Mental Budgeting and Integrated Outcome Editing Intervention by a Neutral Third-Party in Multi-Issue Negotiation

by

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Abstract

Building on recent findings from research on mental accounting in multi-issue negotiation, the current online study ($N = 192$) took a scenario-based approach to investigate how the location of the Zone of Profitable Payoffs (ZOPP) affects joint outcomes, approaches of mental budgeting, and the way of outcome editing negotiators engage in. Additionally, the current study investigated whether negotiators could be nudged towards more integrated outcome editing by means of an intervention delivered by a neutral third-party mediator. It was predicted that participants, who received pay-off tables with the ZOPP located between issues, would be prompted towards comprehensive mental budgeting, and engage in integrated outcome editing. In contrast, participants who received pay-off tables with the ZOPP located within issues, were expected to be prompted towards minimal mental budgeting, engage in more segregated outcome editing, and in turn propose final offers that yield lower joint outcomes than participants from the first group. Participants who received the integrated outcome editing intervention were expected to engage in more integrated outcome editing than participants who did not. Contrary to these predictions, participants from ZOPP-between conditions proposed final offers that, on average, yielded twice the value of joint outcomes than final offers by participants of ZOPP-within conditions. Irrespective of their location-of-ZOPP condition, most participants engaged in minimal rather than comprehensive mental budgeting, and the approach of mental budgeting did not affect joint outcomes. The way of outcome editing was independent of the location of ZOPP, and the integrated outcome editing intervention remained ineffective. In line with expectations, integrated outcome editing was associated with higher joint outcomes and partially mediated the relationship between the location of ZOPP and the joint outcome from final offers.

Keywords: negotiations; mediation; mental budgeting; outcome editing; ZOPP

On July 14, 2015, the Joint Comprehensive Plan of Action (JCPOA), also known as the "Iran nuclear deal," was announced in Vienna, Austria. This deal was concluded 13 years after Iran's nuclear program was first condemned by the U.S. and was the result of almost two years of complicated negotiations between Iran and the P5+1 countries, which are composed of the U.S., U.K., France, Germany, Russia, and China (Samore et al., 2015). Although President Donald Trump terminated the participation in the deal by the U.S. in 2018 (The White House, 2018), the Council of the European Union (2018) reaffirmed their commitment towards the deal shortly after, emphasizing their confidence in the deal that has been termed a "historical breakthrough" and a "win-win" agreement by Iran's foreign minister after it was announced in 2015 (Tarock, 2016, p. 1408).

Even though this negotiation has been considered a prime example of effective conflict resolution, the 13 years prior to the agreement were characterized by several actions from both sides that prevented a much earlier conclusion of the dispute. One of those detrimental actions happened in 2005, when Iran approached the U.S. in an attempt to reach an agreement on the matter (Parsi, 2017). In an article he wrote for the Washington Post, the Iranian foreign minister argued that at the time this opportunity was squandered by unrealistic demands instigated by the Bush administration (Zarif, 2014). Back then, the U.S. demanded that Iran would suspend any uranium enrichment activities until at least 2015 and considered this demand to be a red line, a limit to be surpassed before they would even consider engaging in further negotiations with Iran (Croll, 2009). According to Zarif (2014), the idea behind this was to strengthen the position of the U.S. and pressure Iran into making higher concessions. Croll (2009, p. 112) argued that in order to move forward with negotiations, "a new red line must be drawn. An Iranian nuclear bomb, not uranium enrichment must be prevented." He thereby suggested a revision of the

unrealistic limit set by the U.S. Indeed, such a revision characterized the agreement, that was later accepted by all parties. Specifically, the JCOPA does not prohibit Iran from enriching uranium entirely but stipulates them to limit their enrichment of uranium to a maximum threshold of 3.67%, too low to create atomic bombs from it (Samore et al., 2015).

The story of the Iranian nuclear deal illustrates some important characteristics of negotiations that have been extensively studied in laboratory settings as well as field studies. First, due to different priorities between negotiating parties, negotiations can lead to win-win agreements (cf. integrative agreements) that benefit all parties (Bazerman et al., 1985; Follett, 1941; Thompson, 2020). Such integrative agreements are often preferred to compromise solutions that "split the difference," as their total value creation (cf. joint outcome) exceeds that of mere compromises (Carnevale & Isen, 1986; Carnevale & Pruitt, 1992; Neale & Bazerman, 1985; Thompson, 1991, 1995). Second, reaching such win-win agreements can be an exceptionally complicated and lengthy process. Negotiations, especially such that concern disputes on more than one issue (c.f. multi-issue negotiations), are complex interpersonal coordination tasks with high cognitive demand that may prevent negotiators from identifying integrative potential and realizing win-win agreements (Warsitzka et al., 2020; Zhang et al., 2020). And third, in dealing with negotiation complexity, negotiators excercise a variety of cognitive processes and negotiation tactics to reduce cognitive demand (Watkins, 2003). By doing this, negotiators may fall victim to cognitive bias. These biases may serve as psychological barriers to efficient conflict solution by preventing negotiators from accurately encoding and processing relevant information (L. Ross & Stillinger, 1991). The unrealistic limits set by the U.S. in 2005 (Zarif, 2014) provide one example for such a psychological barrier that may result from the strategy of limit setting.

Some additional examples for cognitive errors in negotiations include the concept of loss aversion – negotiators are more hesitant when offering their own resources rather than requesting resources from their counterpart (Trötschel et al., 2015) – and anchoring effects – negotiators fail to make sufficient adjustments from arbitrary reference points like first offers (Loschelder et al., 2014; Loschelder et al., 2016; Loschelder et al., 2017; Ritov, 1996).

Both loss aversion and the anchoring effect have in common that they were concepts first studied by behavioral economists in order to explain financial decision making and only later were applied to the field of negotiation (Kahneman, 1992; Tversky & Kahneman, 1974, 1991). Likewise, mental budgeting, the subject of the current study, has its roots in behavioral economics, specifically the theory of mental accounting (Kahneman & Tversky, 1984; Thaler, 1985, 1999).

Mental Accounting in Negotiation

The theory of mental accounting posits that consumers categorize their economic outcomes in separate mental accounts to organize and evaluate their gains and losses. Also, individuals sometimes set budget constraints on such accounts (cf. mental budgeting) to limit spending (Thaler, 1985, 1999). When evaluating economic outcomes, consumers do not always consider their gains and losses in an integrated manner (cf. comprehensive mental accounting) but rather segregate them into multiple mental accounts that hold several features of financial transactions (cf. topical mental accounting) or accounts that only consist of one feature of a financial transaction (cf. minimal mental accounting) (Kahneman & Tversky, 1984).

The theory of mental accounting has been extended to negotiation by Trötschel et al. (2020), and the implications of the different mental parsing strategies for the cognitive processing of negotiation outcomes have been researched by Zhang et al. (2020). Specifically,

they showed that in an 8-issue negotiation, negotiators prefer to create topical accounts of two or four issues over creating comprehensive accounts with eight issues or minimal accounts for each individual issue. They further found that negotiators who created a comprehensive mental account (i.e., an all-issue mental account) achieved higher joint outcomes than negotiators who created minimal mental accounts (i.e., single-issue mental accounts). Negotiators who created topical mental accounts (i.e., multi-issue mental accounts) also achieved higher joint outcomes than negotiators who created minimal mental accounts, but only if the integrative potential constituted by parties' differing priorities lay within such accounts rather than being scattered between accounts. In the latter case, negotiators were unable to identify and realize the integrative potential. This makes it apparent that topical mental accounting, the form of accounting most negotiators engage in, can either be beneficial or detrimental to the negotiation at hand (Zhang et al., 2020).

The research by Trötschel et al. (2020) and Zhang et al. (2020) demonstrated that mental accounting matters in negotiation. However, so far, they have only looked at the creation of mental accounts (i.e., mental parsing) and not at mental budgeting, the process of constraining spending on mental accounts.

Mental Budgeting and the Study of Limits in Negotiation

In consumer research, mental budgets refer to some form of maximum threshold that limits spending in the respective category or mental account like "household expenses" or "free time activities" (Heath & Soll, 1996; Thaler, 1999).

The concept of mental budgeting coincides with research on limits in the negotiation literature. Limits refer to minimum outcome thresholds that any proposal by a negotiation party must surpass in order for the other party to even consider agreeing to it (Carnevale & Pruitt,

1992; White & Neale, 1991). Limits, similar to goals, also posit some form of reference points that help negotiators to evaluate the profitability of a given proposal or agreement (Kahneman, 1992). Specifically, previous studies found that setting higher limits or aspiring more difficult goals can help negotiators to achieve higher outcomes (Brett et al., 1996; Holmes et al., 1971; Kimmel et al., 1980; Neale & Bazerman, 1985; Northcraft et al., 1994; White et al., 1994; White & Neale, 1994; Zetik & Stuhlmacher, 2002). However, like the creation of topical accounts, setting limits and goals is not always beneficial. As illustrated by the opening story on the Iran nuclear deal, setting unrealistically high limits can have a detrimental effect on negotiation. The same goes for overly ambitious goals. By engaging in detrimental limit or goal setting strategies. parties may stick to their positions and overlook the integrative potential between them and their counterpart. These negative effects have been found in several studies on the difficulty of goals and limits (Huber & Neale, 1987; Kahan, 1968; Neale & Bazerman, 1985; Polzer & Neale, 1995; Smith et al., 1982).

Considering the setting of limits from the perspective of mental budgeting, a highly intriguing question pertains to how the scope rather than the difficulty of limits affects negotiators' perceptions and decisions. Specifically, based on the mental accounting literature, in multi-issue negotiations, negotiators can set their limit either for all negotiation issues (cf. comprehensive mental budgeting), for a group of issues (cf. topical mental budgeting), or for each individual issue (cf. minimal mental budgeting).

The Zone of Profitable Payoffs (ZOPP) and Mental Budgeting in Negotiation

So far it is unclear under what circumstances negotiators engage in either of the three approaches of mental budgeting in multi-issue negotiation. Given this, the current research makes a first attempt to investigate situations in which negotiators may engage in different

approaches of mental budgeting by looking at its two extremes – comprehensive (i.e., mentally setting one comprehensive limit for all issues) and minimal mental budgeting (i.e., mentally setting one issue-based limit for every individual issue). In detail, the current study investigates whether the location of the Zone of Profitable Payoffs (ZOPP) will affect negotiators' decisions on their mental budgeting approach (i.e., setting comprehensive vs. issue-based limits). The ZOPP describes the area where the negotiating parties can find agreements that lead to mutually profitable outcomes for both sides. In the context of multi-issue negotiations, the location of the ZOPP can either lie within each issue (i.e., there are options for each issue where neither party experiences losses) or between issues (i.e., mutually profitable agreements can only be achieved across issues). In other words, in ZOPP-within negotiations either party may experience losses (i.e., negative economic outcomes), balanced outcomes (i.e., economic outcomes are equivalent to zero), or gains (i.e., positive economic outcomes) on every single issue. While in ZOPP-between negotiations on the other hand, there are some issues where at least one party always experiences losses, while on other issues both parties always experience gains or balanced outcomes (see figure 1). To put it differently, in the current study ZOPP-within payoffs may be understood as bipolar outcome scales (i.e., from negative over zero to positive points) while ZOPP-between payoffs represent unipolar outcome scales (i.e., from zero to positive or from zero to negative points).

Concerning its relationship with the approach of mental budgeting in multi-issue negotiations, it is expected that the location of ZOPP influences whether negotiators will engage in comprehensive or minimal mental budgeting. Specifically, in negotiations where the ZOPP lies within each issue, negotiators are expected to be prompted to engage in minimal mental budgeting (i.e., setting issue-based limits), while in negotiations where the ZOPP lies between

issues, negotiators are expected to be prompted to engage in comprehensive mental budgeting (i.e., setting a comprehensive limit). This prediction is conceived, because every issue in ZOPP-within negotiations holds agreement options that allow a given party to achieve gains. Under these circumstances negotiators are theoretically able to achieve profits (i.e., positive points) on every single issue and they may therefore try to maximize these profits by relying on issue-based limits (i.e., minimal mental budgeting) as performance standards. In ZOPP-between negotiations on the other hand, for each issue at least one party must give up their gains (i.e., zero points) or even take on losses (i.e., negative points) to come to an agreement. In such situations, negotiators may rely on one comprehensive limit (i.e., comprehensive budgeting) to maximize their overall profit rather than compare their issue-based outcomes with issue-based limits for every individual issue.

The location of ZOPP and the mental budgeting approach are also expected to affect the negotiators ability to identify and realize integrative potential. In multi-issue negotiations with integrative potential, negotiators should consider several issues at the same time in an integrative manner to identify and act upon the different priorities between parties and thereby realizing integrative tradeoffs (Geiger & Hüffmeier, 2020; Herbst et al., 2017; Raiffa, 2003). In line with this notion, recent research on mental parsing in negotiation has shown that minimal mental accounting may prevent negotiators from discovering and realizing integrative win-win agreements because the integrative potential (i.e., integrative trade-off opportunities) cannot be discovered without considering more than one issues at a time (Zhang et al., 2020). In light of these findings, it is expected that minimal mental budgeting – setting issue-based limits on individual issues – will prevent negotiators from identifying integrative potential and realizing high joint outcomes in negotiations because negotiators may easily focus on their interest of each

individual issue without realizing the different priorities between them and their counterparts across issues. Initial empirical evidence for this prediction stems from research by Polzer and Neale (1995), who investigated the effects of the scope of goals in negotiations. They showed that in dyads where both negotiators held superordinate goals, which are equivalent to the conceptualization of comprehensive mental budgeting, achieved greater joint outcomes than dyads in which both negotiators held subordinate goals, which are equivalent with the conceptualization of minimal mental budgeting.

Based on the above-mentioned considerations, two initial hypotheses are devised that concern the relationship between the location of the ZOPP of the negotiation, negotiators' mental budgeting approach, and their joint outcomes.

H1: In negotiations with a Zone of Profitable Payoffs (ZOPP) between the negotiation issues, negotiators will make final offers that provide higher joint outcomes than final offers made by negotiators who are negotiating situations with a ZOPP within each issue.

H2: The effect of the location of ZOPP (i.e., within issues vs. between issues) on the joint outcome will be mediated by mental budgeting (i.e., comprehensive vs. minimal mental budgeting). Specifically, in negotiations with a ZOPP between the issues, negotiators are more likely to set themselves a comprehensive limit, while negotiators who are negotiating in situations with a ZOPP within each issue are more likely to set themselves an individual limit for each negotiation issue. Such different mental budgeting approaches will, in turn, affect the achievement of joint outcomes.

Figure 1

Zone of Profitable Payoffs Within Versus Between Issues

ZOPP-within

Issue label	Options	Payoff		Joint outcomes	ZOPP
		Party A	Party B		
Issue 1	Option A	-3200	1600	-1600	
	Option B	-1600	800	-800	
	Option C	0	0	0	
	Option D	1600	-800	800	
	Option E	3200	-1600	1600	
Issue 2	Option A	1200	-2400	-1200	
	Option B	600	-1200	-600	
	Option C	0	0	0	
	Option D	-600	1200	600	
	Option E	-1200	2400	1200	

ZOPP-between

Issue label	Options	Payoff		Joint outcomes	ZOPP
		Party A	Party B		
Issue 1	Option A	0	2800	2800	
	Option B	1400	2100	3500	
	Option C	2800	1400	4200	
	Option D	4200	700	4900	
	Option E	5600	0	5600	
Issue 2	Option A	0	-5600	-5600	
	Option B	-700	-4200	-4900	
	Option C	-1400	-2800	-4200	
	Option D	-2100	-1400	-3500	
	Option E	-2800	0	-2800	

Note. Exemplary payoffs with a location of ZOPP within and between issues are shown. In ZOPP-within payoffs every issue has an option were neither party experiences any losses (i.e., Option C), and each party may achieve gains (i.e., positive points), balanced outcomes (i.e., zero points), or losses (i.e., negative points) on every issue. In ZOPP-between payoffs, on some issues neither party experiences any losses irrespective of the selected option (i.e., Issue 1), while on other issues one party is guaranteed to experience losses irrespective of the option (i.e., Issue 2).

Mental Budgeting and Outcome Editing in Negotiation

Although considering multiple issues simultaneously facilitates the discovery of integrative agreements (Geiger & Hüffmeier, 2020; Herbst et al., 2017; Raiffa, 2003), recent research has shown that considering issues in terms of topical mental accounts with scattered integrative potential between accounts (i.e., integrative agreements can only be achieved by making tradeoffs between mental accounts) impedes the achievement of mutually beneficial agreements between parties (Zhang et al., 2020). Further, Zhang and colleagues (2020) found that negotiators engaging in integrated outcome editing were more successful in discovering the integrative potential scattered between mental accounts than those who engaged in segregated

outcome editing. The concept of outcome editing derives from the mental accounting literature (Thaler, 1985, 1999) and coincides with the concept of choice bracketing (Read et al., 1999). Choice bracketing posits that when faced with multiple decisions, people may either consider the consequences of all these decisions succinctly (cf. broad bracketing) or isolated from one another (cf. narrow bracketing) (Read et al., 1999). In the context of negotiation, outcome editing refers to the way negotiators evaluate the potential outcomes of different mental accounts. Specifically, negotiators can evaluate the outcomes of different mental accounts in a collective, comparable way (cf. integrated outcome editing) or in an independent, isolated way (cf. segregated outcome editing) (Zhang et al., 2020). Read et al. (1999) pointed out that even though broad bracketing should generally produce choices with higher utility, evidence shows that people tend to narrowly bracket instead. Similarly, Thaler (1999) proposed that compared to segregated outcome editing, evaluating potential gains and losses across mental accounts in an integrated way is more efficient and should lead to better financial decision making. Nevertheless, Thaler and Johnson (1990) found out that consumers often chose to evaluate gains and losses of different mental accounts in a segregated manner to reduce the complexity of their decision-making process.

Likewise, in the context of negotiations, integrated outcome editing should be preferred to segregated outcome editing because it allows negotiators to evaluate gains and losses of different mental accounts simultaneously and facilitates the discovery of integrative win-win agreements (Zhang et al., 2020). However, when negotiators engage in minimal mental budgeting and set issue-based limits, it is expected that they are more likely to focus on the gains and losses of single issues and thereby increase their tendency of engaging in segregated outcome editing. Negotiators who exercise comprehensive mental budgeting, on the other hand,

are expected to have a broader focus towards the gains and losses of multiple issues and thereby increase their tendency to engage in integrated outcome editing.

A third hypothesis, therefore, concerns the location of ZOPP, mental budgeting, outcome editing, and joint outcomes in a model of sequential mediation.

H3: The effect of the location of the ZOPP (i.e., within issues vs. between issues) on the joint outcomes will be sequentially mediated by mental budgeting (i.e., comprehensive vs. minimal mental budgeting) and outcome editing (i.e., integrated vs. segregated outcome editing). Specifically, in negotiations with a ZOPP between the issues, negotiators are more like to set themselves a comprehensive limit, exercise integrated outcome editing and achieve higher joint outcomes. In contrast, negotiators who are negotiating in situations with a ZOPP within each issue are more likely to set themselves an individual limit for each negotiation issue, exercise segregated outcome editing and receive lower joint outcomes.

Integrated Outcome Editing Intervention by a Neutral Third-Party in Negotiation

Even though it is expected that the location of ZOPP (i.e., within issues vs. between issues) and approach of mental budgeting (i.e., comprehensive vs. minimal mental budgeting) affect the way of outcome editing (i.e., integrated vs. segregated outcome editing) negotiators engage in, parties in a negotiation with a ZOPP within issues who yet manage to engage in integrated outcome editing may attenuate or even cancel out the detrimental effects caused by the ZOPP within issues on the negotiation outcomes.

Some preliminary evidence for such a buffering effect of outcome editing was obtained by Zhang et al. (2020) in the context of mental accounting in multi-issue negotiations. However,

they received mixed results where some of their hypotheses were rejected, while others were supported by the evidence. Given this, the concept of manipulating outcome editing is revisited in this study within the context of mental budgeting. Specifically, nudging negotiators towards integrated outcome editing is investigated as a potential intervention strategy implemented by a neutral third-party (cf. a mediator) to help negotiators achieve higher joint outcomes.

Mediation is a method of conflict resolution related to negotiation that is usually only being resorted to if disputes cannot be resolved by the opposing parties themselves (Gelfand et al., 2011; Sheppard, 1984). Mediators may help the involved parties to reach an agreement by employing a wide range of available strategies (Wall & Dunne, 2012). To be more precise, mediators may employ strategies to influence how the parties interact during the negotiation (cf. process control), what material the parties discuss during negotiation (cf. content control) or what behaviors are employed by the parties during negotiation (cf. motivational control) (Pruitt, 1971; W. H. Ross, 1990; Sheppard, 1984). Mediation has been proven to be a successful form of conflict resolution from interpersonal disputes (Pruitt et al., 1990) to international conflicts (Stein, 1985; Wilkenfeld et al., 2003). In fact, coming back to the opening story, the EU3 (the U.K., France, and Germany) originally wanted to take on the role of a mediator between the U.S. and Iran in 2003 (Croll, 2009).

As indicated before, mediation is usually only employed if the parties in conflict fail to resolve the conflict themselves (Gelfand et al., 2011; Sheppard, 1984). I assume that one reason for this may be that by allowing a mediator to take part in the negotiation, the negotiating parties might fear that they are giving up some of their agency over the outcome of the negotiation. However, if applied correctly, mediation may be combined with negotiation in such a way that the benefits of both methods are exploited without reducing the control of the negotiating parties.

Some evidence for this can be obtained from Pruitt and Johnson (1970) who showed that intervention by a mediator produced stronger concession making and reduced feelings of inadequacy which usually accompany concession making.

Therefore, third-party mediation in the current study will use nudging as a form of unobtrusive motivational control to motivate the negotiators to engage in integrated rather than segregated outcome editing regardless of the location-of-ZOPP characteristics of their negotiation. Nudging refers to the attempt of prompting someone to show a specific behavior without restricting the available range of behaviors or resorting to prohibitions, punishments, or incentives (Thaler & Sunstein, 2009). This low form of motivational control is chosen as an intervention in an attempt to preserve as much agency and control of the negotiators as possible while simultaneously harnessing beneficial effects from the mediation.

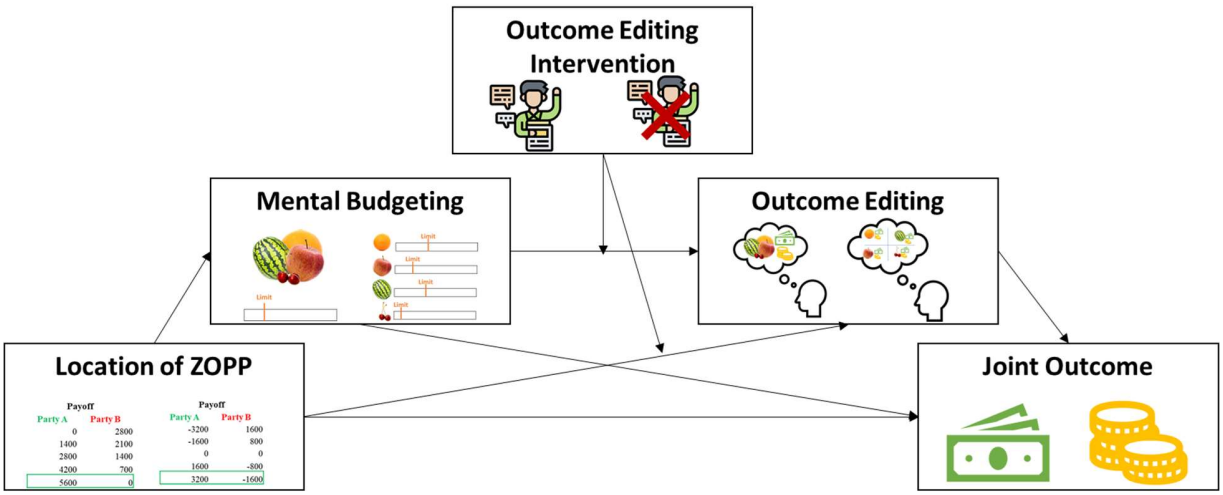
It is expected that nudging towards integrated outcome editing by a neutral mediator will attenuate (*H4a*) or cancel out the (*H4b*) predicted detrimental effects of ZOPP within negotiations on outcome editing (i.e., integrated vs. segregated) and joint outcomes. This is captured in hypotheses 4a and 4b and constitutes a moderated mediation hypothesis.

H4a: A nudging intervention towards integrated outcome editing by a neutral third-party mediator will attenuate the detrimental effect of a ZOPP within issues on the joint outcome from final offers that is mediated by the way of outcome editing (i.e., integrated vs. segregated).

H4b: A nudging intervention towards integrated outcome editing by a neutral third-party mediator will cancel out the detrimental effect of a ZOPP within issues on the joint outcome from final offers that is mediated by the way of outcome editing (i.e., integrated vs. segregated).

Figure 2

The Predicted Model



Note. The predicted model is shown. The location of ZOPP (i.e., within issues vs. between issues) is expected to affect the joint outcome and this relationship is expected to be mediated by the approach of mental budgeting (i.e., comprehensive vs. minimal mental budgeting) and the way of outcome editing (i.e., integrated vs. segregated outcome editing). The integrated outcome editing intervention (i.e., with intervention vs. without intervention) is expected to moderate this relationship by affecting the way of outcome editing.

Method

Initially, the current study was devised as a laboratory experiment that would comprise of two participants negotiating three rounds in an 8-issue negotiation with either ZOPP-within or ZOPP-between characteristics. For the integrated outcome editing intervention conditions, it was further planned that a confederate of the researcher would pose as a third participant who would get assigned the role of mediator seemingly at random and deliver the integrated outcome editing

intervention. However, due to the escalation of the global COVID-19 pandemic (World Health Organization, 2020) and the resulting social distancing measures that were put in place by the German government (Bundesministerium für Gesundheit, 2020) and the Leuphana University (Leuphana University Lüneburg, 2020a, 2020b) in spring 2020, an online scenario study was designed instead. To carry out this study, the research platform GORILLA was selected. [1] This unique challenge allowed me to evaluate the feasibility of using an online scenario study for complex study designs in negotiation research, the associated advantages and disadvantages of which are discussed later in this paper.

Sample Size Analysis

To determine the sample size, an *a priori* sample size analysis using G*Power 3.1 (Faul et al., 2009) was conducted. The effect of $\omega^2 = 0.068$ obtained by Polzer and Neale (1995) was used to estimate effect size because their study about superordinate and subordinate goals coincides with our conceptualization of comprehensive and minimal mental budgeting. Using the equivalent $f = 0.30$ in the G*Power sample size estimation, it was derived that a minimum of 196 participants was required to attain a power of $1 - \beta = 0.85$ (G*Power parameters: $f = 0.30, \alpha = 0.01, 1 - \beta = 0.85$).

Participants and Design

Participants were mainly recruited from the research platform, "Sona Systems," of the Leuphana University. Additionally, an invitation link to the study was shared in social networks like LinkedIn, Facebook, or WhatsApp, and was briefly available to members of the research

[1] GORILLA is an online experiment and survey builder. It may be accessed via this link https://gorilla.sc/.

panel of the Userlutions GmbH.[2] By utilizing these different recruitment channels it was attempted to achieve a demographically more diverse sample than what a mere student sample would have offered. As compensation, participants were able to take part in the lottery for one of twelve amazon gift cards with a total value of 100€ that were randomly distributed among participants who proposed final offers with the highest joint outcomes.[3] Students from the Leuphana University additionally were accredited with one research credit as partial fulfillment of their degree. In total, the link to the study was clicked by 291 participants, 88 of which dropped out during the study (see figure 3). Another eleven participants were excluded from analysis because they indicated that they only wanted to take a look at the study ($n = 5$), failed both attention checks ($n = 4$), indicated that they had a connection error and didn't receive the mediator intervention ($n = 1$), or had missing data that prevented calculation of the main dependent variables ($n = 1$). After dropout and exclusion, 192 participants ($M_{age} = 24.36, SD = 9.16;\ \text{female} = 134, \text{male} = 54, \text{diverse} = 1, \text{NA} = 3$) remained. Most of the participants (82.3%) were university students from 22 different academic majors (e.g., psychology, business administration). The rest indicated "work" (12%), "school" (2.1%) or "other" (3.6%) as their current occupation. Self-reported negotiation experience on a 7-point scale (1 = *no experiences* to 7 = *many experiences*) was rated low on average ($M = 2.31, SD = 1.78$), but more than half of the participants (64.6%) had participated in at least one negotiation study prior to the present study. The current study followed a 2 (Location of ZOPP: within issues

[2] The researcher was working at the Userlutions GmbH at the time of the study, and the Userlutions GmbH allowed the posting of the invitation link for a period of two days as a favor.

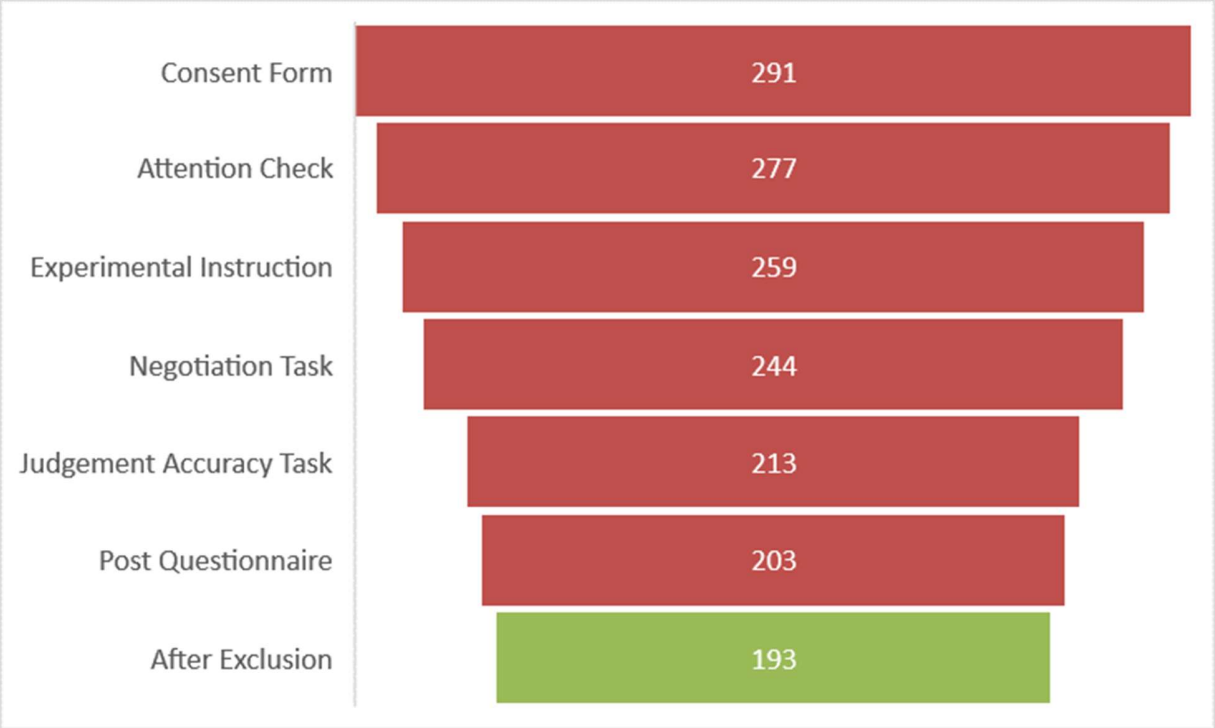
[3] Participants were told during instruction that their odds of winning would depend on their final offer. Specifically, they were informed that the better their offer, the high their odds of winning one of the gift cards were. Participants were not told what the metric for "a good offer" was to hide the studies' focus on joint outcomes.

vs. between issues) × 2 (Integrated Outcome Editing Intervention: with intervention vs. without intervention) between-subjects design.[4] In addition, the party (i.e., Karl/ Karla vs. Marlon/ Marlene) was randomized between subjects to control for a possible role effect.

[4] The study was set up on gorilla.sc as two separate projects. The first project included all conditions without the integrated outcome editing intervention, the second project those conditions with intervention. Therefore, the location of ZOPP was randomized within each gorilla.sc project, while integrated outcome editing intervention was randomized between gorilla.sc projects. Recruitment of participants for both gorilla.sc projects started at the same time and recruitment material that was shared on social media involved links to both projects in a counterbalanced order (i.e., the project with intervention first vs. project without intervention first). By clicking either of the two study links, participants were assigned to the corresponding project on gorilla.sc and thereby randomly assigned to either of the two outcome editing intervention conditions (i.e., with intervention vs. without intervention).

Figure 3

Study Dropout and Final Sample Size After Exclusion



Note. Dropout is depicted along the course of the study and marked in red. The final sample size after exclusion is marked in green. Names on the left indicate the stage during which dropout occurred. Numbers represent the number of participants who entered the corresponding stage.

Negotiation Task and Procedure

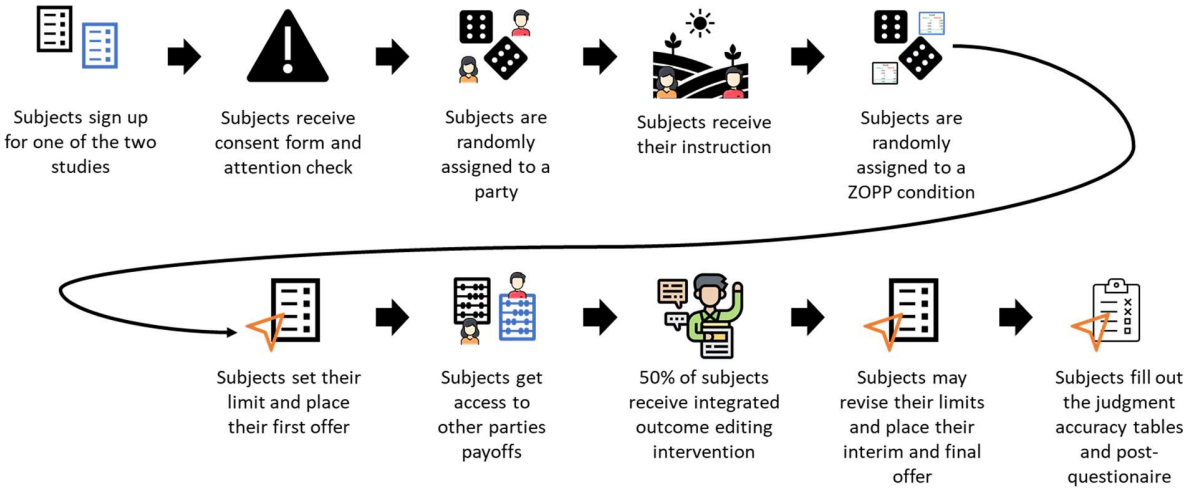
Figure 4 illustrates experimental procedure. By clicking on the study link, participants unknowingly entered either a condition with integrated outcome editing intervention or a condition without this intervention and were thus randomly appointed to an integrated outcome editing intervention. After clicking the study link, participants gave their consent for the collection and analysis of their experimental data and completed one or, if they failed the first

one, two attention checks. Participants were then randomly assigned to one of the two roles (i.e., Karl/ Karla vs. Marlon/ Marlene), and received experimental instructions corresponding to their assigned role. Participants were told that they were one of two farmers who negotiated the shared use of a crop field and its corresponding farming resources. In total, they had to negotiate the distribution of eight separate issues (e.g., number of workers, daily use rights of machines; see appendix A for an overview over all eight issues). Each issue allowed for five agreement options (i.e., A to E) that would provide them with different economic outcomes (i.e., points). Participants were instructed to focus on their points and to gain as many points as possible. They were further informed that prior to negotiation, they had to set themselves limits and that there would be three rounds of negotiation during which they would propose an offer to their counterparty. After receiving their instruction, participants were randomly assigned to one of the two location-of-ZOPP conditions (i.e., within issues vs. between issues). Participants were then provided with their respective pay-off table corresponding to their location-of-ZOPP condition and role (see appendix B and C). They then decided whether they wanted to set themselves separate limits for each individual issue (i.e., minimal mental budgeting) or one limit encompassing all issues (i.e., comprehensive mental budgeting). After selecting their limit-setting approach, they were instructed to specify their limit(s) using interactive sliders. The comprehensive limit could be set at any value between the minimum and maximum possible sum of points over all issues (i.e., -16100 to +16100 points). Correspondingly, issue-based limits could be set at any value between the respective issue's minimum and maximum possible points. The range of the sum of all issue-based limits was equivalent to the range for the comprehensive limit (i.e., -16100 to +16100). At this point, participants were also asked to write their limit(s) down on a piece of paper to make sure to that they kept their limit(s) present during the study.

After setting their initial limits, participants proposed their first, intermediary, and final offer. To simulate information exchange that would occur in real interactive negotiations, participants were also provided with their counterpart's pay-off table and were allowed to revise their limits between their first and intermediary offer. To prevent simple comparison, participants were only able to look at either their own or their counterpart's pay-off table a time. Participants in integrated outcome editing intervention conditions additionally received the intervention by the neutral third-party mediator between their first and intermediary offer (see experimental manipulations below). Before proposing their final offer, participants were asked to estimate the number of rounds they would require reaching a final agreement from a minimum of three to a maximum of fifteen rounds. Concerning their final offer, participants were instructed to propose it in such a way that it would represent the last offer that was acceptable to them before they would break off negotiation without reaching an agreement. Finally, participants were asked to perform a judgment accuracy task and fill out the post questionnaire, at the end of which participants were thanked and debriefed.

Figure 4

Experimental Procedure



Experimental Manipulations

According to their location-of-ZOPP conditions, participants either received pay-off tables that featured ZOPP-within issues (i.e., each issue holds an option where neither party has any losses; see figure 1 and appendix B) or ZOPP-between issues (i.e., half of the issues has only options where neither party has any losses, the other half have only options were at least one party experiences losses; see figure 1 and appendix C). Despite their structural difference, possible point outcomes of pay-off tables equal between conditions (see figure 5).

Participants in conditions with the outcome editing intervention were informed during instruction that a neutral mediator appointed by the regional government would assist them during the negotiation. They received their intervention in the form of an additional screen with a quote by the mediator between proposing their first offer and having the option to adjust their limits. The quote stated that, according to prior research, negotiators must consider the outcomes

of individual issues in a collective and comparative way, to achieve beneficial results. It further stated that the mediator suggested they would do so during the entire negotiation. Participants in the conditions without outcome editing intervention did not receive any intervention from a third party.

Figure 5

Possible Point Outcomes per Location-Of-ZOPP Condition

ZOPP-within			ZOPP-between		
Outcome Group	**Statistic**	**Points**	**Outcome Group**	**Statistic**	**Points**
Joint Outcome	Maximum	7800	**Joint Outcome**	Maximum	7800
	Compromise	0		Compromise	0
	Minimum	-7800		Minimum	-7800
Individual Outcome Party A	Maximum	16100	**Individual Outcome Party A**	Maximum	16100
	Compromise	0		Compromise	0
	Minimum	-16100		Minimum	-16100
Individual Outcome Party B	Maximum	16100	**Individual Outcome Party B**	Maximum	16100
	Compromise	0		Compromise	0
	Minimum	-16100		Minimum	-16100

Note. Maximum, minimum and compromise point values are shown for joint outcomes and individual outcomes for both parties. Possible point values are the same for ZOPP-within and ZOPP-between conditions.

Manipulation Check

The location of ZOPP was manipulated structurally by providing different pay-off tables to participants from different conditions. Therefore, manipulation checks were not strictly necessary but performed to check whether the pay-off characteristic was consciously recognized by the participants. Participants were asked to rate four items on a 7-point scale (1 = *does not apply at all* to 7 = *fully applies).* Manipulation check items asked whether in their negotiation gains and losses could be balanced within each issue, whether gains and losses could only be balanced between the issues, whether all eighth issues included one option that did not produce any losses to both parties, and whether the negotiation included issues that did not allow for both parties to make gains.[5]

To check the integrated outcome intervention manipulation, participants were asked to rate one item on a 7-point scale (1 = *does not apply at all* to 7 = *fully applies*), whether during the negotiation a neutral third-party mediator suggested to them to compare the potential outcomes from individual issues in an integrated manner.[6]

Dependent Variables

The main dependent variable was the joint outcome based on the final offer. It was calculated as the sum of both parties' outcomes from the agreement options selected by the participant during their final offer. It could range from the worst possible joint outcome of -7800

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[5] Manipulation check items one and three were designed to correspond to by ZOPP-within conditions, while items two and four should correspond to ZOPP-between conditions. Due to researcher error, item two was typed incorrectly and was missing the "only". Therefore, its meaning was consistent with the pay-off structure of both location-of-ZOPP conditions.

[6] The manipulation check item for the integrated outcome editing intervention corresponds to conditions with intervention and thus should be rated high by participants who received an intervention and low by such who did not.

points (i.e., options A-A-A-A-E-E-E-E) to the best possible outcome of 7800 points (i.e., options E-E-E-E-A-A-A-A), a compromise solution (i.e., options C-C-C-C-C-C-C-C) would yield a joint outcome of zero points.

Mental budgeting was captured as a dichotomous variable when participants decided to set themselves either issue-based limits (i.e., minimal mental budgeting) or one overall limit (i.e., comprehensive mental budgeting).

Outcome editing was measured by four self-report items that participants rated on a 7-point scale (1 = *does not apply at all* to 7 = *fully applies*). Specifically, they rated whether during the negotiation they considered gains and losses for each issue individually, whether they considered gains and losses for multiple items together, whether they tried to maximize gains for each individual issue, and whether they tried to balance losses from some issues with gains from other issues. Item one and item three were reverse coded and the mean of all four items was calculated for each participant. This mean served as the score for outcome editing with higher values indicating more integrated outcome editing.

Exploratory Analysis

In addition to the main dependent variables, several other variables were collected for exploratory purposes. Five 7-point rating scales (1 = *does not apply at all* to 7 = *fully applies*) were used to assess the perceived helpfulness, neutrality, and influence of the mediator. In detail, participants who received the integrated outcome editing intervention were asked whether they felt the mediator helped them to propose a good final offer, whether they felt that their final offer would have been worse without the support by the mediator, whether they felt the mediator was neutral and didn't lean to the side of one negotiation party, whether they felt that the mediator

had a direct influence on their final offer, and whether they felt that the mediator had a greater influence on the final offer than they did.

Four additional 7-point rating scales (1 = *does not apply at all* to 7 = *fully applies*) were used to measure socio-emotional outcomes. These items measured whether the participants were satisfied with their final offer, whether they felt their final offer to be compatible with their limits, whether they thought their final offer to be fair, and whether they thought that their counterpart would agree to their final offer.

Also, the consistency between final offers and limits was calculated for all participants in two ways. First, it was calculated for the summed-up limit totals of participants who engage in comprehensive and minimal mental budgeting. Second, for participants who engaged in minimal mental budgeting it was also calculated per individual issue. Limit totals counted as "violated," if the total own outcome from the final offer was lower than the limit total. Issue-based limits were counted as "violated," if the own outcome from the final offer of that issue was lower than the respective limit.

Finally, additional variables were collected for related research projects that are being conducted at the Leuphana University at the current time (e.g., number of negotiation rounds, judgment accuracy, loss aversion, gain and loss focus, issue consideration, mental closing, construal level, concession making, cognitive load, epistemic motivation, and social motivation). These variables were not included in the current thesis and thus are not further discussed.

Results

Data treatment and analysis were performed by the researcher in R (R Core Team, 2019) using RStudio (RStudio Team, 2019) and several open source packages by different authors (see appendix D for a full list of packages).

Randomization Check

Participants from different conditions did not significantly differ concerning their gender, $X^2(9, N = 192) = 7.19, p = .617$, negotiation experience, $X^2(21, N = 192) = 18.39, p = .624$, or prior negotiation study experience, $X^2(12, N = 192) = 12.38, p = .415$. However, significant differences were found for age, $F(3, 184) = 4.32, p = .005$, and occupation, $X^2(9, N = 192) = 21.38, p = .011$. Tukey-HSD post-hoc analysis revealed that the mean age of ZOPP-between with intervention ($M = 28.10, SD = 15.10$) and ZOPP-between without intervention ($M = 21.72, SD = 2.76$) conditions significantly differed from one another ($p = .002$). This was caused by three extreme outliers (60, 78 and 84 years) in the ZOPP-between with intervention condition. Median age of these two conditions was remarkably similar (21.5 and 21 years respectively). Post-hoc analysis also revealed that five out of seven participants who selected "other" as their occupation were assigned to the ZOPP-between with intervention condition, while other types of occupation did not significantly differ between conditions. Overall, these results corroborate a successful randomization of participants between conditions.

Manipulation Check

It was expected that participants from ZOPP-within conditions give high ratings on manipulation check items one, two, and three and low ratings on item four, while Participants from ZOPP-between conditions were expected to give high ratings on items two and four and low ratings on items one and three. In line with these expectations, both participants from ZOPP-within ($M = 5.18, SD = 1.42$) and ZOPP-between conditions ($M = 4.88, SD = 1.58$) gave high ratings on manipulation check item two and did not significantly differ from another, $t(190) = 0.00, p = .949$. Also as expected, participants from ZOPP-within conditions ($M = 4.81, SD =$

2.12) gave significantly higher ratings on manipulation check item three than participants from ZOPP-between conditions ($M = 3.26, SD = 1.76$), $t(179.35) = -5.50, p < .001$.[7] However, contrary to expectations, there were no significant differences between ZOPP-within and ZOPP-between conditions on manipulation check items one ($M = 3.61, SD = 1.57$ $vs.$ $M = 3.73, SD = 1.59$), $t(190) = 0.54, p = .587$, and four ($M = 5.07, SD = 2.03$ $vs.$ $M = 5.17, SD = 2.01$), $t(190) = 0.33, p = .741$. Nevertheless, because the location of ZOPP was manipulated structurally by altering the characteristics of the pay-off tables, the success of the manipulation is not dependent on the significance of the manipulation check. In fact, two explanations for the unexpected results on the manipulation check may be considered. First, the structural characteristics of the pay-off tables were not consciously recognized and processed by participants. Second, the manipulation check items were inadequate in describing the difference between the two conditions. Comments made by participants who contacted the researcher after the study or used the open comment field from the post questionnaire indicated that some participants had difficulty understanding individual items or following the general procedure of the experiment. This may be viewed as evidence towards the second explanation and will be further discussed later as a general limitation to the current study.

The results of the manipulation check for the integrated outcome editing condition were in line with expectation. Participants from conditions with intervention ($M = 5.24, SD = 2.18$) and without intervention ($M = 2.79, SD = 1.95$) significantly differed from another in the expected direction, $t(190) = 8.17, p < .001$, corroborating a successful manipulation.

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[7] Levene's test indicated unequal variances for manipulation check item three, $F(190, 1) = 7.58, p = .006$. Therefore, a Welch Two Sample t-test was performed in this case. Levene's test was non-significant for all other manipulation check items ($Fs < 0.139, ps > .710$).

Joint Outcomes

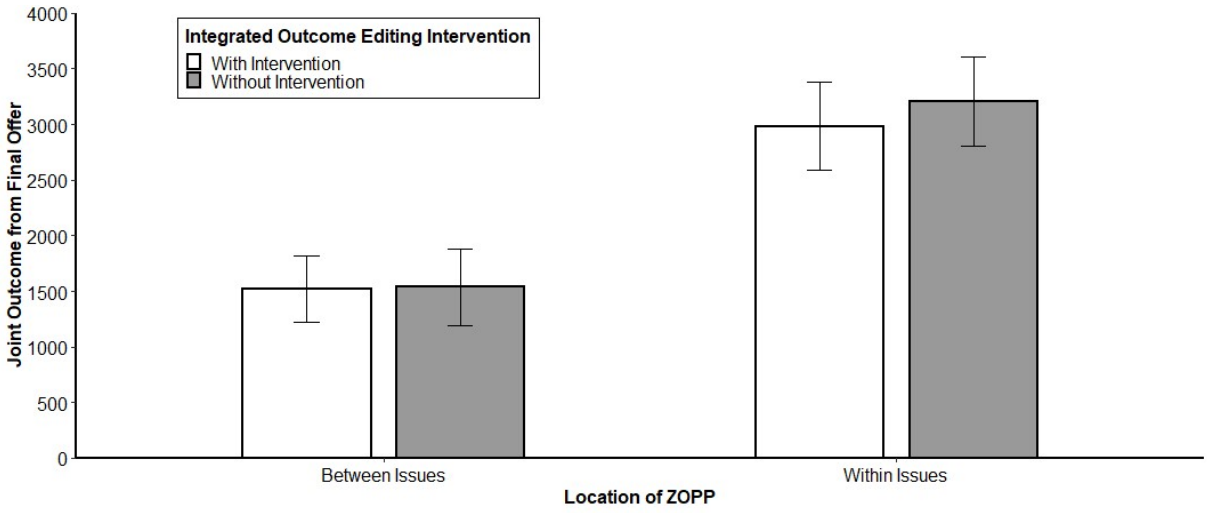
Normality and homogeneity of variance assumptions were tested by performing Shapiro-Wilk and Levene's tests. The Shapiro-Wilk test indicated that the distribution of joint outcomes from final offers was significantly non-normal, $W = 0.96, p < .001$. The Levene's Test indicated equal variances between the groups, $F(3, 188) = 2.45, p = .064$. The robustness of F-tests in cases of non-normality has been examined by Blanca et al. (2017), and the method was proven to be very robust even in cases of non-normality. Therefore, a 2 × 2 ANOVA with the location of ZOPP (i.e., within issues vs. between issues) and integrated outcome editing intervention (i.e., with intervention vs. without intervention) as factors was performed.[8] It revealed a significant main effect for the location of ZOPP, $F(1, 188) = 18.41, p < .001, \eta_p^2 = .089$. Participants from ZOPP-within conditions ($M = 3086.02, SD = 2716.34$) proposed final offers that held significantly higher joint outcomes than participants from ZOPP-between conditions ($M = 1529.79, SD = 2276.64$). The main effect for the integrated outcome editing intervention was not significant, $F(1, 188) = 0.10, p = .752$. The joint outcome from final offers did not significantly differ between participants from conditions with intervention ($M = 2267.60, SD = 2556.25$) and participants from conditions without intervention ($M = 2300.26, SD = 2682.10$). The two-way interaction did not reach significance, $F(1, 188) = 0.08, p = .774$. Together these findings provide evidence, that in negotiations where the ZOPP can be found within each issue, negotiators propose final offers that provide higher joint

[8] In addition, a Scheirer-Ray-Hare-Test (Scheirer et al. (1976) was performed on the same variables. The Scheirer-Ray-Hare-Test is a non-parametric test and as such does not depend on the assumption of normality (Field et al. (2013). This test also produced a significant main effect for the location of ZOPP, $H(1, 188) = 14.97, p < .001, \eta_p^2 = .078$. Neither the main effect for integrated outcome intervention, $H(1, 188) = 0.13, p = .714$, nor the interaction reached significance, $H(1, 188) = 0.17, p = .677$.

outcomes than negotiators in negotiations were the location of ZOPP lies between issues (see figure 6). This relationship is exactly opposite to the prediction from *H1*, thereby rejecting it. A nudging intervention towards integrated outcome editing by a neutral third-party mediator had no effect on joint outcome, thus *H4a* and *H4b* were rejected as well.

Figure 6

Joint Outcome from Final Offers by the Experimental Condition



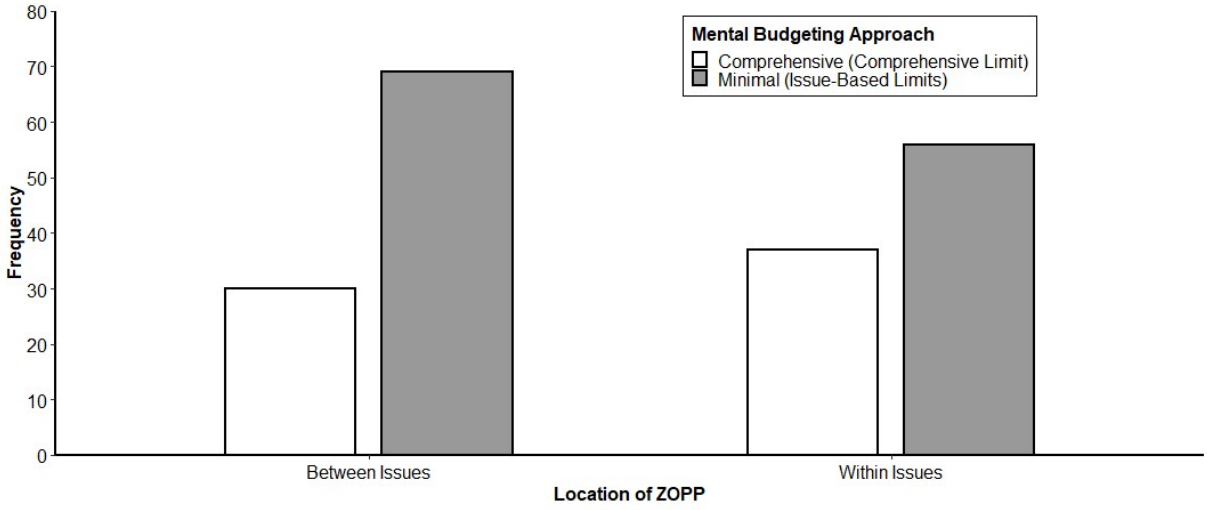
Note. Mean joint outcomes from final offers are shown for different location-of-ZOPP and integrated outcome editing intervention groups (error bars represent standard errors).

Mental Budgeting

A Chi-Square test of independence was performed to examine the relationship between the location of ZOPP (i.e., within issues vs. between issues) and the approach of mental budgeting that participants engaged in (i.e., comprehensive vs. minimal mental budgeting). The relationship between these variables was not statistically significant, $X^2(1, N = 192) = 1.89, p = .168$. Descriptive analysis revealed that independent of condition, most participants (65.1%) chose to set themselves issue-based limits (see figure 7). This result rejects *H2* by showing that independent of the location of ZOPP, most negotiators set themselves issue-based limits and therefore engage in minimal mental budgeting. Further implications for prior negotiation research on limit setting are considered in the final discussion.

Figure 7

Mental Budgeting Approach by the Location Of ZOPP



Note. Frequencies for the approach of mental budgeting by participants are shown for different location-of-ZOPP groups.

Outcome Editing

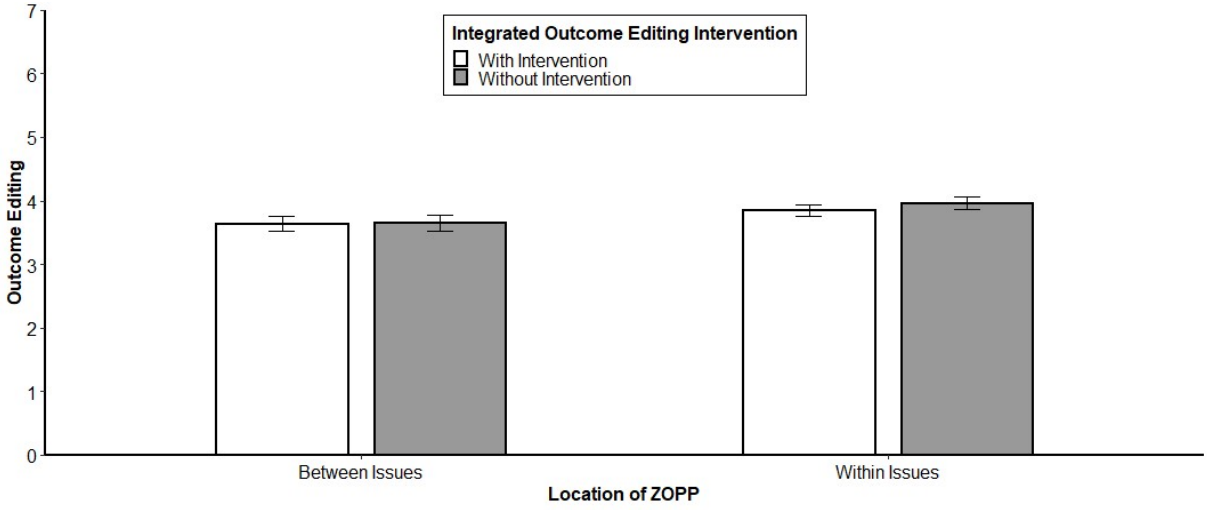
Normality and homogeneity of variance assumptions were tested by performing Shapiro-Wilk and Levene's tests. The Shapiro-Wilk test indicated that outcome editing was significantly non-normal, $W = 0.95, p < .001$. The Levene's Test indicated that variances were similar for the different groups, $F(3, 188) = 2.10, p = .100$. Due to its robustness against the violation of normality (Blanca et al., 2017), a 2 × 2 ANOVA with the location of ZOPP (i.e., within issues vs. between issues) and integrated outcome editing intervention (i.e., with intervention vs. without intervention) as factors was performed. [9] A significant main effect for the location of ZOPP was obtained, $F(1, 188) = 5.49, p = .01, \eta_p^2 = .019$. Participants from location of ZOPP-within conditions ($M = 3.90, SD = 0.66$) rated their outcome editing behavior as significantly more integrated than participants from ZOPP-between conditions ($M = 3.64, SD = 0.83$). The main effect for the integrated outcome editing intervention was not significant, $F(1, 188) = 0.26, p = .609$. Participants from conditions with intervention ($M = 3.74, SD = 0.72$) did not differ in their self-reported outcome editing from participants of conditions without intervention ($M = 3.78, SD = 0.80$). The two-way interaction did not reach significance, $F(1, 188) = 0.22, p = .639$. In sum, these results indicate that in negotiations where the location of ZOPP lies within each issue, negotiators report that they engage in more integrated outcome editing than negotiators in negotiations where the ZOPP is found between issues (see figure 8). Like with the first hypothesis on joint outcomes, this relationship is exactly opposite to our prediction,

[9] In addition, a Scheirer-Ray-Hare-Test was performed on the same variables. The Scheirer-Ray-Hare- Test produced neither a significant main effect for the location of ZOPP, $H(1, 188) = 3.78, p = .051$, nor for integrated outcome intervention, $H(1, 188) = 0.74, p = .387$, or their interaction, $H(1, 188) = 0.18, p = .669$.

thus rejecting *H3*. These results further indicate that the intervention by the neutral third-party mediator was not effective in nudging participants towards more integrated outcome editing, thus providing an explanation why the joint outcome from final offers was not related to the integrated outcome editing intervention.

Figure 8

Outcome Editing by the Experimental Condition



Note. Average ratings of the self-reported way of outcome editing are shown for different location-of-ZOPP and integrated outcome editing intervention groups. Higher values indicate more integrated outcome editing, lower values indicate more segregated outcome editing (error bars represent standard errors).

Mediation Analysis of Mental Budgeting

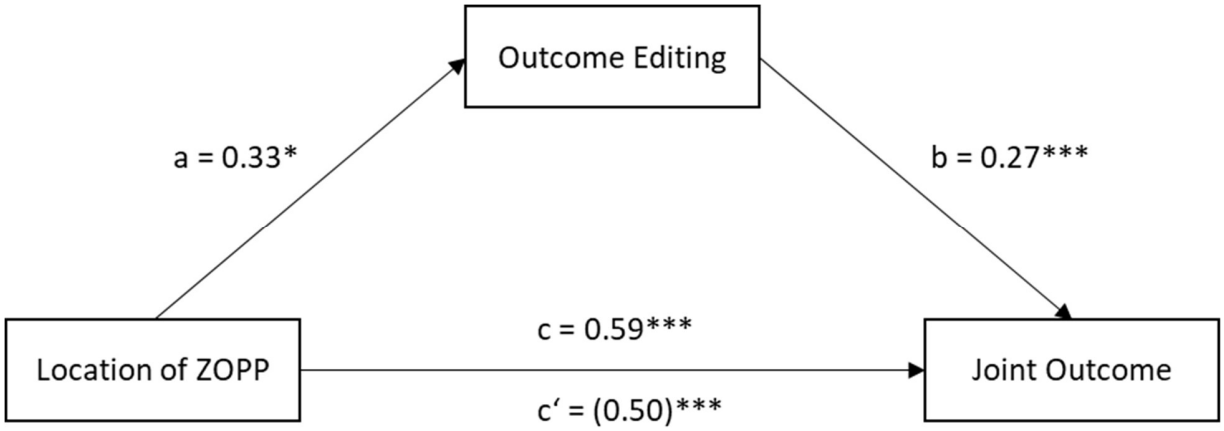
Because no relationship between the location of ZOPP and the approach of mental budgeting was found, the planned mediation analysis of the location of ZOPP on the joint outcome from the final offer, with mental budgeting approach as the mediator was not performed.

Mediation Analysis of Outcome Editing

Even though the direction of this relationship is opposite to the prediction from the first and third hypotheses, the location of ZOPP had a significant effect on both the joint outcome from final offers (DV) and outcome editing (mediator). Therefore, the planned mediation analysis was performed. Figure 9 shows that the effect of the location of ZOPP on the joint outcome from final offers was partially mediated by outcome editing. Both the standardized regression coefficient between the location of ZOPP (IV) and outcome editing (mediator) and between outcome editing (mediator) and the joint outcome from final offers (DV) were significant. The standardized indirect effect was $(0.33)(0.27) = 0.09$. The significance of this indirect effect was tested by using bootstrapping procedures of 10 000 bootstrapped samples to estimate unstandardized indirect effects. A 95% confidence interval was computed by determining indirect effects at the 2.5^{th} and 97.5^{th} percentiles. The bootstrapped unstandardized effect was .09 and its 95% confidence interval ranged from .01 to .18. Therefore, the indirect effect was statistically significant ($p = .019$).

Figure 9

Outcome Editing as a Mediator Between the Location Of ZOPP and the Joint Outcome



Note. Standardized regression coefficients are shown for all paths of the mediation model. The effect of the location of ZOPP on the joint outcome remains significant after controlling for outcome editing (c'), indicating partial mediation (stars indicate level of significance).

Exploratory Analysis of Mental Budgeting

Even though participants from different groups did not significantly differ in their approach of mental budgeting (i.e., comprehensive vs. minimal mental budgeting), it is still important to examine whether the scope of the limit(s) participants set themselves had an effect on the joint outcome from their final offers and whether it interacted with their location of ZOPP condition. Therefore, a 2 × 2 ANOVA with the location of ZOPP (i.e., within issues vs. between issues) and mental budgeting (i.e., comprehensive vs. minimal mental budgeting) as factors was performed. The ANOVA only produced the already known main effect for the location of ZOPP, $F(1, 188) = 17.78, p < .001, \eta_p^2 = .086$ (see figure 10). Neither the main effect for mental budgeting, $F(1, 188) = 1.41, p = .236$, nor the interaction, $F(1, 188) = 1.67, p = .198$,

reached significance. These results suggest that whether negotiators set themselves individual limits per issue (cf. minimal mental budgeting) or one comprehensive limit for all issues (cf. comprehensive mental budgeting) does not have an effect on their final offer with regard to joint outcomes. Together with the fact that mental budgeting is independent of the location of ZOPP, this provides further evidence against *H2*.

Figure 10

Joint Outcome from Final Offers by the Location Of ZOPP and the Mental Budgeting Approach

Note. Mean joint outcomes from final offers are shown for different location-of-ZOPP conditions and different approaches of mental budgeting (error bars represent standard errors).

Exploratory Analysis of Limit Violation

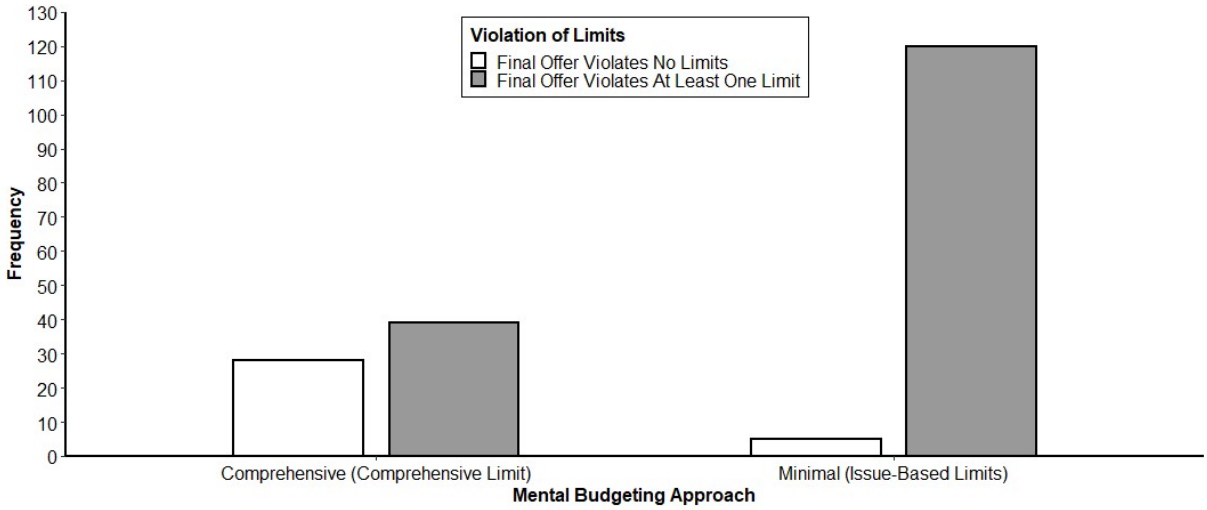
Participants who set issue-based limits (i.e., minimal mental budgeting) may have been forced to violate their initial limits on at least some of the issues when making their final proposals, while participants who set a comprehensive limit (i.e., comprehensive mental budgeting) had more flexibility and did not necessarily have to violate their initial limit. A Chi-Square test was performed to test whether participants who engaged in different approaches of mental budgeting (i.e., comprehensive vs. minimal mental budgeting) significantly differed in their likelihood to violate at least one limit with their final offer.[10] The test was statistically significant, $X^2(1, N = 192) = 43.76, p < .001$, indicating that participants who engaged in minimal mental budgeting were more likely to violate at least one limit than participants who engaged in comprehensive budgeting. Specifically, a greater proportion of participants who set issue-based limits (96%) than participants who set a comprehensive limit (58.2%) violated at least one of their limits (see figure 11). Descriptive analysis further revealed that only five (4%) participants who set issue-based limits violated none of their limits, while 59 (68%) participants who set issue-based limits violated four or more of their limits with their final offer (see figure 12). An additional Chi-Square test was used to test whether participants who engaged in different mental budgeting approaches (i.e., comprehensive vs. minimal mental budgeting) also

[10] For participants who engaged in minimal mental budgeting, their limit on a given issue was compared with their own outcome from their final offer on the respective issue. If their limit on a given issue was higher than the own outcome from final offer of the respective issue, their limit was treated as violated. For participants who engaged in comprehensive mental budgeting, their total own outcome from final offers was compared with their limit and their limit was treated as violated if their own outcome was lower than their limit. In cases where participants chose to revise their limit, their second limit(s) rather than their first limit(s) were used to determine whether their limits were violated.

significantly differed in their likelihood of violating their total limit.[11] The test did not reach significance, $X^2(1, N = 192) = 0.51, p = .472$. Participants who engaged in comprehensive mental budgeting (58.2%) were equally likely to violate their limit total as participants who engaged in minimal mental budgeting (52.8%) (see figure 13).

Figure 11

Violation of at Least One Limit by the Mental Budgeting Approach

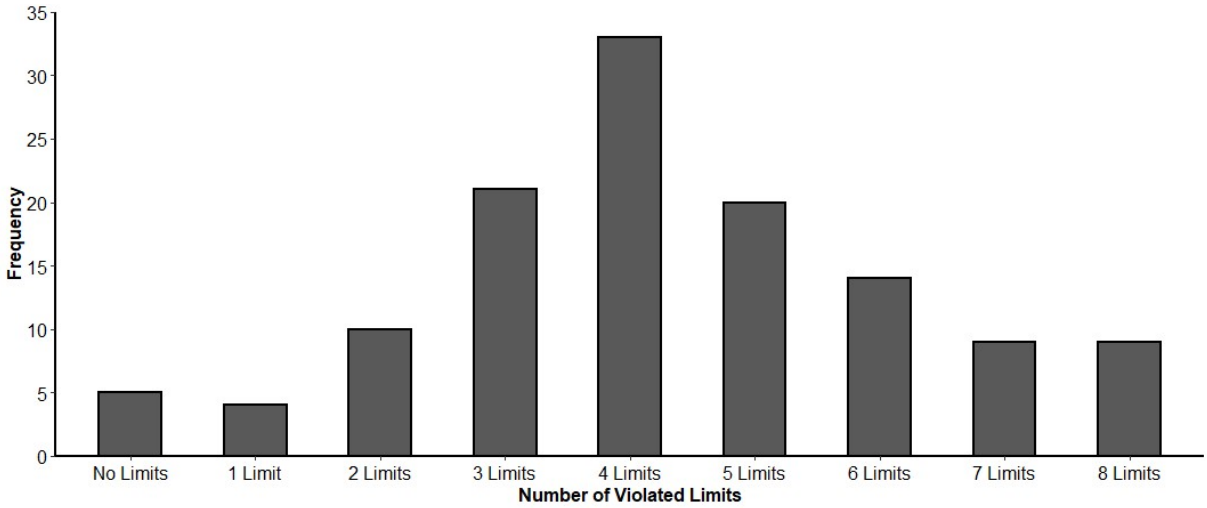


Note. Frequencies for violating no limit versus violating at least one limit are shown for different approaches of mental budgeting.

[11] For participants who engaged in minimal mental budgeting, their total limit was calculated as the sum of their eight individual limits. Participants who engaged in comprehensive budgeting only set one limit, which determined their total limit. In cases where participants chose to revise their limit, their second limit(s) rather than their first limit(s) were used to calculate their total limit.

Figure 12

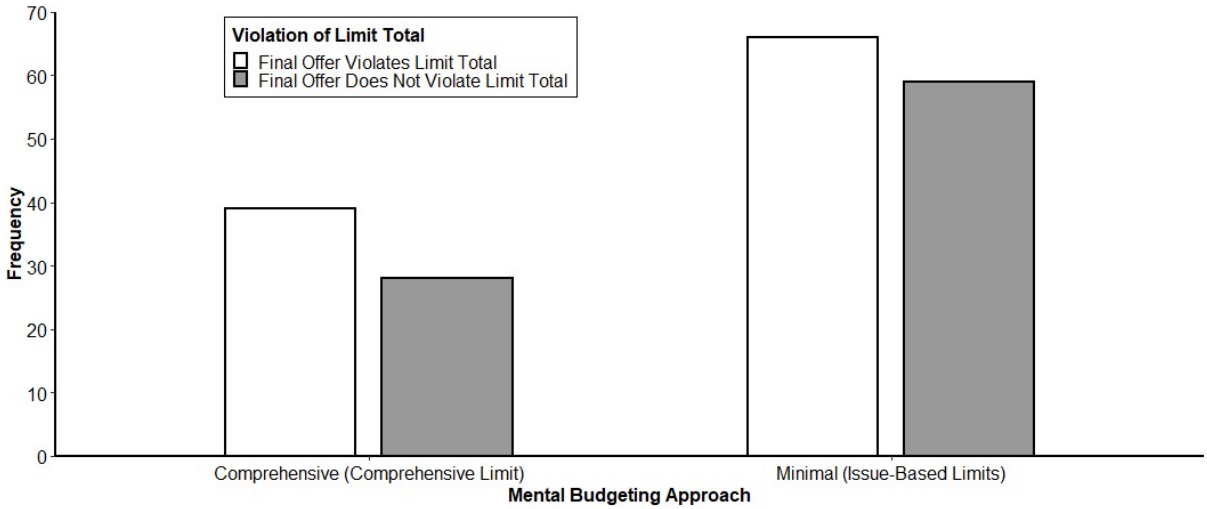
Number of Limits Violated from Participants Who Engaged in Minimal Mental Budgeting



Note. Frequencies for the number of violated limits in minimal mental budgeting are shown.

Figure 13

Violation of Limit Total by the Mental Budgeting Approach



Note. Frequencies for violating the limit total versus not violating the limit total are shown for different approaches of mental budgeting.

Exploratory Analysis of Perceptions Towards the Mediator

Descriptive analysis showed that, on average, the mediator was perceived as neutral ($M = 5.52, SD = 1.92$),[12] and having a low influence on the final offers by the participants ($M = 1.98, SD = 1.25$).[13] The helpfulness of the mediator was generally perceived as low ($M = 2.41, SD = 1.32$). [14] To check for differences between location-of-ZOPP conditions (i.e., within issues vs. between issues), t-tests were conducted on all four measures of mediator perception. No significant difference between groups emerged for the perceived neutrality of the mediator, $t(96) = -1.81, p = .073$, nor the perceived mediator influence on final offer, $t(96) = -0.24, p = .806$. Though, a significant effect was obtained for the perceived helpfulness of the mediator, $t(96) = -2.69, p = .008, d = .27$. Participants ZOPP-within conditions ($M = 2.75, SD = 1.32$) rated the helpfulness of the mediator significantly higher than participants from ZOPP-between conditions ($M = 2.05, SD = 1.23$) (see figure 14). The high neutrality and low influence ratings indicate that the intervention by the mediator was as unobtrusive as aspired, while the low perceived helpfulness ratings are in line with the actual ineffectiveness of the integrated outcome editing intervention.

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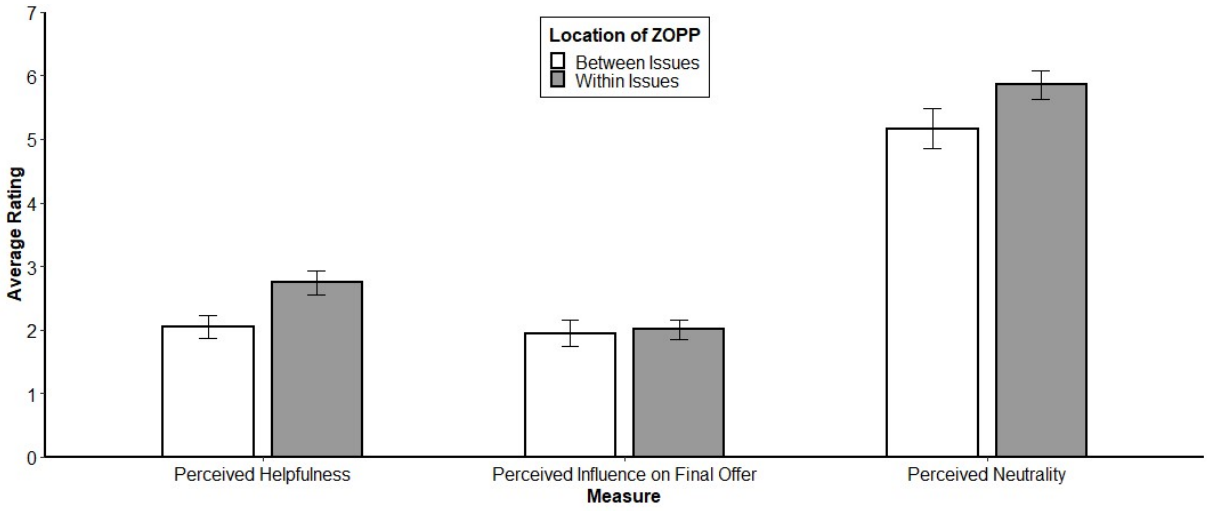
[12] Participants rated one statement (i.e., "the mediator was neutral and didn't lean towards the side of one of the negotiating parties") on a 7-point scale (1 = *does not apply at all* to 7 = *fully applies*).
[13] Participants rated two statements (i.e., "the mediator had direct influence on my final offer" and "the mediator had a greater influence on my final offer than I did") on a 7-point scale (1 = *does not apply at all* to 7 = *fully applies*). Their ratings on both statements were averaged for each participant.
[14] Participants rated two statements (i.e., "the mediator helped me to propose a good final offer" and "without the support of the mediator, I would have proposed a worse final offer") on a 7-point scale (1 = *does not apply at all* to 7 = *fully applies*). Their ratings on both statements were averaged for each participant.

Figure 14

Perceived Mediator Helpfulness, Influence and Neutrality by the Location Of ZOPP



Note. Graph shows average ratings. Higher values indicate higher levels of perceived helpfulness, influence, and neutrality (error bars represent standard errors).

Exploratory Analysis of Socio-Emotional Outcomes

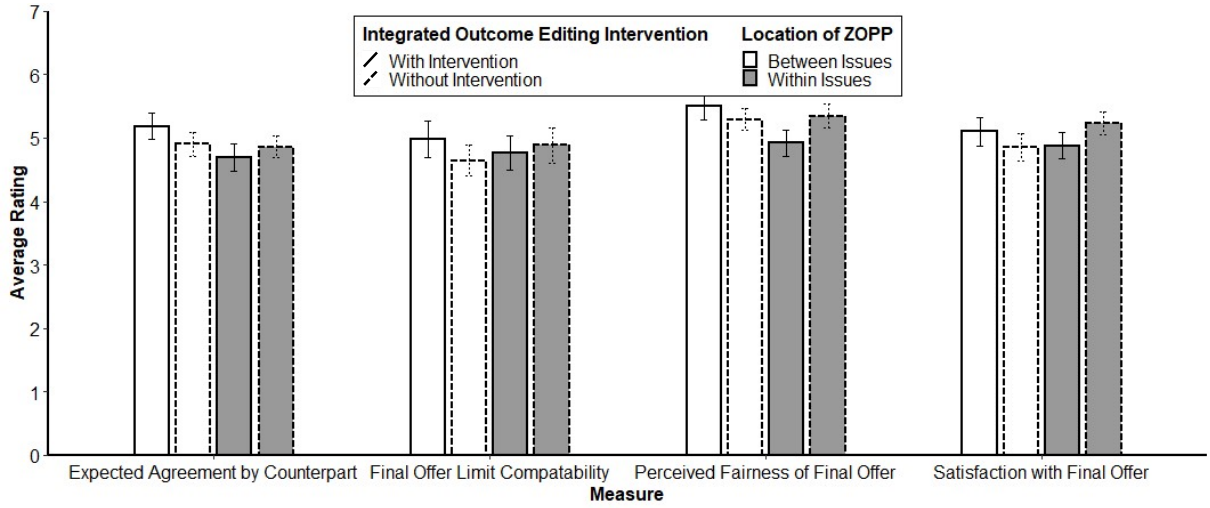
Descriptive analysis showed that, on average, participants were satisfied with their final offer ($M = 5.01, SD = 1.45$),[15] perceived their final offer to be in line with their limits ($M = 4.81, SD = 1.84$), [16] perceived their final offer to be fair ($M = 5.26, SD = 1.36$),[17] and expected their counterpart to agree to their final offer ($M = 4.91, SD = 1.38$).[18] No main effects for the

[15] Participants rated one statement (i.e., "I am satisfied with my final offer") on a 7-point scale (1 = *does not apply at all* to 7 = *fully applies*).
[16] Participants rated one statement (i.e., "my final offer is in line with my limit") on a 7-point scale (1 = *does not apply at all* to 7 = *fully applies*).
[17] Participants rated one statement (i.e., "my final offer is fair") on a 7-point scale (1 = *does not apply at all* to 7 = *fully applies*).
[18] Participants rated one statement (i.e., "my counterpart will agree to my final offer") on a 7-point scale (1 = *does not apply at all* to 7 = *fully applies*).

location of ZOPP ($Fs < 2.01, ps > .158$) and integrated outcome editing intervention ($Fs < 0.27, ps > .605$), nor a significant interaction ($Fs < 4.82, ps > .105$) were found for any of the measures (see figure 15). Ratings on whether their final offer was in line with their limits did not significantly differ between participants whose final offers actually violated their limit total ($M = 4.93, SD = 1.81$) and participants whose final offers did not violate their limit total ($M = 4.71, SD = 1.87$), $t(190) = -0.81, p = .418$ (see figure 16). Together with the previous results that were obtained on limit violation, this indicates that many participants in the current study violated their limit total by making their final offer either without consciously realizing or without admitting that they did.

Figure 15

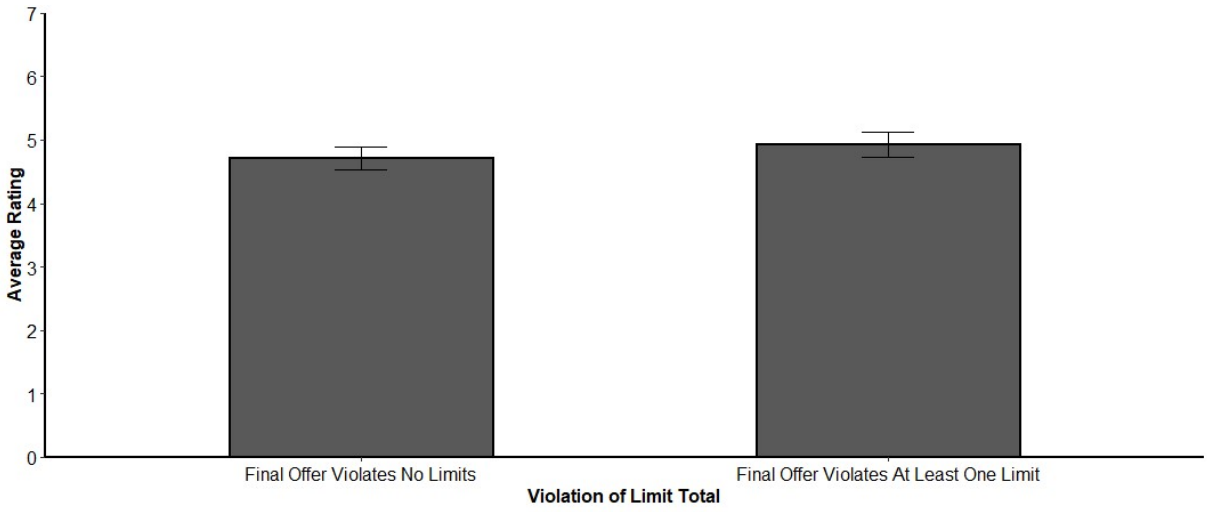
Socio-Emotional Outcomes by the Experimental Condition



Note. Average ratings of socio-emotional outcomes are shown for different location of ZOPP and integrated outcome editing groups. Higher values indicate higher expectation of agreement by counterpart, higher perceived compatibility between limits and final offer, higher perceived fairness, and greater satisfaction (error bars represent standard errors).

Figure 16

Perception of Compatibility Between Limit and Final Offer by the Violation of Limit Total



Note. Average ratings of the perceived compatibility between their limit and final offer are shown for participants whose final offer violated their limit total and participants who did not violate their limit total with their final offer. Higher values indicate higher perceived compatibility between limits and final offer (error bars represent standard errors).

Discussion

Multi-issue negotiations are complex interpersonal coordination and decision tasks. Negotiators often deal with this complexity by utilizing conscious and unconscious strategies to reduce cognitive demand and evaluate their own performance (e.g., by setting goals and limits). Different strategies may be triggered by different circumstantial factors that characterize the negotiation. The current study takes the first steps to investigate how structural differences in the payoffs of negotiations impact joint outcomes and their relationship with two cognitive strategies

derived from the theory of mental accounting (Thaler, 1985, 1999; Trötschel et al., 2020). Namely, mental budgeting (Heath & Soll, 1996; Thaler, 1999) and outcome editing (Thaler, 1999; Thaler & Johnson, 1990; Zhang et al., 2020). To be more precise, the relationship between the location of ZOPP, the approach of mental budgeting, the way of outcome editing, and the joint outcome from final offers was investigated by means of a scenario online study with a 2×2 between-subjects design.

Location of ZOPP

Contrary to expectations (*H1*), participants from ZOPP-within conditions achieved significantly higher joint outcomes from final offers than participants from ZOPP-between conditions, rather than the other way around. According to conventions this effect may be classified as medium size ($\eta_p^2 = .089$). Yet, considering absolute mean differences between the groups, participants from ZOPP-within conditions achieved joint outcomes that on average were about twice as high as those of participants from ZOPP-between conditions ($M = 3086.02$ and $M = 1529.79$ respectively). This indicates that the structural characteristics of the payoffs (i.e., whether the ZOPP is found within each issue or between issues) are highly relevant for the negotiators ability to identify and realize integrative potential in multi-issue negotiations. Yet, the unexpected direction of this relationship cannot be explained by data from the current research. One possible explanation may be derived from findings on loss aversion, the tendency of negotiators to avoid losses more than they seek gains (Kahneman & Tversky, 1979; L. Ross & Stillinger, 1991; Trötschel et al., 2015). By overly focusing on avoiding losses, participants from ZOPP-between conditions may have been less successful identifying and realizing integrative potential in issues without a ZOPP (i.e., where they could only experience losses [negative

points] or balanced outcomes [zero points]) than in issues with a ZOPP (i.e., where they could only experience gains [positive points] or balanced outcomes [zero points]).

Mental Budgeting

In contrast to what was predicted (*H2*), the approach of mental budgeting by participants was independent of the location of ZOPP. Furthermore, contrary to findings by Polzer and Neale (1995), the approach of mental budgeting did not significantly affect the joint outcome from final offers. Nevertheless, an interesting finding emerged in that most participants (65.1%) engaged in minimal mental budgeting (i.e., setting issue-based limits). This result coincides with early research on mental accounting by Tversky and Kahneman (1981), which suggests that people tend to set themselves minimal mental accounts in order to reduce cognitive demands when evaluating financial decisions. Likewise, negotiators may prefer to set issue-based limits to simplify the evaluation of the utility of given proposals against these limits to judge their own performance and provide guidance for further decision making. Results from the exploratory analysis showed that participants who engaged in minimal mental budgeting were significantly more likely to violate at least one of their limits than participants who engaged in comprehensive mental budgeting. No significant difference between mental budgeting approaches (i.e., comprehensive vs. minimal mental budgeting) was found regarding to the violation of the limit total (i.e., comprehensive limit or sum of all issue-based limits). This result is very intuitive when considering that compared to many issue-based limits, one comprehensive limit (i.e., comprehensive mental budgeting) provides a lot more flexibility for concession making on each individual issue because there are no issue-based limits that could be violated. Additionally, many participants in the current study violated their limit total either without consciously realizing it or without admitting to it in the post questionnaire. In combination with the results on

the relationship between limit violation and mental budgeting approach, these results are especially relevant when considering that in real world situations negotiators may be much more reluctant to violate or revise their limits. This was illustrated by the opening example, which showed that limits are often perceived as red lines that are not to be crossed and may prevent the parties from engaging in further negotiation or reaching an agreement (Croll, 2009).

Outcome Editing

While its relationship was diametrically opposite to the predicted direction (*H3*), the way of outcome editing was significantly affected by the location of ZOPP, and in turn affected the joint outcome from final offers. Participants in ZOPP-within conditions exercised more integrated outcome editing than participants from ZOPP-between conditions and proposed final offers that provided higher joint outcomes. To that regard, the way of outcome editing negotiators engage in, provides a starting point for explaining the unexpected direction of the relationship between the location of ZOPP and the joint outcome from final offers. However, the mediation analysis revealed that the way of outcome editing only explained a small portion of the variance in joint outcomes between location-of-ZOPP conditions and other explanations must therefore be investigated. Overall, as indicated by their low mean values on a rating scale that could range from one to seven (higher values indicate more integrated outcome editing), participants from neither location-of-ZOPP condition succeeded in utilizing the potential of integrated outcome editing ($M_{ZOPP-with} = 3.90$ and $M_{ZOPP-between} = 3.64$). Participants were rather stuck in a limbo between segregated and integrated outcome editing. While this result is less grim than the expected tendency towards segregated outcome editing, that was suggested by earlier literature on choice bracketing (Read et al., 1999) and outcome editing (Thaler & Johnson, 1990), it still points to an opportunity for intervention. Consequently, this

begs the question, why the integrated outcome editing intervention by a neutral third-party mediator that was tested in the current study remained unsuccessful in nudging participants towards more integrated outcome editing. One possible explanation would be, that mediation is simply an unsuitable method to elicit a specific way of outcome editing behavior in negotiators. However, this interpretation strongly contradicts existing research on the effectiveness of mediation (e.g., Pruitt et al., 1990; Stein, 1985; Wilkenfeld et al., 2003). Instead it appears much more likely, that the design or delivery of the current intervention was the reason for its ineffectiveness. In fact, the current intervention was specifically designed to be as subtle and unobtrusive as possible. Ratings by participants on the perceived neutrality and influence of the mediator indicated that this goal was achieved. The low ratings on perceived helpfulness and the blatant ineffectiveness of the intervention indicate that it might even have been too subtle to have an effect. This interpretation is intuitive when considering that the intervention was delivered by a singular screen that was presented to the participants in between other complicated information and on average was only looked at by participants for 25.61 seconds. Given these circumstances, it may be proper to interpret this as a failed manipulation attempt rather than rejecting the viability of integrated outcome editing interventions or their delivery by third-party mediators altogether. In sum, the current study built on previous results by Zhang et al. (2020), and produced further evidence that more integrated rather than segregated outcome editing may yield beneficial results for negotiators in multi-issue negotiations.

Perceived Mediator Helpfulness

A significant difference in the ratings of the perceived mediator helpfulness emerged as between participants from different location-of-ZOPP conditions. Participants from ZOPP-within conditions rated the mediator as significantly more helpful than participants from ZOPP-between

conditions. However, this difference remained small ($d = .27$) and the perceived helpfulness of the mediator was rated low across conditions. Therefore, it is difficult to interpret this effect. A very cautious interpretation, or rather a hypothesis that requires further testing, may be that this provides a tentative indication towards participants using the mediator as a form of scapegoat on which to attribute their own inability to negotiate a better agreement. This notion coincides with results by Pruitt and Johnson (1970), who found out that by attributing their own concession making to the intervention by a third-party mediator, subjects reduced feelings of inadequacy that were otherwise induced by the act of concession making. Similarly, participants of ZOPP-between conditions may have been in greater need to attribute their negotiation outcome on the low helpfulness by the mediator to reduce eventual feelings of inadequacy than participants of ZOPP-within conditions.

Limitations and Future Research Directions.

Even though the current study produced a series of unexpected, interesting, and highly relevant results, there are some limitations that must be considered and point to interesting directions for future research.

First and foremost, the relationship between the location of ZOPP and the joint outcome from final offers is diametrically opposite to the predicted direction. This relationship is only partially explained by outcome editing and cannot be further explained by data from the current study. Thus, future studies should focus on investigating how the location of ZOPP affects negotiator cognition and behavior to explain this intriguing relationship. Furthermore, payoffs from real world negotiations likely differ on other structural features then the location of ZOPP. Further research regarding these structural characteristics and their impact on negotiation

outcomes is needed to paint a clearer and more comprehensive picture on multi-issue negotiations that is transferable to real world applications.

A variety of other limitations resulted from the scenario- and online-based design of the current study. First, real world negotiations are characterized by the interaction and communication, between two or more parties, that often happens in real time. The myriad of factors that this interaction and communication entails, may only be captured in interactive studies in which participants actually sit down and negotiate with each other. Even though it was attempted to simulate information exchange and multiple rounds of negotiation in the current study, many characteristics of verbal and non-verbal communication and other important features could not be simulated. Therefore, the results from the current study should be considered as initial evidence that must be replicated and reevaluated by interactive study designs. Second, recruiting subjects online and allowing them to participate in the comfort of their own home, enabled the recruitment of more participants from more diverse backgrounds than what a laboratory study would have most likely allowed for. However, this also meant that the current study experienced a high dropout rate, and that it was impossible to make sure that the participants clearly understood their instructions or to control their environment. In fact, several participants contacted the researcher after the study and indicated that it was difficult for them to follow the instructions and general procedure of the study. This is illustrated by the fact that 15.6% of participants indicated that they were distracted or interrupted during the experiment and 22.9% were unsure whether their data should be included or removed from analysis. Third, with regard to its comprehensibility to participants, the current study could have been improved by providing the participants with experimental materials in the form of separate documents that they would be able to access at all times during the study. One of the most frequent comments

made by participants who contacted the researcher after the study concerned the fact that they were unable to return to the instructions after going to the next pages. It shall be noted that the current study purposely refrained from providing participants with information on separate screens or documents to keep the view of the study consistent for all participants. Considering the above-mentioned limitations however, a different solution must be developed for future online scenario studies.

Another limitation concerns the investigation of mental budgeting in the current study. The approach of mental budgeting (i.e., comprehensive vs. minimal mental budgeting) was not manipulated between subjects but rather investigated as a potential mediator of the relationship between the location of ZOPP and the joint outcome from final offers. Exploratory results on the violation of limits also showed, that most subjects were not too concerned with matching their final offers to their limits, which may contradict how negotiators in the real-world behave. Future studies should therefore experimentally examine the effect of mental budgeting approaches and utilize experimental paradigms that put a bigger emphasize on subjects avoiding violation of their limits. While in the current study the approach of mental budgeting did not affect the joint outcome from final offers, it may yet affect other important decision-making aspects during negotiation that should be investigated in future studies. Especially, whether different approaches of mental budgeting affect the likelihood of reaching full agreements (cf. agreement on all issues) or partial agreements (cf. agreement on only some issues) should be examined by future research. Comprehensive limits allow virtually unlimited flexibility in proposing and accepting offers on individual issues as long as the overall limit is not violated when considering the economic outcomes of all issues. Issue-based limits on the other hand may render agreements on individual issues impossible without violating or revising the respective limits. Also, the current

study only investigated the two extreme approaches of mental budgeting (i.e., comprehensive vs. minimal budgeting). Based on the mental accounting literature people may also engage in topical mental budgeting (i.e., setting a limit on a group of issues). Concerning mental parsing, Zhang et al. (2020) showed that participants preferred creating topical mental accounts (i.e., multi-issue mental accounts) over comprehensive (i.e., all-issue mental accounts) and minimal mental accounts (i.e., single-issue mental accounts). Future research should therefore investigate whether the results for mental budgeting are similar to the ones on mental parsing, when allowing participants to engage in either comprehensive, minimal or topical mental budgeting. Also, the exact relationship between mental budgeting (cf. the creation of mental accounts) and mental budgeting (cf. setting limits) remains unknown. Future research should investigate whether and under what circumstances negotiators create mental accounts before setting their mental budgets or whether and under what circumstances they set their mental budgets first and then create mental accounts. Also, future research should investigate the combination of the creation of mental accounts and mental budgeting in order to find out whether negotiators prefer to set issue-based limits (i.e., minimal mental budgeting), multi-issue limits (i.e., topical mental budgeting), or one comprehensive limit on minimal, topical or comprehensive accounts. Finally, most previous studies on limit setting in multi-issue negotiations provided subjects with one comprehensive limit rather than multiple issue-based limits (e.g., Brett et al., 1996; Huber & Neale, 1987; Neale & Northcraft, 1986; Northcraft et al., 1994). In fact, I was unable to find any studies about limit setting in multi-issue negotiations that provided subjects with issue-based limits. However, there are some studies on multi-round negotiations that provided round-based limits to participants and summed up results from all rounds of negotiation to calculate an overall result (e.g., Kelley et al., 1967; Smith et al., 1982). The design of these studies may be

considered similar to providing participants with issue-based limits in multi-issue negotiations. Nevertheless, some classical studies on limit setting in multi-issue negotiations may be reexamined under the new emerging evidence concerning mental budgeting.

When it comes to the investigation of integrated outcome editing, one limitation concerns the fact that the integrated outcome editing intervention that was tested in this study remained ineffective in nudging participants towards more integrated outcome editing. It remains unclear why this intervention was ineffective but given the finding that more integrated outcome editing coincides with higher joint outcomes, future research should further test the viability of integrated outcome editing interventions. This may be done by exploring different ways of framing and delivering such interventions and reexamining the viability of delivery by a neutral-third party mediator in an interactive laboratory setting.

Concluding Remarks

Previous research expanded the study of mental accounting from consumer research and research on financial decision making to the area of multi-issue negotiations (Trötschel et al., 2020; Zhang et al., 2020). The current study built upon this research and produced evidence that structural differences in negotiation payoffs, specifically whether the location of ZOPP lies within or between issues, affect the negotiators ability to identify and realize integrative potential. It was further shown that most negotiators engage in minimal mental budgeting, which in turn increases the likelihood of violating at least one limit compared with comprehensive mental budgeting. This result contradicts previous approaches of researching limit setting in negotiation because in previous studies negotiators were most often provided with a comprehensive limit rather than with multiple issue-based limits. Given this new knowledge, these studies may require reexamination. Further, these results have important implications for

negotiators in the praxis. First, engaging in comprehensive mental budgeting allows them greater flexibility in issue-based bargaining without violating their limits. And second, different payoff structures may require different approaches of consideration and strategy. In conclusion, the current study provided an intriguing starting point and opened the pathway to interesting new research topics around mental budgeting and outcome editing in multi-issue negotiations.

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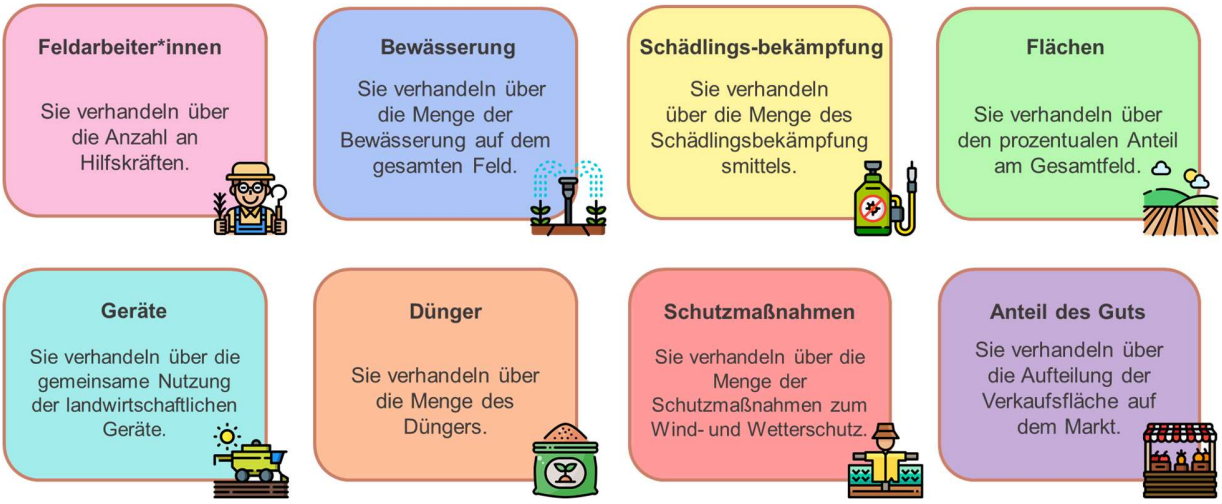
Appendix

Appendix A

The Eight Negotiation Issues



Appendix B

Pay-off Tables for ZOPP-Within Conditions

Karl/ Karla (Party A)

Feldarbeiter*innen Aufteilung verfügbarer Feldarbeiter*innen	
Optionen	Punkte
1. 90:10% (W:K)	−3200
2. 70:30% (W:K)	−1600
3. 50:50% (W:K)	0
4. 30:70% (W:K)	1600
5. 10:90% (W:K)	3200

Bewässerung Menge der Bewässerung	
Optionen	Punkte
1. Typ A	1600
2. Typ B	800
3. Typ C	0
4. Typ D	−800
5. Typ E	−1600

Schädlingsbekämpfung Menge der Schädlings-bekämpfungsmittel	
Optionen	Punkte
1. Bekämpfungstyp A	−2400
2. Bekämpfungstyp B	−1200
3. Bekämpfungstyp C	0
4. Bekämpfungstyp D	1200
5. Bekämpfungstyp E	2400

Flächen Anteil der Flächen	
Optionen	Punkte
1. 10:90% (W:K)	1200
2. 30:70% (W:K)	600
3. 50:50% (W:K)	0
4. 70:30% (W:K)	−600
5. 90:10% (W:K)	−1200

Geräte Nutzungsrecht an Geräten	
Optionen	Punkte
1. 5:1 (W:K)	−1800
2. 4:2 (W:K)	−900
3. 3:3 (W:K)	0
4. 2:4 (W:K)	900
5. 1:5 (W:K)	1800

Dünger Menge des Düngers	
Optionen	Punkte
1. Düngeoption A	2400
2. Düngeoption B	1200
3. Düngeoption C	0
4. Düngeoption D	−1200
5. Düngeoption E	−2400

Schutzmaßnahmen Menge der Maßnahmen zum Schutz vor Wind und Wetter	
Optionen	Punkte
1. Maßnahme A	−1500
2. Maßnahme B	−750
3. Maßnahme C	0
4. Maßnahme D	750
5. Maßnahme E	1500

Anteil des Guts Aufteilung der Verkaufsfläche auf dem Markt	
Optionen	Punkte
1. 10:90% (W:K)	2000
2. 30:70% (W:K)	1000
3. 50:50% (W:K)	0
4. 70:30% (W:K)	−1000
5. 90:10% (W:K)	−2000

Marlon/ Marlene (Party B)

Feldarbeiter*innen Aufteilung verfügbarer Feldarbeiter*innen	
Optionen	Punkte
1. 90:10% (W:K)	1600
2. 70:30% (W:K)	800
3. 50:50% (W:K)	0
4. 30:70% (W:K)	−800
5. 10:90% (W:K)	−1600

Bewässerung Menge der Bewässerung	
Optionen	Punkte
1. Typ A	−3200
2. Typ B	−1600
3. Typ C	0
4. Typ D	1600
5. Typ E	3200

Schädlingsbekämpfung Menge der Schädlings-bekämpfungsmittel	
Optionen	Punkte
1. Bekämpfungstyp A	1200
2. Bekämpfungstyp B	600
3. Bekämpfungstyp C	0
4. Bekämpfungstyp D	−600
5. Bekämpfungstyp E	−1200

Flächen Anteil der Flächen	
Optionen	Punkte
1. 10:90% (W:K)	−2400
2. 30:70% (W:K)	−1200
3. 50:50% (W:K)	0
4. 70:30% (W:K)	1200
5. 90:10% (W:K)	2400

Geräte Nutzungsrecht an Geräten	
Optionen	Punkte
1. 5:1 (W:K)	2400
2. 4:2 (W:K)	1200
3. 3:3 (W:K)	0
4. 2:4 (W:K)	−1200
5. 1:5 (W:K)	−2400

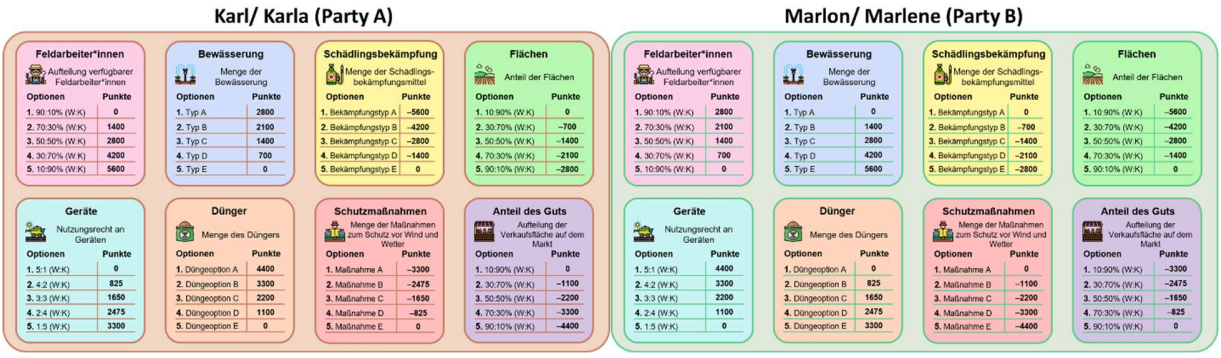
Dünger Menge des Düngers	
Optionen	Punkte
1. Düngeoption A	−1800
2. Düngeoption B	−900
3. Düngeoption C	0
4. Düngeoption D	900
5. Düngeoption E	1800

Schutzmaßnahmen Menge der Maßnahmen zum Schutz vor Wind und Wetter	
Optionen	Punkte
1. Maßnahme A	2000
2. Maßnahme B	1000
3. Maßnahme C	0
4. Maßnahme D	−1000
5. Maßnahme E	−2000

Anteil des Guts Aufteilung der Verkaufsfläche auf dem Markt	
Optionen	Punkte
1. 10:90% (W:K)	−1500
2. 30:70% (W:K)	−750
3. 50:50% (W:K)	0
4. 70:30% (W:K)	750
5. 90:10% (W:K)	1500

Appendix C

Pay-off Tables for ZOPP-Between Conditions



Appendix D

List of R Packages and Their Respective Functions

- readxl (Wickham & Bryan, 2019): read data from excel
- tidyverse (Wickham et al., 2019): data cleaning, data treatment, creation of visual graphs
- plyr (Wickham, 2011): data treatment
- psych (Revelle, 2020): descriptive analysis, t-test, ANOVA, TukeyHSD post-hoc analysis
- gmodels (Warnes et al., 2018): descriptive analysis, Chi-Square test
- car (Fox & Weisberg, 2019): Levene's test
- rcompanion (Magiafico, 2020) and FSA (Ogle et al., 2020): Scheirer-Ray-Hare test
- mediation (Tingley et al., 2014): mediation analysis

Decleration of Authorship

I hereby declare that the thesis I am submitting is entirely my own original work and that I used no other sources apart from those that are referenced. Any content from other authors that was used in its literal or content equivalent sense has been marked as such. This thesis has been composed solely by myself and it has not been submitted, in whole or in part, in any previous application for a degree.

Berlin, 29.09.2020

Luke Korthals