 were higher than those for sequence 1 (see section Location of Integrative Potential). Again, there was no main effect of trust ($F[2,61] = .090$, $p = .914$, $\eta_p^2 = .003$) and no interaction effect of trust and negotiation sequences ($F[2,61] = .456$, $p = .636$, $\eta_p^2 = .015$) on joint negotiation outcomes (no support for H2b).

Discussion

Findings provide initial support for H1a and H1b: Negotiators focused on their immediate gains by making large resource claims in the initial negotiation sequence at the cost

[14] The negotiation task might seem complex, but dyads were not systematically overwhelmed by the negotiation task as indicated by the substantial proportions of dyads who reached outcomes superior to a compromise solution (S1: about 15% of dyads; S2: about 50% of dyads; S3: about 25% of dyads; S4: about 35% of dyads).

of more valuable integrative tradeoff opportunities over time. Whereas this difference also showed on the level of joint outcomes (i.e., higher joint outcomes in sequence 1 than 2), we do not know whether these differences in joint outcomes occurred because *more systematic tradeoffs* were made in sequence 1 than in sequence 2 or simply because *more resources were harvested* in sequence 1. To disentangle the two potential explanations, we will systematically investigate parties' tradeoff behavior in Experiment 2.

We did not find evidence for the predicted positive effects of trust on distribution behavior and joint negotiation outcomes (H2a, H2b). A potential reason might be that Experiment 1 was carried out online, and thus the richness of communication and non-verbal cues in the interactions of the negotiators might have been impaired. Previous research has argued that such cues are crucial for the development of trust in bargaining (e.g., Naquin & Paulson, 2003), and it is more difficult for negotiators to build trust "when communication channels are limited" (Swaab et al., 2012, p. 27; for a meta-analysis on the effects of face-to-face vs. computer-mediated dyadic negotiations see Lu et al., 2017). This shortcoming was also addressed in Experiment 2.

Experiment 2: Understanding Negotiators' Tradeoff Behaviors

Experiment 2 pursued two main goals. First, we aimed to test our hypotheses (H1a to H2b)[15] in a face-to-face laboratory setting (instead of an online setting), which also allowed us to gain further insights into the role of trust in face-to-face sequential negotiations. Second, we wanted to understand which specific tradeoff opportunities parties discover and exploit in their negotiation and how this is related to their negotiation outcomes. A deeper understanding of parties' tradeoff behaviors allows us to gain insights into how negotiators' overfocus on their immediate gains and resource claims may be attenuated.

Here and in the following (Experiments 3-4), we omitted the control condition and focussed on the differences between high trust and low trust conditions.

[15] H1a, H1b, and H2b were preregistered.

Method

Participants and Design

The experiment followed a 2 (location of integrative potential: sequence 1 vs. sequence 2) x 2 (trust: HT vs. LT) mixed-factorial design with repeated measures on the first factor.

The sample size was calculated following the same procedure as in Experiment 1. G*Power analyses indicated that at least 54 negotiating dyads (N = 108 participants) were required for Experiment 2. We recruited a total of 122 participants at a German university. Seven negotiation dyads were removed from the data due to failed attention checks or errors in the data (final sample of 54 dyads; mean age M = 21.87, SD = 2.44, 63.0% female, n = 97 university students). The subjects received either €8.00 or partial course credit for their participation. Using a similar procedure as in Experiment 1 to incentivize the negotiation behavior, participants could additionally win one of six vouchers with a total value of €120.00, depending on the quality of their negotiation outcome.

Procedure and Independent Variables: Location of Integrative Potential and Trust

We transferred the procedure of Experiment 1 to the laboratory setting of Experiment 2. Upon arrival in the laboratory, participants were matched in dyads and seated at a table. They provided informed consent and read the instructions. Different from Experiment 1, we created a new cover story where the parties—owner of a jam factory vs. owner of a juice factory—had to negotiate the distribution of harvests from fruit trees on a shared fruit stand. For each of nine resources (i.e., nine kinds of fruit trees), 17 units (i.e., orchards) were available at the start of the negotiation. The two negotiation sequences were operationalized as two harvesting seasons, one immediately (i.e., sequence 1) and one after six months (i.e., sequence 2). As in Experiment 1, both sequences were negotiated separately, meaning that during the first sequence, negotiators were only allowed to form binding agreements on the distribution of harvests for the immediate harvest season and distribute resource units to either party or leave resources in the shared pool for the second negotiation sequence—without already agreeing on the exact resource distribution in the future. That would happen during the second sequence. The participants also received payoff charts which indicated their interests in the present (front side) and upcoming (back side) negotiation sequence (Figure 4). At least one experimenter was assigned to each (or every two) dyad(s) to answer potential questions about the task, ensure a correct understanding of the study materials, and guide through the negotiation procedure.

Figure 4. *Experiments 2-3: Payoffs for Party A and B in the Two-Sequence Distribution Negotiation Task.*

Party A (Juice Factory KraftSaft)

Profit Overview *KraftSaft* (early harvest)

Sort	Pear	Strawberry	Currant	Quince	Apple	Blueberry	Mirabelle	Cherry	Plum
Picture									
Profit per field **early harvest**	**115**	63	**78**	40	89	89	59	59	*125*

Profit Overview *KraftSaft* (late harvest)

Sort	Pear	Strawberry	Currant	Quince	Apple	Blueberry	Mirabelle	Cherry	Plum
Picture									
Profit per field late **harvest**	89	89	59	59	**115**	63	**78**	40	*125*

Party B (Jam Factory MarmelAmore)

Profit Overview *MarmelAmore* (early harvest)

Sort	Pear	Strawberry	Currant	Quince	Apple	Blueberry	Mirabelle	Cherry	Plum
Picture									
Profit per field **early harvest**	63	**115**	40	**78**	89	89	59	59	*125*

Profit Overview *MarmelAmore* (late harvest)

Sort	Pear	Strawberry	Currant	Quince	Apple	Blueberry	Mirabelle	Cherry	Plum
Picture									
Profit per field late **harvest**	89	89	59	59	63	**115**	40	**78**	*125*

Note. The values represent Party A's and Party B's gains (i.e., points) for one unit of a respective resource at sequence 1 ("early harvest") or sequence 2 ("late harvest"). Pear (1), Strawberry (2), Currant (3), and Quince (4) form resource subset 1. Apple (5), Blueberry (6), Mirabelle (7), and Cherry (8) form resource subset 2. Plum is the distributive resource 9. **Bold underlined** font marks the integrative solution for each resource, allowing for the highest joint negotiation outcome. To reach maximum integrative potential, the first four fruits (subset 1)

should be distributed in the firs tsequence, and the second four fruits (subset 2) in the second sequence. Please note that the order of resources displayed in the study materials was mixed and not sorted by resource subset, as illustrated here.

Location of Integrative Potential. We varied the location of integrative potential such that resources offered integrative tradeoff opportunities only in one of the negotiation sequences. Resources 1-4 (subset 1) offered integrative potential in the first sequence (i.e., parties *could* maximize their joint outcomes through preference-based integrative tradeoffs), whereas they did not offer integrative potential (i.e., they were *distributive*, Thompson, 2009) in the second sequence (i.e., parties had similar preferences regarding resource 1 and 2 as well as 3 and 4 so they *could not* increase their joint outcomes through integrative tradeoffs in the second negotiation sequence). Conversely, resources 5-8 (subset 2) offered integrative potential in the second sequence but not in the first. This time, the integrative solutions for subset 1 and 2 were symmetrical and identical, each worth 6,562 points. The distributive resource 9 was worth 2,125 points. The optimal total joint outcome was 15,249 points.

The manipulation of trust and further course of the study mirrored the procedure described in Experiment 1. We made slight adjustments to the post-questionnaire[16].

Dependent Variables

Manipulation Check. We used the same items as in Experiment 1 to assess the trust manipulation check (Cronbach's α_{pre} = .77; Cronbach's α_{post} = .78). We again base our main analyses on the pre-negotiation measurement of trust.

Distribution Behavior and Joint Negotiation Outcomes. We operationalized distribution behavior and joint outcomes as in Experiment 1.

Tradeoff Behaviors. To examine negotiators' tradeoffs and their impact on negotiation outcomes, we differentiated three types of tradeoff behaviors: integrative tradeoffs, non-integrative tradeoffs, and compromises. We coded *integrative tradeoffs* for every resource unit allocated in line with the optimal integrative solution. Specifically, units of resources 1-4 (resources 5-8) distributed in sequence 1 (sequence 2) to the party benefiting most were coded as integrative tradeoffs ("right party, right time"). For example, units of resource 1 given to Party A in sequence 1 or units of resource 6 given to Party B in sequence 2 were integrative

[16] In Experiments 2-4, we explored the potential psychological reasons underlying negotiators' present-focused decision-making. Findings were inconclusive across studies and can be found in the SOM.

tradeoffs (Table 2). *Non-integrative tradeoffs* were coded when resource units were allocated in the sequence with integrative potential but to the party benefiting least ("wrong party"). For instance, units of resource 1 given to Party B in sequence 1 or units of resource 6 given to Party A in sequence 2 were non-integrative tradeoffs. *Compromises* were coded when resource units were allocated in the sequence where payoffs were distributive ("wrong time"). For example, units of resource 1 distributed in sequence 2 or units of resource 6 distributed in sequence 1 to either party were compromises. Resource units that have not been distributed were not coded[17].

Based on the distribution of resources 1-8, we created a score for each tradeoff behavior (the distributive resource 9 was excluded for the analysis of tradeoff behaviors). To do so, for each resource, we counted the number of units allocated in terms of an integrative tradeoff (e.g., 10 units of resource 1 distributed to Party A in sequence 1 = 10), a non-integrative tradeoff (e.g., 2 units of resource 1 distributed to Party B in sequence 1 = 2), or a compromise (e.g., 5 units of resource 1 distributed in sequence 2 = 5). We divided this count by the total number of available units of that resource (i.e., 17), resulting in scores from 0 (no resource unit was allocated in a specific way) to 1 (all resource units were allocated in a specific way). We averaged these resource-based scores for resource subsets 1 (resources 1-4) and 2 (resources 5-8). Final scores ranged from 0 to 1 and reflected the percentage of resource units distributed integratively, non-integratively, or as compromises per resource subset. Comparing tradeoff scores between subset 1 and subset 2 allowed us to analyze differences in tradeoff behaviors depending on whether the integrative potential laid in the immediate negotiation sequence 1 or in the future negotiation sequence 2. Such an approach gives more insights into *how* resources were distributed and (sub)optimal deals were made.

Results

Manipulation Check

Before the negotiation, dyads in the low trust condition reported substantially lower trust levels ($M = 3.60$, $SD = 0.68$) than dyads in the high trust condition ($M = 4.34$, $SD = 0.71$),

[17] Coding tradeoff behaviors could not be realized in Experiment 1 in a similar way, because the resources in Experiment 1 offered small vs. large amounts of integrative potential in both negotiation sequences (i.e., no "compromising" possible due to the asymmetric structure of payoffs). In Experiment 2, payoffs were completely symmetric, and the resources offered integrative tradeoff opportunities only in one of the negotiation sequences (while they were distributive in the respective other negotiation sequence), allowing for a clear categorization of negotiators' tradeoffs into the three types.

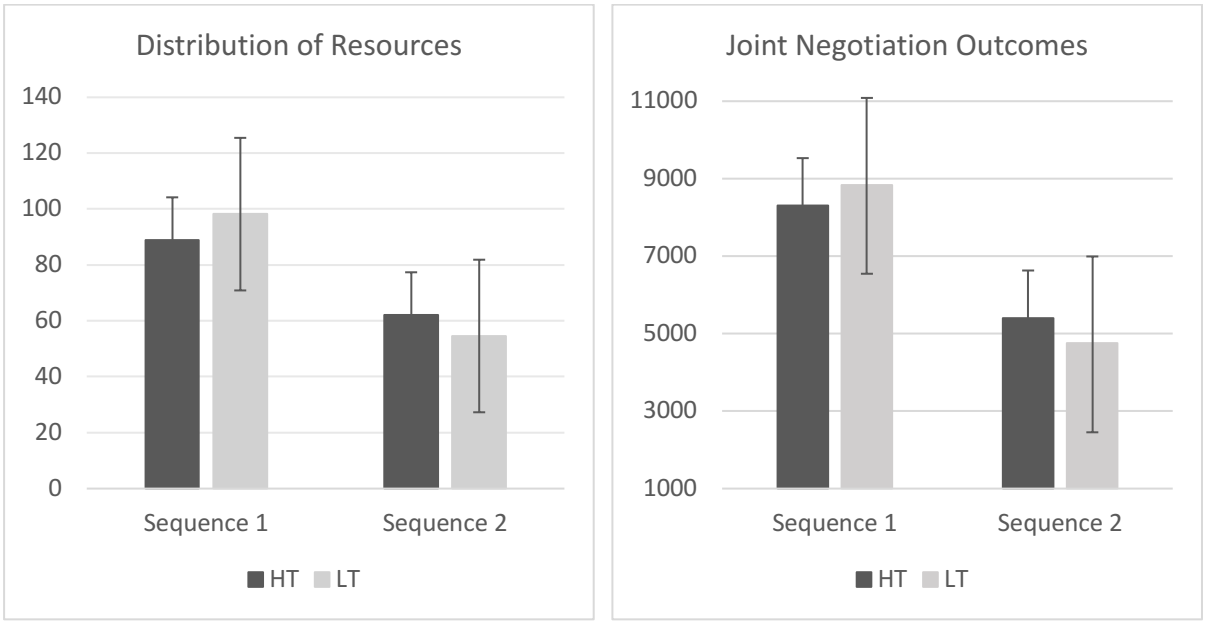
$t(52) = 3.886$, $p < .001$, $g = 1.042$, 95%-CI[.476, 1.600]. Thus, the trust manipulation can be considered successful.

An exploratory 2 (measurement: pre vs. post) x 2 (trust: HT vs. LT) ANOVA with repeated measures on the first factor again showed that regardless of trust condition, trust levels significantly increased from pre- to post-measurement, $F(1,52) = 36.710$, $p < .001$, $\eta_p^2 = .414$.

Distribution Behavior and Negotiation Outcomes

Of the 153 resource units available in total, negotiators distributed 93.56 (*SD* = 22.41) units in the first sequence and 58.35 (*SD* = 22.22) units in the second sequence (Figure 5). In support of H1a, a 2 (sequence: 1 vs. 2) x 2 (trust: HT vs. LT) ANOVA with repeated measures on the first factor revealed a significant main effect of sequence on distribution behavior, indicating that dyads distributed significantly more resource units in sequence 1 than in sequence 2, $F(1,52) = 34.382$, $p < .001$, $\eta_p^2 = .398$. An unexpected main effect of trust on distribution behavior was found, $F(1,52) = 4.190$, $p = .046$, $\eta_p^2 = .075$. Overall, high trust dyads distributed slightly fewer resource units than low trust dyads ($M_{HT} = 151.04$, $SD = 4.27$ vs. $M_{LT} = 152.78$, $SD = 1.16$). Despite the descriptive tendency of low trust dyads to make more excessive resource claims in the first negotiation sequence than for high trust dyads, H2a was not supported, $F(1,52) = 1.952$, $p = .168$, $\eta_p^2 = .036$.

Figure 5. *Distribution Behavior (in Resource Units) and Joint Outcomes (in Points) per Negotiation Sequence and Trust Condition in Experiment 2.*



Note. HT = high trust, LT = low trust. Error bars depict standard deviations.

In support of H1b, negotiators achieved significantly higher joint outcomes in the first negotiation sequence (M = 8571.83, SD = 1812.08) as compared to the second sequence (M = 5074.93, SD = 1892.19), $F(1,52) = 50.268$, $p < .001$, $\eta_p^2 = .492$ (Figure 5). However, there was no main effect of trust on negotiation outcomes, $F(1,52) = .547$, $p = .463$, $\eta_p^2 = .010$, and no significant interaction effect, $F(1,52) = 1.898$, $p = .174$, $\eta_p^2 = .035$. H2b was thus not supported.

Exploratory Analyses

Tradeoff Behaviors. Tradeoff scores (Table 1) showed that negotiators made more integrative tradeoffs in sequence 1 (65% of integrative tradeoff opportunities realized) than in sequence 2 (48% of opportunities realized), $t(53) = 4.545$, $p < .001$, $g = .610$, 95%-CI[.320, .895]. This difference in integrative tradeoff behaviors was complemented by a much stronger tendency of negotiating dyads to agree on compromises in sequence 1 than in sequence 2, $t(53) = -4.413$, $p < .001$, $g = -.592$, 95%-CI[-.876, -.304]. Specifically, dyads distributed almost half (46%) of the resources that would have offered integrative tradeoff opportunities in sequence 2 already in sequence 1. By making so many compromises in sequence 1, negotiators destroyed a large portion of their opportunities for integrative tradeoffs in the future that could lead to better overall outcomes for both parties. At the same time, in sequence 1, dyads did *not* distribute about 27% of the resources that *did* contain integrative potential in that sequence. Non-integrative tradeoffs rarely occurred and did not differ between negotiation sequences, $t(53) = 1.111$, $p = .272$, $g = .149$, 95%-CI[-.116, .413].

Table 1. *Experiment 2: Negotiators' Tradeoff Behaviors Depending on the Location of Integrative Potential.*

Location of Integrative Potential	Tradeoff Behavior		
	Integrative Tradeoff	Non-integrative Tradeoff	Compromise
Sequence 1 (Resources 1-4)	.65 (.22)	.07 (.10)	.27 (.19)
Sequence 2 (Resources 5-8)	.48 (.23)	.06 (.06)	.46 (.23)

Note. The values represent the tradeoff scores (ranging from 0 to 1) with (standard deviation), calculated for each resource subset. Values can be interpreted as proportions. If values in one row do not add up to 1, some of the respective resource units were not distributed by the negotiators.

Discussion

Experiment 2 replicated negotiators' tendency to make large resource claims and achieve higher joint outcomes in the immediate negotiation sequence as compared to the upcoming sequence, validating H1a and H1b. Exploratory analyses showed that negotiators made more integrative tradeoffs in sequence 1 than in sequence 2. However, two detrimental behaviors also occurred in the first sequence: overclaiming resources by immediately agreeing on inferior compromises, which prevented superior integrative tradeoffs in sequence 2, and inefficient claims on resources with integrative potential, leaving over a quarter of these resources in the shared pool.

There were no differences in resource claiming or joint outcomes between high and low trust conditions within or across negotiation sequences. Thus, H2a and H2b were not supported, indicating that, again, the different conditions of trust did not affect negotiators' behavior and outcomes. A potential reason for the lacking effects of trust in this study might be our study design, providing negotiators with a high degree of certainty regarding their agreements. Specifically, the task structure in Experiments 1 and 2 provided parties with the certainty that their agreed-upon resource distributions would be implemented exactly in accordance with their agreements. Such certainty inherent in our study design may have reduced the relevance of trust: neither party had to truly rely on their counterpart regarding the truthful implementation of their agreement. However, in many real-world negotiations, negotiators face the risk of being exploited by the counterparts through unpredictable post-agreement behavior (Hart & Schweitzer, 2020; Jang et al., 2018; Mislin et al., 2011; Schauer et al., 2023). We thus introduced and investigated situations with non-binding agreements in Experiment 3 to further examine the effect of trust in sequencial negotiations.

Experiment 3: Introducing Non-Binding Negotiation Agreements

To make the role of trust more salient and improve the external validity of our findings, Experiment 3 examined parties' distribution behavior (H1a), joint outcomes (H1b), and the role of trust (H2a, H2b) in sequential negotiations with non-binding agreements[18]. In sequential negotiations, negotiators' implemented resource claims in a first sequence directly determine future resource availability for the next sequence and thus the opportunities for successful

[18] H1a, H1b, and H2b were preregistered.

subsequent negotiations. To model the social uncertainty inherent in sequential negotiations more realistically, we introduced *non-binding negotiation agreements* that allowed parties' actual resource claims to deviate from the negotiated agreement. Specifically, unlike in Experiments 1 and 2, negotiators were allowed to break their promises when implementing their resource claims, potentially harming the other party (and future negotiations) by claiming different amounts of resources than agreed upon. As a consequence, trusting the other party becomes more crucial and trust between negotiators should help "to extend cooperation through to the post-negotiation phase of […] implementation" (Mislin et al., 2011, p. 57; Lewicki & Polin, 2013). We again analyzed negotiatiors' tradeoff behaviors to understand how trust affected their tradeoffs in situations with a high degree of social uncertainty. We exploratorily compared negotiators' joint outcomes and tradeoff behaviors across Experiments 2 and 3, highlighting the impact of heightened social uncertainty through non-binding agreements more directly.

Method

Participants and Design

Experiment 3 followed a 2 (location of integrative potential: sequence 1 vs. sequence 2) x 2 (trust: HT vs. LT) mixed-factorial design with repeated measures on the first factor.

A priori power analyses revealed that a minimum of $N = 54$ negotiating dyads ($N = 108$ participants) were required. We recruited 120 participants for the study. Five dyads were excluded due to failed attention checks or errors in the data (final sample of 55 dyads; mean age $M = 23.23$, $SD = 7.44$, 52.7% female, $n = 98$ university students). The subjects received either €8.00 or partial course credit for their participation. As in the previous studies, we incentivized negotiators to maximize their overall negotiation outcomes by providing extra payment (vouchers of a total value of €120.00) bound to the quality of their joint agreements (with higher chances of winning for higher joint negotiation outcomes).

Procedure and Negotiation Task

Upon arrival in the laboratory, participants were matched into dyads and seated at tables. We used the identical task, materials, measures, cover story, and procedure as in Experiment 2. The only change that we made was to modify the procedure for concluding the negotiation sequences by introducing *non-binding negotiation agreements*. This time, participants were explicitly told that their negotiation agreement would ultimately not be

binding to either party. To operationalize these non-binding agreements, negotiators' joint agreement in the first negotiation sequence was followed by a covert agreement implementation phase. In this implementation phase, each party decided whether they wanted to claim resource units from the shared pool in line with their negotiated agreement or deviate from the agreement. Importantly, negotiators were told that *if* the combined individual claims of both parties during the implementation phase exceeded the number of available resource units in the shared pool (i.e., exhaustion), neither party would gain any points for their claimed units, and all units (of that specific resource) would be wasted.

After parties negotiated the first sequence, agreed on a deal, and then made their covert resource claims, the experimenter calculated the remaining number of units for each resource (based on negotiators' individually implemented resource claims) as a starting point for the second negotiation sequence and informed both parties about the remaining units of each resource. This way, the negotiators learned whether their counterpart stuck to the agreed-upon resource distribution. Parties then made their first proposals for the second negotiation sequence, based on the remaining resource units. Next, they negotiated again, following the same procedure as in sequence 1. Finally, participants filled out the post-questionnaire, were thanked, paid, and debriefed.

Independent and Dependent Variables

We used largely the same independent variables, payoffs, experimental manipulations, exploratory variables, and measures as in Experiment 2. We used the same manipulation check as in our previous studies (Cronbach's α_{pre} = .79; Cronbach's α_{post} = .79). We adapted the central dependent variables to the new setting of non-binding agreements.

Distribution Behavior. In Experiment 3, we determined negotiators' distribution behavior based on their actual resource claims during the implementation phases, which not necessarily equaled their negotiation agreements. Thus, we summed up both parties' individual resource claims after each negotiation sequence.[19]

Joint Negotiation Outcomes. We calculated joint outcomes as in the previous studies but based on negotiators' actual resource claims (and not based on agreements). If negotiators overclaimed resources, we corrected their joint outcomes based on the pre-registered rule that

[19] Analyses depicting distribution behavior and joint outcomes based on negotiators' agreements as in Experiments 1 and 2 mirror the here reported results and can be found in the SOM.

in case of overclaiming, all units of the respective resource are wasted for both negotiators (i.e., they do not receive any points for the respective resource units).

Results

Manipulation Check

Prior to the interactive negotiation, dyads in the high trust condition (M = 3.90, SD = 0.77) reported significantly higher trust than dyads in the low trust condition (M = 3.49, SD = 0.62), $t(53) = 2.228$, $p = .030$, $g = .592$, 95%-CI[.057, 1.123]. The trust manipulation was thus successful. Again, trust levels increased throughout the negotiation ($F[1,53] = 51.783$, $p < .001$, $\eta_p^2 = .494$) across the different trust conditions, $F(1,53) = 0.791$, $p = .378$, $\eta_p^2 = .015$.

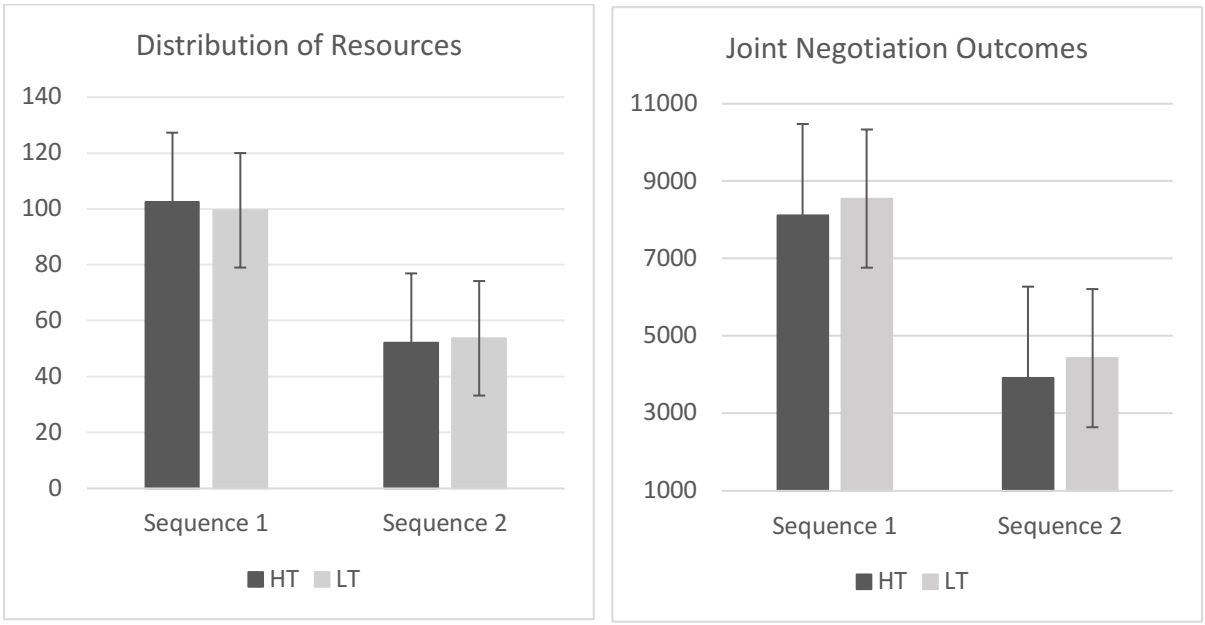
Distribution Behavior and Negotiation Outcomes

In 18 out of 55 dyads, at least one party claimed at least one resource unit more than agreed upon with their counterpart during the covert implementation phase. Negotiators' tendency to deviate from the joint agreement did not differ between trust conditions ($X^2(1) = 3.307$, $p = .069$, $\varphi = -.245$).

Replicating H1a, a 2 (sequence: 1 vs. 2) x 2 (trust: HT vs. LT) ANOVA with repeated measures on the first factor again showed negotiators' tendency to make disproportionally large resource claims in the first negotiation sequence. Dyads claimed on average two thirds (M = 102.22, SD = 21.82) of the available resources in sequence 1 and preserved one third (M = 51.80, SD = 21.18) for sequence 2, $F(1,53) = 76.531$, $p < .001$, $\eta_p^2 = .591$ (Figure 6). Contrary to H2a and in line with the results of the previous studies, no trust effects on distribution behavior were observed ($ps > .134$).

The same pattern of results occurred for joint outcomes (Figure 6). In the absence of a systematic impact of trust on negotiation results ($ps > .106$), joint outcomes in sequence 1 (M = 8409.66, SD = 2011.99) were higher than in sequence 2 (M = 4080.64, SD = 1889.24; $F[1,53] = 94.878$, $p < .001$, $\eta_p^2 = .642$), providing further support for H1b whereas H2b was not supported by the data.

Figure 6. *Distribution Behavior (in Resource Units) and Joint Outcomes (in Points) per Negotiation Sequence and Trust Condition in Experiment 3.*



Note. HT = high trust, LT = low trust. The outcomes depicted in the graphs illustrate negotiators' actual claiming behavior (left) and joint negotiation outcomes corrected for potential overclaiming of resources (right). Error bars depict standard deviations.

Exploratory Analyses

Tradeoff Behaviors. Dyads showed similar tradeoff behaviors as in Experiment 2 (Table 2). They again made substantially more integrative tradeoffs when these tradeoffs were possible in the first negotiation sequence (58% of opportunities used) as compared to when integrative tradeoffs were only possible in the second negotiation sequence (35%), $t(54) = 6.603$, $p < .001$, $g = .878$, 95%-CI[.566, 1.184].

Table 2. *Experiment 3: Negotiators' Tradeoff Behaviors Depending on the Location of Integrative Potential.*

Location of Integrative Potential	Tradeoff Behavior		
	Integrative Tradeoff	Non-integrative Tradeoff	Compromise
Sequence 1 (Resources 1-4)	.59 (.23)	.10 (.10)	.26 (.20)
Sequence 2 (Resources 5-8)	.35 (.20)	.07 (.08)	.52 (.18)

Note. The values represent the tradeoff scores (ranging from 0 to 1) with (standard deviation), calculated for each issue subset. Values can be interpreted as proportions. If values in one row

do not add up to 1, some of the respective resource units were not distributed or overclaimed by the negotiators.

The parties negotiated as inefficiently as in Experiment 2 by leaving more than a quarter (26%) of resources offering integrative tradeoff opportunities in sequence 1 on the table. At the same time, they distributed more than half (52%) of the resources that offered integrative potential in sequence 2 already in the first negotiation sequence (as compared to 46% in Experiment 2), pointing towards an even more pronounced tendency for immediate overclaiming of resources under conditions of higher social uncertainty.

Increased Social Uncertainty and Joint Outcomes Across Experiments 2 and 3. Exploratorily, we compared dyads' joint outcomes across Experiments 2 and 3 to gain more direct insights into the impact of increased social uncertainty on negotiators' outcomes in sequential negotiations. There was no overlap between the samples of the experiments.

We ran a 2 (sequence: 1 vs. 2) x2 (trust: high vs. low) x2 (social uncertainty: low [Experiment 2] vs. high [Experiment 3]) ANOVA with repeated measures on the first factor. Results revealed a main effect of social uncertainty, indicating that negotiation dyads achieved better joint outcomes under conditions of low social uncertainty, $F(1,105) = 15.312$, $p < .001$, $\eta_p^2 = .127$. Specifically, whereas negotiators in Experiment 2 with low social uncertainty reached average joint outcomes of 13,646.76 ($SD = 691.30$) points, negotiators in Experiment 3 with high social uncertainty reached substantially lower total joint outcomes of 12,490.29 ($SD = 2108.21$) points. We also found a main effect of the negotiation sequence on joint outcomes, indicating that regardless of the degree of social uncertainty, negotiating dyads achieved higher joint outcomes in the first negotiation sequence than in the second, $F(1,105) = 139.226$, $p < .001$, $\eta_p^2 = .570$. None of the interaction effects nor the main effect of trust reached significance (all $ps > .085$).

Discussion

Experiment 3 further supported the predicted overclaiming behavior in the first negotiation sequence and its negative impact on joint outcomes, thereby validating H1a and H1b. However, no systematic trust effects were observed, so H2a and H2b were again not supported. Analyses of tradeoff behaviors indicated a pronounced tendency for immediate inferior compromises at the expense of superior later integrative tradeoffs, replicating negotiators' tradeoff inefficiency. It appears that the large proportion of compromises and

frequent overclaiming of resources in the first negotiation sequence destroyed opportunities for mutually beneficial tradeoffs in the later sequence. Consistent with this, negotiating dyads achieved lower overall joint outcomes under high social uncertainty in Experiment 3 compared to somewhat lower social uncertainty in Experiment 2, suggesting a a negative impact of higher social uncertainty on joint outcomes.

Across Experiments 1-3, negotiators consistently exhibited present-focused resource (over)claiming in *distribution* negotiation contexts, which destroyed integrative tradeoff opportunities over time. However, not all repeated joint decision-making contexts are expected to produce this behavior. Unlike *distribution* contexts which entail a take-frame and emphasize gains (negotiators receive gains by distributing resources from a shared pool into their exclusive ownership), *contribution* contexts entail a give-frame and thus emphasize losses (negotiators experience losses by contributing resources from their exclusive ownership into a shared pool) (Majer et al., 2022; Trötschel et al., 2015). Due to loss aversion, contribution contexts should induce different allocation behaviors. Specifically, we would expect parties to (a) generally minimize their resource contributions to the shared resource pool and (b) postpone costly contributions to the future (later negotiation sequence), resulting in non-optimal tradeoffs and negotiation outcomes (Majer et al., 2022). Experiment 4 explores whether this prediction holds true in contribution contexts.

Experiment 4: Negotiating Sequential Contributions of Resources

Experiment 4 examined negotiators' behavior and outcomes in a different resource allocation context—contributions of resources. Parties had to jointly agree on their individual (costly) resource contributions to a shared project at two different timepoints. Theoretically equivalent to Experiments 1-3, we again expected the negotiators to focus on their immediate personal outcomes (Sondak et al., 1999; Trötschel et al., 2022). Precisely, we predicted parties to minimize their immediate losses in the negotiation and therefore expected a tendency of negotiators to avoid immediate resource contributions, postponing their contributions to the future. This tendency should lead negotiators to overlook integrative tradeoff opportunities in their immediate negotiation sequence at the cost of even larger losses in an upcoming negotiation sequence and lower overall joint outcomes (i.e., higher joint costs).

H3: Negotiators will focus on avoiding immediate costs by undercontributing resources in a current negotiation sequence (H3a) and reaching lower joint costs in a current negotiation sequence vs. in an upcoming negotiation sequence (H3b).

Further, when negotiating about contributions that are perceived as personal losses, it should be even more important for negotiators to make sure they do not get exploited by their counterpart, due to their loss aversion (Kahneman & Tversky, 1979). Using a contribution context should thus increase the importance of trust in the negotiation. When losses instead of gains are at stake, potential costs of exploitation are even higher and trusting the negotiation counterpart, in turn, should be even more important to enable integrative negotiation agreements and cooperation. We therefore hypothesized that trust should have a positive effect on the quality of joint negotiation outcomes and may help to reduce risk-avoidant under-contribution behaviors:

H4: High-trust negotiation dyads will show a less pronounced tendency to undercontribute resources in a current negotiation sequence than low-trust negotiation dyads (H4a) and will achieve better joint outcomes (i.e., lower joint costs) than low-trust negotiation dyads within and across negotiation sequences (H4b)[20].

Method

Participants and Design

The study followed a 2 (location of integrative potential: sequence 1 vs. sequence 2) x 2 (trust: HT vs. LT) mixed-factorial design with repeated measures on the first factor.

In line with Experiments 2 and 3, an a priori power analysis indicated that a minimum of 54 dyads (N = 108 participants) were required for Experiment 4. We recruited 124 participants at a German university. Six dyads were removed from the data due to failed attention checks or erroneous data (final sample of 56 dyads, mean age M = 22.50, SD = 3.74, 64.3% female, n = 105 university students). Participants received €8.00 or partial course fulfillment for their participation. We used similar behavior-contingent incentivization as in our previous studies (total value of vouchers €60.00).

Procedure and Independent Variables: Location of Integrative Potential and Trust

Participants were recruited at a German university. Upon arrival in the laboratory, participants were paired in dyads, seated at a table, and provided informed consent. The experimental procedure resembled Experiments 2 and 3: similar materials and measures have been used in the same order. However, a few adjustments were made to adapt the negotiation

[20] H3a, H3b, and H4b were preregistered.

paradigm to the contribution context. We developed a new scenario where the mayors of two municipalities negotiated their contributions of different construction materials to a joint project: building a dam. Each negotiator began with 17 units of 9 different construction materials in their individual ownerships. They had to agree on how many of which resources each party should contribute when, to build the dam. There were two negotiation sequences. In the first sequence, negotiators had to agree on their immediate contributions of construction materials (i.e., in summer). In the second sequence, they had to agree on their future contributions of materials to build the dam (i.e., in winter). Negotiators needed to jointly contribute at least 17 units of each material by the end of the second negotiation sequence to complete the dam. It did not matter who contributed which resources when, as long as the total of 17 units per material was met. Each unit of construction material contributed incurred costs for the negotiators based on the value indicated in their payoff table (Figure 7).

We used similar payoffs as in Experiments 2 and 3, manipulating the location of integrative potential in the same way. Resources 1-4 (resources 5-8) formed subset 1 (subset 2) and offered integrative tradeoff opportunities in sequence 1 (sequence 2). Due to the switch to the contribution negotiation context, the values in the payoff charts now represented the *costs* incurred by contributing one unit of a resource (i.e., construction material) at a specific time. For instance, if Party A contributed one unit of resource 1 in sequence 1, Party A would lose 115 points. Hence, the highest total joint outcome (i.e., lowest joint costs) achievable was –9.129 points. The optimal integrative solution for both subsets 1 and 2 was –3.502 points each. The distributive resource 9 resulted in joint costs of –2,125 points, regardless of the negotiation sequence it was contributed in.

Figure 7. *Experiment 4: Payoffs for Party A and B in the Two-Sequence Contribution Negotiation Task.*

Party A (Major of Gusdorf)

Overview of costs for *Gusdorf* (in winter)

Material	Loam	Cement	Rubble	Steel	Sand	Soil	Wood	Pebble	Brick
Picture									
Costs per unit **in winter**	-89	-89	-59	-59	-115	**-63**	-78	**-40**	-125

Overview of costs for *Gusdorf* (in summer)

Material	Loam	Cement	Rubble	Steel	Sand	Soil	Wood	Pebble	Brick
Picture									
Costs per unit **in summer**	-115	**-63**	-78	**-40**	-89	-89	-59	-59	*-125*

Party B (Major of Mahldorf)

Overview of costs for *Mahldorf* (in summer)

Material	Loam	Cement	Rubble	Steel	Sand	Soil	Wood	Pebble	Brick
Picture									
Costs per unit **in summer**	**-63**	-115	**-40**	-78	-89	-89	-59	-59	*-125*

Overview of costs for *Mahldorf* (in winter)

Material	Loam	Cement	Rubble	Steel	Sand	Soil	Wood	Pebble	Brick
Picture									
Costs per unit **in winter**	-89	-89	-59	-59	**-63**	-115	**-40**	-78	*-125*

Note. The values represent Party A's and Party B's costs for contributing one unit of a respective resource (resources 1-9) at sequence 1 ("in summer") or sequence 2 ("in winter"). Sequence 1 represents the immediate contribution period, sequence 2 represents the contribution period adter half a year. Loam (1), Cement (2), Rubble (3), and Steel (4) form resource subset 1. Sand (5), Soil (6), Wood (7), and Pebble (8) form resource subset 2. Brick is the distributive resource 9. **Bold underlined** font marks the integrative solution for each resource, allowing for the best joint negotiation outcome (i.e., lowest joint costs). To reach maximum integrative potential, the first four construction materials (subset 1) should be contributed in the first sequence, and the second four materials (subset 2) in the second sequence. Please note that the order of resources displayed in the study materials was mixed and not sorted by resource subset, as illustrated here.

As in Experiment 3, negotiation agreements were non-binding: parties were free to deviate from any deal they reached in both the first and the second sequence. In the covert implementation phase after each negotiation sequence, parties could either contribute what they agreed on with their counterparts or deviate from their agreement to minimize their individual costs. Analogously to the procedure in Experiment 3, however, negotiators learned that if they

failed to reach their goal of 17 jointly contributed units for one or more of the materials at the end of the negotiation, both parties would have to give away all units of the respective material(s) and incur the respective costs (e.g., if both parties after both sequences cumulatively contributed fewer than 17 units of sand, both parties would lose all their sand as a consequence). Insufficient contributions could thus harm the negotiators' individual and joint outcomes.

We implemented the same trust manipulation as in Experiments 1-3 right before the start of the negotiation and asked the participants to fill out the first manipulation check. Thereafter, the negotiators were guided through the first negotiation sequence (individual first proposals, up to 15 min time to negotiate, agreement, individual covert implementation phase). After both negotiators made their covert contributions, they waited silently at their table while the experimenter calculated the remaining resource units needed to build the dam. The experimenter then communicated the remaining required contributions, marking the starting point of the second negotiation sequence. Upon concluding their negotiations, the parties learned whether they successfully achieved their shared goal of building the dam based on their joint resource contributions. They then filled out the post-questionnaire, were thanked, paid, and debriefed.

Dependent Variables

Due to the shift from distribution to contribution setting, we adapted the operationalization of our central DVs. We used the same manipulation check as in our previous studies (Cronbach's α_{pre} = .78; Cronbach's α_{post} = .76).

Contribution Behavior. Analogously to distribution behavior in Experiments 1-3, we operationalized contribution behavior as the total number of resource units that have been contributed from the negotiators' exclusive ownerships to the shared resource pool by both parties after each negotiation sequence.

Joint Negotiation Outcomes. We operationalized joint outcomes in terms of cumulative costs for both negotiators of a dyad after (a) the first sequence, (b) the second sequence, and (c) overall. For each resource, costs were calculated by multiplying the number of resource units contributed to the shared pool with the corresponding value in the respective payoff chart. The lower dyads' cumulated joint costs, the better their joint outcome. No extra points were awarded for units that remained in parties' individual ownership. If dyads jointly contributed less than 17 units of a resource after negotiation sequence 2, we applied the pre-registered rule that both negotiators had to contribute all their remaining resource units in their

private ownership to the shared resource pool. Joint negotiation outcomes were then calculated based on the corrected resource contributions.

Tradeoff Behaviors. Tradeoff behaviors were operationalized analogously to Experiments 2 and 3. Contributions that were made in line with the integrative solution were coded as integrative tradeoffs. Contributions that were made in opposition to the integrative solution were coded as non-integrative tradeoffs. Contributions that were made in the sequence where no integrative tradeoffs were possible (i.e., resources 1-4 in sequence 2 and resources 5-8 in sequence 1) were coded as compromises. Tradeoff scores were calculated according to the procedure described in Experiment 2.

Results

Manipulation Check

Dyads in the high trust condition (M = 4.21, SD = 0.64) reported significantly higher trust levels than dyads in the low trust condition (M = 3.84, SD = 0.62), $t(54) = 2.240$, $p = .029$, $g = .590$, 95%-CI[.059, 1.116]. The trust manipulation can therefore be considered successful. Trust levels increased throughout the negotiation ($F[1,54] = 30.488$, $p < .001$, $\eta_p^2 = .361$), regardless of the trust condition, $F(1,54) = 1.365$, $p = .248$, $\eta_p^2 = .025$.

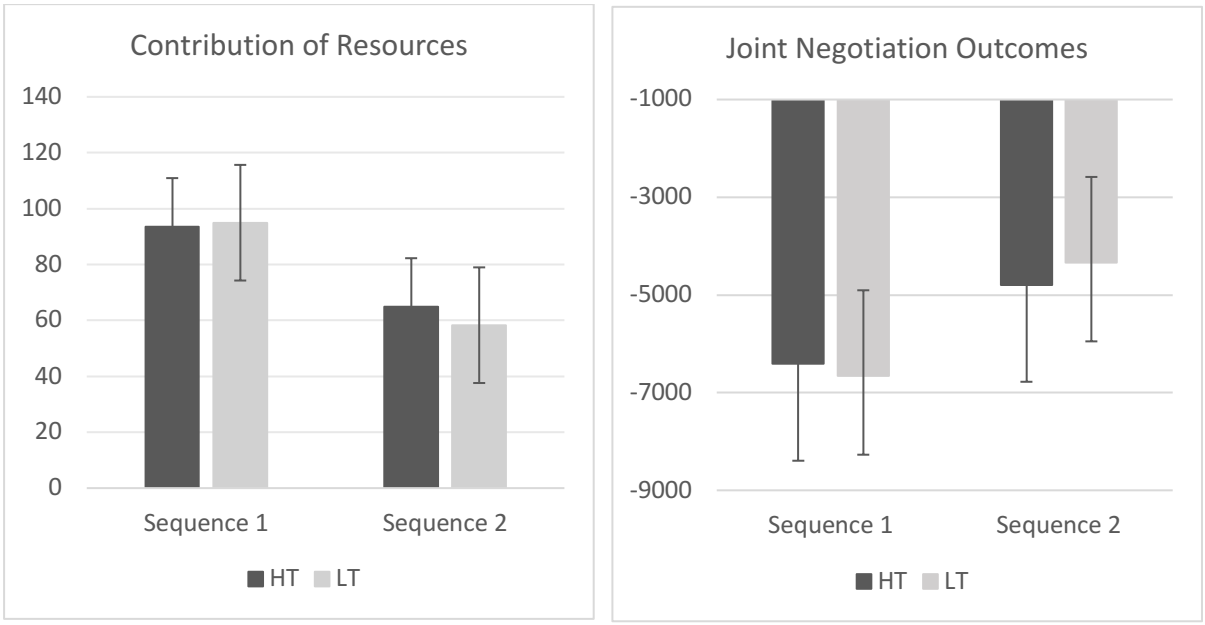
Contribution Behavior and Negotiation Outcomes

A 2 (sequence: 1 vs. 2) x 2 (trust: HT vs. LT) ANOVA with repeated measurement on the first factor indicated that contrary to our prediction of contribution behavior (H3a), negotiating dyads contributed significantly *more* resource units to the shared pool in the first (M = 94.39, SD = 16.07) than in the second negotiation sequence (M = 61.39, SD = 21.12), showing a similar behavioral focus on the first negotiation sequence as in the previous Experiments 1-3, $F(1,54) = 41.077$, $p < .001$, $\eta_p^2 = .432$. This effect occurred once more irrespectively of the trust condition dyads were in ($ps > .119$, no support for H4a; Figure 8).

A 2 (sequence: 1 vs. 2) x 2 (trust: HT vs. LT) ANOVA with repeated measurement on the first factor and joint outcomes as the dependent variable substantiated the findings on contribution behavior. Regardless of their trust condition ($ps > .416$) dyads achieved lower joint outcomes, thus created higher joint costs, in the first negotiation sequence (M = -6530.45, SD = 1625.11) as compared to the second negotiation sequence (M = -4557.98, SD = 1825.69), $F(1,54) = 21.682$, $p < .001$, $\eta_p^2 = .286$. Thus, findings are not supportive of H3b and H4b. In

the absence of any systematic trust effects, negotiators' contribution behavior and joint outcomes unfolded in the reversed predicted direction.

Figure 8. *Contribution Behavior (in Resource Units) and Joint Outcomes (in Minus Points) per Negotiation Sequence and Trust Condition in Experiment 4.*



Note. HT = high trust, LT = low trust. The outcomes depicted in the graphs illustrate negotiators' actual contribution behavior (left) and joint negotiation outcomes corrected for potential under-contribution of resources (right). Error bars depict standard deviations.

Tradeoff Behaviors

Dyads made more integrative tradeoffs in the first negotiation sequence (61% of opportunities used) than in the second sequence (42%), $t(55) = 7.275$, $p < .001$, $g = .959$, 95%-CI[.642, 1.270]. They also made even more compromises than in the previous studies (S2: 46%, S3: 52%), contributing 55% of resources in sequence 1 that would have led to lower joint costs if contributed later (Table 3). This behavior likely prevented integrative tradeoffs in the second sequence. Moreover, parties failed to contribute 31% of resources with integrative potential in sequence 1 in their immediate negotiation, and postponed these contributions to the costlier sequence 2. Finally, dyads also made more non-integrative tradeoffs in sequence 1 compared to sequence 2, $t(55) = 4.136$, $p < .001$, $g = .545$, 95%-CI[.265, .821]). Thus, in sequence 1, more than in sequence 2, parties contributed some resources when it was most costly to them individually and most detrimental to the dyad's joint outcomes.

Table 3. *Experiment 4: Negotiators' Tradeoff Behaviors Depending on the Location of Integrative Potential.*

Location of Integrative Potential	Tradeoff Behavior		
	Integrative Tradeoff	Non-integrative Tradeoff	Compromise
Sequence 1 (Resources 1-4)	.61 (.18)	.10 (.10)	.31 (.16)
Sequence 2 (Resources 5-8)	.42 (.20)	.05 (.07)	.55 (.20)

Note. The values represent the tradeoff scores (ranging from 0 to 1) with (standard deviations), calculated for each issue subset. Values can be interpreted as percentages. If values in one row do not add up to 1 (i.e., 100%), some of the respective resource units were contributed by the negotiators above the threshold of 17 units per resource.

Discussion

Contrary to our predictions, we found no effect of trust on negotiation behavior and no postponement of costs to the future negotiation sequence. We did not find support for any of our Hypotheses 3a, 3b, 4a, and 4b. Instead, parties continued to focus on sequence 1 and "over-contributed" resources in the immediate negotiation sequence, incurring higher immediate and total costs. Negotiators showed the highest compromise rate out of all studies (55% of resources 5-8 and 31% of resources 1-4), hinting to lower negotiation efficiency in the contribution context than in the distribution contexts of the other studies. This higher compromise rate may point to very competitive negotiation behavior. Previous negotiation research has shown that contribution contexts elicit more competition among negotiators who acted more ambitiously and achieved less integrative agreements compared to distribution contexts (Majer et al., 2022; Trötschel et al., 2015).

However, our findings may also point to negotiators' aim to reduce the uncertainty about achieving their common goal at the end of the negotiation by securing early contributions, forcing each other to make unsystematic resource contributions already in the first negotiation sequence regardless of the exceeding costs resulting from this behavior. Whereas our results contradict previous evidence that decision-makers prefer to have gains immediately and losses later (for an overview see Frederick et al., 2002; Mazur, 1987), they are in line with recent findings that people prefer immediate gains *and* losses when the future is uncertain (Hardisty & Pfeffer, 2017).

In sum, across Experiments 1-4 negotiators consistently struggled to strategically incorporate the time perspective into their distribution and contribution negotiations, leading to inefficient and unsustainable joint decision-making over time due to unsystematic tradeoff behvior.

General Discussion

Despite the need to manage the natural and man-made resources of our planet in a sustainable way (e.g., Meadows et al., 1972, 1993, 2004) and the establishment of sequential negotiation processes for this purpose, the use of resources in our society continues to exceed planetary boundaries and environmental negotiations regularly conclude with suboptimal outcomes (Masood et al., 2022; Stoddard et al., 2021; van der Gaast, 2015). The present research serves as a starting point for a better understanding of sequential negotiations on resource allocations by providing insights into negotiators' detrimental behaviors in such negotiation processes.

In four interactive joint decision-making studies, we have shown a substantial failure of joint decision-makers to behave strategically over time. Across all experiments, we observed a robust tendency of negotiators to focus on their immediate negotiation and neglect their interests at subsequent timepoints in their conflict management process. Through large immediate resource claims in distribution negotiations and large immediate resource contributions in contribution negotiations, parties destroyed their opportunities for future win-win agreements and sustainable solutions across time. A stepwise increase of social uncertainty between studies impeded the quality of joint negotiation outcomes and caused increasingly inefficient tradeoff behaviors.

Whereas parties' present-focus in distribution negotiation contexts (Experiments 1-3) served their immediate negotiation outcomes (i.e., immediate claims led to higher immediate gains), we observed an opposite effect in the contribution context (Experiment 4) where parties' behavior harmed their immediate negotiation outcomes (i.e., immediate contributions led to lower immediate outcomes). These findings highlight negotiators' inefficient tradeoff behaviors in negotiations involving multiple timepoints. Our research demonstrates that although parties managed to create some value through systematic integrative tradeoffs across negotiation sequences, they also exhibited two types of detrimental tradeoff behaviors. Firstly, negotiators had a strong tendency to settle on immediate compromise agreements (i.e., allocating resources in the immediate negotiation sequence that can generate better outcomes

in the later sequence). This short-sighted approach often destroyed opportunities for more valuable, systematic integrative tradeoffs in the future. Secondly, negotiators frequently failed to exploit the integrative potential in the first negotiation sequence due to unsystematic resource claims, leaving a substantial amount of value on the table. Whereas the manipulation of trust did not systematically impact negotiation outcomes, trust levels between negotiating parties significantly increased over the interactive-communicative negotiation process in all studies. This suggests that while trust evolves naturally through interaction, it does not necessarily correct inefficient tradeoff behaviors.

Present-*Outcome*-Bias vs. Present-*Action*-Bias

Previous studies on intertemporal choice suggest that decision-makers have a *present-outcome-bias*: they prioritize short-term outcomes over long-term outcomes (Mazur, 1987; Samuelson, 1937), because they psychologically *want* gains now and losses later—as decision-makers are impatient (Benhabib et al., 2010) and discount future outcomes (e.g., Frederick et al., 2002). This present-outcome-bias was used to explain why decision-makers in allocation games quickly exhaust resources in distribution contexts and fail to maintain resources in contribution contexts in the interest of immediate benefits (e.g., Brewer & Kramer, 1986; Gächter et al., 2017; Hardin, 1968; Ostrom, 1990; see also Van Lange et al., 2013). Our findings from distribution negotiation contexts (Experiments 1-3) align with this. However, in the contribution negotiation context (Experiment 4), negotiators did not focus on optimizing short-term outcomes as expected. Instead, they prioritized mutual immediate contributions, disregarding short-term costs.

In fact, the reversed findings in the contribution context support our assumption that negotiators primarily strive to reduce their social uncertainty, against the idea of a present-outcome-bias. Empirical studies have shown that—particularly in uncertain situations—decision-makers often exhibit a *present-action-bias* (e.g., Dykstra, Met, et al., 2022; Dykstra, Shortridge, et al., 2022; Hardisty et al., 2013; Patt & Zeckhauser, 2000). This bias is defined as "[impulse or] desire to do something" to reduce uncertainty (Patt & Zeckhauser, 2000, p. 45). Such a present-action-bias "stray(ed) decision-makers from rational cost-benefit analysis" in previous studies on, for instance, individual decision-making in environmental settings (Dykstra, Shortridge, et al., 2022, p. 1117; Patt & Zeckhauser, 2000).

Our empirical findings support this account. In the contribution context, negotiators did not prioritize optimizing short-term outcomes as would be expected with a present-outcome-

bias. Instead, they focused on immediate actions, such as mutual immediate contributions, even when these actions led to lower short-term (and overall) negotiation outcomes. This behavior aligns with the present-action-bias perspective, where negotiators aim to reduce uncertainty through immediate action, increasing their perception of being in control (Dykstra, Met, et al., 2022).

Importantly, whereas present-outcome-bias and present-action-bias are confounded in distribution contexts (both biases should lead to similar behaviors, namely large immediate claims), our fourth study using a contribution context demonstrates that the present-action-bias, using a social uncertainty account, provides a more comprehensive explanation for the observed behaviors across different negotiation contexts. Future research needs to disentangle both mechanisms to better understand how negotiators balance immediate and long-term outcomes in the face of uncertainty in sequential allocation negotiations.

Inefficient Tradeoffs Harm Future *and* Present Outcomes

With systematically increasing levels of social uncertainty across studies, negotiators' tradeoff efficiency, and thus outcome quality, gradually decreased. Specifically, negotiating dyads to some extent *overlooked* integrative tradeoff opportunities in their immediate negotiation, by leaving value unclaimed in their immediate negotiation sequence. Even worse, they at the same time *destroyed* future opportunities for valuable sustainable agreements, by claiming or contributing resources immediately regardless of their higher future value.

The destruction of future value creation opportunities can have severe consequences in real-world sequential negotiations that require collective cooperation and strategic decision-making over time. For instance, extensive immediate resource claims in distribution negotiations can lead to resource scarcity in upcoming negotiations (Shah et al., 2015; Trötschel et al., 2022). Research has shown that (perceived) resource scarcity weakens cooperative behaviors (e.g., Mittone & Savadori, 2009) and increases the tendency to show self-serving behaviors directed to satisfy short-term interests (e.g., Gatiso et al., 2015; Mullainathan & Shafir, 2013; Shah et al., 2012). Thus, resource scarcity as a consequence of inefficient tradeoff behaviors can induce a destructive spiral of overclaiming resources in today's negotiations and destroying tomorrow's opportunities for mutually beneficial agreements.

Such a spiral may be prevented if negotiators manage to act more strategically over time by exploiting integrative tradeoffs across multiple negotiation sequences. How negotiators

can be enabled to realize integrative potential over time and how more efficient tradeoff behaviors can be promoted needs exploration by future studies. Our research suggests that developing strategies to foster long-term integrative thinking and training systematic tradeoff behaviors is crucial for improving outcomes of sequential negotiations. Further, intervention approaches addressing negotiators' handling of uncertainty can be promising to improve the quality of negotiation agreements over time, potentially reducing negotiators' detrimental present-action-bias.

The Interplay of Trust and Social Uncertainty

Based on the expectation that trusting each other may help negotiators to cope with the social uncertainty about the intentions, goals, and behaviors of their counterpart (Axelrod, 1984; De Dreu et al., 2007; Mannix, Tinsley, et al., 1995), we manipulated trust across all four studies. Surprisingly, and in contradiction to the literature, trust did not affect negotiation outcomes in any of our studies – despite the (increasing levels of) social uncertainty negotiators had to deal with, which theoretically should make trust a more relevant factor (e.g., Kong et al., 2014; Rousseau et al., 1998). Whereas rising social uncertainty levels indeed led to lower-quality tradeoffs and outcomes across studies, our trust manipulation did not help counteract this trend.

Interestingly, we consistently found substantially higher levels of trust between negotiation parties at the end of the negotiation than before entering the negotiation in all studies and across all experimental trust conditions. This suggests that the interactive, communicative decision-making process in itself had a trust-building effect on the negotiators. This effect may have influenced negotiators' behavior and outcomes more than the implementation of (dis)trust before the negotiation, diminishing the impact of our experimental manipulation. Future studies may explore different approaches to manipulate negotiators' trust, such as letting them play a trust game before they start negotiating (e.g., Berg et al., 1995) or providing them with false feedback about the counterpart's trustworthiness (Yao et al., 2021). Importantly, future research should also more directly test various levels of social uncertainty to complement our comparison across studies.

Conclusion

The present research shows that negotiators fail to manage resources in a sustainable and mutually beneficial way in sequential negotiations that take place at multiple interdependent timepoints. They do so by exhibiting an overly strong focus on their present negotiation sequence and neglecting their future interests, resulting in unsystematic tradeoff behavior harming negotiation outcomes- both for themselves and for their counterpart now and in the future. Inefficient large immediate resource claims or contributions destroy valuable agreement options at subsequent timepoints and speak to a present-focused and non-sustainable management of resources at stake. Developing interventions that help negotiators improve their strategic joint decision-making through efficient, systematic tradeoff behavior within and across timepoints may help practitioners increase their efficiency and sustainability of negotiation agreements in sequential negotiations. Since joint decision-making processes such as sequential negotiation play a decisive role in the management of limited natural resources, future research aimed at a more fine-grained understanding of negotiators' perceptions and behaviors in such negotiations is vital.

Constraints on Generality

Our samples were not representative of any larger population: participants were mostly undergraduate students from a European university, a commonly used sample in experimental psychology (Roulin, 2015) and negotiation research (Buelens et al., 2008). In previous negotiation experiments, however, students with initial negotiation experience were as successful as professional negotiators, indicating that findings based on student samples may indeed be generalizable to the broader public (Herbst & Schwarz, 2011). This was particularly the case when students are incentivized for their performance (Camerer & Hogarth, 1999) and motivated though perceived social-ecological relevance of the study topic (Steg et al., 2016). Across our studies, 52% to 75% of participants reported initial negotiation experience, all studies had performance-based incentivization, and the context of recource management, where students dealt with the allocation of limited, natural resources has high social-ecological relevance. We therefore hope to have minimized the drawbacks of investigating student samples, while simultaneously maximizing the important advantages thereof (e.g., high internal validity). These advantages should not be overlooked, as the goal of our research is to demonstrate isolated effects, not to describe real life negotiations where many other factors might be at play and interact with each other that would be impossible to disentangle in, for example, a descriptive field study.

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Chapter 4: Playing it Safe: How Negotiators Create Value for Uncertain Outcomes

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Abstract

Negotiations inherently involve uncertainties about the exact value that agreements may yield. Implementation uncertainties, differing estimations of how the future will unfold and uncertain environmental factors require managers to handle outcomes that are *not* definite in nature. However, the effects of these uncertainties on value-creation, trade-off behaviors and decision-quality in joint decision-making processes such as negotiations are not well understood. We introduce a novel negotiation paradigm to explore how uncertainty affects trade-off behaviors in negotiations. We tested two hypotheses: the Value-Insight Hypothesis suggests that focusing on the value component of uncertain outcomes highlights priority differences, thereby encouraging the exploration of integrative logrolling opportunities. In contrast, the Uncertainty-Avoidance Hypothesis argues that focusing on outcomes' likelihood component leads to risk aversion and *intra*personal value-for-certainty trade-offs, deterring parties to explore *inter*personal integrative opportunities for issues with uncertain outcomes. Across two pre-registered interactive (Study 1 & 2), incentivized (Study 2), negotiation studies, the findings show that negotiators are less likely to pursue logrolling opportunities (i.e., create value) for issues with uncertain (vs. certain) outcomes (Study 1 & 2). This effect persisted across varying levels and ranges of risk (Study 2). Supporting the Uncertainty-Avoidance Hypothesis further, exploratory analyses suggest that early strategic concession-making behaviors (i.e., *intra*personal value-for-certainty trade-offs) on uncertain negotiation issues mediate the negative effect of uncertainty on parties' ability to create value. Finally, we explore negotiators' information exchange and proposal making behaviors in contexts of outcome uncertainty through the use of video recorded negotiations (Study 1).

Keywords: negotiation; joint decision-making; uncertainty; risk; uncertainty-avoidance

Many organizational decisions are made not on an individual, but rather on a social, interactive level. In fact, managers spend a considerable amount of time negotiating, ranking negotiation skills among their most important skills (Gentry et al., 2008; World Economic Forum, 2018). These joint decision-making contexts require stakeholders to reach agreements which typically allow for integrative win-win solutions (e.g., De Dreu et al., 2007). As a major challenge to exploit this integrative potential, conflict parties have to find and explore opportunities to create value by, for example, trading-off concessions on lower vs. higher valued issues (i.e., logrolling or preference-based trade-offs; Thompson, 2015).

What has largely been overlooked in psychological empirical negotiation research though, is the inherent future-orientation of many negotiations. Conflict parties do not only need to address immediate certain but also prospective uncertain outcomes (Bottom, 1998; Jang et al., 2018). For instance, managers in organizational and political contexts have to negotiate on future price developments (e.g., Stolberg & Robbins, 2022), risky financial investments (e.g., Gallina, 2021), or sustainability measures (e.g., Barrett & Dannenberg, 2012) for which the outcomes are not certain, but rather presumable. Thus, instead of being confronted with clear-cut outcomes, negotiators frequently must form an expectation about an uncertain outcome's value[21]. This uncertainty of outcomes likely has profound, yet understudied impacts on conflict parties' ability to reach agreements and create value.

Crucially, in negotiations that are marked by uncertain outcomes, parties must navigate not only their *inter*personal trade-offs between negotiators. Instead, each party needs to additionally assess the risks and opportunities associated with different settlements on an *intra*personal level. This dual-layered analysis requires a careful evaluation of both the social level (i.e., trade-offs between parties) and the individual level of the negotiation (i.e., trade-offs between potential benefits and risks). Recognizing and capitalizing on integrative potential due to priority differences between parties is likely to be influenced by parties' *intra*personal considerations of expected outcomes (Bottom, 1998; Essa et al., 2018). Predictions about the direction of the uncertainty influence on negotiators' value-creation seem viable for either way: On the one hand, outcome uncertainty may aid conflict parties in creating value. The exploitation of integrative potential has been shown to be increased under specific structural conditions of the decision context (e.g., conflict strength: Majer, Schweinsberg, et al., 2022; choice bracketing: Read et al., 1999) as well as by heightened judgement accuracy about

[21] The term *uncertain* is not used in its mathematical sense (Ellsberg, 1961), but as an overarching concept denoting outcomes that are non-certain.

negotiators' interest structures (Arnold & O'Connor, 2021; Geiger & Hüffmeier, 2020). In line with these findings, the inherent uncertainty of expected negotiation outcomes may aid parties to identify differences in their opportunities to maximize their respective benefits (Value-Insight Hypothesis). Specifically, when comparing certain and uncertain outcomes with the same expected value (i.e., value * expectancy), the uncertain outcome by definition must involve a larger value (high risk, high reward). These heightened values highlight the priority differences within and between parties, guiding negotiators to explore integrative trade-off opportunities (e.g., Warsitzka et al., 2022) by promoting the exchange of concessions on the low vs. high priority issues (e.g., De Dreu et al., 2000; Trötschel et al., 2011).

On the other hand, uncertainty may act as a barrier for creating value, impeding the ability to logroll and create high-quality agreements. Outcome uncertainty forces parties to balance *intra*personal trade-offs between certainty and potential profits. Although uncertain options may offer higher returns, they also introduce greater uncertainty. Given the prevalent risk-aversion in profit-oriented decision-making contexts (Fox et al., 2015; Tversky & Kahneman, 1992), the selection of risky agreement options may be impeded, complicating the identification of integrative solutions for issues with uncertain outcomes (Uncertainty-Avoidance Hypothesis). While the pivotal role of (outcome) uncertainties on negotiators' behaviors and agreement quality has been acknowledged on a theoretical level (e.g., De Dreu et al., 2007; Jang et al., 2018; Schauer et al., 2023), systematic, experimental evidence is limited (e.g., Bottom, 1998; Essa et al., 2018).

To test these opposing hypotheses, we used an experimental approach (Minson et al., 2023). Specifically, in two pre-registered, social-interactive experiments, we systematically tested the two alternative predictions using a novel negotiation task that provides negotiators with certain vs. uncertain outcome issues. Thus, we tested whether uncertainty aided or prevented negotiators from exploring integrative solutions. In a first study we investigated the effects of uncertainty on parties' value creation as well as different psychological factors that might account for it. To further our understanding of the boundary conditions of the effect of uncertainty on value creation, we systematically varied the size and range of risks in a second incentivized study. Finally, to gain insights on the negotiation process, we analyzed parties' information exchange through video recordings (Study 1) and highlight the role of systematic concession making (Study 1 and 2).

Our research advances the current understanding of joint decision-making processes in three critical ways: (1) Unlike previous studies that maintained constant outcome probabilities (at 100 percent; e.g., Burns et al., 2023; de Kwaadsteniet et al., 2023; Majer, Zhang, et al.,

2022; Pruitt & Lewis, 1975) or constant outcome values (e.g., Bottom, 1998; Church & Zhang, 1999; Schurr, 1987), we varied both, value and probability components. This comprehensive approach allows us to examine how negotiators navigate complex trade-offs of 'expected outcomes' in negotiations with uncertainty. (2) From the lens of organizational decision-making research, we introduce a context of risky decisions in which conflict parties' handling of uncertainty on the individual level may influence the joint decision-making process between parties on the social level. Thus, we present a novel methodological approach to explore decision-makers' ability to create value. (3) From an applied perspective, we aim at increasing the external validity of experimental negotiation studies (Boothby et al., 2023) by focusing on aspects of the decision context that conflict parties are faced with (Gallina, 2021; Intergovernmental Panel on Climate Change, 2022). Our findings therefore offer valuable insights for effectively managing negotiations under uncertainty and pave the way for the development of evidence-based interventions.

Decision-Making Under Uncertainty

Investigations into how individuals' decision-making behavior is affected by outcome uncertainty have a long history (for an overview see Fox et al., 2015). In fact, findings dating back to Allais (1953) emphasize a strong tendency of decision-makers to prefer smaller profits that are (more) certain in nature, compared to greater profits that are (more) risky (e.g., Curley et al., 1986; Kahneman & Tversky, 1979; Ruggeri et al., 2020). These studies rely on the concept of expected value to quantify the trade-offs that decision-makers face between the value of specific outcome options and their probabilities of occurrence. Within this sphere of economic decision-making, the axiom of "high risk, high reward" frequently applies, indicating that greater risks are linked to higher potential profits (e.g., Andrews et al., 2018). Decision-makers therefore have to make *intra*personal trade-offs between (expected) value and certainty.

In contrast to individual decision-making contexts, the social context of negotiations requires negotiators to agree upon the individual trade-offs between (expected) profit and certainty jointly. In fact, outcome uncertainty has been shown to affect negotiators' behavior in distributive, zero-sum negotiations (Bottom, 1998; Church & Zhang, 1999; Murnighan et al., 1988; Schurr, 1987). However, many economic negotiations are not distributive in nature. Instead they offer the possibility to create integrative, win-win agreements by means of value-creating trade-offs between negotiators (e.g., Majer, Schweinsberg, et al., 2022; Pruitt & Lewis, 1975; Thompson, 2015; Walton & McKersie, 1965). Whether and how, each individual

negotiators' *intra*personal value-risk trade-off affects the *inter*personal trade-offs necessary to reach high-quality, integrative agreements, has not yet been adequately addressed (Bottom, 1998).

Value Creation in Integrative Negotiations

The process of exploiting integrative potential has been coined *value-creation* as the negotiation parties do not simply divide a fixed sum of value, but rather look for agreement possibilities that create more value to each party compared to a compromise agreement (Walton & McKersie, 1965). One important negotiation behavior that has been identified as a strategy to create value is *preference-based trade-offs* (Murnighan et al., 1999; Raiffa, 1982). Whenever negotiators give in on less prioritized negotiation issues that are prioritized more strongly by another party, all negotiation parties end up with a higher valued agreement compared to a compromise solution – value has been created. How and which trade-offs managers make therefore determines the quality of negotiated agreements. Having to deal with outcome uncertainty is likely to affect the strategic concession behavior necessary to find and exploit integrative trade-offs (Underdal, 1983).

However, the experimental negotiation literature has primarily used negotiation paradigms under the pre-condition of outcome certainty. This practice of providing negotiators with clear-cut, definite payoff structures stands in stark contrast to practitioners' experience (e.g., Gallina, 2021; Intergovernmental Panel on Climate Change, 2022) and theoretical consensus that "negotiators face and manage fuzzy, ambiguous, and messy situations" (De Dreu et al., 2007, p. 611). For example, managers of organizations operate in highly uncertain environments without complete information (Vahlne et al., 2017) and managers of political entities frequently face uncertainty about returns of investments (Barrett & Dannenberg, 2012). A mismatch between the kinds of contexts typically investigated and those that practitioners face, limits the scope, importance, and applicability of our fields' findings (Boothby et al., 2023).

Overall, the preliminary findings on the effects of outcome uncertainty on conflict parties' behaviors and agreements (e.g., Bottom, 1998; Church & Zhang, 1999; Essa et al., 2018) do not provide a clear understanding of how the value creation process of integrative negotiations is affected by outcome uncertainty.

Value-Insight Hypothesis

Specific elements of the joint decision-context have been shown to influence negotiators' exploration and exploitation of integrative potential (e.g., conflict strength: Majer, Schweinsberg, et al., 2022; choice bracketing: Read et al., 1999). Moreover, in addition to the structure of decision-contexts, negotiators' understanding of such structures (e.g., divergent interest structures) guides them towards preference-based trade-offs, aiding the value creation process (e.g., Arnold & O'Connor, 2021; Geiger & Hüffmeier, 2020). These insights are being put into practice when negotiators are prompted to use the negotiation strategy of 'issue analysis', which is directly aimed at identifying preference differences between parties to create value (e.g., Siebert & Herbst, 2021).

Similarly, the structural variation due to outcome uncertainty may aid negotiators in understanding preference structures and creating value. When expected values between outcome options remain constant, but uncertainty increases, the disparities in payoff structures within and between negotiation parties are accentuated (see Figure 1). For instance, as opposed to a certain agreement option with a 100% likelihood, a risky agreement option with a 50% likelihood of realization sees potential profits doubling. Divergent priority or profit structures between negotiators concerning specific negotiation issues are therefore more "visible" when the outcomes are uncertain compared to when they are certain. This heightened visibility may in turn guide negotiators to explore integrative trade-off opportunities (e.g., Warsitzka et al., 2022) and may ultimately promote the exchange of preference-based concessions on low vs. high priority issues (e.g., De Dreu et al., 2000; Trötschel et al., 2011). In short, a focus on risky outcomes' *values* should help negotiators to achieve integrative win-win agreements.

H1a (Value-Insight Hypothesis): Negotiators will reach *more* integrative win-win agreements when the priority-structures of outcomes are accentuated by uncertainty compared to when the outcomes are certain.

Uncertainty-Avoidance Hypothesis

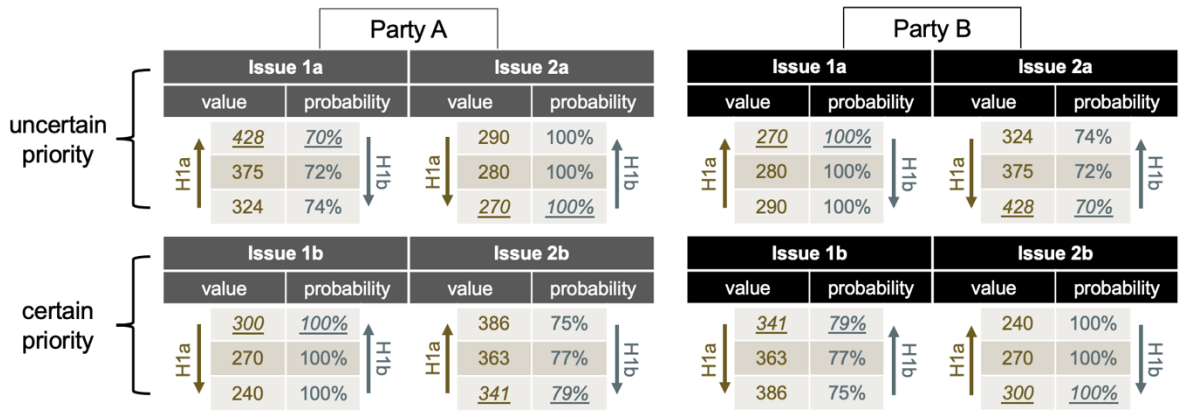
In an analysis of why international negotiations frequently fail, Underdal (1983) highlights that "uncertainty tends to slow down the negotiation process and disturb the search for mutually advantageous solutions" (p. 187-188). After all, uncertainty may have more detrimental effects. A comprehensive array of research underscores that risk aversion can significantly hinder rational decision-making processes (e.g., Bottom, 1998; Essa et al., 2018; Hardisty & Pfeffer, 2017). This aversion can be rather extreme with decision-makers preferring

a zero-risk option despite the additional costs associated with such a choice (e.g., Fox et al., 2015; Greiner, 2023; Kahneman & Tversky, 1979; Viscusi et al., 1987).

In negotiations, parties may craft agreements that lack some of the value that would be possible, in order to achieve less risky outcomes (see Figure 1). Such an *intra*personal trade-off in favor of the *probability* part of risky outcomes and the resulting uncertainty-avoidant behavior would be in line with findings from the individual and group decision-making literature (e.g., Fox et al., 2015; Kahneman & Tversky, 1979; Ruggeri et al., 2020; Whyte, 1993). These uncertainty-based concessions inherently avoid options with the highest opportunities to maximize benefits (i.e., expected value). The exploration of integrative agreements by means of preference-based trade-offs, however, requires negotiators to be concession averse on (objectively) highly valued negotiation issues. Hence, uncertainty-avoidant concessions hinder value creation. In short, conflict parties' tendency to avoid uncertain outcomes may lead to an increase of *intra*personal concession behaviors that stand in contrast to the *inter*personal preference-based trade-offs necessary to find and exploit integrative agreements.

H1b (U*ncertainty-Avoidance Hypothesis*): Negotiators will reach *less* integrative win-win agreements when the priority-structures of outcomes are accentuated by uncertainty compared to when the outcomes are certain[22].

Figure 1. *Visualization of the Value-Insight and Uncertainty-Avoidance Hypotheses.*



Note. Illustration of two negotiators and their exemplary outcome profits with three agreement options per issue, each associated with a specific *value* and *probability*. Issues 1a (2a) and 1b

[22] The decision-making literature provides stronger support for H1b as compared to H1a. We therefore pre-registered H1b only.

(2b) are equal in expected value. Issues 1 and 2 offer integrative potential (underlined). The *Value-Insight Hypothesis* H1a argues that the differences in value preferences direct negotiators' trade-off behavior, guiding them towards the integrative agreement when the integrative potential is driven by uncertain outcome issues (i.e., uncertain priority subset) and misleading them when the integrative potential is driven by the certain outcome issues (i.e., certain priority subset). The U*ncertainty-Avoidance Hypothesis* H1b argues that negotiators concede based on uncertainty avoidance (i.e., in direction of arrows), thereby obstructing the possibility to explore preference-based trade-offs when the integrative potential is driven by uncertain outcome issues (i.e., uncertain priority subset) and guiding them when the integrative potential is driven by the certain outcome issues (i.e., certain priority subset).

When Does Outcome Uncertainty Affect Value Creation

Uncertain outcomes can take many different forms ranging from outcomes with rather high likelihoods (i.e., large probabilities) to those that are barely likely at all (i.e., small probabilities). In line with the likelihood variation, the values of these outcomes vary greatly when keeping the expected value of outcomes equal. The higher the risk of an outcome, the larger its value component must be to keep the expected value constant. Moreover, risky outcomes may vary in their degree of differences in risk levels. Even when keeping expected values constant, in some contexts, agreement options may have similar likelihoods (i.e., small range of uncertainties) while in others, they may vary more considerably in their risk levels (i.e., broad range of uncertainties). From a *Value-Insight Hypothesis* perspective, a heightened difference in outcome values either because of high risks or broad ranges of risks makes priority differences between negotiators more salient. When priority differences become more salient, preference-based trade-offs (i.e., value creation) should become more likely (e.g., Arnold & O'Connor, 2021; Geiger & Hüffmeier, 2020).

From an *Uncertainty-Avoidance Hypothesis* perspective, the probability part of risky outcomes should influence negotiators' behavior more strongly. Findings from the experimental individual decision-making literature suggest that the exact probabilities of potential outcomes play an important role for individuals' perception and behavior (Gurevich et al., 2009; Kahneman & Tversky, 1979; Ruggeri et al., 2020; Tversky & Kahneman, 1992). The attractiveness of gambles for example tends to be evaluated more strongly by their associated likelihood as opposed to its payoff (Slovic et al., 2007). With conflict parties' focus on outcomes' probabilities, their concession making is likely affected by the salience of

likelihood differences between different agreement possibilities. The higher the perceived difference between agreement possibilities' likelihoods, the more salient the uncertain character of the agreement becomes which in turn makes negotiators more likely to concede based on uncertainty-avoidance, hindering value-creation.

In Study 2 we will focus on these boundary conditions, investigating the moderating effect of probability *size* and *range* on the impact of outcome uncertainty on value creation.

Why Does Outcome Uncertainty Affect Value Creation

To aid our understanding of why outcome uncertainties may either foster or hinder the exploitation of integrative potential in social interactive decision contexts, we explore potential mechanisms across Studies 1 and 2. On a behavioral level, the exploitation of integrative potential has been associated with negotiators' information exchange (Bazerman et al., 1999) and concession aversion (De Dreu et al., 2000; Majer, Zhang, et al., 2022). Specifically, we argue that *inter*personal preference-based trade-offs require negotiators' simultaneous consideration of multiple negotiation issues (Warsitzka et al., 2022). Likewise, the number of multiple-issue offers made by negotiators has been shown to foster information exchange between parties and positively predicts joint outcomes in contexts of outcome certainty (Brett et al., 2021; Yao et al., 2021). We use video recordings (Study 1) to explore whether information exchange and proposal characteristics (e.g., multiple-issue offers) have similar effects in negotiations with outcome uncertainty. Particularly, we predicted that the number of multiple-issue offers would positively foster negotiators' preference-based trade-offs for certain, but not uncertain outcome issues.

Next to negotiators' proposals, their strategic concession-making behavior has repeatedly been shown to affect agreement quality (De Dreu et al., 2000; Majer, Zhang, et al., 2022; Trötschel et al., 2010, 2011). In particular, negotiators with a higher concession-aversion are reluctant to compromise and instead explore creative integrative agreements to solve their conflict of interests (e.g., Pruitt, 1981; Trötschel et al., 2015). In contexts of outcome uncertainty, negotiators may find themselves to be particularly concession-averse with value-priorities being highlighted, predicting more integrative agreements (*Value-Insight Hypothesis*). Conversely, negotiators' risk-aversion may guide their *intra*personal trade-offs towards certainty and away from (expected) value (*Uncertainty-Avoidance Hypothesis*), decreasing their concession-aversion. Such decreased concession-aversion in turn predicts less integrative, more compromising agreements.

Present Research

To test whether conflict parties' ability to create value and achieve integrative agreements depends on the certainty level of outcomes, as well as understanding the boundary conditions of this effect, two pre-registered, social-interactive negotiation experiments were run. In Study 1, we aimed at gaining a fundamental understanding of negotiators' trade-off behaviors when confronted with uncertain outcomes. Our novel multi-issue negotiation paradigm included both *certain* and *uncertain outcomes* with the same expected value, allowing us to compare negotiators value-creation depending on the level of certainty (H1a vs. H1b). Outcome uncertainty was operationalized as probabilistic outcomes which can "serve as a device for quantifying and communicating uncertainty encountered in the world" (Keren & Gerritsen, 1999, p. 150). An incentivized second study was conducted to replicate our findings from Study 1 and develop a greater understanding of the boundary conditions and mechanisms that play a role when dealing with *uncertain outcomes*. Specifically, we varied negotiators *uncertain outcomes'* values and probabilities. This allowed us to systematically compare trade-off behaviors depending on objectively identical, yet subjectively different, *uncertain outcomes*. In order to grasp negotiators' value creation processes in more detail, we videotaped and coded the entire negotiation process for information exchange characteristics (Study 1) and measured negotiators' *intra*personal certainty-for-value trade-offs by means of strategic concession making (Study 1 and 2).

Study 1: Creating Value for Certain vs. Uncertain Outcomes

The pre-registered (https://osf.io/a4s7h/?view_only=7cf9379edbfd44e28f48a0e9644a1897) Study 1 tested our first hypotheses, predicting that negotiators make less (more) preference-based trade-offs and thereby create less (more) value when confronted with uncertain compared to certain outcomes. In particular, we manipulated the structure of conflict parties' outcomes, varying between negotiators, within negotiation issues, whether outcome uncertainty is present or not. Additionally, we varied within negotiation dyads whether the certain vs. uncertain outcomes were to be prioritized to reach integrative agreements (see Figure 2). Such a manipulation allowed us to maximize both the priority differences within and between negotiators (effect based on Value-Insight Hypothesis), as well as negotiators' risk aversion (effect based on Uncertainty-Avoidance Hypothesis). Due to the Covid-19 pandemic and laboratories not being

available at the time of data collection, the interactive, two-person negotiation study was implemented online using a video conference tool and the experiment software Gorilla (https://gorilla.sc/).

Method and Procedure

Participants and Design

Based on an a-priori power analysis (Faul et al., 2007) for a medium-sized within-subject two-tailed difference in means effect with a power of 1-β = 0.95, we pre-registered an a-priori sample size of 60 participants. A total of 64 participants[23] (n_{female} = 39; M_{age} = 23.44, SD_{age} = 4.15) with different academic majors (e.g., business administration, psychology) took part in the online-facilitated interactive Study 1. Participants either received course credit or €8 for their participation. The study followed a 1 x 2 (priority location: certain vs. uncertain outcomes) within-subjects design meaning that all negotiation dyads faced both certain and uncertain outcome issues. Within each dyad, participants were randomly assigned one of two roles. Unless otherwise stated, the unit of analysis was the dyad.

Procedure

Participants entered a video conference call in pairs of two or four. Experimenters verbally gave general instructions about the study procedure. Participants then received an individual link to an external platform through which the consent form and all detailed instructions were provided. If four participants were present, pairs of two participants plus one experimenter were moved to different virtual rooms. Participants were explicitly instructed to have both, the video conference call (for the negotiation) and Gorilla (for the instructions and materials) open at all times. Once both participants familiarized themselves with the study materials, the negotiation (maximum of 20 minutes) started with the exchange of first offers. To assess an interim offer, dyads were interrupted after five minutes of negotiating. All negotiations were video recorded. Finally, upon finishing the negotiation, participants filled out a questionnaire, were debriefed and thanked. Payments were administered online. Overall, the study procedure took around one hour.

[23] Fifty-six participants indicated being students, five employed, and three participants chose not to answer.

Experimental Manipulation and Negotiation Task

The instructions provided participants with the negotiation context. In particular, participants were asked to assume the role as the owner of one of two agricultural companies. The local government had authorized eight new agricultural regions that were to be used for growing regional vegetables. Participants were told that they would have to negotiate with the manager of another agricultural company about the allocation of each of the eight regions. Five options on how negotiators could divide each region were available, with each company achieving their highest outcome value when they receive as much of each region as possible. The instructions for both negotiators were identical in depth and informativeness with the exception of the so-called negotiation overview. The negotiation overview (see Appendix A) provided each negotiator with a payoff schedule, showing how much profit they could expect to achieve with a specific option of region division (Conflict Strength Coefficient based on Majer, Schweinsberg, et al., 2022: 0.71).

The experimental conditions of Study 1 were implemented within each negotiators' payoff schedules. Specifically, to investigate the competing *Value-Insight* and *Uncertainty-Avoidance Hypotheses*, a study design based on the *high risk – high value* (or *low risk – low value*) principle was crafted. The design aimed at systematically differentiating between negotiators' abilities to create value depending on parties' focus on either agreement options' value or risk component. For this purpose, negotiation dyads were presented with eight negotiation issues, each offering either certain or uncertain agreement options. Crucially, each negotiation issue was structured so that one negotiation party encountered certain, while the counterpart faced uncertain agreement options (see Figure 2). Consequently, the party with uncertain agreement options faced higher risks but anticipated higher outcome values, while the counterpart with certain agreement options faced no risk but anticipated lower outcome values (see Figure 1). According to the *Value-Insight Hypothesis*, negotiation dyads should primarily be guided by the value of the agreement alternatives, leading the party with the more pronounced value component (but risky outcome) to assert its position, while the party with the less pronounced value component (but no risk) should be more yielding. In contrast, according to the *Uncertainty-Avoidance Hypothesis*, the effect should be reversed: the negotiation party with uncertain agreement alternatives should be inclined to minimize the risk and therefore be more willing to concede on the respective issue. In contrast, the counterpart with certain outcomes should assert their position.

In our first study, the design was tailored in a way, so that half of the negotiation issues required the negotiation party with uncertain agreement options to not concede, while the party

with certain agreement options needed to be highly yielding in order to jointly exploit integrative potential (i.e., uncertain outcome priority subset). Conversely, for the remaining four issues, the profit structure was inverted: the integrative potential could be exploited, if the negotiation party with certain agreement options remained unconceding, while the party with uncertain agreement options needed to be highly yielding (i.e., certain outcome priority subset). Based on this operationalization, distinct effects can be anticipated for the *Value-Insight* and *Uncertainty-Avoidance Hypotheses*: if the premises of the *Value-Insight Hypothesis* hold, negotiation dyads should create more value for the uncertain outcome priority compared to the certain outcome priority subset. In contrast, if the premises of the *Uncertainty-Avoidance Hypothesis* hold, negotiation dyads should create more value for the certain outcome priority compared to the uncertain outcome priority subset.

Figure 2. *Study 1: Structural Overview of the Negotiation Task.*

	Issue 1	*Issue 2*	*Issue 3*	*Issue 4*	*Issue 5*	*Issue 6*	*Issue 7*	*Issue 8*
Negotiator 1	**certain**	uncertain	**certain**	uncertain	**un-certain**	certain	**un-certain**	certain
Negotiator 2	uncertain	**certain**	uncertain	**certain**	certain	**un-certain**	certain	**un-certain**
	certain outcome priority				uncertain outcome priority			

Note. In Study 1, negotiators faced eight negotiation issues that provided certain vs. uncertain profits. The preference-based trade-offs between parties needed to create value are depicted in bold (i.e., indicating high priority issues). The first four (last four) negotiation issues depict the subset of issues for which negotiation parties' priorities laid with the certain (uncertain) outcome issues. Both subsets are fully symmetric.

Dependent Variables

Created Value. The major dependent variable was the created value of negotiation dyads split by priority subsets. We calculated created value by adding up the individual outcomes per priority subset (i.e., certain vs. uncertain priority) of both negotiators. The profit for issues with a risky outcome were calculated using the expected value. Both negotiators could achieve identical outcomes.

Video Ratings. All negotiations were video recorded. A pre-registered rating schema was used to quantify negotiation behaviors. All ratings were made independently by two raters

and differences between raters were clarified jointly. Specifically, and most importantly, negotiators' proposals were coded as either being single negotiation issue offers (i.e., a proposal with an agreement option for one issue) or as being a multi-issue offer (i.e., a proposal with agreement options for multiple issues). The rating schema and full exploratory analyses can be found in the OSM.

Strategic Concession Making. Negotiators concession making behavior (i.e., logrolling) was calculated using a strategic concession making score (based on Trötschel et al., 2010, 2011). Specifically, we coded for each negotiation issue how many concession-steps a negotiator made. For each negotiation issue, five agreement options were available that could be ordered from highest to lowest value. For each step away from the highest value option we added one concession step to the concession making score, meaning that per negotiation issue a maximum of four concessions steps were possible.

Additional Variables. For exploratory purposes we assessed a variety of additional variables in the post questionnaire. A full list of measures and their exploratory findings can be found in the OSM.

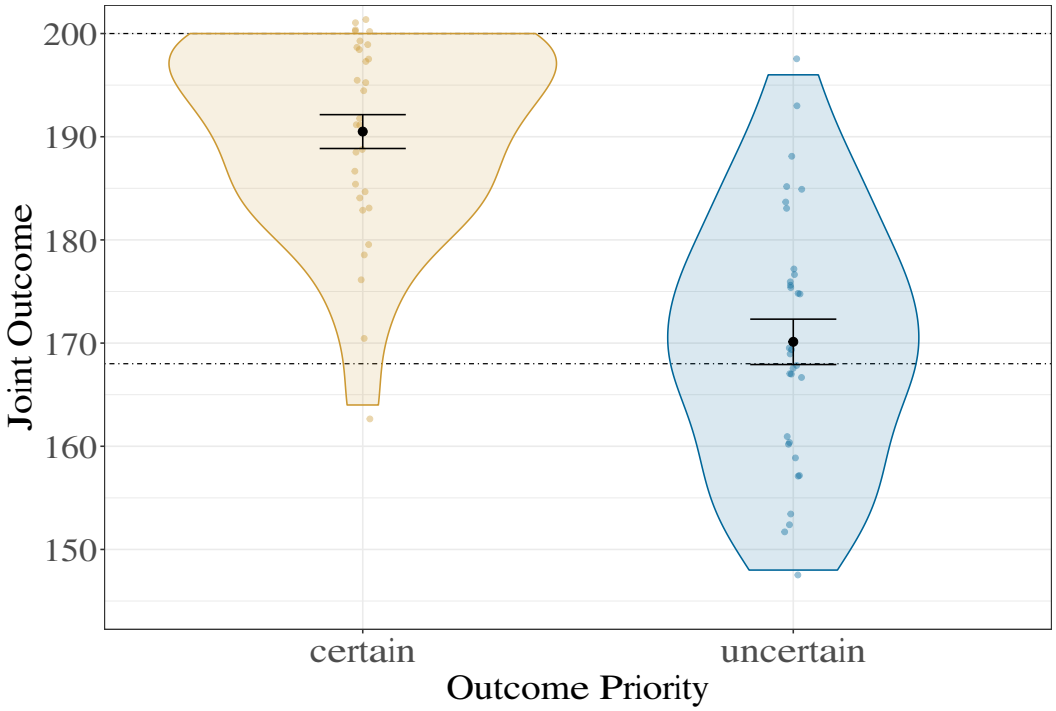
Results

All analyses for both Study 1 and Study 2 were run using R version 4.2.2 (R Core Team, 2022). Analyses scripts can be found in the OSM. All dyads reached an agreement.

Created Value

A two-sided paired *t*-test was conducted to test our competing hypotheses H1a (*Value-Insight*), predicting that negotiators reach higher quality outcomes for the uncertain compared to the certain outcome priority subset, and H1b (*Uncertainty-Avoidance*), predicting that negotiators reach higher quality outcomes for the certain compared to the uncertain outcome priority subset. In line with our pre-registered H1b, negotiation dyads created higher value outcomes for the *certain outcome priority* subset ($M_{certain}$ = 190.50, $SD_{certain}$ = 9.30), compared to the *uncertain outcome priority* subset ($M_{uncertain}$ = 170.13, $SD_{uncertain}$ = 12.44). This difference (M = 20.38, 95% CI [15.44, 25.31]) was highly significant at $t(31) = 8.42$, $p < .001$ (d = 1.49). In reference to the compromise solution (i.e., 168 per subset) and the fully integrative solution (i.e., 200 per subset), the results indicate that negotiators created less value for uncertain compared to certain outcomes (see Figure 3).

Figure 3. *Study 1: Created Value by Priority Location.*



Note. Figure 3 shows the difference of negotiators' created value split by outcome priority subset. The two horizontal, dotted lines represent the compromise agreement and the fully integrative agreement. The error bars represent standard errors. Significantly more value was created for the certain compared to the uncertain priority subset.

Video Ratings: Multiple-Issue Offers

On average dyads made 3.72 multiple-issue offers (*SD* = 2.68) over the course of their negotiation. To test the pre-registered hypothesis that the difference in outcomes between the certain and uncertain priority subsets would be greater the more multiple-issue offers negotiators made, we regressed the number of dyadic multiple-issue offers onto the outcome difference score (i.e., certain outcome priority subset minus uncertain outcome priority subset). The amount of multiple-issue offers did *not* significantly predict the difference between dyads' outcomes for the certain and uncertain outcome priority subsets, b = -1.33, $t(30)$ = -1.48, p = .149. In fact, the use of multiple-issue offers was significantly positively correlated with dyads outcome for the uncertain priority subset ($r(30)$ = .43, p = .014), but not with dyads outcome for the certain priority subset ($r(30)$ = .19, p = .298). The more multiple-issue offers made by a negotiation dyad, the more value was created overall, especially for the uncertain priority subset.

Exploratory Analyses

Here, we present parts of our exploratory analyses with all remaining analyses being available in the OSM.

Strategic Concession Making. We tested whether negotiators strategic concession making (Trötschel et al., 2010, 2011) was affected by outcome uncertainty. Particularly, we were interested to see whether there is a difference in negotiators' tendency to make concessions on issues of higher priority, depending on outcome certainty. Such concessions would impede negotiators' ability to make preference-based trade-offs (i.e., logroll).

Each negotiator faced two certain and two uncertain issues of higher priority. Hence, we calculated two strategic concession making scores (one per certainty level) that each could vary from zero (i.e., no concessions made for neither issue) to eight (i.e., full concessions made for both issues). Indeed, negotiators made higher concessions for high priority uncertain (M = 3.73, SD = 1.92) compared to high priority certain (M =1.19, SD = 1.31) outcome issues ($t(63) = 9.25$, $p < .001$, $d = 1.16$). This heightened concession behavior for high-priority uncertain (compared to high-priority certain) negotiation issues indicates that, indeed, negotiators *intra*personally traded-off value for certainty.

Video Recordings. Without previous investigations into negotiators' value creation processes under uncertainty, we explored negotiators behaviors by means of video recordings (see full analyses in OSM).

Information Exchange. Exchanging information between negotiators has consistently been associated with greater joint outcomes (Bazerman et al., 1999). In an attempt to quantify negotiators' information exchange behavior, we rated how often negotiators gave information on the importance of issues (e.g., "For me issue X is quite important.") split by issues' outcome certainty level.

Negotiation dyads exchanged information on the importance of negotiation issues with a certain outcome significantly more often (M = 4.03, SD = 3.84) than on negotiation issues with an uncertain outcome (M = 2.50, SD = 3.04), $t(31) = 3.10$, $p = .004$, $d = .55$. Intriguingly though, while the amount of information shared about negotiation issues with an uncertain outcome significantly predicted the joint outcome for the uncertain outcome priority subset (b = 2.78, $t(30) = 5.05$, $p < .001$, $R^2_{\text{adjusted}} = .44$), the amount of information shared about negotiation issues with a certain outcome was not predictive of the joint outcome for the certain outcome priority subset ($b = .77$, $t(30) = 1.85$, $p = .075$, $R^2_{\text{adjusted}} = .07$). Whereas dyads exchanged less information on uncertain compared to certain outcome issues, sharing information about the importance of uncertain outcome issues was more strongly predictive of

the respective outcome than sharing information about the importance of certain outcome issues.

Discussion

In line with our pre-registered prediction of H1b, we found that conflict parties created less value for uncertain outcome priority issues than certain outcome priority issues. In particular, negotiators' concession rates were higher for high-priority uncertain compared to high-priority certain outcome issues, omitting the possibility for both conflict parties to make preference-based trade-offs that are needed for reaching integrative agreements. These high rates of concessions for uncertain outcome issues underscore conflict parties' inclination for agreement options that are of lower expected value, yet occur with a higher likelihood (i.e., uncertainty avoidance).

While Study 1 warrants a first insight into negotiators' concession-making and trade-off behaviors when confronted with outcome uncertainty, further investigation is necessary. Previous findings from related fields (e.g., Gurevich et al., 2009; Kahneman & Tversky, 1979; Ruggeri et al., 2020; Tversky & Kahneman, 1992) indicate that different probability levels might have heterogeneous effects on decision-makers, thereby acting as boundary conditions for the negative effect of uncertainty avoidance in integrative negotiations with outcome uncertainty. In line with the *Uncertainty-Avoidance Hypothesis* and our findings from Study 1, we predict that negotiators focus particularly on the probability aspect of outcomes, making uncertainty-based instead of preference-based trade-offs (i.e., less value creation). With conflict parties' strong focus on outcomes' probabilities, we expect negotiators' strategic concession making to be affected by the salience of likelihood differences between different agreement possibilities. The higher the perceived difference between agreement possibilities' likelihoods, the more salient the uncertain character of the agreement becomes. The more salient the uncertainty of outcomes, the more likely negotiators are to concede based on uncertainty-avoidance instead of making preference-based trade-offs. Thus, based on (cumulative) Prospect Theory's weighting function (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992) we expect negotiators to make more concessions based on uncertainty-avoidance when the outcomes' probabilities are above (compared to below) 50 percent (H2a).

In addition, we predict that when negotiators are confronted with a broader compared to a smaller *range* of outcome probabilities (while keeping expected outcomes equal), their salience is heightened, leading to more concessions based on uncertainty-avoidance and

therefore less value creation (H2b). Since the differences between higher probabilities is likely to be perceived as greater compared to the same difference of percentage points between lower probabilities (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992), manipulating the range of risky outcome probabilities should have a greater effect for probabilities of higher compared to lower size (H2c). A broad range of probabilities for high likelihood outcomes is perceived as larger than a broad range of probabilities for low likelihood outcomes. In summary, we hypothesize that the specific *size* and *range* of the uncertain outcomes' probabilities affects negotiators' ability to create value.

Study 2: Creating Value for Different Levels of Outcome Uncertainty

The pre-registered Study 2 (https://aspredicted.org/JYV_SSD) aimed at replicating the effect of outcome uncertainty on negotiators' value creation behavior under more diverse boundary conditions and a more conservative operationalization of outcome uncertainty. Specifically, uncertainty in outcomes was manipulated not within issues (i.e., one party facing certain and the other uncertain outcomes), but within dyads (i.e., both parties facing certain or uncertain outcomes). This approach aligns with classical work in the experimental negotiation literature (i.e., manipulation on a dyadic level: e.g., Beersma & Dreu, 1999; De Dreu et al., 1998; Pruitt & Lewis, 1975; Trötschel et al., 2013), providing a more conservative test of our hypotheses and ensuring that the findings of Study 1 were not dependent on the specific operationalization of outcome uncertainty. In particular, such within *dyad* operationalization of outcome uncertainty, reduces the salience of value difference (i.e., the difference between outcome values is not maximized anymore) while aligning the level of concession-aversion between negotiators who now face the same as opposed to different certainty levels per negotiation issue (see Figure 4). In addition, we varied the level of risk associated with the uncertain outcomes (between dyads), while maintaining identical objective expected outcome values. This procedure allowed us to test our prediction that negotiators create more value when their outcomes are certain compared to when they are uncertain under diverse levels of uncertainty[24]. Additionally, we predicted that negotiators would come to more integrative win-win agreements when (H2a) the outcome probabilities are lower (i.e., 50% and lower) vs. higher (i.e., 50% and higher); (H2b) the range of the outcome probabilities is smaller (i.e., 20% points) vs. broader (i.e., 40% points). Finally, (H2c) we predicted that the difference in outcome

[24] The replication hypothesis of the main effect was only indirectly pre-registered.

quality depending on the range of outcome probabilities to be larger for higher vs. lower outcome probabilities. The incentivized face-to-face negotiation Study 2 was conducted in the laboratory.

Method and Procedure

Participants and Design

Based on an a-priori power analysis (Faul et al., 2007) for a small to medium-sized interaction effect with a power of $1\text{-}\beta = 0.95$, we pre-registered a sample of 240 participants. A total of 246 participants ($n_{female} = 167$; $M_{age} = 22.22$, $SD_{age} = 2.53$; 92% students) with different academic majors (e.g., business administration, psychology) took part in the incentivized, interactive laboratory Study 2. Participants received either course credit or €8 for their participation. To make the negotiation outcome incentive compatible, participants possibility to earn an additional payment was bound to the quality of their negotiation outcome. The study followed a 2 (outcome certainty [within-subjects]: certain vs. uncertain) x 2 (probability size [between-subjects]: low [≤ 50%] vs. high [≥ 50%]) x 2 (probability range [between-subjects]: small [20% points] vs. large [40% points]) mixed design. Participants were randomly assigned one of two negotiation roles and unless otherwise stated, the unit of analysis was the dyad.

Procedure

We used the study procedure of Study 1 in a laboratory, face-to-face setting. We did not video-record the negotiations.

Experimental Manipulation and Negotiation Task

The instructions provided participants with the negotiation context. In particular, participants were asked to assume the role as managers of a state in a fictitious country. The government had authorized the provision of financial aid to eight areas of sustainable development. As manager of their state, participants were tasked to negotiate with the manager of another state about the allocation of financial funding for each of the eight development areas. Five possible agreement options per development area were available, with each state achieving the highest profit when they receive as much of the funding as possible. Again, the instructions for the two negotiators were identical with the exception of the negotiation

overview (see Appendix B) which provided negotiators with a payoff schedule, detailing how much profit they could expect to achieve.

As with Study 1, the experimental manipulation of Study 2 was implemented within negotiators' payoff schedules. Specifically, the payoffs included eight negotiation issues that offered integrative potential between the negotiators (Conflict Strength Coefficient based on Majer, Schweinsberg, et al., 2022: 0.74). Similar to Study 1, four negotiation issues provided a certain vs. uncertain outcome respectively. However, contrary to the payoff schedules in Study 1, the negotiation issues were structured differently. Instead of one issue offering a certain payoff for one negotiator and an uncertain outcome for the other, issues were realized as either offering certain or uncertain outcomes for both parties. Again, two symmetric subsets of four issues emerged (see Figure 4). Generally, profits were calculated using the expected value.

Figure 4. *Study 2: Structural Overview of the Negotiation Task.*

	Issue 1	*Issue 2*	*Issue 3*	*Issue 4*	*Issue 5*	*Issue 6*	*Issue 7*	*Issue 8*
Negotiator 1	**certain**	certain	**certain**	certain	**un-certain**	uncertain	**un-certain**	uncertain
Negotiator 2	certain	**certain**	certain	**certain**	uncertain	**un-certain**	uncertain	**un-certain**
	certain outcomes				uncertain outcomes			

Note. In Study 2, negotiators faced eight negotiation issues. The preference-based trade-offs between parties needed to exploit the integrative potential are depicted in bold (i.e., indicating high priority issues). In contrast to Study 1, the subsets are divided by their certainty level (i.e., certain vs. uncertain) across negotiators. Both subsets are fully symmetric.

Dependent Variables

Created Value. Identical to Study 1, the major dependent variable was dyads' created value split by certainty subset. We calculated created value by adding up the individual outcomes per certainty subset of both negotiators. Additionally, we assessed negotiation process data by means of a first and interim proposal of both participants.

Strategic Concession Making. Identical to Study 1, negotiators strategic concession making behavior was measured by means of calculating strategic concession making scores (based on Trötschel et al., 2010, 2011).

Additional Variables. For exploratory purposes we assessed a variety of variables in the post-questionnaire. Results can be found in the OSM.

Results

All dyads reached an agreement.

Created Value

A pre-registered 2 (probability size: high vs. low) x 2 (probability range: small vs. large) x 2 (outcome certainty: certain vs. uncertain) repeated measures ANOVA (with the outcome certainty factor being repeated) was conducted to test hypothesis H1b (i.e., higher value creation for certain compared to uncertain outcome subset), hypothesis H2a (i.e., higher value creation for small compared to high probability size), hypothesis H2b (higher value creation for small compared to large probability range), and hypothesis H2c (interaction probability size and range). The repeated measures ANOVA table can be found in Table 1 and Figure 5 visualizes the findings. In line with H1b and replicating our findings from Study 1, negotiators created more value ($F(1,119) = 11.05$, $p = .001$, $\eta^2_p = .085$) when their outcomes were certain ($M = 176.66$, $SD = 9.96$) compared to when the outcomes were uncertain ($M = 173.67$, $SD = 9.39$)[25]. However, negotiator's ability to exploit integrative agreements did not depend on the probability size or range of their uncertain outcome issues (see Table 1). Thus, all other hypotheses have to be rejected.

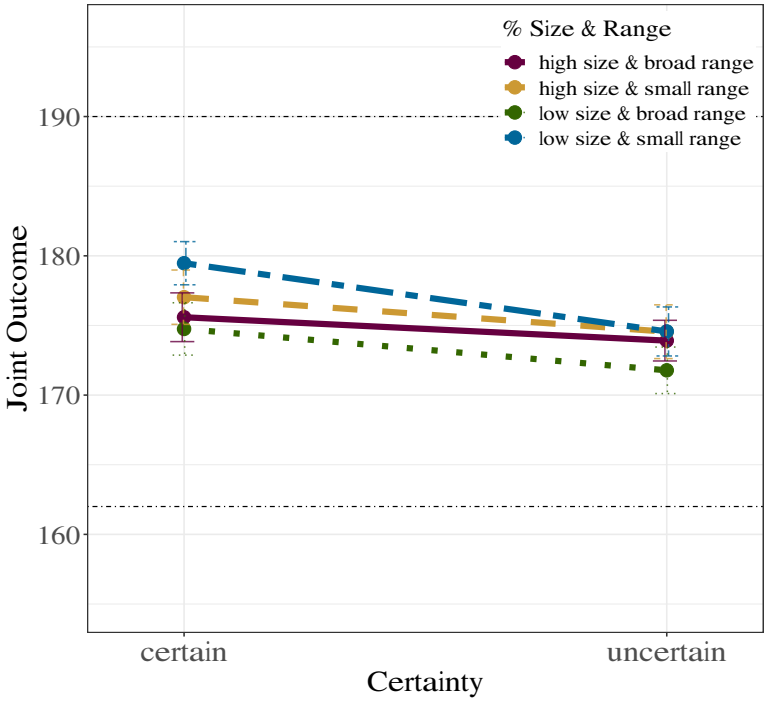
Table 1. *Study 2: Pre-Registered Repeated Measures ANOVA.*

Effect	*df*	*F*	*p*	η_p^2
% size	1	0.01	0.931	
% range	1	2.58	0.111	
certainty	1	11.05	**0.001**	.085
% size * % range	1	0.82	0.367	
% size * certainty	1	1.04	0.309	
% range * certainty	1	0.57	0.453	
% size * % range * certainty	1	0.10	0.754	

[25] The compromise and fully integrative agreements equal profits of 162 and 190 per subset respectively.

Note. A 2 (probability size: high vs. low) x 2 (probability range: small vs. large) x 2 (outcome certainty: certain vs. uncertain) repeated measures ANOVA (with the outcome certainty factor being repeated) was run to test whether negotiation dyads' joint outcomes differ depending on the level of certainty, probability *size* and *range* condition. η_p^2 represents the partial eta squared.

Figure 5. *Study 2: Joint Outcome by Probability Size and Range Conditions Split by Certainty.*



Note. Figure 5 shows the difference of negotiators' joint outcomes split by outcome certainty. The four line-types represent the four probability *size* and *range* conditions. The two horizontal, dotted lines represent the compromise agreement (i.e., 162 per subset) and the fully integrative agreement (i.e., 190 per subset). The error bars represent standard errors. Negotiation dyads' outcomes for the certain outcome subset was significantly higher compared to the uncertain outcome subset.

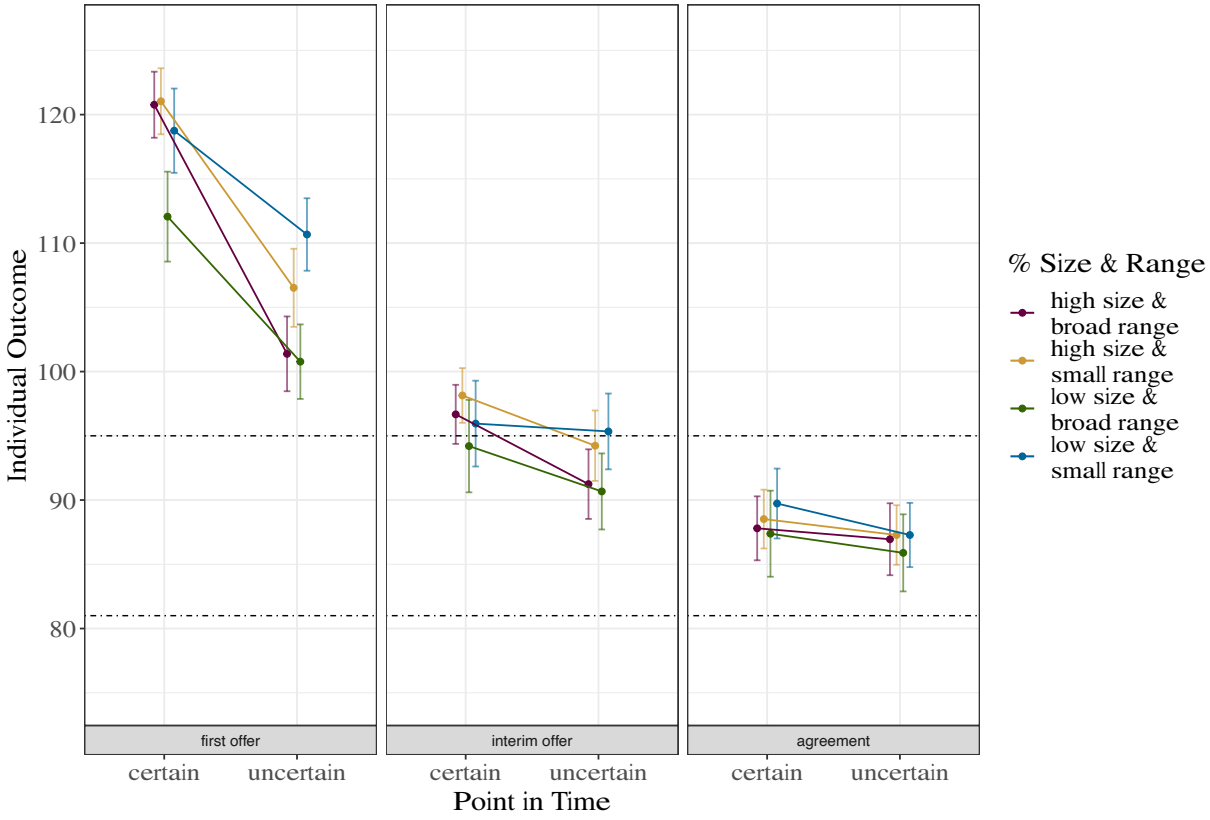
Exploratory Analyses

To conclude the result section of Study 2, we report on further exploratory findings (full analyses in OSM).

Process Data. In addition to the final outcome, we assessed the current state of the negotiation 1) before the negotiation as negotiators' first proposals; and 2) five minutes into the negotiation as negotiators' interim proposals. Using these data, we calculated how much

individual profit each negotiator would make with their respective proposal across time points and split by certainty conditions (see Figure 6).

Figure 6. *Study 2: Individuals' Outcomes Across Time.*



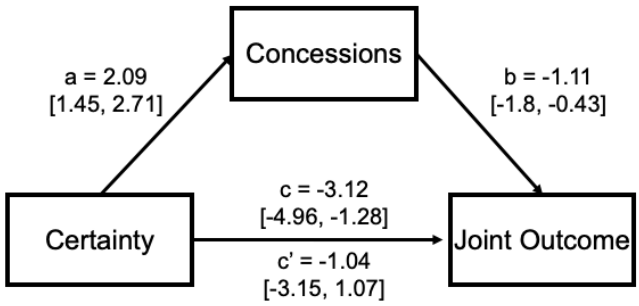
Note. Figure 6 shows the difference of negotiators' individual outcomes split by outcome certainty and point in time. The four colored lines represent the four probability *size* and *range* conditions. The two horizontal, dotted lines represent an individual's share of the compromise agreement (i.e., 81 per subset) and the fully integrative agreement (i.e., 95 per subset). The error bars represent standard errors.

To test potential differences in first offer uncertain outcomes we ran a 2 (probability size: high vs. low) x 2 (probability range: small vs. large) x 2 (negotiator: a vs. b) repeated measures ANOVA (with the negotiator factor being repeated). The repeated measures ANOVA table can be found in Appendix C. Negotiators confronted with a smaller range of probabilities made first offers of higher value to themselves (M = 108.66, SD = 22.26) compared to negotiators confronted with a broader range of probabilities (M = 101.07, SD = 23.15; $F(1,117)$ = 7.61, p = .007, η^2_p = .061). This effect vanishes throughout the negotiation (see final agreement section above).

Strategic Concession Making. We replicated our findings on negotiators' *intra*personal value-for-certainty trade-offs from Study 1 by investigating the strategic concession making score (i.e., log-rolling): summed-up across all conditions, individual negotiators made more concession steps for high priority uncertain (M = 2.35, SD = 2.01) compared to high priority certain (M = 1.92, SD = 2.09) negotiation issues, $t(245) = 2.12$, p = .035, d = .14.

In addition to the concessions made for the negotiation agreement, we investigated negotiators' *intra*personal trade-offs throughout the negotiation process. At the start of the negotiation, negotiators already made more concession for the high priority uncertain (M = 1.91, SD = 2.01), compared to high priority certain (M = 0.87, SD = 1.67) issues in their opening proposals, $t(243) = 6.31$, $p < .001$, d = .40. To explore whether negotiators' strategic concession making mediates the main effect of outcome certainty on value creation, we ran a Bayesian mediation analysis for within-subject designs with 10000 iterations (Vuorre & Bolger, 2018). Specifically, we used negotiation dyads' concession steps for high priority certain vs. uncertain issues made as part of their first proposals, as a mediator for the difference in joint outcome of the final agreement based on certainty. The resulting mediation model can be seen in Figure 7. We find a direct effect of outcome certainty on joint outcome, as indicated by the credible interval (CI) not including zero (M = -3.12, CI [-4.96, -1.28]). This effect is, however, to a large degree mediated by negotiators' concessions made as part of their first proposals (i.e., indirect effect includes zero: M = -1.04, CI [-3.15, 1.07]). In summary, confronting negotiators with certain vs. uncertain outcome issues predicts negotiators' concession making in their first proposal, which in turn predicts negotiators' final agreement (i.e., value creation).

Figure 7. *Study 2: First Offer Concessions Mediating the Effect of Certainty on Joint Outcomes.*



Note. We used a Bayesian mediation analysis for within-subject designs with 10000 iterations (Vuorre & Bolger, 2018). The credible intervals are given in square brackets. Concessions within the first offer mediate the effect of certainty on joint outcomes.

Discussion

Our findings from Study 1 replicated under diverse boundary conditions in Study 2. Irrespective of the *size* (i.e., below or above 50 percent) and *range* (i.e., 20 or 40 percent points) of probabilities that negotiators were confronted with, less value was created whenever outcomes were uncertain vs. certain. Analyses of negotiators' behavior over the course of the negotiation revealed that differences in expected profit between probability *range* conditions initially did exist but vanished over time. Specifically, in line with hypothesis H2b, negotiators confronted with a broader range of outcome likelihoods traded-off (expected) value for certainty to a larger degree (in their first proposals) than negotiators confronted with a smaller range of outcome likelihoods.

Finally, we were able to show that negotiators *intra*personal value-for-certainty trade-offs (i.e., strategic concession making) mediated the outcome uncertainty effect. Negotiators conceded earlier and to a greater extent on high priority uncertain compared to high priority certain issues. These behaviors omitted the possibility for negotiation parties to create value by means of preference-based trade-offs and highlight once again conflict parties' tendency to favor agreements of lower value and lower risk over agreements of higher value and higher risk.

General Discussion

Across two interactive experimental negotiation studies, we consistently found that negotiators create less value and reach less mutually beneficial integrative agreements under contexts of outcome *uncertainty* compared to outcome *certainty*. In fact, negotiators did not use heightened value differences in outcomes to infer priority differences and create value (H1a). Instead, negotiators avoided uncertainty, opting for more certain, but lower value outcomes, ultimately creating less value (H1b). These findings replicated across a variety of outcome uncertainty levels ranging from outcome probabilities as low as 10% to those as high as 90% and across different negotiation contexts. Conflict parties were more strongly influenced by the associated risk of negotiation outcomes than its expected profit.

Negotiators' concession behaviors offer an explanation for the reduced value creation under outcome uncertainty. In order for conflict parties to make integrative *inter*personal trade-offs, each party has to stay concession-averse on high-priority issues and concede on low-priority issues (Murnighan et al., 1999; Raiffa, 1982). We found this principle to be violated in

contexts of outcome uncertainty. On an *intra*personal level, negotiators traded-off value for (more) certainty, conceding on high priority issues with an uncertain outcome even before the negotiation started (i.e., first proposal). In fact, regardless of the outcomes' probability *size* or *range*, negotiators' concessions on high-priority issues mediated the effect of certainty on outcome quality. Individual negotiators' early uncertainty-avoidant concession behavior obstructed conflict parties' possibility to create value.

Moreover, negotiators' concessions revealed their tendency to treat uncertain outcomes in relative and not in absolute terms. Across different probability conditions negotiators agreed on outcomes with a specific probability in one condition, while they seemed to have deemed the same probability too risky in other conditions. Such behavior suggests that negotiators perceived and treated outcome uncertainty in relation to other available outcomes and their level of uncertainty. In other words, negotiators were less willing to agree upon the *riskiest* available option. Instead, regardless of the overall probability size or range of probabilities, negotiators favored the second or third riskiest option.

Theoretical and Practical Contributions

By showing that conflict parties behave differently and create less value when confronted with *uncertain* compared to *certain* negotiation outcomes, we have underlined the importance for experimental decision researchers to incorporate real-world contextual factors into their study design (Boothby et al., 2023). Particularly, we have developed and tested a novel experimental negotiation paradigm that allows for the operationalization of outcome uncertainty. We thereby offer a direct means to investigate a kind of uncertainty that has received little attention in the study of joint value creation (Bottom, 1998; Essa et al., 2018; Schauer et al., 2023). Moreover, our negotiation paradigm may be used to experimentally investigate other types of uncertainty as well. For example, instead of the uncertainty stemming from contextual factors, it could stem from uncertain expectations about the counterparts' intentions to implement the agreement (Jang et al., 2018).

More generally, whereas uncertainty about negotiation outcomes stemming from time delays in their implementation has been shown to positively affect agreement quality (Okhuysen et al., 2003), we show that uncertainty about the value of agreement outcomes negatively affects agreement quality (i.e., value creation). Negotiators seem to be sensitive to the difference between *when* agreement outcomes materialize and *if* they materialize at all. In line with previous findings showing that gain-framed negotiators are reluctant to take risks

under one specific level or uncertainty (Bottom, 1998), we find that negotiators make *intra*personal value-for-certainty trade-offs irrespective of the absolute level of risk they are confronted with. The uncertainty-avoidant behavior appears stable over a variety of risk-levels. Moreover, we extend Essa and colleagues' (2018) finding, that one uncertain outcome issue alone reduces negotiators' use of integrative tactics and thereby their joint profit on different certain outcome issues. In particular, we find that the presence of outcome uncertainty not only affects negotiators' joint profit on certain outcome issues, but to an even greater extent on uncertain outcome issues.

In addition to the processing of outcome uncertainty in relative terms, our exploratory analyses revealed that multiple-issue offers that contained either only certain or only uncertain negotiation issues occurred almost three times as often as multiple-issue offers that contained both certain and uncertain issues. From a mental accounting perspective (Thaler, 1999; Zhang et al., 2023), negotiators might have used different mental accounts for certain and uncertain negotiation issues. Specifically, in an attempt to reduce the complexity of multi-issue negotiations, negotiators have been shown to process negotiation issues in separate mental accounts. However, such mental accounting reduced the ability to create value between issues of different mental accounts (Warsitzka et al., 2022). As indicated by negotiators' multiple-issue offers in Study 1, in negotiations with issues of certain and uncertain nature, negotiators likely parse issues into different mental accounts based on their respective certainty level. Such mental accounting would hinder negotiators' value creation whenever trade-offs between certain and uncertain outcome issues are necessary (as in Study 1, but not Study 2), potentially explaining the smaller effect of outcome uncertainty in Study 2 compared to Study 1.

Moreover, first offers have repeatedly been shown to predict outcomes, especially in distributive negotiations (e.g., Gunia et al., 2013). Field data underlines the important role that first offers play in determining negotiators' outcomes (Petrowsky et al., 2023). Likewise, we find negotiators' first offers to be of particular importance as they mediated the effect of outcome certainty on joint outcomes. However, in our integrative negotiation paradigm negotiators' first offers predicted joint outcomes not because of their positive effect on value claiming, but instead, because of negotiators' early uncertainty-avoidant concessions (i.e., *intra*personal value-for-certainty trade-off). These first offer concessions set negotiators on a path towards lower value creation.

Finally, in line with the motivated information processing framework (De Dreu et al., 2008) that predicts individual level variables to affect group level outcomes, we show that *individual* negotiators' tendency to avoid uncertainty by trading-off value for (more) certainty,

hinders the *interactive* value-creation process between negotiators. Early individual concessions were identified as detrimental factors, reducing the quality of joint agreements. We see these findings as a first step to the development of evidence-based interventions for practitioners that aim at improving value creation in organizational, political, and sustainability-related negotiations. Interventions aimed at reducing negotiators' tendency for early, uncertainty-avoidant concessions appear fruitful in aiding managers to successfully negotiate future price developments, risky financial investments, or sustainability measures.

Limitations

As with most experimental work, our findings must be interpreted with respect to their limitations. Firstly, we would like to acknowledge that the chosen operationalization of outcome uncertainty by means of probabilistic outcomes warrants consideration. While such an operationalization has great advantages when it comes to keeping certain and (different) uncertain conditions equal based on expected values, thereby allowing a more direct comparison of different levels of outcome uncertainty, managers are not always able to assign specific probability values to uncertain outcomes (Thompson, 2015).

Secondly, while we were able to show that the early, first offer concessions made by negotiators mediated the negative effect of outcome uncertainty on value creation, we only have limited data to assess how negotiators' interaction unfolded. First insights from related fields show that in multi-party negotiations, interactions of different levels of willingness to takes risks (Boto-García & Bucciol, 2023), power dynamics (Sekścińska et al., 2022) or knowledge about the risk-taking behavior of others (Dannenberg et al., 2022) may affect the effect of uncertainty on value creation.

Finally, we would like to acknowledge that our findings are bound to conflict parties negotiating the immediate gain of benefits. Variations of the timing (Okhuysen et al., 2003), framing (Majer, Zhang, et al., 2022; Trötschel et al., 2015) and valence (Majer, Zhang, et al., 2022) of outcomes are likely to affect negotiators' concession making and value creation.

Conclusion

In order for an applied field to offer evidence-based guidance that impacts negotiation processes for the better, understanding core elements of managers' real-world contexts such as outcome uncertainty more thoroughly is of utmost importance (Boothby et al., 2023). Our

results offer an improved understanding of negotiators' trade-off and value-creation behaviors under outcome uncertainty. Indeed, using a novel negotiation paradigm, we have found that negotiating uncertain outcomes increases negotiators' (early) *intra*personal concession making behaviors in favor of lower value, more certain outcomes. These *intra*personal value-for-certainty trade-offs limit the trade-off possibilities between parties thereby having a detrimental effect on joint value creation.

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Appendix

Appendix A

Study 1: Negotiators' Negotiation Overviews

Party A

	Issue 1			Issue 2			Issue 3			Issue 4		
risky priority subset	Value	%	EV	Value	%	EV	Value	%	EV	Value	%	EV
	58	69%	40	20	100%	20	86	58%	50	30	100%	30
	43	75%	32	16	100%	16	63	63%	40	24	100%	24
	30	80%	24	12	100%	12	44	68%	30	18	100%	18
	19	86%	16	8	100%	8	27	74%	20	12	100%	12
	9	91%	8	4	100%	4	12	81%	10	6	100%	6
	Issue 5			**Issue 6**			**Issue 7**			**Issue 8**		
certain priority subset	Value	%	EV	Value	%	EV	Value	%	EV	Value	%	EV
	40	100%	40	30	66%	20	50	100%	50	56	54%	30
	32	100%	32	22	72%	16	40	100%	40	41	59%	24
	24	100%	24	16	77%	12	30	100%	30	28	65%	18
	16	100%	16	10	83%	8	20	100%	20	17	70%	12
	8	100%	8	5	88%	4	10	100%	10	8	76%	6

Party B

	Issue 1			Issue 2			Issue 3			Issue 4		
risky priority subset	Value	%	EV	Value	%	EV	Value	%	EV	Value	%	EV
	4	100%	4	9	91%	8	6	100%	6	12	81%	10
	8	100%	8	19	86%	16	12	100%	12	27	74%	20
	12	100%	12	30	80%	24	18	100%	18	44	68%	30
	16	100%	16	43	75%	32	24	100%	24	63	63%	40
	20	100%	20	58	69%	40	30	100%	30	86	58%	50
	Issue 5			**Issue 6**			**Issue 7**			**Issue 8**		
certain priority subset	Value	%	EV	Value	%	EV	Value	%	EV	Value	%	EV
	5	88%	4	8	100%	8	8	76%	6	10	100%	10
	10	83%	8	16	100%	16	17	70%	12	20	100%	20
	16	77%	12	24	100%	24	28	65%	18	30	100%	30
	22	72%	16	32	100%	32	41	59%	24	40	100%	40
	30	66%	20	40	100%	40	56	54%	30	50	100%	50

Note. The top (bottom) part depicts the eight-issue negotiation overview of Party A (B). Issues one to four depict the *risky priority subset*, while the issues five to eight depict the *certain priority subset*. The integrative agreement is highlight using frames. Participants were only provided with their own negotiation overview, did not see the column with the calculated expected value (EV) and the order of negotiation issues was shuffled.

Appendix B_1

Study 2: Negotiators' Negotiation Overviews (low size & small range)

Party A

	Issue 1			Issue 2			Issue 3			Issue 4		
	Value	%	EV	Value	%	EV	Value	%	EV	Value	%	EV
risky subset	200	20%	40	74	27%	20	205	22%	45	107	28%	30
	139	23%	32	55	29%	16	150	24%	36	77	31%	24
	92	26%	24	39	31%	12	104	26%	27	53	34%	18
	55	29%	16	24	33%	8	64	28%	18	32	37%	12
	25	32%	8	11	35%	4	30	30%	9	15	40%	6
	Issue 5			**Issue 6**			**Issue 7**			**Issue 8**		
	Value	%	EV	Value	%	EV	Value	%	EV	Value	%	EV
certain subset	40	100%	40	20	100%	20	45	100%	45	30	100%	30
	32	100%	32	16	100%	16	36	100%	36	24	100%	24
	24	100%	24	12	100%	12	27	100%	27	18	100%	18
	16	100%	16	8	100%	8	18	100%	18	12	100%	12
	8	100%	8	4	100%	4	9	100%	9	6	100%	6

Party B

	Issue 1			Issue 2			Issue 3			Issue 4		
	Value	%	EV	Value	%	EV	Value	%	EV	Value	%	EV
risky subset	11	35%	4	25	32%	8	15	40%	6	30	30%	9
	24	33%	8	55	29%	16	32	37%	12	64	28%	18
	39	31%	12	92	26%	24	53	34%	18	104	26%	27
	55	29%	16	139	23%	32	77	31%	24	150	24%	36
	74	27%	20	200	20%	40	107	28%	30	205	22%	45
	Issue 5			**Issue 6**			**Issue 7**			**Issue 8**		
	Value	%	EV	Value	%	EV	Value	%	EV	Value	%	EV
certain subset	4	100%	4	8	100%	8	6	100%	6	9	100%	9
	8	100%	8	16	100%	16	12	100%	12	18	100%	18
	12	100%	12	24	100%	24	18	100%	18	27	100%	27
	16	100%	16	32	100%	32	24	100%	24	36	100%	36
	20	100%	20	40	100%	40	30	100%	30	45	100%	45

Note. The top (bottom) part depicts the eight-issue negotiation overview of Party A (B). Issues one to four depict the *risky subset*, while the issues five to eight depict the *certain subset*. The integrative agreement is highlight using frames. Participants were only provided with their own negotiation overview, did not see the column with the calculated expected value (EV) and the order of negotiation issues was shuffled.

Appendix B_2

Study 2: Negotiators' Negotiation Overviews (low size & broad range)

Party A

risky subset

Issue 1			Issue 2			Issue 3			Issue 4		
Value	%	EV	Value	%	EV	Value	%	EV	Value	%	EV
400	10%	40	83	24%	20	321	14%	45	115	26%	30
200	16%	32	57	28%	16	200	18%	36	75	32%	24
109	22%	24	38	32%	12	123	22%	27	47	38%	18
57	28%	16	22	36%	8	69	26%	18	27	44%	12
24	34%	8	10	34%	4	30	30%	9	12	50%	6

certain subset

Issue 5			Issue 6			Issue 7			Issue 8		
Value	%	EV	Value	%	EV	Value	%	EV	Value	%	EV
40	100%	40	20	100%	20	45	100%	45	30	100%	30
32	100%	32	16	100%	16	36	100%	36	24	100%	24
24	100%	24	12	100%	12	27	100%	27	18	100%	18
16	100%	16	8	100%	8	18	100%	18	12	100%	12
8	100%	8	4	100%	4	9	100%	9	6	100%	6

Party B

risky subset

Issue 1			Issue 2			Issue 3			Issue 4		
Value	%	EV	Value	%	EV	Value	%	EV	Value	%	EV
10	40%	4	24	34%	8	12	50%	6	30	30%	9
22	36%	8	57	28%	16	27	44%	12	69	26%	18
38	32%	12	109	22%	24	47	38%	18	123	22%	27
57	28%	16	200	16%	32	75	32%	24	200	18%	36
83	24%	20	400	10%	40	115	26%	30	321	14%	45

certain subset

Issue 5			Issue 6			Issue 7			Issue 8		
Value	%	EV	Value	%	EV	Value	%	EV	Value	%	EV
4	100%	4	8	100%	8	6	100%	6	9	100%	9
8	100%	8	16	100%	16	12	100%	12	18	100%	18
12	100%	12	24	100%	24	18	100%	18	27	100%	27
16	100%	16	32	100%	32	24	100%	24	36	100%	36
20	100%	20	40	100%	40	30	100%	30	45	100%	45

Note. See notes of Appendix B_1.

Appendix B_3

Study 2: Negotiators' Negotiation Overviews (high size & small range)

Party A

	Issue 1			Issue 2			Issue 3			Issue 4		
	Value	%	EV	Value	%	EV	Value	%	EV	Value	%	EV
risky subset	67	60%	40	30	67%	20	73	62%	45	44	68%	30
	51	63%	32	23	69%	16	56	64%	36	34	71%	24
	36	66%	24	17	71%	12	41	66%	27	24	74%	18
	23	69%	16	11	73%	8	26	68%	18	16	77%	12
	11	72%	8	5	75%	4	13	70%	9	8	80%	6
	Issue 5			**Issue 6**			**Issue 7**			**Issue 8**		
	Value	%	EV	Value	%	EV	Value	%	EV	Value	%	EV
certain subset	40	100%	40	20	100%	20	45	100%	45	30	100%	30
	32	100%	32	16	100%	16	36	100%	36	24	100%	24
	24	100%	24	12	100%	12	27	100%	27	18	100%	18
	16	100%	16	8	100%	8	18	100%	18	12	100%	12
	8	100%	8	4	100%	4	9	100%	9	6	100%	6

Party B

	Issue 1			Issue 2			Issue 3			Issue 4		
	Value	%	EV	Value	%	EV	Value	%	EV	Value	%	EV
risky subset	5	75%	4	11	72%	8	8	80%	6	13	70%	9
	11	73%	8	23	69%	16	16	77%	12	26	68%	18
	17	71%	12	36	66%	24	24	74%	18	41	66%	27
	23	69%	16	51	63%	32	34	71%	24	56	64%	36
	30	67%	20	67	60%	40	44	68%	30	73	62%	45
	Issue 5			**Issue 6**			**Issue 7**			**Issue 8**		
	Value	%	EV	Value	%	EV	Value	%	EV	Value	%	EV
certain subset	4	100%	4	8	100%	8	6	100%	6	9	100%	9
	8	100%	8	16	100%	16	12	100%	12	18	100%	18
	12	100%	12	24	100%	24	18	100%	18	27	100%	27
	16	100%	16	32	100%	32	24	100%	24	36	100%	36
	20	100%	20	40	100%	40	30	100%	30	45	100%	45

Note. See notes of Appendix B_1.

Appendix B_4

Study 2: Negotiators' Negotiation Overviews (high size & broad range)

Party A

	Issue 1			Issue 2			Issue 3			Issue 4		
	Value	%	EV	Value	%	EV	Value	%	EV	Value	%	EV
risky subset	80	50%	40	31	64%	20	83	54%	45	45	66%	30
	57	56%	32	24	68%	16	62	58%	36	33	72%	24
	39	62%	24	17	72%	12	44	62%	27	23	78%	18
	24	68%	16	11	76%	8	27	66%	18	14	84%	12
	11	74%	8	5	80%	4	13	70%	9	7	90%	6
	Issue 5			**Issue 6**			**Issue 7**			**Issue 8**		
	Value	%	EV	Value	%	EV	Value	%	EV	Value	%	EV
certain subset	40	100%	40	20	100%	20	45	100%	45	30	100%	30
	32	100%	32	16	100%	16	36	100%	36	24	100%	24
	24	100%	24	12	100%	12	27	100%	27	18	100%	18
	16	100%	16	8	100%	8	18	100%	18	12	100%	12
	8	100%	8	4	100%	4	9	100%	9	6	100%	6

Party B

	Issue 1			Issue 2			Issue 3			Issue 4		
	Value	%	EV	Value	%	EV	Value	%	EV	Value	%	EV
risky subset	5	80%	4	11	74%	8	7	90%	6	13	70%	9
	11	76%	8	24	68%	16	14	84%	12	27	66%	18
	17	72%	12	39	62%	24	23	78%	18	44	62%	27
	24	68%	16	57	56%	32	33	72%	24	62	58%	36
	31	64%	20	80	50%	40	45	66%	30	83	54%	45
	Issue 5			**Issue 6**			**Issue 7**			**Issue 8**		
	Value	%	EV	Value	%	EV	Value	%	EV	Value	%	EV
certain subset	4	100%	4	8	100%	8	6	100%	6	9	100%	9
	8	100%	8	16	100%	16	12	100%	12	18	100%	18
	12	100%	12	24	100%	24	18	100%	18	27	100%	27
	16	100%	16	32	100%	32	24	100%	24	36	100%	36
	20	100%	20	40	100%	40	30	100%	30	45	100%	45

Note. See notes of Appendix B_1.

Appendix C

Study 2: First Offer Uncertain Outcomes Repeated Measures ANOVA

Effect	*df*	*F*	*p*	η_p^2
% size	1	0.69	0.408	
% range	1	7.61	**0.007**	0.061
negotiator	1	2.39	0.125	
% size * % range	1	1.13	0.289	
% size * negotiator	1	2.13	0.147	
% range * negotiator	1	1.12	0.293	
% size * % range * negotiator	1	0.00	0.963	

Note. A 2 (probability size: high vs. low) x 2 (probability range: small vs. large) x 2 (negotiator: a vs. b) repeated measures ANOVA (with the negotiator factor being repeated) was run to test whether individuals' uncertain outcomes based on their first offers differ depending on the probability *size* and *range* conditions. η_p^2 represents the partial eta squared.

Chapter 5: Balancing Intra-Constituency Outcome Conflicts in Representative Negotiations

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Abstract

In organizational negotiations, representatives must often balance an intra-constituency conflict behind the negotiation table while negotiating an agreement with another party across the table. Here, we address how representatives balance intra-constituency conflicts in three non-interactive online-facilitated and two interactive-integrative face-to-face negotiation experiments (total N = 1269). We focused on intra-constituency conflicts regarding time preferences, where one constituency subgroup advocates for negotiation outcomes that are immediately beneficial to the current constituency and another constituency subgroup for outcomes that are beneficial for the future of their organization. In a non-interactive bargaining context, representatives weigh the interests of the immediate benefits subgroup heavier than those of the future benefits subgroup (S1a, S1b). However, in a sustainability negotiation context that emphasizes the importance of future interests, this preference switches (S3). Once representatives engage in interactive negotiations with their counterparts, the constituency subgroups' outcomes primarily depend on the conflict constellation with the other party (S2, S4). Put differently, representatives focus on reaching integrative win-win agreements with the other party and do not systematically prioritize the interests of one subgroup over the other. Still, highest quality agreements are reached when such win-win agreements can be achieved through an internal prioritization of the immediate, rather than the future benefits subgroup. We discuss implications of our findings for representative negotiations on intra- and inter-organizational conflicts.

Keywords: representative negotiation, divided constituency, future-oriented decision-making, self-interest, sustainability

Negotiations are a pervasive tool for interdependent parties to resolve conflict, plan for the future, and reduce chances of future conflict (e.g., Majer et al., 2021). To coordinate interests of different groups and group members, representatives are sent to the table to negotiate on behalf of their organizations and respective constituencies (De Dreu, 2010; Pruitt & Carnevale, 1993). These representatives often face constituencies with divergent opinions on the negotiation strategy or desired outcome, presenting a major challenge (e.g., Aaldering & De Dreu, 2012; Halevy, 2008): Representatives must balance the conflicting interests of constituency factions *behind* the negotiation table (i.e., intra-constituency conflict), as well as resolve the conflict of interest with their negotiation counterpart(s) *across* the table to reach an agreement that both their constituents and the other party will accept.

Whereas research has shown how representatives respond to conflicting *motivational orientations* within their constituency (cooperative vs. competitive approaches: e.g., Aaldering & De Dreu, 2012; ethical vs. unethical negotiation strategies: Aaldering et al., 2020), little is known about how they balance conflicting preferences for negotiation *outcomes* among constituency subgroups—although managing such divergent outcome preferences is one of the most frequent and challenging tasks of representatives in organizational settings (e.g., Halevy, 2008). While intra-constituency conflicts about outcomes can be manifold, they often arise in time-sensitive contexts where different factions differently prioritize short versus long-term outcomes (e.g., Van Lange et al., 2013). For example, within an organization, one constituency faction may prioritize securing profits in the short term, while another faction advocates for investing resources in sustainable development that could benefit the organization in the long run. This inherent time perspective in organizational negotiations makes representatives' careful reconciliation of intra-constituency conflicts crucial for reaching agreements that satisfy all parties involved, enable strategic organizational transformations, and facilitate long-term organizational success (e.g., Bogacki & Letmathe, 2021; Wade-Benzoni, 1999). By contrast, failure to resolve such intra-constituency conflicts may threaten the inner peace of an organization.

The present work investigates (1) how representatives weigh the interests of a constituency subgroup favoring immediate benefits and the interests of a constituency subgroup favoring benefits for the future when preparing negotiation proposals in a non-interactive bargaining context, and (2) how negotiating with an actual negotiation counterpart affects representatives' reconciliation of the intra-constituency conflict in interactive-integrative negotiations.

Our work contributes to the fields of negotiations and decision making in several ways: (1) We enhance understanding of decision-making in resolving intra-constituency conflicts, offering new insights into how representatives balance and trade-off interests behind and across the negotiation table. (2) Our work integrates social dilemmas and negotiation research to tackle the complex but inevitable challenge of managing time-related conflicts in organizational negotiations. (3) Addressing how group dynamics may help or hinder mutually beneficial agreements in representative negotiations, our research sets the stage for helping organizations to improve negotiation outcomes and long-term success.

Challenge in Representative Negotiations: Navigating Conflicts Behind the Table

Representative negotiators are in a challenging position, as they have to advocate for the interests of their constituency which is often divided in goals and interests (Demoulin & De Dreu, 2010; Druckman, 2015; Halevy, 2008) whilst trying to negotiate an acceptable agreement with other negotiation parties (e.g., De Dreu, 2010; Druckman, 1994; Luvison & Cummings, 2017). Previous research on representative negotiations with divided constituencies focused solely on constituents' diverging preferences for the representatives' negotiation strategy (Aaldering & De Dreu, 2012; Aaldering & Kopelman, 2022; Aaldering & Ten Velden, 2018; Steinel et al., 2009) whilst assuming all constituency groups had aligned interests with respect to the negotiation outcome. Such research has thus concentrated on intra-constituency conflicts about the *approach* of representative negotiations, but never investigated the role of intra-constituency conflicts of interests about the actual *outcomes* of these negotiations. As opposed to conflicts on the motivational or strategic approach to a negotiation, conflicts about the preferred negotiation outcomes within a constituency reflect fundamental conflicts of interest, which add another level of complexity to representatives' challenge of reconciling different interests behind and across the negotiation table.

Intra-Constituency Conflicts Involving a Time Perspective

Within organizations, conflicting interests about the desired outcomes of negotiations can come in various forms (e.g., conflicts about investments in one business domain or another, conflicts about human resources allocated to one department or another). However, among the most critical, relevant, and challenging conflicts are intra-organizational conflicts of interests

that involve different outcomes across time (e.g., within organization budget allocation focused on current challenges vs. sustainability transformation).

The time perspective at the core of many organizational negotiations (e.g., negotiating multi-year supply agreements in B2B negotiations or longer-term tariff contracts in labor-union negotiations) requires representatives to balance constituents' interests for both maximized immediate outcomes and optimized outcomes for the future (Van Lange et al., 2013). Balancing such diverging constituency preferences requires trade-offs between immediate benefits and future-oriented rewards, with the latter inherently involving higher levels of uncertainty, potentially benefitting other people in the future (rather than oneself), and often requiring costly contributions in the present (e.g., Bogacki & Letmathe, 2021; Hauser et al., 2014; Wade-Benzoni, 1999). While some constituents may advocate for maximizing immediate benefits (e.g., pay out company profits as employee bonuses), others may opt for strategic contributions to the future and prefer maximizing benefits for the future (e.g., invest company profits in energy-saving technology). Since representatives commonly are equally accountable to all subgroups of their constituency, it is important to understand how representatives balance such opposing outcome preferences within their constituency.

Decision-Making in Conflicts of Interests Across Time

Although the existing literature has not investigated representatives' decision-making in negotiations with intra-constituency conflicts, research on social and intergenerational dilemmas has shed first light on how individual decision-makers balance conflicting interests across time. This research suggests that individual decision-makers behave in favor of their immediate (self-) interests, at the expense of more beneficial, collective long-term benefits (e.g., Fischer et al., 2004; Hauser et al., 2014; for a review, see Van Lange et al., 2013). However, these dilemmas crucially differ from the intra-constituency conflicts representatives face. While intergenerational dilemmas involve other beneficiaries in the future and costly contributions, they typically treat future benefits as the interest of distant generations who lack a voice in current decision-making (e.g., Aaldering et al., 2024; Hauser et al., 2014; Shahen et al., 2021; Wade-Benzoni & Tost, 2009). Representatives, by contrast, must navigate conflicting time preferences among equally important constituency subgroups, each actively advocating for their interests in the negotiation, and placing equal accountability pressure on the representatives. Hence, not the representatives' time preferences, but their ability to deal with different time preferences of their constituency, is central.

Balancing Intra-Constituency Conflict on Immediate and Future Benefits

How representatives manage such a divided constituency is hard to predict. It is conceivable that representatives will weigh immediate interests and the interests of the future in a balanced way, given that they must represent both interests on behalf of part of their current constituency. Moreover, active representation of the interests of the future can lead to relative or even absolute better outcomes for the future (e.g., Bogacki & Letmathe, 2021; Kamijo et al., 2017) suggesting that representatives might even weigh future interests heavier than immediate interests within a divided constituency.

However, it is equally or more conceivable that representatives would prioritize immediate over future interests, even when part of their constituency favors future benefits. Firstly, focusing on immediate interests is in fact not just benefitting the constituents who advocate for their immediate interests. After all, realizing immediate benefits would accrue to all constituency members—also to the subgroup that prefers a future-focused approach. Further, immediate benefits might also accrue to the representatives themselves, and therefore be more in line with their personal interests, swaying their decision-making this direction. And finally, immediate benefits are more proximal, both mentally and objectively, than future benefits, likely leading to present-focused decision-making (e.g., Frederick et al., 2002). Research indeed suggests that organizational decision makers often aim to maximize immediate outcomes rather than recognize that investing in the future might be in the organization's best long-term interest (Bogacki & Letmathe, 2021; Wade-Benzoni, 1999). Consequently, we hypothesize that representatives will put more weight to the interests of their constituents who prioritize immediate benefits (immediate benefits subgroup: IBS) than to those who advocate for future-oriented benefits (future benefits subgroup: FBS).

H1: Representatives weigh the interests of their IBS heavier than the interests of their FBS.

Balancing Conflicts Behind the Table While Dealing with Conflict Across the Table

Importantly, resolving intra-constituency conflicts in organizational settings is often embedded in social conflicts that go beyond the organizations' boundaries and require resolution with other parties via negotiations (Druckman, 2015; Walton & McKersie, 1965). Via negotiations, parties can jointly create value through a mutual exploration of their interests and priorities, facilitating integrative, win-win agreements (i.e., agreements that let both parties

better off than compromise solutions, Bazerman et al., 2000; Pruitt & Carnevale, 1993). However, doing so is challenging for negotiators who often focus on claiming instead of creating value and overlook opportunities for integrative agreements (e.g., Bazerman et al., 1985; Pruitt & Rubin, 1986). This is particularly the case for negotiators in the role of representatives who need to defend the interests of their constituency— a need that leads them to negotiate in a competitive and non-conciliatory way, rather than one focusing on creating value (e.g., Aaldering & Kopelman, 2022; De Dreu et al., 2014; Trötschel et al., 2010).

When representatives face both intra-constituency conflict and a conflict of interest with their negotiation counterpart, the interests of one but not the other constituency subgroup may allow for integrative agreements with the negotiation counterpart. In other words, depending on the conflict constellation with the counterpart, integrative agreements might require representatives to concede on the interests of the immediate benefits subgroup (IBS) and remaining firm on the interests of the future benefits subgroup (FBS). Or, vice versa, representatives may have to give in on the interests of FBS while holding on to the interests of IBS to reach an integrative agreement with the counterpart.

Building on H1, we predict that in negotiations with a counterpart, representatives will continue to focus on and will be more resistant to concede on the interests of the IBS, at the expense of the interests of the FBS. When the integrative conflict with the counterpart can be resolved through advocating for the IBS while conceding on the FBS, we predict that higher quality agreements between negotiators will be reached. Vice versa, we propose that representatives will create less value and explore less of the integrative potential with their counterpart when integrative agreements can only be reached at the cost of IBS, namely by conceding on the interests of IBS and advocating for the interests of FBS.

H2: Representatives reach more integrative agreements when integrative potential can be realized by pursuing the interests of IBS (and conceding on FBS' interests) than vice versa.

Contextual Importance of Future Outcomes

Whereas we generally predict that representatives will prioritize the interests of IBS over those of FBS, it is possible that specific contextual factors lead to a greater emphasis on the interests of FBS. In particular, there may be conflict scenarios where the interests of the future are especially salient or important, thereby receiving greater contextual significance and more weight than in other contexts (e.g., Barrett & Dannenberg, 2012; Milinski et al., 2006). For instance, in light of global challenges such as climate crisis, organizations increasingly

commit to transformations toward sustainability and recognize their role in providing for the(ir) future (e.g., Müller & Pfleger, 2014). Organizational sustainability transformations are thus decision contexts where the interests of the future are inherently salient and people are committed to do "the right thing, even though such actions may be somewhat less convenient or more costly" (Steg et al., 2014, p. 105). Consequently, in the presence of a sustainability conflict, representatives may perceive that advocating for the interests of FBS is the right thing to do, and no longer favor IBS over FBS. In fact, they may even favor FBS over IBS- because the interests of the future carry psychologically more weight in this context. This will be investigated exploratively.

The Current Research

In two online-facilitated, non-interactive scenario studies S1a and S1b, we start with investigating how representatives balance conflicting constituency interests with respect to immediate vs. future benefits by examining their decisions in terms of negotiation proposals, testing Hypothesis 1. We implement different context conditions where the representatives have (S1a) or do not have (S1b) own interests in the negotiation with respect to immediate benefits. As mentioned before, representatives' personal interests may decisively affect their weighing of subgroup interests. In a subsequent interactive, face-to-face, laboratory negotiation experiment (S2), we investigate how negotiating a conflict with another party influences representatives' balancing of subgroup interests behind the table, testing Hypothesis 2. We further explore whether representatives' self-interest impacts their subgroup weighing in the interactive decision-making context. Finally, in the non-interactive S3 and interactive S4, we implement a sustainability decision-making context with high salience of the future and explore whether and how such a context shapes representatives' balancing of their subgroups' interests behind and across the table[26].

Studies 1a and 1b

The primary task of a representative in a negotiation is to advocate for and reach agreements in line with the interests of their constituency. However, in organizational settings, representatives are often personally involved in negotiations and may benefit more from some

[26] The order of studies as presented in this manuscript deviates from the order of study conduction. The original order of conduction was S3, S2, S1a & S1b, S4.

outcomes than others (e.g., Aaldering et al., 2013). Specifically, they may personally benefit from immediate outcomes, but not from outcomes that only materialize in the future. Whether or not representatives have own interests in line with the interests of the IBS in the negotiation might affect how they balance the intra-constituency conflict between IBS and FBS.

We conducted two initial online scenario studies S1a and S1b to test H1 in two contexts that imply different levels of self-interest of representatives (i.e., S1a: high self-interest as political delegates aiming for re-election vs. S1b: no self-interest as work council representatives who are not affected by the negotiation outcomes). S1a served to examine how representatives balance intra-constituency conflicts in a more realistic decision-making context where they have a personal interest in maximizing immediate benefits. S1b investigated to what extent representatives' weighing of subgroup interests generalizes to contexts without personal involvement, where self-interest cannot explain their behavior [27].

Study 1a

Method

Participants and Design

Study 1a followed a 1 × 2 (outcomes of constituency groups: IBS vs. FBS) within-factorial design. Based on an a-priori power analysis (Faul et al., 2007) for a medium-sized within-subject two-tailed difference in means effect ($d = 0.50$) with a power of $1\text{-}\beta = 0.95$, we recruited 85 participants via the online platform Prolific (a minimum of $N = 54$ participants was required; for more info, see preregistration). One participant was removed from the data because of a failed attention check. The final sample ($N = 84$) included 57.1% males and 42.9% females from 20 countries across the world (e.g., 22.6% South Africa, 11.9% UK, 11.9% Poland), on average 30.91 ($SD = 11.48$) years old. About a quarter of participants had a high school degree (27.4%), about half a college or undergraduate degree (53.6%), 16.7% a graduate degree, and 2.4% a doctoral degree as highest educational degree.

[27] Studies 1a and 1b were initially pre-registered as one 2 (outcomes of constituency groups: IBS vs. FBS) x2 (self-interest: yes vs. no) study with repeated measures on the first factor, see https://aspredicted.org/TT5_JSL. Since we triggered representatives' self-interest indirectly through the negotiation context, we may have inadvertently manipulated more than self-interest (e.g., the perceived importance or relevance of the decision, differing personal preferences about the suggested projects in the business vs. political context, etc.). We therefore decided to report both experimental self-interest conditions independently as sub-studies S1a and S1b to avoid conclusions which might be driven by confounding factors.

Procedure

Upon indicating informed consent[28], participants were asked to imagine themselves as political delegates representing citizens' interests in a negotiation with another delegate from the city council. The negotiation was about the implementation of government-funded projects in three areas (i.e., Healthcare, Entrepreneurship, Infrastructure). In each area, six projects were suggested, of which one could be implemented. The representatives had to propose one project for each area to the other party, on behalf of their constituents (citizens).

The representatives learned from an alleged voters' poll that the citizens were split into two equally sized groups with opposing preferences about which projects should be implemented. One group advocated for projects that would lead to immediate benefits for the current citizens (IBS). The other group advocated for longer-term projects that would not pay off immediately but might benefit future citizens (FBS). Representatives were informed that their re-election would depend on the voter support from both citizen groups. The better the interests of one group were represented, the higher the number of prospective voters from that same group would be (for interest table, see Table 1). Representatives were explicitly told that their task was to represent the interests of all citizens as good as possible, but that they also wanted to be re-elected. Thus, representatives' decisions affected the outcomes for IBS and FBS but also their own interest of attracting voters for the re-election.

We operationalized the specific interests of IBS and FBS in a slightly asymmetric way, mirroring the reality in two ways: i) there is larger uncertainty on whether future benefits will indeed yield the expected value and ii) the immediate benefits accrue to the members of both subgroups, whereas the future benefits do not. In the statistical analyses, we controlled for this asymmetry (see 'Measures').

After representatives made a proposal for one project in each area to their counterpart, they filled out a post-questionnaire (see 'Measures') and were thanked, debriefed and paid.

[28] Before the research there was an ethical self-evaluation which led to the conclusion that the line of studies complies with the ethical guidelines of the university where it was conducted.

Table 1. *Study 1a: An Example of the Interests of IBS and FBS in the Political Context.*

Project: Healthcare	**Prospective Voters of Each Community Group if Project Is Implemented (from 0%-100%):**	
	IBS	**FBS**
Project 1: 100% Focus on Expanding Ambulatory Care for Senior Citizens	90%	20%
Project 2: 80% Ambulatory Care / 20% Retirement Home	74%	32%
Project 3: 60% Ambulatory Care / 40% Retirement Home	58%	44%
Project 4: 40% Ambulatory Care / 60% Retirement Home	42%	56%
Project 5: 20% Ambulatory Care / 80% Retirement Home	26%	68%
Project 6: 100% Focus on Building a New Retirement Home	10%	80%

Note. The table depicts one example of the interests of IBS and FBS for the area Healthcare. The numbers illustrate the percentage of prospective voters for the representatives' re-election from each constituency subgroup, depending on the project representatives propose in the negotiation. We used identical interest structures for the three areas Healthcare, Entrepreneurship, and Infrastructure. For each area, representatives had to propose one project. We counterbalanced the order of presentation of IBS' and FBS' interests for all areas.

Measures

Representation of Subgroup's Interests. We calculated an interest score for each subgroup based on the three projects proposed by the representative. For instance, if the representative chose project 1 for Healthcare (see Table 1), project 2 for Entrepreneurship, and project 3 for Infrastructure, an interest score of (90 + 74 + 58) / 3 = 74 resulted for the IBS and an interest score of (20 + 32 + 44) / 3 = 32 resulted for the FBS.

To control for the inherent asymmetry in IBS' and FBS' interests, we computed a relative interest score for each subgroup that illustrated their outcomes relative to the range of possible outcomes: relative outcome = (achieved outcome for subgroup – minimal possible

outcome for subgroup) / (maximal possible outcome for subgroup – minimal possible outcome for subgroup). Relative outcomes ranged from 0 (interests of the respective subgroup not at all represented) to 1 (interests of the respective subgroup fully represented).

The results reported here and in the following studies are based on these corrected, relative outcomes controlling for the asymmetry in subgroups' interests. Analyses based on absolute outcomes robustly mirror our findings and can be found on OSF (see below).

Self-Interest. Representatives' self-interest was assessed with three items, using a 7-point scale from 1 *strongly disagree* to 7 *strongly agree* (e.g., "Favoring some projects over others helped me enforce my personal interests in this negotiation, Cronbach's $\alpha = .670$).

Demographics and Exploratory Variables. Here and in all subsequent studies, we collected demographic data such as participants' age, sex, ethnicity, nationality, and education. For exploratory purposes, we assessed a variety of additional variables in the post-questionnaire. None of these variables related significantly and consistently to the dependent variables of our studies, hence analyses are not reported.

Results

All analyses for all studies were carried out using IBM SPSS Statistics version 29.0.1.0. Our data sets, syntax, and additional analyses are publicly available at OSF, https://osf.io/sq75a/?view_only=c6a73c26959545e49586a8765f57f16b.

Representation of Subgroup's Interests

A paired *t*-test on relative subgroup outcomes revealed that in line with H1, representatives weighed the interests of the IBS ($M = 0.65$, $SD = 0.22$) heavier than the interests of the FBS in their negotiation proposals ($M = 0.35$, $SD = 0.22$), $t(83) = 6.19$, $p < .001$, $g = .68$, 95%-CI[.43, .90].

Additional Analyses: Self-Interest

Representatives reported high levels of self-interest ($M = 4.93$, $SD = 1.23$), which were significantly above the scale mean of 4.00, $t(83) = 6.90$, $p < .001$, $g = .75$, 95%-CI[.50, .99], indicating that the context-based induction of self-interest was successful. Representatives' self-interest significantly predicted negotiation proposals in favor of the interests of IBS,

$F(1,82) = 5.25$, $p = .025$, $R^2_{adj} = .05$: Higher levels of self-interest predicted superior outcomes for the IBS ($B = 6.04$, $SE = 2.64$).

Study 1b

Method

Participants and Design

Study 1b followed the same 1 × 2 (outcomes of constituency groups: IBS vs. FBS) within-factorial design as S1a. We recruited 96 participants via Prolific, of which nine were removed from the data because of failed attention checks. The final sample ($N = 87$) comprised 55.2% male and 42.5% female participants (2 missing values) from 16 countries (e.g., 18.4% Poland, 17.2% South Africa, 13.8% Portugal), with a mean age of 32.41 ($SD = 11.97$) years (2 missing values). As highest degree, 23% had a high school degree, 47.1% an undergraduate or college degree, and 27.6% a graduate degree (2.3% did not answer).

Procedure

S1b differed from S1a in two ways. Firstly, participants were asked to imagine being a works council member representing the divided interests of an organization's employees in a negotiation with the management about strategy changes in three business areas (Market Expansion, Marketing Strategy, Production): a business rather than a political context. The interests of the employee subgroups were presented as results of an (alleged) employee survey along the same lines as in Study 1a, see Table 2. Secondly, representatives were explicitly told that their only task was to represent the interests of the employee groups as good as possible and that they themselves would in no way be affected by their decision or the negotiation outcome, excluding the possibility of self-interested representatives. The task (i.e., making a negotiation proposal by choosing one out of six proposed projects for each business area), procedure, and measures used were identical to S1a.

Table 2. *Study 1b: An Example of the Interests of IBS and FBS in the Business Context.*

Project: Market Expansion	**Satisfaction of Each Employee Group if Project Is Implemented (on a Scale from 0-100):**	
	IBS	**FBS**
Project 1: 100% focus on Europe	90	20
Project 2: 80% Europe / 20% Asia	74	32
Project 3: 60% Europe / 40% Asia	58	44
Project 4: 40% Europe / 60% Asia	42	56
Project 5: 20% Europe / 80% Asia	26	68
Project 6: 100% focus on Asia	10	80

Note. The table depicts an example of the interests of IBS and FBS for the area Market Expansion. The numbers represent the subgroups' average answers in the alleged employee survey on a scale from 0 "[implementing this project] does not consider our interests at all" to 100 "[implementing this project] considers our interests very strongly". We used identical interest structures for the three areas Market Expansion, Marketing Strategy, and Production. For each area, representatives had to propose one project. We counterbalanced the order of presentation of the interests of IBS and FBS for all areas.

Results

Representation of Subgroup's Interests

Supporting H1 and validating S1a, representatives again weighed the interests of the IBS ($M = 0.58$, $SD = 0.17$) more heavily in their negotiation proposal than the interests of the FBS ($M = 0.42$, $SD = 0.17$), $t(86) = 4.33$, $p < .001$, $g = .46$, 95%-CI[.24, .68].[29]

Additional Analyses: Self-Interest

Representatives' self-interest levels ($M = 4.10$, $SD = 1.28$) did not significantly deviate from the neutral scale mean of 4.00, $t(86) = .73$, $p = .469$, $g = .08$, 95%-CI[-.13, .29]:

[29] We conducted another pre-registered Study 1c ($N = 88$) which was identical to S1b and replicated the results (for pre-registration, see https://aspredicted.org/GD3_G1L; for the study description and analyses, see OSF).

Representatives did not perceive heightened self-interest. Moreover, self-interest was unrelated to representatives' negotiation proposals and did not significantly, as opposed to in S1a, predict proposals in favor of the interests of IBS, $F(1,85) = 3.02$, $p = .086$, $R^2_{adj} = .02$.

Discussion Study 1a and Study 1b and Introduction to Study 2

In line with H1, S1a and S1b show that representatives assign more weight to the interests of IBS than to the interests of FBS. Importantly, their tendency to favor IBS occurred regardless of whether representatives had personal interest in optimizing immediate outcomes.

The first two studies provide insights into representatives' handling of intra-constituency conflict *behind* the table, but do not yet examine how representatives handle such conflicts when they have to interact with a negotiation counterpart *across* the table. The presence and interests of a counterpart conceivably limit the representatives' degrees of freedom in resolving internal conflicts related to negotiation outcomes. Will representatives still favor IBS over FBS during actual negotiations?

The objective of S2 is to examine how representatives handle opposing subgroup preferences in negotiations where successful conflict resolution with the counterpart necessitates integrative agreements, even when these solutions contradict the preferences of IBS (or FBS). We address this question by manipulating two conflict constellations in an interactive negotiation setting: One, where integrative conflict solutions with the counterpart open up when representatives prioritize the outcomes advocated for by IBS in the negotiation, and another one, where such integrative solutions open up when representatives prioritize the outcomes advocated for by FBS. Based on our present findings, we expected that representatives continue to focus on the interests of IBS over FBS (H1), and therefore also achieve better integrative agreements with their negotiation counterparts when integrative conflict solutions between the parties align with the interests of IBS and not with FBS (H2).

For a cleaner examination of the potential impact of representatives' self-interest on their decision-making, we manipulated self-interest while keeping the negotiation context constant and explored whether self-interest moderated negotiation outcomes.

Study 2

Method

Participants and Design

The interactive laboratory Study 2 (https://aspredicted.org/8DG_FSD) followed a 2 (conflict constellation: integrative between IBS while distributive between FBS and counterpart vs. integrative between FBS while distributive between IBS and counterpart) × 2 (self-interest: yes vs. no) between-factor design. A priori power analysis indicated a need for $N = 128$ dyads for the study (G*Power, two-way ANOVA main effects and interactions, four groups, effect size $f = 0.25$, $\alpha = .05$, power $1\text{-}\beta = 0.80$). To anticipate on possible exclusions, we collected 132 dyads (students at a North-Western European university). The final sample ($N = 264$) was 29.6% male, 66.3% female, 2.7% did not identify as male or female, and 1.1% did not indicate their gender. The mean age was 22.07 ($SD = 2.44$) years.[30]

Procedure and Experimental Variables

Upon arrival in the laboratory, participants were randomly paired into negotiation dyads, signed informed consent, and received task instructions about representing a start-up organization negotiating the distribution of funds with another organization. The funding package provided eight sub-budgets to advance different business areas within each organization (e.g., Technology, Marketing, Production, Recruitment, etc.). Four business areas provided immediate benefits for the constituency of current employees, while the other four were long-term investments benefiting future employees. For each business area, dyads had to jointly agree on one of six funding distribution options (i.e., agreement options A-F).

Representatives then learned about the interests of their divided constituency (Appendix A, Table 1a and 1b). The two constituency subgroups IBS and FBS had opposing priorities regarding which business areas to fund. Representatives received both interest tables (Table 1a for IBS and Table 1b for FBS) for reference during the negotiation. The order of presentation of each subgroup's interests was counterbalanced between dyads. We only manipulated the divided constituency for one person in the dyad, the representative.

[30] We pre-registered strict exclusion criteria (a dyad must be excluded from the analyses as soon as one party failed at least one out of three questions related to the instructions). We ran all analyses based on these exclusion criteria (excluding 28 dyads from the analyses) as well as using the full sample. All findings were robust regardless of the used sample. We therefore chose to report the results based on the entire sample.

Conflict Constellation. The conflict between representatives and their counterpart either led to an integrative conflict of interest between IBS and the counterpart (while the conflict between FBS and the counterpart was distributive, Table 2a, see Appendix A), or vice versa (integrative between FBS and the counterpart, distributive between IBS and the counterpart; Table 2b, see Appendix A). Depending on the experimental condition (i.e., conflict constellation), the *counterparts* received either Table 2a *or* Table 2b for the negotiation. Importantly, the payoff structure was kept symmetric between conditions, with the same optimal (i.e., 874 points) and lowest (i.e., 647 points) joint outcome dyads can achieve.

Self-Interest. Representatives' self-interest was manipulated by varying their role descriptions. Participants either read that they needed to be re-elected as employee representative to avoid losing their jobs or learned that re-election was not relevant to them because they had a job offer elsewhere and would leave after finishing this last negotiation.

After noting a first negotiation proposal, parties negotiated face-to-face for up to 25 minutes. They then indicated their agreement and completed a post-questionnaire before being thanked, paid (€10 or partial course fulfillment), and debriefed.

Measures

Self-Interest. We measured representatives' experienced self-interest using the same three items as in S1a (Cronbach's $\alpha = .48$).

Representation of Subgroup's Interests. To examine H1 in the current interactive context, we summed up the outcomes for each subgroup on all eight negotiation issues (i.e., business areas). We controlled for the asymmetry in IBS' and FBS' interests and only report the corrected relative outcomes.

Realization of Integrative Potential. To examine H2, we additionally analyzed the realization of integrative potential between the representative and their counterpart: The joint outcomes of the integrative conflict based on all eight negotiation issues (i.e., outcomes of the constituency subgroup with integrative conflict of interest with the counterpart + outcomes of counterpart). The outcomes of the constituency subgroup that had the distributive conflict of interest with the counterpart were not considered, because they did not provide information on parties' realization of integrative potential.

Results

Experienced Self-Interest

Participants in the self-interest condition (M = 5.59, SD = 0.95) reported higher levels of self-interest than participants in the no self-interest condition (M = 3.87, SD = 1.15), $t(261) = 13.21$, $p < .001$, g = 1.62, 95%-CI[1.34, 1.90], supporting the manipulation of self-interest.

Representation of Subgroup's Interest in Negotiation Outcomes

A 2 (outcomes of subgroups: IBS vs. FBS) × 2 (conflict constellation) × 2 (self-interest: yes vs. no) mixed-factorial ANOVA with repeated measures on the first factor showed a main effect of subgroup outcomes in favor of IBS over FBS (M_{IBS} = 0.55, SD_{IBS} = 0.11; M_{FBS} = 0.51, SD_{FBS} = 0.14), $F(1,126) = 19.04$, $p < .001$, $\eta_p^2 = .13$, in line with H1. However, this main effect was qualified by a cross-over interaction effect of conflict constellation and subgroup outcomes, $F(1,126) = 252.88$; $p < .001$, $\eta_p^2 = .67$. Simple effect analyses showed that whereas representatives reached higher outcomes for their IBS than their FBS when the integrative potential laid between IBS and the counterpart, $F(1,126) = 124.14$, $p < .001$, $\eta_p^2 = .50$, they also reached higher outcomes for their FBS (than IBS) when the integrative potential laid between FBS and the counterpart, $F(1,126) = 61.29$, $p < .001$, $\eta_p^2 = .33$. Since representatives did not systematically prioritize IBS over FBS in the negotiation agreements, our findings do not fully support H1[31].

The manipulation of representatives' self-interest had no main effect on subgroup outcomes overall, $F(1,126) = 0.90$; $p = .344$, $\eta_p^2 = .01$, nor did it cause a difference between subgroup outcomes, $F(1,126) = 2.85$; $p = .094$, $\eta_p^2 = .02$.

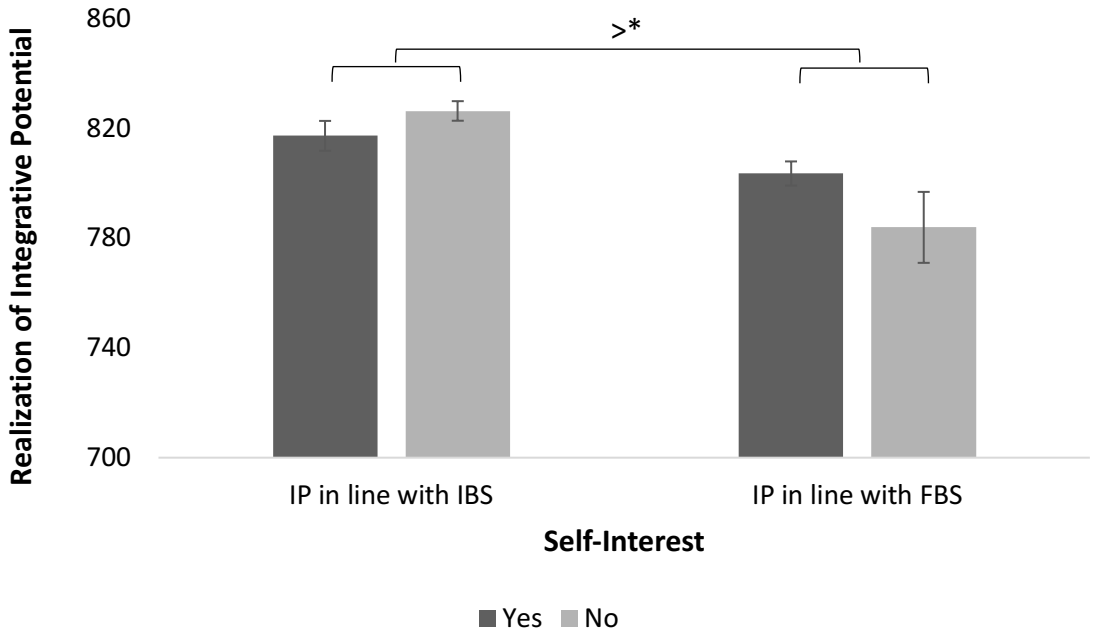
Realization of Integrative Potential by Dyads

A 2 (conflict constellation) × 2 (self-interest) between-factor ANOVA on the dyadic realization of integrative potential showed support for H2: Negotiation dyads realized more integrative potential when the integrative conflict was between the IBS and the counterpart (M = 822.00, SD = 25.88) than when it was between the FBS and the counterpart (M = 793.97, SD = 55.78), $F(1,126) = 13.51$; $p < .001$, $\eta_p^2 = .10$ (Figure 1). The realization of integrative potential was not affected by negotiators' self-interest (no main effect of self-interest: M_{self-}

[31] The analyses of subgroup outcomes are based on negotiation agreements. We also analyzed representatives' first negotiation proposals (as in S1a and S1b). Findings fully replicated H1 and can be found on OSF.

$_{interest}$ = 810.20, $SD_{self\text{-}interest}$ = 28.64; $M_{no\ self\text{-}interest}$ = 804.91, $SD_{no\ self\text{-}interest}$ = 58.49, $F(1,126)$ = 0.48; p = .491, η_p^2 = .004), and there was no significant interaction effect of conflict constellation and self-interest on realization of integrative potential, $F(1,126) = 3.53$; p = .063, η_p^2 = .03.

Figure 1. *Study 2: Realization of Integrative Potential in Joint Agreements.*



Note. The graph shows parties' joint realization of integrative potential based on their negotiation agreements, depending on the nature of conflict (i.e., integrative potential in line with the priorities of IBS vs. integrative potential in line with the priorities of FBS) and representatives' self-interest (yes vs. no). Error bars represent standard errors.

Discussion Study 2 and Introduction to Study 3

While results in S2 mirror findings of S1a and S1b and validate H1 to the extent that representatives did achieve overall higher outcomes for their IBS than FBS, we also find that their weighing of subgroup interests was fundamentally affected by the presence of a social conflict with a negotiation counterpart. In their negotiation at the table, representatives prioritized whichever subgroup allowed them to reach integrative agreements with their counterpart, signaling that the conflict constellation with the counterpart plays a stronger role than the temporal orientation of the constituency in representatives' weighing of subgroup

interests. However, negotiation dyads reached higher-quality integrative solutions when these were possible through an internal prioritization of IBS (and not FBS). Thus, resolving conflicts with a negotiation counterpart was more successful for the representatives when such conflict resolution was in line with their tendency to prioritize the interests of IBS over FBS, supporting H2.

Despite an effective manipulation, representatives' self-interest did not affect negotiation outcomes. Due to the consistent lack of support for a role of self-interest in balancing the intra-constituency conflict, we omit the manipulation of self-interest in the remaining studies.

Contextual Importance of Future Outcomes

Whether or not representatives prefer to weigh immediate outcomes heavier than future outcomes may depend on outcomes' contextual significance. If so, changes in contextual importance favoring future outcomes may impact representatives' handling of the intra-constituency conflict. For instance in sustainability conflicts, where the interests of the future are assigned great relevance and pursuing these interests is perceived as the right thing to do, even if more costly (Steg et al., 2014).

However, it is important to note that future outcomes are more distant than immediate outcomes, both mentally (i.e., in terms of psychological distance) and experientially (i.e., they materialize later and are less beneficial for current decision-makers or constituents) (e.g., Frederick et al., 2002). In our previous Studies 1a, 1b, and 2, we operationalized mental distance by *telling* representatives in the study instructions that following FBS' interests would benefit the organization only in the future. Simultaneously, we operationalized the experienced distance of future outcomes through asymmetric constituency interest charts, highlighting the larger uncertainty and reduced immediate value of future benefits. In S3, we aimed to disentangle such mental and experienced distance by exploring whether the mental distance of future outcomes alone could prompt representatives to prioritize IBS over FBS (i.e., merely telling participants about the distance of future outcomes), without reinforcing this distance through the constituents' interest charts (i.e., experiential distance).

Taken together, we explored two potential boundary conditions of our present findings in S3: First, whether representatives' preference for the interests of IBS over FBS interests (H1) persists in the presence of a sustainability conflict, where the interests of the future (FBS) are salient and of high contextual importance. And second, whether the effect predicted in H1

persists when the outcomes of the future are only mentally distant, but not experientially (no asymmetry in IBS' and FBS' interests).

Study 3

Method

Participants and Design

The non-interactive online negotiation Study 3 (https://aspredicted.org/3M4_QC1) followed a 2 (outcomes of constituency groups: IBS vs. FBS) × 2 (conflict context: non-sustainable vs. sustainable) × 2 (experiential distance of future outcomes: yes vs. no) mixed-factorial design with repeated measures on the first factor, resulting in four conditions. Via Prolific, we recruited 648 participants (an a priori power analysis with G*power indicated a minimum of 536 participants to detect two-way ANOVA main effects and interactions, with effect size $f = 0.15$, using four groups, $\alpha = .05$, power $1\text{-}\beta = 0.80$) and randomly assigned them to the four conditions. Sixty-two participants were removed from the data due to failed attention checks. The final international sample (N = 586) included 58.2% males and 41.1% females (0.7% missing answers) from 50 countries across the world (e.g., 32.4% UK, 13.0% South Africa, 9.6% Poland). The mean age was 35.12 (SD = 12.58) years. As their highest educational degree, 22.5% indicated a high school degree, 48.3% an undergraduate or college degree, 24.7% a graduate degree, 3.8% a doctoral degree, and 0.7% did not answer.

Procedure and Experimental Variables

The study procedure was identical to S1b with the below exceptions.

Sustainability Conflict versus Non-Sustainability Conflict. We manipulated the conflict representatives faced by varying the negotiation issues (i.e., business areas) and linking them to (non-)sustainability-related decision options. In the sustainability conflict condition, the business areas were Energy Supply (imported oil vs. solar energy), Catering (conventional food vs. organic food), and Products (disposable products vs. recyclable products). The most sustainable project was framed as benefitting the future (but not paying off immediately) and thus in the interest of FBS. The least sustainable project yielded immediate benefits and was thus in the interest of IBS. The non-sustainability conflict condition corresponded to S1b with neutral projects not related to sustainability.

Experiential Distance of Future Outcomes. We further manipulated future outcomes as being either mentally and experientially distant (as in the previous studies) or only mentally distant. We did so by confronting participants either with the previously used task in S1b (manipulating distance of future outcomes in both instructions and through asymmetrical interest charts) or with a completely symmetrical task, where we only told representatives about the distance of future outcomes in the instructions, but did not induce experiential distance within the constituency subgroups' interest charts (see Appendix B).

Measures

Representation of Subgroups' Interests. The representation of IBS's and FBS's interests as relative score served as the main dependent variable.

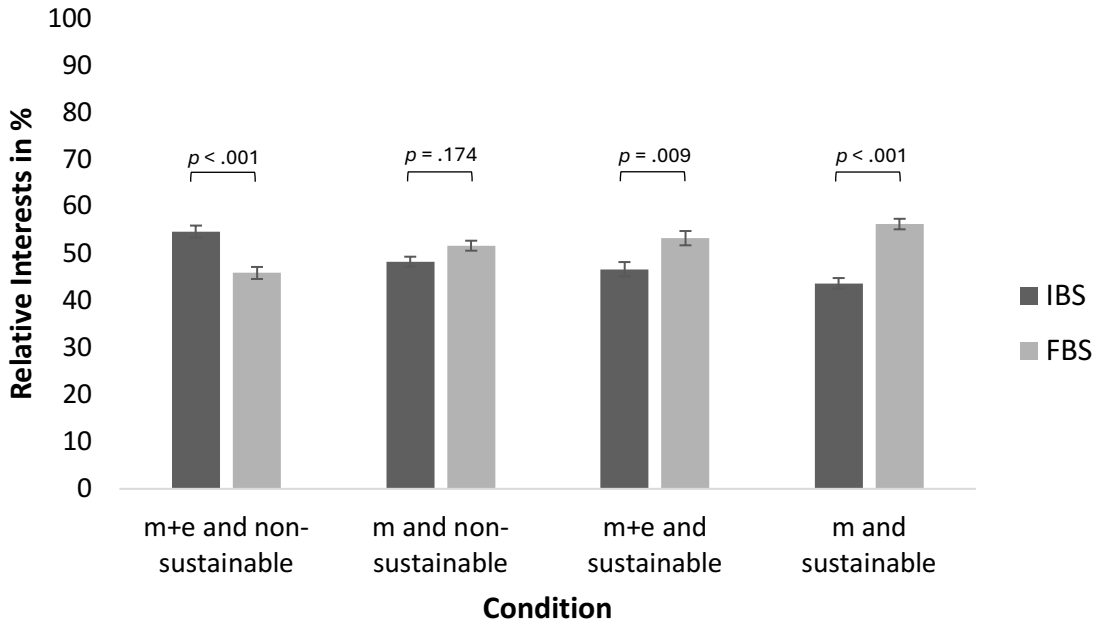
Results

Representation of Subgroup's Interests

A mixed-ANOVA revealed a main effect of subgroup outcomes, $F(1,582) = 8.39$, $p = .004$, $\eta_p^2 = .01$, a two-way interaction of conflict condition on differing subgroup outcomes (i.e., sustainability vs. non-sustainability conflict: $F(1,582 = 22.91$, $p < .001$, $\eta_p^2 = .04$), and a two-way interaction effect of subgroup outcomes and experiential distance of future outcomes on differing subgroup outcomes (i.e., experiential distance vs. no experiential distance: $F(1,582) = 12.17$, $p < .001$, $\eta_p^2 = .02$). The three-way interaction of subgroup outcomes, conflict condition, and distance of future outcomes was not significant, $F(1,582) = 1.31$, $p = .252$, $\eta_p^2 = .002$. Subgroup outcomes are illustrated in Figure 2.

To understand the complex pattern of findings, we conducted MANOVA simple effects analyses comparing the outcomes for the subgroups separately split by experimental conditions. Results revealed a differentiated pattern (see Figure 2 and Table 3): In the non-sustainability conflict where the interests of the future were mentally and experientially distant (i.e., the condition that resembled S1-S2), representatives put more weight to the IBS than to the FBS, in line with H1. However, this effect disappeared when the outcomes of the future were only mentally but not experientially distant. Thus, when the difference between IBS and FBS was only signaled in descriptive words, representatives no longer prioritized IBS over FBS. In the sustainability context where the future outcomes were of greater contextual significance, representatives put *less* weight on IBS than on FBS, regardless of how FBS' future-oriented outcomes were manipulated (i.e., experiential distance).

Figure 2. *Study 3: Representation of Subgroups' Relative Interests in Negotiation Proposals.*



Note. The graph shows the representation of interests of IBS and FBS based on representatives' negotiation proposals split by experimental conditions conflict context (sustainable vs. non-sustainable) and distance of future outcomes (mental and experiential vs. mental only). M+e = mental and experiential distance of the future, m = mental distance only. Error bars represent standard errors.

Table 3. *Study 3: Means, Standard Deviations, and MANOVA Simple Effects Analyses of IBS and FBS Relative Outcomes Based on Representatives' Negotiation Proposals.*

Condition	Relative Outcomes		$F(1,582)$	η_p^2
	IBS *M* (*SD*)	FBS *M* (*SD*)		
non-sustainability (mental and experiential)	0.54 (0.15)	0.46 (0.15)	10.48***	.018
non-sustainability (mental distance only)	0.48 (0.13)	0.52 (0.13)	1.85	.003
sustainability (mental and experiential)	0.47 (0.18)	0.53 (0.18)	6.97**	.012
sustainability (mental distance only)	0.44 (0.14)	0.56 (0.14)	26.61***	.044

Note. The table depicts mean values and (standard deviations) of the outcomes of IBS and FBS based on representatives' negotiation proposals. *** $p < .001$. ** $p = .009$.

Discussion Study 3 and Introduction to Study 4

S3 results corroborate that representatives tend to prioritize IBS over FBS, but also show when this effect is attenuated. First, in a sustainability conflict emphasizing salience and importance of the interests of the future, representatives weighed FBS's interests more heavily than those of IBS. Second, when future outcomes were only mentally but not experientially distant, representatives balanced the interests of IBS and FBS equally.

Our findings suggest that representatives are sensitive to the contextual importance of present and future interests and shift their weighing of subgroup interests in favor of IBS to favoring FBS, when the FBS advocates for the "right thing to do". They further suggest that representatives' decisions are affected by the experienced distance of future outcomes, and words alone (i.e., mental distance only) might not be sufficient to mirror the real-world characteristics of investments into the future.

In a final interactive S4, we investigate whether the attenuating effect of a sustainability conflict holds when representatives actively negotiate with another party. Integrating S2 and S3, we varied the conflict constellation at the negotiation table as in S2 and the conflict context as sustainability vs. non-sustainability conflict as in S3, while sticking to the mental and experiential distance situation as in S2.

Following S2 and S3 results, we predicted that the presence of a sustainability conflict would increase the contextual importance of future interests and attenuate representatives' balancing of subgroup interests such that the previously tested Hypothesis 1 would be reversed: Representatives will weigh the interests of FBS heavier than the interests of IBS (H3). We further expected that a sustainability context would determine the way representatives reach integrative agreements with their negotiation counterpart. In a non-sustainability context, we expected to replicate Hypothesis 2: Representatives reach more integrative agreements when integrative potential can be realized by pursuing the interests of IBS (and conceding on the interests of FBS) than vice versa. In a sustainability context emphasizing the importance of future interests, however, we expected the reverse: Representatives reach more integrative agreements with their counterparts when integrative conflict solutions between the parties align with the interests of FBS and not with IBS (H4).

Study 4

Method

Participants and Design

The interactive laboratory Study 4 (https://aspredicted.org/K7H_2YF) followed a 2 (conflict constellation: integrative between IBS and counterpart vs. integrative between FBS and counterpart) × 2 (conflict context: non-sustainable vs. sustainable) between-factor design. As for S2, $N = 128$ dyads were required for the study and we stopped data collection once 130 dyads (students from a North-Western university) completed the study. We excluded 6 dyads from the analyses because at least one of the parties failed our attention check. The final sample ($N = 248$) consisted of 29.8% male, 67.7% female, and 6 participants who identified as neither male nor female. They were on average 21.93 ($SD = 3.26$) years old.

Procedure and Experimental Variables

Procedure and structure equaled S2 with one exception. Instead of self-interest, we manipulated the conflict context for the representative in both instructions and negotiation issues (i.e., sustainability vs. non-sustainability). Mirroring S3, in the sustainability conflict condition the negotiation issues prioritized by IBS were associated with short-term non-sustainable projects (e.g., Marketing: corporate event on a cruise ship, Recruitment: fly in candidates), whereas the negotiation issues prioritized by FBS were linked to longer-term sustainable projects (e.g., Technology: solar panels on rooftop, Product Development: green tech innovations). In the non-sustainability condition and for the negotiation counterpart, all negotiation issues were neutral, sustainability-unrelated projects, corresponding with S2.

Measures

Manipulation Check: Sustainability Concern. To check whether the manipulation of sustainability context was effective, participants rated three items addressing their consideration of sustainability in their decision-making on a 7-point scale from 1 *strongly disagree* to 7 *strongly agree* (e.g., "During the negotiation, sustainability concerns guided my decision-making"), Cronbach's $\alpha = .88$.

Representation of Subgroup's Interests and Realization of Integrative Potential. Both dependent variables correspond to those in S2.

Results

Manipulation Check

A 2 (conflict context for representative: sustainability vs. non-sustainability) × 2 (role: representative vs. counterpart) ANOVA on representatives' sustainability concern confirmed the manipulation with higher sustainability concern when representatives were facing a sustainability conflict (M = 4.12, SD =1.55) vs. when they were not (M = 3.55, SD = 1.46), $F(1,244) = 5.12$, $p = .025$, $\eta_p^2 = .02$.

Representation of Subgroup's Interest in Negotiation Outcomes

We conducted a 2 (outcomes of constituency groups: IBS vs. FBS) × 2 (conflict constellation: integrative between IBS and counterpart vs. integrative between FBS and counterpart) × 2 (conflict context: non-sustainable vs. sustainable) mixed-factorial ANOVA with repeated measures on the first factor. There was a trend, but no significant difference between subgroups' outcomes ($M_{IBS} = 0.54$, $SD_{IBS} = 0.11$; $M_{FBS} = 0.52$, $SD_{FBS} = 0.14$), $F(1,120) = 3.06$, $p = .083$, $\eta_p^2 = .03$, indicating that overall, representatives did not prioritize the interests of one subgroup over the other in the negotiation agreements[32]. However, as in S2, a significant cross-over interaction of outcomes of constituency groups and conflict constellation occurred, $F(1,120) = 249.82$, $p < .001$, $\eta_p^2 = .68$. Simple effects analyses replicated the outcomes of S2: Representatives weighed the interests of IBS and FBS depending on the conflict constellation with their counterpart. Specifically, depending on whether it would allow integrative agreements with the counterpart, they would weigh the interests of IBS heavier than those of FBS, $F(1,120) = 65.31$, $p < .001$, $\eta_p^2 = .35$, or the interests of FBS heavier than those of IBS, $F(1,120) = 52.57$, $p < .001$, $\eta_p^2 = .31$.

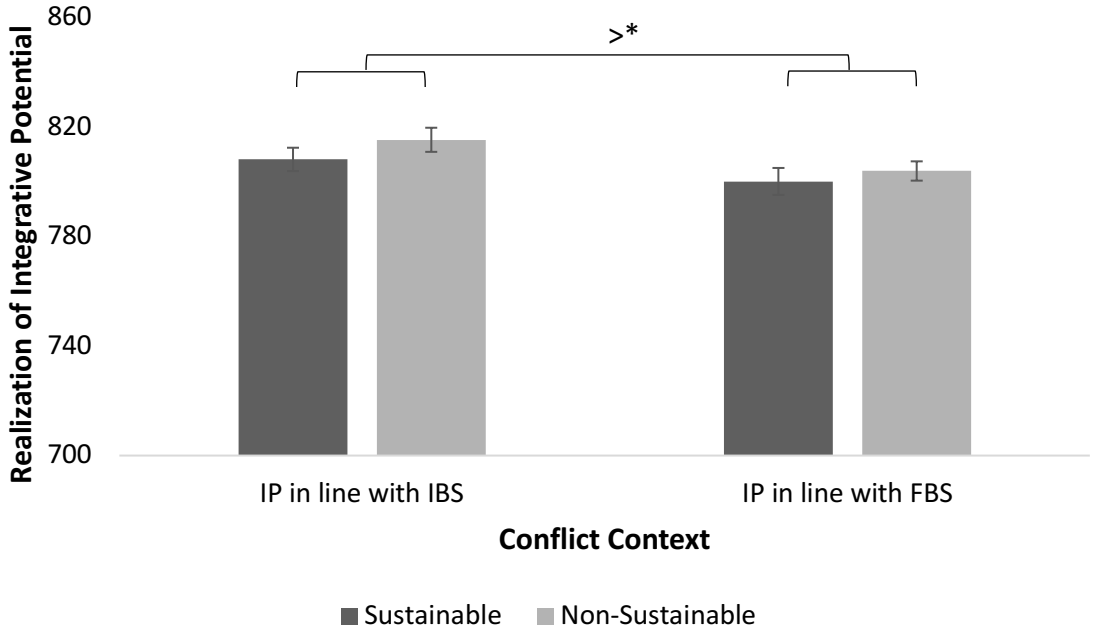
No other main effects and interaction effects reached statistical significance. These findings indicate that as in S2, the conflict constellation with the counterpart determined representatives' weighing of subgroup interests and representatives neither systematically prioritized IBS nor FBS. Therefore, neither H1 nor H3 were supported by the data.

[32] Additional analyses of representatives' first negotiation proposals fully replicated H1 and can be found on OSF.

Realization of Integrative Potential by Dyads

Our next analyses are on the dyadic level, investigating quality of agreements across the table. As in S2 and validating H2, a 2 (conflict constellation) × 2 (conflict context) between-factor ANOVA showed that dyads exploited more of the integrative potential when this was in line with the interests of IBS (M = 811.78, SD = 24.44) versus FBS (M = 801.87, SD = 23.57), $F(1,120) = 5.05$, $p = .026$, $\eta_p^2 = .04$ (Figure 3). The presence vs. absence of a sustainability conflict did not significantly moderate this effect, $F(1,120) = 0.15$, $p = .699$, $\eta_p^2 = .001$, and there were no differences in quality of negotiation agreements between the sustainability (M = 803.95, SD = 25.55) vs. non-sustainability conflict condition (M = 809.76, SD = 23.14), $F(1,120) = 1.61$, $p = .208$, $\eta_p^2 = .01$. H4 was thus not supported by the data.

Figure 3. *Study 4: Realization of Integrative Potential in Joint Agreements.*



Note. The graph shows parties' joint realization of integrative potential based on their negotiation agreements, depending on the nature of conflict (i.e., integrative potential in line with the priorities of IBS vs. integrative potential in line with the priorities of FBS) and the conflict context (sustainable vs. non-sustainable). Error bars represent standard errors.

Discussion

Replicating S2 findings, outcomes of S4 again show that the presence of a negotiation counterpart overrules representatives' reconciliation of intra-constituency conflicts.

Specifically, our findings suggest that the conflict constellation between parties, more than representatives' initial tendency to assign more weight to the IBS or FBS, crucially determines the outcomes of the different constituency groups. Still however, representatives capitalized on the integrative potential more when this could be realized through an internal prioritization of IBS (and not FBS). This confirms H2 and provides partial support for H1, whereas contrary to H3 and H4 – and to the findings of S3 – the presence of a sustainability context did not impact representatives' decisions in S4.

General Discussion

Representatives are biased in the way they handle intra-constituency conflicts. Five studies showed that representatives assign more weight to a constituency faction advocating for immediate outcomes than to a faction advocating for future benefits in their negotiation proposals (S1-S4). When entering integrative-interactive negotiations with another party, this bias attenuates: Representatives now make trade-offs for their constituency subgroups depending on whose interests allow for integrative agreements with their negotiation counterpart (S2, S4). However, dyads still reach higher joint outcomes when representatives' preference for the IBS (vs. FBS) allows for integrative agreements across the table.

The contextual significance of future interests also attenuates representatives' unequal weighing of the subgroup interests. In a sustainability context, where the interests of the future are inherently important, representatives weigh the interests of the future benefits subgroup equally or heavier than those of the immediate benefits subgroup (S3). But again, negotiating with a counterpart leads representatives to prioritize exploring integrative potential across the table, regardless of the contextual importance of the outcomes their subgroups advocate for (S4). Put differently, when representatives face divergent constituency pressures but are also interdependent with another party, they concentrate primarily on collaboratively resolving their interdependence with the other party, and less on balancing their divided constituency's interests. Findings were robust for variations in representatives' self-interest (S1-S2).

Shifting Negotiation Focus: The Power of Context

Representatives' prioritization of value creation with their counterparts contrasts with previous research findings where representatives negotiated aggressively due to the accountability pressure toward their constituency (Benton & Druckman, 1974; see for a review

De Dreu et al., 2014). We observed successful value creation across all experimental conditions- not only *despite* the presence of a constituency and *despite* intra-constituency conflict, but even by strategically *using* constituents' interests where those facilitated deal-making with the counterpart. Our findings suggest that collaborative interactive settings can be an antidote against tensions and disagreements within the own group or organization.

At the same time, in a sustainability context, representatives' focus on resolving social conflict with their counterparts also overshadowed their initial inclination to prioritize a sustainable future. This suggests that the presence of an immediate inter-party conflict dominates representatives' behavior and can take the focus off sustainability goals- potentially contributing to sustainability-related organizational negotiations often concluding with suboptimal agreements (e.g., Bogacki & Letmathe, 2021). Thus, interactive settings may not only help to focus on value creation across the table but may by doing so also undermine representatives' future-oriented behavior on behalf of (part of) their constituency.

Theoretical Implications and Future Research

Despite our core findings, the underlying mechanisms behind them remain largely unknown. In inter-temporal decision-making research, present-focused decisions have often been attributed to decision-makers' temporal devaluation of future outcomes (vs. immediate outcomes) and social devaluation of the interests of others (vs. own interests) (Frederick et al., 2002). However, these explanations cannot account for our results. First, although one constituency subgroup advocated for future interests, both subgroups advocated for their interests at the time of the negotiation, forcing representatives to deal with their divergent constituency interests *in the present,* speaking against temporal devaluation. Second, speaking against social devaluation of one the constituency subgroups, both subgroups were equally large, present, and part of the represented group.

Our findings suggest that an experience of distance from the future, specifically, operationalizing future benefits as somewhat uncertain and less beneficial for the current constituency, might have driven representatives' present-focused decisions. This complements research arguing that peoples' mental construal of future interests is the most important driver in temporal decision-making (e.g., Trope & Liberman, 2003, 2010). Alternatively, or even additionally, the uncertainty of whether investments into the future pay off, the perception that future investments are less beneficial for the current constituency, or a combination of both might account for representatives' biased handling of subgroup interests.

Previous findings from representative negotiations suggest that representatives may be more *motivated* to advocate for some interests than others (Aaldering & De Dreu, 2012). Similarly, the interests of the immediate benefits subgroup might have attracted more *attention* than those of the future benefits subgroup (Steinel et al., 2009) due to peoples' default present-orientation (Frederick et al., 2002). Whether representatives' biased handling is driven by motivational or cognitive sources – whether representatives are more *willing* or more *able* to account for the immediate benefits subgroup – warrants further examination.

Our paradigm offers new possibilities for investigating how representatives manage various intra-constituency conflicts behind and across the negotiation table. For instance, our paradigm could be applied to examine other kinds of intra-organizational conflicts where different constituency factions advocate for different desired outcomes (Halevy, 2008), such as professional faultlines within organizations (e.g., Lau & Murnighan, 1998), or the effects of minority and majority groups on representatives' balancing of intra-constituency conflicts.

Implications for Organizations, Representatives, and Constituents

Our findings bear implications for organizational representative negotiations. Since organizations from a strategic perspective need to consider future interests, representatives' decision tendency toward immediate benefits could have negative consequences for the long-term success of organizations (Bogacki & Letmathe, 2021; Flammer & Bansal, 2017). Future-oriented decisions may help maximize the organizations' value from a long-term development perspective (e.g., Flammer & Bansal, 2017). Not only from a strategic perspective (e.g., Aschbacher & Kroon, 2023) but also to ensure organizational harmony and the satisfaction of employees and stakeholders, it is important that managers are aware of their bias, that there are likely constituent members that do prefer a focus on the future- and that the voices of these constituent members receive the necessary weight.

Our findings on value creation in integrative-interactive negotiations demonstrate that intra-organizational conflicts can have essential impact on the success and quality of conflict management beyond organizations' boundaries- both positively (by facilitating value creation) and negatively (by hampering future-oriented decision making), depending on how interests between counterpart and constituent subgroups are aligned or opposed.

Our findings also bear relevance for constituents in organizational negotiations. They may benefit from framing their interests as "what's in it for us now"- also, or even especially when they want their representative to advocate for future interests. Additionally, constituents'

voices will sound louder if they allow for integrative conflict resolution with parties beyond their own organizations' boundaries. It is possible that the increasing focus on sustainability and organizations' sustainability transitions (e.g., Müller & Pfleger, 2014) will enhance cross-organizational interests to create value for the future, and therefore inter-organizational conflict resolution might promote the interests of future-oriented constituents.

Concluding Thoughts

The present work integrates and broadens previous research on representative negotiations and provides insights into how representatives balance intra-constituency conflicts about negotiation outcomes. Our findings offer important implications for research and practice in both intra- and inter-organizational decision-making and conflict resolution, crucial for both maintaining the inner peace within, and improving the long-term success across the boundaries of organizations.

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Appendix

Appendix A

Table 1a. *Interests of IBS (Favoring Immediate Interests) in Study 2 and 4.*

Technology		HR		**Marketing**		Product Develop.	
A	91	A	50	A	80	A	56
B	78	B	45	B	72	B	50
C	65	C	40	C	64	C	44
D	52	D	35	D	56	D	38
E	39	E	30	E	48	E	32
F	26	F	25	F	40	F	26
Production		Work Environment		**Recruitment**		Market Expansion	
A	95	A	48	A	77	A	30
B	85	B	45	B	70	B	26
C	75	C	42	C	63	C	22
D	65	D	39	D	56	D	18
E	55	E	36	E	49	E	14
F	45	F	33	F	42	F	10

Table 1b. *Interests of FBS (Favoring the Interests of the Future) in Study 2 and 4.*

Technology		**HR**		Marketing		**Product Develop.**	
A	45	A	86	A	43	A	90
B	42	B	75	B	42	B	82
C	39	C	64	C	41	C	74
D	36	D	53	D	40	D	66
E	33	E	42	E	39	E	58
F	30	F	31	F	38	F	50
Production		**Work Environment**		Recruitment		**Market Expansion**	
A	51	A	75	A	25	A	72
B	47	B	69	B	23	B	67
C	43	C	63	C	21	C	62
D	39	D	57	D	19	D	57
E	35	E	51	E	17	E	52
F	31	F	45	F	15	F	47

Note. The tables depict the interests of the employee groups IBS and FBS of the focal representative. The numbers represent the subgroups' average answers in the alleged employee survey. Bold font indicates the prioritized business areas of IBS and FBS, respectively.

Table 2a. *Interests of the Negotiation Counterpart in Case of Integrative Conflict with IBS and Distributive Conflict with FBS in Study 2 and 4.*

Technology		**HR**		Marketing		**Product Developm.**	
A	25	A	26	A	33	A	45
B	30	B	39	B	36	B	55
C	35	C	52	C	39	C	65
D	40	D	65	D	42	D	75
E	45	E	78	E	45	E	85
F	50	F	91	F	48	F	95
Production		**Work Environment**		Recruitment		**Market Expansion**	
A	26	A	40	A	10	A	42
B	32	B	48	B	14	B	49
C	38	C	56	C	18	C	56
D	44	D	64	D	22	D	63
E	50	E	72	E	26	E	70
F	56	F	80	F	30	F	77

Note. The table depicts the negotiation counterpart's interests in the negotiation. Bold font indicates the prioritized business areas of the counterpart. FBS prioritizes the same business areas (i.e., HR, Work Environment, Product Development, Market Expansion), leading to a distributive conflict between FBS and the counterpart. IBS prioritizes the respective other business areas (i.e., Technology, Production, Marketing, Recruitment), leading to an integrative conflict between IBS and the counterpart.

Table 2b. *Interests of the Negotiation Counterpart in Case of Distributive Conflict with IBS and Integrative Conflict with FBS in Study 2 and 4,*

Technology		HR		**Marketing**		Product Developm.	
A	26	A	25	A	40	A	26
B	39	B	30	B	48	B	32
C	52	C	35	C	56	C	38
D	65	D	40	D	64	D	44
E	78	E	45	E	72	E	50
F	91	F	50	F	80	F	56
Production		Work Environment		**Recruitment**		Market Expansion	
A	45	A	33	A	42	A	10
B	55	B	36	B	49	B	14
C	65	C	39	C	56	C	18
D	75	D	42	D	63	D	22
E	85	E	45	E	70	E	26
F	95	F	48	F	77	F	30

Note. The table depicts the negotiation counterpart's interests in the negotiation. Bold font indicates the prioritized business areas of the counterpart. IBS prioritizes the same business areas (i.e., Technology, Production, Marketing, Recruitment), leading to a distributive conflict between IBS and the counterpart. FBS prioritizes the respective other business areas (i.e., HR, Work Environment, Product Development, Market Expansion), leading to an integrative conflict between FBS and the counterpart.

Appendix B

Study 3: Interest Tables for the Constituency Subgroups IBS and FBS Split by Distance Condition

	Mental + Experienced Distance		Mental Distance	
Project: Market Expansion	Answer of IBS	Answer of FBS	Answer of IBS	Answer of FBS
1: 100% focus on Europe	90	20	90	10
2: 80% Europe / 20% Asia	74	32	74	26
3: 60% Europe / 40% Asia	58	44	58	42
4: 40% Europe / 60% Asia	42	56	42	58
5: 20% Europe / 80% Asia	26	68	26	74
6: 100% focus on Asia	10	80	10	90

Note. The table depicts an example of the interests of IBS and FBS in the mental and experiential distance condition as well as the mental distance only condition. The numbers represent the subgroups' average answers in the alleged employee survey. Representatives saw either the left two columns or the right two columns.

Chapter 6: The Manager as a Sustainability Negotiator: Psychological Drivers and Barriers in Navigating Complex Conflicts of Interest

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Abstract

Organizations face increasing pressure to integrate sustainability into their operations, requiring managers to navigate complex conflicts of interest in negotiations. Specifically, sustainability negotiations involve multi-faceted conflicts, spanning multiple stakeholders (internal vs. external), outcome dimensions (economic, ecological, social), and time points (present vs. future). While traditional negotiation models focus on maximizing economic gains, they often overlook the complexities and psychological challenges associated with sustainability goals. This paper introduces the Integrative Model of Sustainability Negotiations (IMSuN), a framework that identifies key psychological and contextual challenges in sustainability negotiations. Synthesizing insights from psychology and sustainability science, we propose three criteria for the evaluation of sustainability agreements: efficiency, sustainable scale, and distributive justice. Further, the IMSuN outlines three negotiation stages: 1) forming sustainability intentions in the preparation stage, influenced by attitudes, subjective norms, and perceived control, 2) targeting, exploring, and evaluating trade-offs during negotiations, and 3) implementing sustainability outcomes through monitoring, communication, and adaptation. This framework bridges negotiation theory and practice, offering managers theoretical insights and practical strategies to navigate trade-offs between economic, social, and ecological goals, fostering long-term corporate sustainability. The model's contributions to negotiation research and the development of practical strategies for achieving sustainability agreements are discussed.

Negotiations are a fundamental aspect of management, with managers devoting a substantial portion of their time to negotiation processes that shape strategic managerial decisions (Gentry, Harris, Baker, & Brittain Leslie, 2008; World Economic Forum, 2018). Negotiation research in organizational and social psychology has explored a wide range of psychological factors, focusing on improving agreements primarily in terms of economic gains or subjective utility (e.g., De Dreu, Koole, & Steinel, 2000a; Pruitt & Lewis, 1975; Thompson, 2015; Warsitzka, Zhang, Beersma, Freund, & Trötschel, 2023). This emphasis reflects the conventional managerial role in optimizing organizational financial performance (Lax & Sebenius, 1986).

However, the increasing integration of environmental, social, and economic concerns into corporate strategies (Evans et al., 2017; George, Haas, Joshi, McGahan, & Tracey, 2023; Schaltegger, Hansen, & Lüdeke-Freund, 2016) challenges this traditional focus. Specifically, evolving legislative regulations, shareholder expectations, and voluntary corporate commitments pressure organizations to integrate sustainability goals into their agendas while maintaining profitability (Bloomfield & Steward, 2020; Burritt & Schaltegger, 2010; Lozano, 2012). As sustainability becomes integral to corporate strategy, managers must consider social and ecological dimensions of their business negotiations, including impacts on external stakeholders and long-term consequences (Burritt & Schaltegger, 2010; Evans et al., 2017). This development introduces new layers of complexity to negotiation processes, and challenges traditional negotiation theory to broaden its scope and investigate psychological drivers and barriers that influence the quality of agreements in *sustainability negotiations*.

The shift toward sustainability in corporate strategies introduces psychological challenges and complex social conflicts at different levels (e.g., Bazerman, Moore, & Gillespie, 1999; Bazerman, Tenbrunsel, & Wade-Benzoni, 1998; Hoffman et al., 1999; Wade-Benzoni et al., 2002). While classical negotiation models (e.g., Brett & Thompson, 2016; De Dreu & Carnevale, 2003; Pruitt & Rubin, 1986) have significantly advanced our understanding of psychological factors and processes among parties at the table, they commonly overlook that many (business) negotiations involve conflicts of interest extending beyond the immediate parties involved. Specifically, nowadays many negotiations require managers to balance economic, social, and environmental objectives, often involving interests of external stakeholders not directly represented at the table, such as absent business partners, community representatives, or future generations. Without a framework that reflects these additional layers of complexity, negotiation theory risks oversimplifying the decision-making processes required in sustainability contexts (Hoffman & Bazerman, 2007; Ostrom, 2010). From an applied perspective, addressing this gap is essential to provide managers with psychological insights

and strategic tools to balance their business goals with sustainability commitments in business negotiations.

To account for the complexity of sustainability negotiations, this paper presents a structured approach tackling their inherent multi-faceted conflicts of interests. Specifically, sustainability negotiations involve diverse stakeholders (internal parties at and external parties beyond the table), multiple outcome dimensions (economic, ecological, social), and conflicting time frames (immediate vs. future). By adopting this broader perspective, we identify key psychological challenges for managers across all stages of the negotiation process. Synthesizing insights from psychology and sustainability science, we propose the *Integrative Model of Sustainability Negotiations* (IMSuN), a comprehensive framework of sustainability negotiations outlining three critical stages: (1) forming sustainability intentions in the *preparation stage*, shaped by attitudes, subjective norms, and perceived control; (2) targeting, exploring, and evaluating trade-offs in the *negotiation stage*; and (3) realizing agreements through monitoring, communication, and adaptation in the *implementation stage*.

Our model not only seeks to systematically address psychological factors and challenges across the different negotiation stages but also introduces key criteria for sustainability agreements—resource efficiency, sustainable scale, and distributive justice—fundamental to understanding the psychological drivers and barriers in the process of conflict resolution. By highlighting the multi-faceted nature of conflicting interests inherent in sustainability negotiations, the model advocates for new methodological approaches and paradigms that more systematically capture these conflict complexities. Beyond its theoretical and methodological contributions, the IMSuN aims to bridge the gap between theory and practice, offering managers practical guidelines to balance economic, social, and ecological objectives. Finally, the interdisciplinary perspectives from sustainability sciences embedded in the model offer valuable insights for related fields of management research, including leadership, consumer behavior, and entrepreneurship.

Corporate Sustainability Development and Negotiations

Many organizations have been increasing their managerial efforts to transition towards sustainability (e.g., Evans et al., 2017; Schaltegger et al., 2016). This transition is driven by voluntary initiatives, growing market demands, and legal regulations that present managerial challenges in reconciling diverse interests and concerns. Examples of voluntary initiatives include cross-industry frameworks like the Science-Based Targets Initiative and the New

Plastics Economy Global Commitment. Additionally, global market trends for sustainable products indicate a need for companies to adopt sustainability practices to remain competitive (World Economic Forum, 2022). And finally, organizations face new regulatory requirements (e.g., EU Green Deal, see Council of the EU, 2024) and growing pressure from investment firms such as the 'Big Three', which start to emphasize the role of corporate sustainability (Azar, Duro, Kadach, & Ormazabal, 2021; Bocken, 2015).

To quantify sustainability efforts, companies have traditionally relied on financial metrics, thereby internalizing ecological or social costs (Coase, 1960; Nguyen, Laratte, Guillaume, & Hua, 2016). However, economic valuation alone is not sufficient to meet the demands for sustainability (e.g., Bithas, 2011). Issues like freshwater contamination or greenhouse gas emissions are not fully addressed through monetary compensation alone, as these impacts require more than financial offsetting (Dietz & Neumayer, 2007). Consequently, non-economic metrics such as emission reports, supply chain standards, and resource usage benchmarks have gained prominence in corporate sustainability accounting and reporting (Schaltegger, Bennett, & Burritt, 2006). Incorporating these non-economic metrics into sustainability negotiations introduces psychological challenges for managers, who must transition from prioritizing financial outcomes to balancing ecological and social considerations. This shift adds complexity and uncertainty, necessitating new psychological strategies for preparing, evaluating, and implementing sustainability agreement trade-offs.

Sustainability Agreements

To manage the psychological challenges in sustainability negotiations and achieve successful corporate sustainability development, clearly defined criteria that guide managers' decision-making through the stages of preparing, negotiating, and implementing sustainability agreements are needed. In traditional negotiation research, economic outcomes are assessed through criteria such as joint profits, value creation, or efficiency. Joint profits represent the total combined gains across parties, emphasizing collective economic utility (De Dreu et al., 2000a; Pruitt & Lewis, 1975). Value creation reflects the quality of agreements that goes beyond simple zero-sum or compromise solutions, assessing the degree to which parties achieve integrative outcomes (Galinsky, Maddux, Gilin, & White, 2008; Thompson, 2015). Lastly, efficiency assesses whether no further improvements can be made to one party's (economic) outcome without making another party economically worse off, ensuring optimal resource allocation (Hyder, Prietula, & Weingart, 2000; Tripp & Sondak, 1992).

In contrast to purely economic contexts, sustainability negotiations introduce new layers of complexity, as they aim to balance economic profitability with ecological health and social responsibility (De Lange, Busch, & Delgado-Ceballos, 2012; Gladwin, Kennelly, & Krause, 1995; Trötschel, van Treek, Heydenbluth, Zhang, & Majer, 2022). Unlike economic negotiations, sustainability agreements strive for organizations' long-term profitability while preserving or enhancing the ecological and social environments in which they operate (Schaltegger et al., 2016; Thomas & Lamm, 2012). Hence, measuring the quality of agreements in sustainability negotiations requires criteria that reflect these broader goals. Building on insights from sustainability science, we propose three criteria for evaluating the quality of sustainability agreements: efficiency, sustainable scale, and distributive justice (e.g., Costanza et al., 1997; Daly & Farley, 2004).

The first criterion, *efficiency*, has long been an evaluative criterion in negotiation research on economic profits and subjective utility (Raiffa, 1982; Tripp & Sondak, 1992). In sustainability negotiations, the principle of Pareto efficiency extends beyond economic outcomes: it requires that no alternative agreement can improve (one of the party's) economic outcomes without impairing outcomes on the social or ecological dimensions—and vice versa. Applying the principle of efficiency to the context of sustainability negotiations does not mean that there are no costs or burdens on any dimension. Rather, it means that, within the given constraints, further improvement on one dimension (e.g., economic gains) cannot be achieved without worsening outcomes on another (e.g., environmental health). For instance, in a negotiation between a beverage company and a local water supply agency, a Pareto efficient agreement could require the company to implement water-saving technologies. This would allow the company to increase its profits while minimizing the ecological impact of freshwater depletion on local communities. Under this agreement, no alternative would enable the company to further increase its economic benefits without adding harm to the community.

Sustainable scale, the second criterion, focuses on the balance between resource use and the regenerative or assimilative capacities of affected social or ecological systems (Costanza et al., 2017; Daly, 2014). Sustainable scale refers to maintaining resource flows within limits that do not exceed these capacities, ensuring long-term environmental and social sustainability. This concept parallels negotiation principles like reservation points and limits, which have been widely studied in traditional negotiation research (e.g., Trötschel, Bündgens, Hüffmeier, & Loschelder, 2013; White & Neale, 1991). In corporate negotiations, sustainable scale entails setting clear ecological and social reservation points alongside economic ones, optimizing economic growth while staying within ecological and social boundaries. For example, in the

water supply negotiation, sustainable scale could mean setting a water usage limit aligned with the watershed's regenerative capacity.

The third criterion, *distributive justice*, emphasizes the fair distribution of benefits and burdens among all stakeholders, whether directly involved in the negotiation or not (e.g., Daly, 2014; Kenter, Reed, & Fazey, 2016; Wilson & Howarth, 2002). Distributive justice ensures that no party, particularly external or future stakeholders, disproportionately bears the economic, ecological, or social costs of agreements. Unlike efficiency or sustainable scale, distributive justice is a more abstract principle that is defined through social consensus and normative judgments, making it difficult to quantify with traditional metrics (Daly, 2014). Despite this challenge, distributive justice remains of vital importance in addressing social conflicts (Albin & Druckman, 2017; Gelfand et al., 2002). To create metrics for distributive justice and guide fair agreements in sustainability negotiations, stakeholders can employ tools like impact evaluations, needs assessments, or distributive analyses (e.g., Morgan, 2012; Walker, 2010). For example, in the water supply negotiation, stakeholders might agree to conduct environmental impact assessments to ensure fair water distribution among all affected stakeholders, including local residents and future generations.

While efficiency, sustainable scale, and distributive justice are important evaluative criteria for psychological negotiation research, training, and practice, the precise determination, fixation, and measurement of these criteria in specific business contexts—such as concrete benchmarks for sustainable scale or parameters for the range of fair resource distributions—requires an approach involving researchers from different disciplines as well as representatives of the affected stakeholder groups (i.e., transdisciplinary research; Brandt et al., 2013; Lang et al., 2012). For instance, specific benchmarks and parameters may be fixated based on local natural limitations (e.g., regenerative water capacities), voluntary initiatives (e.g., science-based targets for corporate CO_2-emissions), social negotiation processes (e.g., labor agreements on the range of social services), or legal regulations (e.g., EU Industrial Emissions Directive; US National Ambient Air Quality Standards, NAAQS).

The primary role of psychological research on negotiations, in turn, is to investigate how negotiators process, interpret, and apply these multi-dimensional criteria across various negotiation stages and contexts. For instance, in certain contexts, negotiators may prioritize efficiency, seeking to maximize economic growth while minimizing external ecological or social impacts, potentially at the expense of sustainable scale and distributive justice (cf. weak sustainability; Neumayer, 2013). Conversely, in other contexts, negotiators might take a more comprehensive sustainability approach, prioritizing the environment's regenerative capacity as

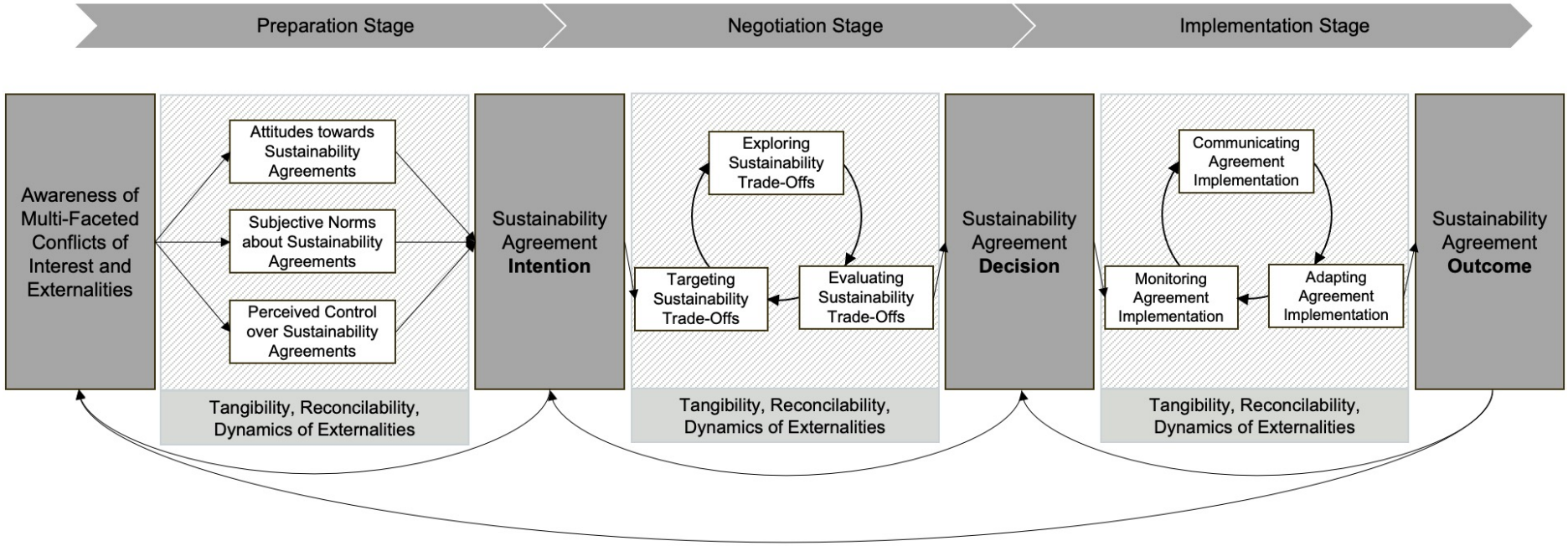
defined by sustainable scale, while treating economic gains as a secondary goal (cf. strong sustainability; Neumayer, 2013). By exploring the psychological processes underlying these different approaches, negotiation research can offer valuable insights for both theory and practical application in sustainability negotiations.

An Integrative Model of Sustainability Negotiations

From a sustainability science perspective, efficiency, sustainable scale, and distributive justice are essential criteria for evaluating the sustainability of negotiated agreements. However, whether and how psychological processes either facilitate or hinder achieving sustainability agreements that fulfill these criteria has yet to be systematically explored. To structure these challenges, we introduce the *Integrative Model of Sustainability Negotiations* (IMSuN: see Figure 1).

Following the prototypical negotiation sequence (Druckman & Wagner, 2016; Jang, Elfenbein, & Bottom, 2018), the model includes three key stages: preparation, negotiation, and implementation. It outlines how parties, before negotiating, must commit to sustainability agreement *intentions*, expanding short-term economic goals to integrate long-term sustainability concerns. During negotiations, parties need to explore holistic trade-offs, balancing their economic interests with the interests of external stakeholders across different dimensions and time points to reach mutually accepted *decisions*. Finally, parties must realize their negotiated agreements under the dynamic developments of their business environments to effectively implement their agreed upon *outcomes*.

Figure 1. *Visualization of the Integrative Model of Sustainability Negotiations (IMSuN).*



Note. Illustration of the IMSuN, depicting the three stages of sustainability negotiations: preparation, negotiation, and implementation. When facing multi-faceted conflicts of interests in sustainability negotiations, negotiators form sustainability agreement intentions depending on their attitudes towards, the subjective norms about, and the perceived control over sustainability agreements. In the negotiation stage, negotiators aim at reaching a joint sustainability agreement decision by targeting, exploring, and evaluating sustainability trade-offs. In the implementation stage, negotiators realize sustainability agreement outcomes by monitoring, communicating, and adapting agreement implementations. Each of the psychological processes across negotiation stages may be moderated by the tangibility, reconcilability, and dynamics of externalities. Finally, the negotiation process is illustrated as an iterative process with later stages potentially influencing earlier stages of future negotiation efforts.

Multi-Faceted Social Conflicts and Externalities

Sustainability negotiations typically involve three interconnected conflicts of interest: *multi-lateral conflicts* between different stakeholders, *multi-dimensional conflicts* across distinct outcome dimensions, and *multi-temporal conflicts* spanning over time.

Socially, managers must balance the needs and concerns of various stakeholders, such as employees, suppliers, community members, or regulators—many of whom are not directly represented at the negotiation table but whose interests are significantly affected by the negotiated agreements (i.e., social externalities). Resolving these multi-lateral conflicts requires managers to create value not only for those directly at the table but also to prevent value destruction—or promote value creation—for external stakeholders impacted by the agreements. While psychological research has examined multi-lateral negotiations among directly involved parties (e.g., Gillespie, Brett, & Weingart, 2000; Polzer, Mannix, & Neale, 1998), less attention has been given to negotiations affecting unrepresented external parties (Menkel-Meadow, 2009; Van Treek, Majer, Zhang, Zhang, & Trötschel, 2023). However, to prevent future conflicts and achieve sustainable, long-term solutions, this broader perspective is essential in many real-world negotiations—especially in sustainability contexts. For instance, when negotiating the construction of a beverage factory, managers must consider their shareholders' interests, suppliers' logistical needs, and local residents' concerns.

In addition to multi-lateral conflicts, managers must navigate conflicting interests across economic, ecological, and social outcome dimensions. Since an organization's economic growth often relies on the use of natural resources and social infrastructures (Hoffman et al., 1999; Wade-Benzoni, 1999), sustainability negotiations inherently cause qualitatively distinct, *multi-dimensional externalities*—such as carbon emissions, freshwater consumption, or social impacts. Balancing these dimensions requires negotiating trade-offs that optimize economic gains while minimizing ecological damage and promoting social welfare. Doing so is complex, due to the interdependence of these dimensions: prioritizing one dimension often has undesired consequences for another. Hence, addressing multi-dimensional externalities holistically is essential for resolving conflicts across dimensions. For example, negotiations about building a new beverage factory must balance the economic benefits of growth with ecological impacts such as increased water consumption, and social considerations including effects on local employment and community resources.

Finally, sustainability negotiations involve multi-temporal conflicts of interest, requiring managers to balance immediate and long-term impacts of their agreements (e.g.,

Majer, Barth, Zhang, van Treek, & Trötschel, 2021; Van Treek et al., 2023; Wade-Benzoni, 1999). *Temporal externalities* arise when the outcomes of today's agreements have far-reaching, potentially irreversible effects on future conditions. Crucially, outcomes at different time points are often non-fungible, as benefits taken by present stakeholders cannot easily offset burdens placed on future ones (Bazerman et al., 1999; Wade-Benzoni, 1999). Thus, addressing temporal externalities requires a forward-looking approach that balances short-term gains with long-term sustainability. For instance, prioritizing short-term profitability in the construction of a beverage factory may lead to future resource depletion or ecological damage, undermining long-term sustainability goals.

Preparation Stage: Forming Intentions

In psychological research, setting clear intentions is recognized as an essential tool for managing conflicting goals (Gollwitzer & Moskowitz, 1996; Srull & Wyer, 1986): Intentions provide direction, increase commitment, support self-regulation, and enhance a clear focus in complex decision-making settings (Ajzen, 1985; Armitage & Conner, 2001). In sustainability contexts with competing motives, intentions help individuals handle trade-offs more effectively (Bamberg & Möser, 2007; Klöckner, 2013). Similarly, in classical negotiations, clear intentions help negotiators stay focused and reach high-quality agreements (Brett, Northcraft, & Pinkley, 1999; Galinsky & Mussweiler, 2001).

Sustainability negotiations, however, introduce complexities that go beyond traditional negotiations, requiring managers to address multi-faceted conflicts. Unlike purely economic negotiations, sustainability contexts therefore necessitate the formation of comprehensive agreement intentions that consider multi-dimensional concerns and long-term impacts, highlighting the need for psychological research to explore how these intentions can be effectively formed during negotiation preparation.

Drawing on insights from social and environmental psychology (Ajzen, 1985, 1991; Armitage & Conner, 2001; Bamberg & Möser, 2007; Klöckner, 2013), we propose that sustainability agreement intentions are shaped by three factors: *attitudes, subjective norms*, and *perceived control*. These psychological factors determine negotiators' approach to handling multi-dimensional conflicts and externalities. By examining these factors, we aim to provide managers with a systematic approach to develop intentions that guide their strategies in dynamic sustainability negotiations.

Attitudes Toward Sustainability Agreements

In negotiation contexts, attitudes reflect a negotiator's favorable or unfavorable evaluation of various aspects of the negotiation process, such as the issues at stake, strategies applied, parties involved, or outcomes being pursued (e.g., De Dreu & Carnevale, 2003; Judd, 1978; Neville & Fisk, 2019). While all these aspects influence negotiations, negotiators' attitudes toward the outcomes of sustainability negotiations hold particular significance. These attitudes reflect how favorably negotiators evaluate achieving not only 'pro-economic' goals but also 'pro-environmental' and 'pro-social' negotiation outcomes that align with the criteria of efficiency, sustainable scale, and distributive justice. Research on corporate sustainability development highlights the key role these attitudes play in determining a company's success in advancing sustainability transformation (Thomas & Lamm, 2012). The formation of managers' attitudes depends on psychological factors like self-identity, social values, and personal beliefs. For instance, a pro-environmental self-identity likely enhances negotiators' positive attitudes toward sustainability agreements (e.g., Van Der Werff, Steg, & Keizer, 2013; Whitmarsh & O'Neill, 2010). Moreover, managers' attitudes are shaped by their perceptions of the pragmatic, moral, or cognitive legitimacy of sustainability concerns (Suchman, 1995; Tost, 2011). Specifically, pragmatic legitimacy relates to practical benefits of sustainability, such as cost reductions, while moral legitimacy concerns ethical considerations of pursuing sustainability. Cognitive legitimacy involves how negotiators assess the practicality of implementing sustainability agreements, taking into account potential impacts on future operations (Thomas & Lamm, 2012).

Subjective Norms About Sustainability Agreements

Subjective norms, defined as the "perceived social pressure to perform or not to perform [a] behavior," (Ajzen, 1991: 188) represent another key factor influencing negotiators' intentions. These norms reflect negotiators' perceived social pressures from both internal and external sources. Whereas internal stakeholders, such as board members, colleagues, and organizational mission statements influence managers' tendencies to form sustainability agreement intentions (e.g., Perez-Batres, Doh, Miller, & Pisani, 2012), external pressures from customers, suppliers, authorities, and media reports influence how acceptable sustainability agreements appear (Hoffman & Bazerman, 2007; Kassinis & Vafeas, 2006). Hence, subjective norms can facilitate or obstruct sustainability agreement intentions. For example, internal norms promoting sustainability can create a sense of obligation to pursue sustainability agreements. Similarly, external norms like consumer or market demands for corporate social responsibility

can compel managers to favor sustainability (Bansal & Roth, 2000). Conversely, subjective norms prioritizing short-term profit maximization or external policies favoring less sustainable practices can act as barriers (Thomas & Lamm, 2012).

Subjective norms are particularly powerful because they create accountability. Managers may feel pressure to conform to socially accepted behaviors (Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007), especially when failure to do so could lead to reputational harm or strained stakeholder relationships (Lin-Hi & Blumberg, 2018). This is particularly relevant in business, where transparency is expected, and organizations are held accountable for their social and environmental impacts.

Perceived Control Over Sustainability Agreements

Lastly, perceived control over actions and outcomes, refers to the "perceived ease or difficulty of [reaching a decision or] performing a behavior" (Ajzen, 1991: 188). In sustainability negotiations, this concept is critical as it directly influences negotiators' confidence in achieving sustainability agreements. Managers assess their control over the negotiation process and the feasibility of agreements by evaluating internal capacities and external constraints. For instance, a negotiator's self-confidence and efficacy beliefs (e.g., Brett, Pinkley, & Jackofsky, 1996; Stevens & Gist, 1997)—their belief in being able to manage complex negotiations that involve economic, ecological, and social dimensions—play a key role in shaping sustainability agreement intentions. While past personal successes in sustainability initiatives can enhance self-efficacy, failures and anticipated obstacles may reduce it (Lauren, Fielding, Smith, & Louis, 2016). On the organizational level, internal barriers such as budget limitations or insufficient employee support can reduce negotiators' perceived control (Lines, 2004). Externally, market forces like consumer resistance to price increases due to eco-friendly practices (Gonzalez-Arcos, Joubert, Scaraboto, Guesalaga, & Sandberg, 2021) or legal constraints, such as those set by the US Clean Power Plan, can also influence perceived control and significantly affect negotiators' willingness to commit to sustainability agreements. In general, when negotiators feel higher control over internal and external challenges, they are more likely to form strong, committed intentions toward sustainability goals. Conversely, low perceived control due to anticipated difficulties in managing resistance or implementing change may reduce managers' commitment to sustainability agreement intentions.

Attitudes, subjective norms, and perceived control offer a robust framework for understanding how and when managers develop sustainability agreement intentions. These intentions are crucial in the negotiation preparation stage, as they not only influence how

managers interpret and apply sustainability criteria but additionally shape their basic approach to sustainability (Neumayer, 2013). This orientation may range from a primary focus on economic efficiency to a broader commitment to sustainable scale or distributive justice.

Negotiation Stage: Striving for Decisions

Beyond agreement intentions, research has long identified trade-offs as a fundamental element of negotiation, focusing on how parties achieve a balance between *value creation* (i.e., "expanding the pie") and *value claiming* (i.e., "slicing the pie"; Larrick & Wu, 2007; Raiffa, 1982; Walton & McKersie, 1965). Most studies have examined single-dimensional outcomes, such as economic profit or subjective utility, where integrative solutions involve trade-offs between parties with losses on less critical issues in exchange for gains on higher-priority issues, thereby maximizing joint profits (Galinsky et al., 2008; Thompson, 2015).

However, sustainability negotiations introduce additional complexities, requiring negotiators to navigate multi-faceted trade-offs that go beyond the classical give-and-take between parties in a single-dimensional context (Majer, Zhang, Zhang, Höhne, & Trötschel, 2022b; Trötschel, Loschelder, Höhne, & Majer, 2015). Here, negotiators must navigate trade-offs not only between parties but also across diverse outcome dimensions and over different time points (Bazerman & Gillespie, 1999; Hüffmeier et al., 2019; Van Treek et al., 2023), while considering the interests of external stakeholders who are not directly represented at the table. These multi-layered trade-offs make it far more challenging to explore solutions that take all conflicting interests into account (De Dreu, 2010; Halevy & Katz, 2013; Majer et al., 2021). Thus, a deeper understanding of how negotiators can effectively navigate such trade-offs in sustainability negotiations is essential for achieving sustainability agreement decisions.

Building on insights from negotiation and experimental game research on multi-lateral, multi-dimensional, and multi-temporal conflicts (Böhm & Theelen, 2016; Majer et al., 2021; Sherstyuk, Tarui, Ravago, & Saijo, 2016; Van Treek et al., 2023), we propose that decision-making in sustainability negotiations is particularly influenced by three key factors: *targeting trade-offs*, *exploring trade-off opportunities*, and *evaluating trade-offs*. By examining the psychological factors that shape agreement decisions in the negotiation stage, we aim not only to equip managers with practical insights on effectively navigating sustainability trade-offs but also to advance negotiation theory by addressing the complexities of multi-layered trade-offs across diverse outcome dimensions and time points.

Targeting Sustainability Trade-Offs

Extensive research on the intention-behavior gap highlights the critical distinction between decision-makers' abstract intentions and their concrete plans for decisions and actions (Gollwitzer, 1999; Sheeran & Webb, 2016). This distinction underlines the importance of strategic planning in sustainability negotiations, where parties must move beyond abstract intentions by setting specific targets to manage trade-offs between conflicting dimensions (Bamberg, 2002; Gollwitzer, 1999; Loy, Wieber, Gollwitzer, & Oettingen, 2016).

Many organizations have begun to incorporate corporate sustainability into their strategic planning by using accounting practices that measure both economic and sustainability metrics (Morse, Davis, & Hartgraves, 2003; Schaltegger et al., 2006). Building on these practices, managers in sustainability negotiations should establish clear, multi-dimensional agreement targets that account for interdependencies among economic, ecological, and social outcomes, rather than focusing exclusively on economic reservation or aspiration points (Brett et al., 1996; De Dreu, Weingart, & Kwon, 2000b; White & Neale, 1994). When targets on different outcome dimensions conflict, strategizing trade-offs through contingency plans (e.g., Bazerman & Gillespie, 1999; Thompson, 2015) can provide direction. For instance, linking economic goals to ecological or social benchmarks—by making economic gains contingent upon meeting predefined ecological reservation points—ensures that progress in one area does not compromise objectives in others.

Negotiators' specific contingency plans and trade-off targets are substantially shaped by their approach to sustainability (Neumayer, 2013). For instance, those who prioritize economic targets tend to view these as 'reference outcomes', with ecological or social impacts considered 'trade-off outcomes'. This economy-focused approach aligns with the traditional focus on maximizing economic efficiency (cf. weak sustainability approach). Alternatively, negotiators who prioritize adhering to ecological or social reservation points treat these targets as 'reference outcomes', thereby considering economic targets to be 'trade-off outcomes' until reservation points on the ecological or social dimension are met. This approach aligns with the criteria of sustainable scale or distributive justice (cf. strong sustainability approach). Regardless of their sustainability approach, contingency planning provides sustainability negotiators with a systematic way to manage trade-offs and balance conflicting targets across distinct outcome dimensions.

Exploring Sustainability Trade-Offs

The challenge of exploring integrative trade-off opportunities that allow negotiators to create value beyond internal outcomes to include external impacts, is particularly demanding due to the interdependent nature of economic, ecological, and social objectives. Building on research on integrative strategies in negotiations (Pruitt & Rubin, 1986; Thompson, 2015; Walton & McKersie, 1965), we propose three distinct approaches to explore such holistic trade-off opportunities: compensation, integration, and transformation strategies.

Compensation strategies aim to balance conflicting targets by offsetting negative impacts on one outcome dimension ('trade-off outcome') with positive effects on another ('reference outcome'). Rather than generating new value, compensation strategies redistribute benefits and costs across dimensions. Hence, strictly speaking, these strategies do not align with the criteria of sustainability agreements, as they neither seek to directly promote efficient resource use, sustainable scale, nor distributive justice. Rather than exploring integrative solutions, compensation strategies aim at mitigating damage. A typical compensation strategy is 'specific compensation' (Pruitt, 1981), which directly offsets burdens on one outcome dimension with compensatory actions on the same dimension. For instance, in the negotiation between the beverage company and the water supply agency, the company might compensate for its freshwater usage by constructing water reservoirs to help the local community mitigate water shortages during periods of scarcity. Another strategy is 'non-specific compensation' (Hoffman et al., 1999; Pruitt & Rubin, 1986; Thompson, 2015), which offsets burdens on one dimension with compensatory actions on a different dimension. For instance, the beverage company could offer additional financial compensation for freshwater usage, allowing the community to use these funds flexibly.

Integration strategies go beyond the balancing approach of compensation by either systematically creating value through the alignment of various outcome dimensions—for instance by enhancing synergies across economic, ecological, and social goals—or by systematically reducing damage, aiming to cause less harm on one dimension while generating additional benefits on another. Central to integration strategies is the principle of efficiency, whereas the principles of sustainable scale or distributive justice are less relevant or may even contradict the logic of integration. One of the most prominent integration strategies in negotiations is 'logrolling' (Froman & Cohen, 1970; Trötschel, Hüffmeier, Loschelder, Schwartz, & Gollwitzer, 2011). In sustainability negotiations, logrolling allows parties to secure gains in one (higher prioritized) area by accepting damages in another (less prioritized), so long as the overall benefits outweigh the burdens. For example, a beverage company might commit

to increasing local employment by expanding its facilities, which brings economic benefits to the community. In return, the community permits higher water extraction rates to support production, despite potential risks to local water resources. This agreement generates both economic and social value, but it overlooks the principle of sustainable scale, as increased water use may not be sustainable over time. Another approach, 'expanding the pie' (Hüffmeier et al., 2019; Warsitzka et al., 2023), introduces additional resources to facilitate trade-offs. For instance, the community and company could agree to jointly apply for national funding (i.e., adding resources) to build a desalination plant to boost the water supply, enabling the company to increase production. The company commits to covering the remaining construction costs that exceed the national funding, while the community takes on responsibility for the ongoing operational expenses. However, this solution may overlook distributive justice, as desalination entails high energy consumption, imposing substantial recurring costs on the community. These expenses could limit the community's capacity to invest in other social projects.

While compensation or integration strategies enable negotiators to manage trade-offs for immediate objectives, they often fail to address the root causes of conflicts in sustainability negotiations. *Transformation strategies*, by contrast, seek to resolve these underlying causes, going beyond efficiency to incorporate sustainable scale and distributive justice. 'Adaptation', as one potential type of transformation strategy, adjusts production processes to address these sustainability principles. For example, in negotiations with the community's water agency, the beverage company might reduce water usage during dry months and increase production when rainfall is higher. In exchange, the community could offer tax reductions for the periods of reduced production. Though this approach may limit profit maximization, it allows time-contingent trade-offs that respect the water's regenerative capacity, supporting sustainable scale. 'Modification', another potential transformation strategy, focuses on altering products rather than processes. For instance, the beverage company might shift from water-intensive, large soft drinks to smaller vitamin drinks, which require less water and yield higher margins. In response, the agency could offer the company lower price rates for water, as the modification of products helps to ensure fair access to water for the entire community. In general, circular economy approaches like the '9R' framework (reduce, reuse, recycle, etc.; Potting, Hekkert, Worrell, & Hanemaaijer, 2017; Valencia, Bocken, Loaiza, & De Jaeger, 2023) offer a foundation for transformation strategies that uphold sustainable scale and distributive justice.

Evaluating Sustainability Trade-Offs

After exploring and identifying potential trade-offs, negotiators must evaluate their options and decide whether to fully accept one, reach a partial impasse, or conclude with a total impasse (Brett et al., 1999; Schweinsberg, Thau, & Pillutla, 2022; Trötschel et al., 2011). In the evaluation process, negotiators' analysis of opportunity cost plays a crucial role (Buchanan, 1991; Frederick, Novemsky, Wang, Dhar, & Nowlis, 2009). At an abstract level, opportunity costs reflect the value of the next best alternative forgone when a choice is made. In negotiation terms, it highlights the specific benefits lost when selecting one agreement over another (Larrick, Morgan, & Nisbett, 1990; Northcraft & Neale, 1986). By evaluating opportunity costs in sustainability negotiations, managers gain a thorough understanding of the comprehensive costs and benefits associated with each of their agreement options.

To reach a holistic evaluation of the quality of explored trade-off opportunities, negotiators must not only analyze the opportunity costs, but additionally evaluate these explored opportunities against their predefined targets (Curhan, Elfenbein, & Xu, 2006; Galinsky, Mussweiler, & Medvec, 2002; Schuster, Majer, & Trötschel, 2020). When multiple agreement options meet all stakeholders' multi-dimensional targets, negotiators must weigh them against each other (e.g., Brett et al., 1996; Jang et al., 2018) by considering their respective opportunity costs. If, however, none of parties' explored trade-off opportunities meet all targets, negotiators must evaluate whether they accept a non-optimal agreement or whether their negotiation should conclude with a partial or total impasse (Trötschel et al., 2011). This decision is shaped by negotiators clear understanding of their BATNAs (i.e., Best Alternative To Negotiated Agreement; Raiffa, 1982), which serve as fallback options beyond the explored agreement alternatives in the current negotiation (Brett et al., 1996; Sebenius, 2017). To decide whether their BATNA is superior to the explored agreement options, negotiators can again analyze the opportunity costs of choosing their BATNAs versus choosing an available agreement option. Importantly, BATNAs in sustainability negotiations are complex and include fallback options on economic, ecological, and social dimensions (Mann, Warsitzka, Zhang, Hüffmeier, & Trötschel, 2022), making them harder to evaluate than traditional economic BATNAs that primarily focus on financial alternatives.

While targeting, exploring, and evaluating trade-offs and corresponding agreements present distinct challenges, it is their interplay that makes the negotiation stage an iterative process: targets may need to be adjusted based on the evaluation of agreement options, making further exploring of sustainability trade-offs necessary. Ultimately, the negotiation stage concludes with either a consensus on an agreement decision or an impasse.

Implementation Stage: Achieving Outcomes

Traditional negotiation research has largely focused on the negotiation process itself, emphasizing the process of agreement formation and conflict resolution strategies. In contrast, the implementation stage—where agreements are realized and contracts are fulfilled—has received limited attention (Hart & Schweitzer, 2020; Morgan & Tindale, 2002). Recognizing this gap, Jang et al. (2018) call for more empirical research on the post-negotiation phase, highlighting the pivotal role of agreement implementation beyond agreement formation.

Particularly in the context of sustainability negotiations, the implementation stage is often characterized by notable internal and external resistance. Unlike conventional agreements in economic terms (Herbst, Voeth, & Meister, 2011; Thompson, 2015), sustainability measures can highlight existing conflicts or even spark new disagreements, as the implementation of agreements may cause clashing opinions, priorities, or values (Harinck & De Dreu, 2004; Schuster et al., 2020). These tensions amplify the need for effective management in the post-negotiation phase and emphasize the important role of successful implementation of sustainability agreements for achieving a company's long-term goals.

Drawing on insights from psychological change management research (Doppelt, 2017) and research on accounting and reporting in sustainability science (Burritt, Schaltegger, & Christ, 2023; Newig et al., 2013; Schaltegger et al., 2006), we propose that the effective implementation of sustainability agreements hinges on three critical elements: *continuous monitoring, transparent communication*, and *flexible adaptation*. By reflecting on the psychological processes that play a crucial role in the implementation stage, we not only highlight the practical importance of psychology in the post-negotiation phase but also respond to calls for research into agreement execution (see Jang et al., 2018).

Monitoring the Implementation of Sustainability Agreements

To ensure that sustainability agreements are effectively realized, managers must monitor the implementation progress. In this process, sustainability accounting is a key tool that provides a structured approach to track progress across various implementation pathways and distinct sustainability metrics (Burritt et al., 2023; Schaltegger et al., 2006). Thereby, sustainability accounting integrates financial and non-financial metrics, offering a holistic way for managers to evaluate whether their sustainability targets are being met.

From a psychological perspective, sustainability accounting systems play a crucial role by providing measurable outcomes and feedback throughout the implementation process. On a

cognitive level, accounting systems offer structured guidance and orientation in decision-making, enabling stakeholders to align their implementation with the concrete targets and measures defined in the negotiated agreements. They also support problem-solving and learning processes by providing data-driven insights that facilitate the search for creative implementation solutions (Gray, Walters, Bebbington, & Thompson, 1995; Mann et al., 2022; Singh, Murty, Gupta, & Dikshit, 2009). Motivationally, accounting systems enhance perceived accountability and support self-regulation, giving stakeholders clear metrics to reinforce their commitment to long-term objectives and renew efforts toward these goals (Wibbeke & Lachmann, 2020). Finally, on an affective level, accounting systems may provide additional benefits as they help reduce feelings of uncertainty and instill a sense of control, offering reassurance that efforts align with sustainability goals (Birnberg, Luft, & Shields, 2006; Luft & Shields, 2010).

Communicating the Implementation of Sustainability Agreements

Beyond monitoring, clear and effective communication is crucial in the implementation stage of sustainability negotiations. As a managerial tool, sustainability reporting complements sustainability accounting, playing a vital role in corporate sustainability development (Burritt & Schaltegger, 2010; Hahn & Kühnen, 2013; Siew, 2015). Beyond its communicative function, sustainability reporting fulfills multiple psychological functions, such as sense-making (Basu & Palazzo, 2008; Hahn, Preuss, Pinkse, & Figge, 2014), impression management (Merkl-Davies, Brennan, & McLeay, 2011), or fostering commitment and engagement (Godemann & Michelsen, 2011; Newig et al., 2013).

Within organizations, disclosing information through reporting helps internal stakeholders to gain a clear understanding of their roles in the agreement implementation processes (Newig et al., 2013; Proctor & Doukakis, 2003). Such transparent internal communication reduces ambiguity and uncertainty among employees—key psychological barriers to change—leading to greater acceptance of and higher commitments towards realizing sustainability targets (Thøger Christensen, 2002; Thoradeniya, Lee, Tan, & Ferreira, 2015). Beyond the organization, communication to external stakeholders like customers or suppliers creates transparency and credibility and similarly helps reduce resistance to change (Bebbington, Larrinaga, & Moneva, 2008; Vaccaro & Patiño Echeverri, 2010). Additionally, regular reporting reassures negotiation partners and external stakeholders that sustainability targets are pursued, fostering their commitment and increasing customers' trust (Gräuler, Freundlieb, Ortwerth, & Teuteberg, 2013; Hodge, Subramaniam, & Stewart, 2009).

Importantly, however, reporting in sustainability negotiations is more challenging than traditional economic reporting due to the long-term, multi-dimensional nature of sustainability goals. Hence, the implementation of sustainability agreements often spans extended time periods and several outcome dimensions, requiring ongoing and extensive communication (e.g., Klöckner, 2015).

Adapting the Implementation of Sustainability Agreements

Given the long-term focus of sustainability agreements, constant monitoring and communication must be complemented by flexible adaptations to dynamic, unexpected developments throughout the different stages of implementation processes (Brulin & Svensson, 2016; Doppelt, 2017). Specifically, the time between reaching an agreement and its full implementation can be lengthy (Hernandez, 2022; Jang et al., 2018), and is often marked by unexpected practical difficulties, organizational changes, or shifts in external conditions (Spector & Korula, 1993; Zhang, Zhang, Warsitzka, & Trötschel, 2021). For example, natural resources may degrade unexpectedly fast, requiring an adaptation of sustainable scale measures and a re-evaluation of what constitutes a fair resource distribution. Additionally, social resistance from both within and outside the organization can further complicate the realization of the negotiated agreements (Gonzalez-Arcos et al., 2021; Lines, 2004).

From a psychological perspective, managers must remain flexible and respond proactively to internal and external changes (Allen, Fontaine, Pope, & Garmestani, 2011; Sharfman & Dean Jr, 1997). This may involve adjusting strategies to meet regulatory shifts, evolving public expectations (Clegg & Walsh, 2004; Herold, Fedor, & Caldwell, 2007), or reacting to internal changes like leadership transitions and fluctuating employee engagement (Oreg & Sverdlik, 2011; Proctor & Doukakis, 2003). Moreover, managing uncertainty is crucial in adapting to dynamic, unexpected developments in the implementation stage, as unforeseen changes may require agile adjustments to ensure progress towards organizations' sustainability targets (Schauer, Majer, & Trötschel, 2023).

Sustainability Negotiations as an Iterative Process

In the face of dynamic corporate environments, disruptive events or social resistance can hinder the implementation of negotiated agreements, and merely adapting implementation strategies may not always be sufficient in response. In some cases, it may become necessary to re-negotiate previously accepted agreements or even revise the initial agreement intentions. Adjusting intentions and re-negotiating sustainability trade-offs, however, not always have to

be prompted by adverse circumstances but can also be driven by positive developments. For example, if technological advancements provide new, more efficient ways to reduce environmental impact, stakeholders may find it beneficial to revise the terms of their agreement to incorporate these innovations. From a psychological perspective, sustainability negotiations should thus be viewed as an iterative and dynamic process requiring reoccurring goal-setting, constant trade-off adjustments, and flexible implementation strategies (Gollwitzer & Moskowitz, 1996; Srull & Wyer, 1986). Given the iterative nature of the entire process, each stage of these negotiations is part of a broader, long-term effort to balance economic vitality with social and environmental responsibility.

Tangibility, Reconcilability, and Dynamics of Externalities

Finally, the psychological processes that shape negotiation behaviors and outcomes within and across the different stages of the negotiation process are profoundly influenced by contextual factors (Brett & Thompson, 2016; Gelfand, Fulmer, & Severance, 2011). In sustainability negotiations, the nature of the resources being negotiated (Sebenius, 1983; Trötschel et al., 2022) and the characteristics of the resulting externalities (Van Noordwijk et al., 2023; Van Treek et al., 2023) are key contextual factors. For instance, stakeholders can only account for potential externalities if they are tangible. The *tangibility of externalities* captures to what extent a negotiation context enables stakeholders to gain critical knowledge of, understand causal links between, and conceptualize the external effects of their agreements (e.g., Thomas & Lamm, 2012; Van Noordwijk et al., 2023). If, for example, the extent of the environmental impact of deforestation on biodiversity loss is unknown or cannot be clearly quantified (Constantino & Weber, 2021; Schaltegger et al., 2006), stakeholders might, despite their knowledge of the existence of ecological externalities, not be able to factor them into their sustainability negotiations. Moreover, tangibility involves the comprehensibility of externalities—the extent to which stakeholders grasp the scope, interdependencies, and evolution of the caused externalities (Menkel-Meadow, 2009; Trötschel et al., 2022). This includes understanding how external effects relate to critical thresholds such as the risk of exceeding key ecological tipping points (Lenton et al., 2008).

Another critical contextual factor in sustainability negotiations is the *reconcilability of externalities*—how well external impacts align with the short-term economic interests of stakeholders at the negotiation table. Unlike zero-sum conflicts where gains for one outcome directly result in losses for another, sustainability negotiations often allow for varying degrees

of integrative solutions (Chen & Pensini, 2024; Davidai & Tepper, 2023; Thompson, 2015). The extent to which conflicting interests can be reconciled depends on two key aspects: conflict interdependence (Majer et al., 2021; Van Treek et al., 2023) and conflict strength (Majer, Schweinsberg, Zhang, & Trötschel, 2022a; Wang, Kokubo, Jusup, & Tanimoto, 2015). Conflict interdependence refers to how resolving one conflict of interest (e.g., between economic interests) impacts the emergence or escalation of other conflicts of interest (e.g., between immediate economic and long-term ecological interests). The more conflict interdependencies exist, the more difficult it becomes to reconcile the competing interests. Conflict strength, meanwhile, refers to the degree of negative interdependence between outcomes (Majer et al., 2022a; Wang et al., 2015). The higher the conflict strength, the fewer degrees of freedom exist to resolve the negative interdependence between qualitatively distinct outcome dimensions. Higher conflict strength leaves fewer opportunities for discovering trade-off opportunities that reduce costs on one dimension without undermining benefits on another. When externalities involve high levels of both conflict interdependence and conflict strength, negotiators face greater challenges in reaching sustainability agreements.

Finally, the *dynamic nature of externalities* plays a pivotal role in shaping sustainability negotiations (Constantino & Weber, 2021; Qudrat-Ullah, 2020; Trötschel et al., 2022). Social factors like demographic change or labor movements, ecological developments such as climate change or resource depletion, and economic trends like technological innovations or market fluctuations evolve over time. These dynamics can either facilitate or hinder conflict resolution at various negotiation stages. For instance, unpredictable externalities may obscure negotiators' intentions or disrupt the implementation of sustainability measures. Conversely, when externalities develop in more predictable ways, psychological processes are more likely to support negotiators in resolving the multi-faceted conflicts in sustainability negotiations. In conclusion, the *tangibility*, *reconcilability*, and *dynamics* of externalities are crucial examples for contextual factors affecting stakeholders' psychological processes in sustainability negotiations.

Reflection of the IMSuN

With corporate sustainability development gaining increasing relevance (De Lange et al., 2012; Loorbach, 2010), the *Integrative Model of Sustainability Negotiations* (IMSuN) sheds light on the pivotal role that negotiations play in steering organizations toward sustainability. With our model, we seek to advance research on joint decision-making processes that involve

multi-lateral, multi-dimensional, and multi-temporal conflicts of interest. To do so, in the IMSuN, we outline psychological and contextual challenges that managers encounter throughout the negotiation process (Jang et al., 2018), and propose that achieving sustainability agreements involves three key stages: forming sustainability agreement intentions during the preparation stage, navigating sustainability trade-offs during the negotiation stage, and realizing sustainability outcomes in the implementation stage. Beyond its normative focus, which is central to any sustainability debate, the IMSuN adopts a descriptive approach, acknowledging that different sustainability criteria—efficiency, sustainable scale, and distributive justice—may receive varying emphasis depending on a manager's strategic sustainability approach. Regardless of the specific sustainability approach though, the IMSuN's systematic analysis of various psychological processes that fundamentally shape sustainability negotiations offers valuable insights for practical strategies, and provides guidance on how to effectively prepare for, negotiate, and implement sustainability agreements. In the following, we will first turn to the model's theoretical and methodological implications before discussing practical implications for negotiation teaching and training. We will conclude by discussing the limitations of our model.

Theoretical and Methodological Implications

The IMSuN offers key theoretical contributions by moving beyond traditional negotiation models that focus primarily on maximizing economic utility in bilateral or single-dimensional conflicts (e.g., Social-Interaction-Model, Brett & Thompson, 2016; Motivated Information Processing Model, De Dreu & Carnevale, 2003; Dual Concern Model, Pruitt & Rubin, 1986). It integrates insights from psychological conflict management research and sustainability science, tackling the complexity of multi-faceted conflicts and emphasizing the need to explore interdependent yet distinct outcomes across multiple non-fungible dimensions and time points. By incorporating the concept of externalities into negotiation research, the IMSuN opens new research avenues to examine how, for example, individual attitudes, social norms, trade-off preferences and patterns, business cultures, or corporate goals shape the processes and outcomes of managerial sustainability negotiations.

Importantly, the model's implications extend beyond negotiation research. Adjacent fields such as consumer behavior (e.g., Priem, 2007), leadership (e.g., Mazutis & Zintel, 2015), and entrepreneurship (e.g., Calás, Smircich, & Bourne, 2009) can gain valuable insights from understanding how decision-makers navigate conflicts among personal, organizational, and societal goals. For instance, leadership studies could examine how, within the broader context

of responsible leadership, decision-makers balance profitability with sustainability goals, such as employee health care. Interactive decision-making research—covering group processes (Lu, Yuan, & McLeod, 2012), social dilemmas (Van Lange, Joireman, Parks, & Van Dijk, 2013), and collective action (Barth, Masson, Fritsche, Fielding, & Smith, 2021)—could similarly start to take multi-faceted outcomes into consideration. While experimental games research has begun to examine the role of externalities (e.g., Böhm & Theelen, 2016; Sherstyuk et al., 2016), few studies address decision-making processes with multi-dimensional outcomes, such as simultaneous impacts on profits, emissions, and employment.

The new perspective on sustainability negotiations furthermore demands extended methodological approaches in negotiation research (Buelens, Van De Woestyne, Mestdagh, & Bouckenooghe, 2008; Carnevale & Dreu, 2006). Investigating sustainability conflicts requires combining qualitative methods, interviews, surveys, and experimental studies. For example, qualitative methods may allow researchers to investigate the distinct psychological processes in each negotiation stage. Moreover, longitudinal studies are particularly valuable for capturing the entire negotiation process from the start to the implementation of agreements.

Another methodological challenge lies in developing new evaluation metrics beyond traditional measures like subjective utility, economic profits, or relational value. Established concepts, such as Pareto efficiency (Tripp & Sondak, 1992), need adaptation to sustainability negotiations. Moreover, future research paradigms on sustainability negotiations should incorporate multiple criteria, including efficiency, sustainable scale, and distributive justice.

Implications for Negotiation Training and Practice

By addressing key psychological and contextual factors essential to sustainability negotiations, the IMSuN offers practical strategies at each negotiation stage to help managers navigate complex, multi-dimensional conflicts of interest. We propose that negotiation training programs—whether at business schools, universities, or within the business sector—as well as management education platforms, should incorporate and address the psychological challenges identified by the IMSuN. For example, training programs may aid managers in the preparation stage to shape a clear understanding of their sustainability intentions by reflecting on personal and organizational attitudes toward sustainability, reinforcing values that align with sustainability goals, and building sustainability-focused norms. Before entering the actual negotiation process, managers could be trained to translate their agreement intentions into specific multi-dimensional trade-off targets by means of computer-assisted teaching programs or AI tools which allow to reflect on the relevant outcome dimensions, their interdependence

and the perceived conflict strength. In management courses, present and future managers could learn about defining reference vs. trade-off outcome dimensions, reflect on their specific trade-off strategies, and understand principles such as efficiency, sustainable scale, or distributive justice. Exploring transformative agreement solutions, managers might learn to uncover approaches that address the root causes of environmental and social impacts. Before finalizing agreements, novel teaching materials on sustainability negotiations may train managers to evaluate explored trade-off alternatives against their predefined criteria, trade-off targets, and their BATNAs on various outcome dimensions to align their potential agreements with both their immediate and long-term sustainability goals. Finally, in the implementation stage, managers must be trained in sustainability accounting systems allowing them to track outcomes across economic, ecological, and social dimensions, thereby enabling continuous adjustments to meet sustainability benchmarks. In corresponding communication courses, they may also reflect on the important role of internal and external reporting as well as on the importance of balancing transparency versus confidentiality in the implementation stage.

Limitations

While the IMSuN offers a structured framework of sustainability negotiations, its normative approach has limitations. Although other psychological models on negotiations (e.g., Brett & Thompson, 2016; Pruitt & Rubin, 1986; Tripp & Sondak, 1992) also focus on normative criteria such as joint outcomes, created value, or Pareto efficiency, the IMSuN with its emphasis on achieving sustainability agreements adds additional layers of normative criteria such as sustainable scale or distributive justice. These criteria can be more difficult to assess and violate the classical approach to business negotiations which commonly aims at economic growth. Importantly though, the IMSuN does not aim to establish sustainability criteria as mandatory in all business negotiations or as a universal evaluative standard for future research. Instead, its goal is to explore, describe, analyze, and predict the psychological drivers and barriers that impact sustainability agreements in business negotiations.

Given the limited emphasis on sustainability in traditional negotiation studies, this framework draws extensively from other areas of psychology and interdisciplinary research. As a result, it may appear less internally cohesive and clearly delineated than traditional negotiation models. Moreover, as any theoretical framework, the model simplifies real-world negotiation processes, potentially overlooking other psychological dynamics and additional contextual factors. For example, it does not account for how cultural and organizational contexts (e.g., Gunia, Brett, & Gelfand, 2016), situational factors like time pressure (e.g., De Dreu, 2003),

hierarchy (e.g., Kim, Pinkley, & Fragale, 2005), or value-driven conflicts (e.g., Wade-Benzoni et al., 2002) impact sustainability negotiations. Finally, the IMSuN remains largely theoretical and lacks empirical validation. Future research must therefore systematically test the model's assumptions to assess its robustness and practical applicability.

Conclusion

To stay economically viable in a healthy natural and social business environment, managers must lead their organizations towards sustainability (Schaltegger et al., 2006). While the conflict management literature has advanced our understanding of negotiations, most research has narrowly focused on single-dimensional outcomes impacting solely the negotiating parties at the table. We argue that negotiation research must expand its focus to include multi-dimensional outcomes and externalities. The Integrative Model of Sustainability Negotiations (IMSuN) offers a theoretical framework for investigating the complexities managers face when dealing with negotiations that involve multi-faceted conflicts of interest. Achieving sustainability agreements that are efficient, sustainably scaled, and just requires managers to embed sustainability considerations into every negotiation stage. Hence, the IMSuN offers researchers and practitioners new perspectives on managerial negotiations.

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