Goal Striving in Groups with Implementation Intentions: Collective Planning Improves Performance

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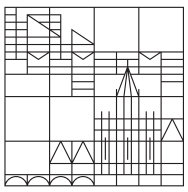

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(J. Lukas Thürmer)

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II

"There is no more magic behind the fact that groups have properties of their own, which are different from the properties of their subgroups or their individual members, than behind the fact that molecules have properties which are different from the properties of the atoms or ions of which they are composed."
—Kurt Lewin (1947) *Frontiers in group dynamics: Concept, method and reality in social science.*

"The community stagnates without the impulse of the individual; the impulse dies away without the sympathy of the community."
—William James (1896) *The will to believe.*

"Planned social action usually emerges from a more or less vague 'idea'. (. . .) to become real, to be able to steer action, something has to be developed that might be called a 'plan'."
—Kurt Lewin (1947) *Frontiers in group dynamics: II. Channels of group life.*

Abstract

The present research investigates group performance from a goal-striving perspective. A model of goal striving in groups with implementation intentions (GSG-II) is developed by connecting individual-level theory that planning when, where, and how to act (forming *implementation intentions*, Gollwitzer, 1999) promotes goal achievement and group-level theory suggesting that groups can strive for goals individually or collectively. The GSG-II model proposes a new type of plan that refers to the group, *collective implementation intentions* (cII). The model's main prediction that cII promote group performance found consistent support in six experiments with three common obstacles to keeping goal striving on track in representative group tasks (expected muscle pain in physical persistence, unexpected normative impact on creative idea generation and consumer impulse purchases, goal conflict in mixed-motive decisions) covering all performance quadrants (McGrath, 1984) and permitted processes (Steiner, 1972). Collective if-then planning thus improves group performance. Theoretical implications and future directions are discussed.

Contents

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Goals such as developing a micro computer, exploring Antarctica, or winning a soccer match cannot be achieved by a single individual, not even by many individuals working side by side, but only by interacting groups (e.g., Keyton, 2005; Scott, 1910). But even if a goal can be achieved independently, humans often choose to act in groups (Larson, 2010) such as running clubs, organizational teams, and think tanks. Improving group goal achievement is therefore an important task. The present research asks whether pre-planning collectively when, where, and how to act towards a collective goal can improve group goal achievement and performance. I will first introduce the psychology of action; review evidence that individual planning when, where, and how to act with *implementation intentions* (II) promotes goal achievement; and discuss how group performance can be improved by this type of plan (Proposition 1). Applying theory and research on goals and motivation in groups to goal striving and volition, I will then argue that individuals within the group (group members) can not only individually strive for individual goals but can also collectively strive for collective goals by referring to the group (Proposition 2). From these two propositions, my working model of *goal striving in groups with implementation intentions* (GSG-II) follows: Group members can either strive individually or collectively and with or without implementation intentions (see Table 1). As implementation intentions traditionally refer to the individual, my model thus proposes a new type of plan that refers to the group, *collective implementation intentions* (cII), and predicts that cII improve group performance in tasks that have been shown to pose obstacles to staying on track with collective goal striving. I will report six experiments that test this prediction. Before I turn to my first proposition, one question needs to be addressed.

Why are goals important to group performance? *Goals* are mental representations of desired endstates that humans want to attain (Ryan, 2012). Because one is committed to attaining one's goal, one compares it to the actual state and acts to minimize the discrepancy (Carver & Scheier, 1982). *Group performance* is commonly defined as "the process and outcome of members' joint efforts to achieve a collective goal" (Levine & Moreland, 1990, p. 612), with a *collective goal* referring to a desired endstate for the group (e.g., Locke & Latham, 1990; O'Leary-Kelly, Martocchio, & Frink, 1994; Weldon & Weingart, 1993; Zander, 1971). Consistent with this view, task groups set a collective goal to perform their task, either implicitly through task instructions or by explicitly setting goals, and then reduce the discrepancy between the actual state and their goal (Carver & Scheier, 1982). Improving a task group's performance is thus synonymous with improving its task goal achievement. The psychology of action addresses how one best achieves goals. Planning when, where, and how to act (forming *implementation intentions*, Gollwitzer, 1999) improves goal striving in individuals. As group performance can be conceptualized as goal striving, it should also profit from this type of plan. I will now turn to this first proposition.

Proposition 1: Implementation Intentions Support Goal Achievement in Groups

This section discusses the proposition that implementation intentions can improve goal achievement in performance groups. I will first introduce the psychology of action that suggests that we do not always achieve our goals because of the challenges of goal striving. Then, I will introduce implementation intentions, a type of plan that is known to help master the most common of these challenges. Lastly, I will discuss how goal striving in groups can benefit from implementation intentions, leading to my first proposition.

The Psychology of Action and Goal Pursuit

To investigate the course of goal pursuit from setting a goal to achieving (or abandoning) it, the psychology of action (Lewin, Dembo, Festinger, & Sears, 1944) distinguishes between choosing a desired endstate (*goal setting*) and acting towards this endstate (*goal striving*). Both are thought to depend on different processes: Goal setting depends on motivational processes, such as deliberating one's wishes and desires, and turning one of these wishes into a binding goal. In short, goal setting concerns the question of *what* to pursue. Goal striving, on the other hand, depends on volitional processes, such as developing plans for how to strive for one's goal and performing

goal-directed actions. In short, goal striving concerns the question of *how* to pursue a set goal.

Contemporary theories of goal pursuit follow this distinction (e.g., Bagozzi & Dholakia, 1999; Cantor, 1990; Frese & Zapf, 1994; Higgins, 1997; Kuhl, 1992; Metcalfe & Mischel, 1999; Oettingen, Pak, & Schnetter, 2001; Ryan & Deci, 2000; see Austin & Vancouver, 1996; Gollwitzer & Oettingen, 2012, for reviews). So does the Rubicon model of action phases (Gollwitzer, 1990; Heckhausen & Gollwitzer, 1987; see Gollwitzer, 2012, for an overview), which takes a temporal perspective to conceptualize how goals are achieved. It describes goal pursuit as a series of four steps: (1) weigh the many wishes and desires one has and decide to turn one of them into a goal to pursue (*pre-decisional phase*), (2) plan how to pursue this goal and start acting towards it (*pre-actional phase*), (3) act towards the goal until one abandons or achieves it (*actional phase*), and (4) evaluate goal pursuit (*post-actional phase*). The first, pre-decisional phase and the last, post-actional phase are concerned with deliberation and weighing and are thus considered to be motivational (i.e., concerned with goal setting). In contrast, the second, pre-actional phase and third, actional phase are concerned with implementing a set goal and are thus considered to be volitional (i.e., concerned with goal striving). The Rubicon model thus describes goal pursuit from goal selection to goal achievement and suggests that successful goal pursuit requires both goal setting and goal striving.

Only if one commits to a goal and strives for it successfully can one achieve it. In line with this reasoning, even strong commitment to one's goal does not ensure its achievement (Sheeran, 2002). This is because one has to meet several challenges during goal striving (Gollwitzer & Sheeran, 2006). Common challenges in goal striving include initiating action at the right time (*getting started*), maintaining action even in the face of obstacles (*staying on track*), maintaining resources such as time and willpower for future goal pursuit (*not overextending oneself*), and abandoning goals that have become unattainable (*calling a halt*, Gollwitzer & Sheeran, 2006). Staying on track is a challenge when pursuing goals that cannot be achieved with a single goal-directed response (Achtziger, Gollwitzer, & Sheeran, 2008; Bayer, Gollwitzer, & Achtziger, 2010; Gollwitzer & Sheeran, 2006; Wieber, von Suchodoletz, Heikamp, Trommsdorff, & Gollwitzer, 2011). One has to strive for these goals continuously, making them prone to disruption. Examples include persisting as long as possible, coming up with as many ideas as possible, making repeated choices, and making repeated decisions in mixed-motive situations. Even when one has successfully started striving for one's goal (e.g., one has generated the first idea), goal achievement is at risk if goal striving is disrupted (e.g., one stops generating new ideas).

Many different obstacles can disrupt goal striving. First, expected states or stimuli can pose an obstacle to goal striving. Although one might think that anticipating an obstacle makes it easy to overcome, some expected ob-

stacles seem beyond willful control. This is the case when detrimental states or stimuli attract attention (Compton, 2003) and paying attention to them increases rather than decreases their disruptive impact (e.g., Wegner, 1994). Support for this idea comes from classic studies in the *delay of gratification* paradigm where children have to resist a smaller, instant reward (e.g., one marshmallow) to receive a bigger, later reward (e.g., two marshmallows; Mischel, 1974; Mischel, Shoda, & Rodriguez, 1989). Studies with this paradigm show that the presence of the small, instant reward makes it difficult to delay gratification (Mischel, 1974) and the more time children spend attending to the distractor (i.e., the smaller, instant reward), the shorter they manage to delay gratification (Mischel & Ebbesen, 1970; Rodriguez, Mischel, & Shoda, 1989). Also internal states can pose such a threat: Sometimes, task performance has unwanted side effects, such as aching muscles during sports or a persistence task. These detrimental states and stimuli are difficult to ignore, and as soon as one notices them it is too late to regulate their detrimental impact on goal striving.

Second, states or cues that one is unaware of or does not expect can derail goal striving. This is the case when behavioral norms, goals, or concepts are activated that one does not expect to impact one's behavior (Bargh, 2007; Bargh & Barndollar, 1996; Dijksterhuis & Aarts, 2010; Schröder & Thagard, 2012; Shah, 2005). Because one does not expect these obstacles, it is difficult to prepare oneself and prevent their impact on behavior. In line with this idea, working on an unrelated task that activates a detrimental goal outside one's awareness (e.g., a speed goal) hampers subsequent striving for one's explicitly set task goal (e.g., to drive safely), as indicated by reduced rates of goal achievement (e.g., more driving errors, Gollwitzer, Sheeran, Trötschel, & Webb, 2011).

Third, some performance tasks lead to goal conflict, which poses an obstacle to goal striving (Emmons & King, 1988; Locke, Smith, Erez, Chah, & Schaffer, 1994; Stroebe, van Koningsbruggen, Papies, & Aarts, 2013). This can occur in economics tasks where the economic rational and profitable choice is not always socially or morally desirable (e.g., Fehr & Fischbacher, 2003; Henrich et al., 2006). For instance, one might be confronted with a profitable offer that is unfair, leading to conflict between the goal of making profit (accept the offer) and the goal of punishing unfair proposers (reject the offer). When one finds both options desirable, it is difficult to prioritize one over the other on the spot. This conflict can bring goal striving to a halt. In sum, unexpected influences, expected influences, and goal conflict all pose a threat to ongoing goal striving.

How can one deal with such obstacles to staying on track? The Rubicon model inspired two process theories: mindset theory (Gollwitzer, 1990, 2012) and implementation intention theory (Gollwitzer, 1999). Implementation intention theory suggests that planning when, where, and how to act towards

one's goal helps master the challenges of goal striving, including overcoming obstacles to staying on track.

Implementation Intention Theory

Because mere goal intentions are not always sufficient to meet the challenges to goal striving, Gollwitzer (1999) suggests supporting goals with *implementation intentions*. Building on classic work (Ach, 1935; Lewin, 1926), implementation intention theory distinguishes general goal intentions (*I want to achieve X!*) from concrete implementation intentions which specify when, where, and how to act. The if (situation)–then (response) format (e.g., *And if situation Y occurs, then I will show response Z!*, with Y being an opportune situation to show the goal-directed response Z) has been found to be particularly effective (Chapman, Armitage, & Norman, 2009). Implementation intentions are always formed in addition to goal intentions, and thus are considered subordinate plans. They support goal achievement on the basis of psychological mechanisms that relate to the if-part (situation) and the link between the if-part and the then-part (situation-response link). First, selecting the opportune situation (if-part) activates the mental representation of this situation and thus makes it easily accessible (Aarts, Dijksterhuis, & Midden, 1999; Achtziger, Bayer, & Gollwitzer, 2012): When the situation arises, one immediately recognizes it (Aarts et al., 1999; Wieber & Sassenberg, 2006). Second, forming implementation intentions forges a strong link between the mental representation of the situation specified in the if-part and the mental representation of the response specified in the then-part (Gollwitzer, 1999). Because of this situation-response link, activating the mental representation of the situation activates the mental representation of the response (Parks-Stamm, Gollwitzer, & Oettingen, 2007; Webb & Sheeran, 2007, 2008).

How does forming implementation intentions influence goal striving? Together, the activation of the situation and the situation-response link allow for bottom-up, stimulus driven action control that is qualitatively different from top-down, thought driven action control by mere goal intentions (Gilbert, Gollwitzer, Cohen, Oettingen, & Burgess, 2009). While goal striving with mere goal intentions relies on deliberately monitoring the environment for action opportunities, deciding whether to act on the spot, and effortfully initiating goal-directed responses, goal striving with implementation intentions relies on the situation-response link (Webb & Sheeran, 2007, 2008) that allows for action control carrying features of automaticity (cf. Bargh, 1994): The situational cue (if-part) triggers the goal-directed response (then part). Once the specified situation occurs, the response included in the then-part is initiated immediately (Brandstätter, Lengfelder, & Gollwitzer, 2001; Parks-Stamm et al., 2007; Webb & Sheeran, 2007), efficiently (Brandstätter et al., 2001), and without requiring further conscious

intent (e.g., the response is even initiated when the critical cue is presented outside of conscious awareness; Bayer, Achtziger, Gollwitzer, & Moskowitz, 2009). By forming implementation intentions, one therefore strategically delegates action control to the environment (Gollwitzer, 1999).

At the individual level, furnishing goals with implementation intentions has been shown to help master the most common challenges in goal striving (Gollwitzer & Sheeran, 2006), including staying on track (Achtziger et al., 2008; Bayer et al., 2010; Wieber et al., 2011). This is because implementation intentions can instantly trigger responses that help overcome obstacles to staying on track. First, a suppression implementation intention that specifies an expected obstacle links it to a suppression-response helps with ignoring expected detrimental stimuli and states before they draw attention and disrupt goal striving. A recent study on attention in school children (Wieber et al., 2011) supports this claim. Seven-year olds either formed the implementation intention "If there is a distraction, then I will ignore it!" or received control instructions without the if-then link before they worked on a monotonous categorization task. While working on this task, distractions that were highly, moderately, or mildly attractive (funny, less funny, and boring videos) were presented. Reaction time (RT) measures showed that while all children dealt with mildly attractive distractions equally well (all maintained fast RTs), only children who had formed the implementation intention managed to maintain fast RTs in the face of highly attractive disruptions (funny videos). This finding suggests that a suppression implementation intention allows one to ignore a detrimental state or stimulus as soon as it shows itself. Further support for this idea comes from a study by Schweiger Gallo and colleagues (Schweiger Gallo, Keil, McCulloch, Rockstroh, & Gollwitzer, 2009, Study 3) that used immediate neuro-cortical markers: Spider phobics with the implementation intention "If I see a spider, then I will ignore it" showed significantly less activity in their visual cortex (P1 ERP obtained with dense-array EEG) after seeing spider pictures compared to spider-phobic participants who had not formed the implementation intention. As this was measured only 120 ms after seeing the spider pictures and willful action control is known to require more time (Bargh & Chartrand, 1999), this finding supports the assumption that suppression implementation intentions can prevent the detrimental impact of a distracting stimulus.

Second, an action implementation intention that specifies an opportune situation and a goal directed action has been shown to promote goal striving, even in the face of unanticipated obstacles. In a recent study by Gollwitzer and colleagues (2011, Study 3), participants primed with a speed goal (i.e., who had performed a previous, ostensibly unrelated task quickly) with an explicit goal to drive safely made as many driving errors as participants without this explicit safety goal. However, primed participants who had furnished their explicit safety goal with the implementation intention "If I

enter a curve then I will slow down, and if I enter a straight road then I will accelerate!" made as few driving errors as participants who had not been primed with the detrimental speed goal. Importantly, debriefings indicated that neither implementation intention participants nor control participants were aware that they had been primed with a speed goal that might impact their driving. This finding thus suggests that action implementation intentions can stabilize goal striving and thus make it less prone to disruption by unexpected obstacles (Bayer et al., 2010).

Lastly, a prioritization implementation intention that specifies a goal-conflict situation and a reminder of one's focal goal helps one deal with conflicting goals. As soon as the specified situation arises, it triggers the mental representation of one's focal goal and makes it easier to prioritize. In a recent study by Kirk, Gollwitzer, and Carnevale (2011), participants received several envelopes allegedly from other participants, each containing an offer of how to share 10 lottery tickets. Participants had to decide whether to reject or accept each offer. When the participant accepted, the offer was implemented; when the participant rejected, nobody received any tickets. Some of the offers were unfair (e.g., 2 tickets for the participant, 8 for the proposer) but profitable (2 tickets are better than 0 tickets). This poses a conflict that is difficult to resolve on the spot: punishing the unfair proposer by rejecting the offer (fairness goal) or making money by accepting the offer (profit goal). Indeed, participants who had the explicit goal to make money still rejected many unfair but profitable offers. On the other hand, participants who had furnished their profit goal with the implementation intention "And if I see an envelope, then I will tell myself: This is an opportunity to make money!" accepted significantly more profitable but unfair offers. The implementation intention thus helped participants to prioritize their profit goal over their fairness goal on the spot. This interpretation is in line with recent findings from the domain of dieting that show that implementation intentions can trigger higher-order goals (van Koningsbruggen, Stroebe, Papies, & Aarts, 2011). In sum, implementation intentions help overcome obstacles to goal striving and promote performance in individuals.

Implementation Intentions in Groups

Why would groups need implementation intentions? As argued earlier, performance goals in quantitative tasks (e.g., persisting physically, generating ideas, making repeated choices, and mixed-motive decisions) cannot be achieved with a single goal directed response and should therefore encounter staying on track problems. These are precisely the kinds of tasks that groups perform. McGrath (1984) suggests that all group tasks can be classified into four *quadrants* according to what needs to be done to perform them: execute,

generate, choose, and negotiate.[1] The four tasks that I mentioned fall into these four quadrants, suggesting that they are representative of what groups do. As these tasks cannot be performed with a single goal-directed response, but require continuous goal striving, groups might also face the challenge of staying on track. To the degree that goal striving in groups faces expected obstacles such as muscle pain, unexpected obstacles such as detrimental behavioral standards, and goal conflict, forming respective suppression, action, and prioritization implementation intentions should improve performance.

Indeed, Wieber and colleagues (Wieber, Thürmer, & Gollwitzer, 2012) argued that the challenges to individual goal striving should hinder group goal striving (e.g., getting started) but that implementation intentions should help overcome them. To explain how implementation intentions can be effective in groups, they drew on the idea that one can identify with a group (internalized group membership). Social identity theory (Tajfel & Turner, 1986) maintains that one's group membership becomes a part of one's identity and that this *social identity* guides thoughts, feelings, and behavior when one is in the context of this respective group (i.e., when one has a salient respective social identity; see Brown, 2000; Ellemers & Haslam, 2012; Hogg, 2006; Rubin & Hewstone, 1998, for reviews). Recent research suggests that one can self-regulate based on this identity (i.e., when this identity is made salient; Sassenberg & Woltin, 2008). Thus, Wieber and colleagues (2012) argued that the implementation intention processes related to the if-part and the then-part should run off in groups and help master the challenges to goal striving, leading to higher rates of goal attainment. First evidence supports this reasoning. Thürmer, Wieber, and Gollwitzer (2013) found that groups of three made more informed decisions following group discussions when they had furnished their decision goal with an implementation intention to review relevant information. Not only did implementation intention groups make better decisions than control groups; Process analyses of the group discussions showed that they actually reviewed more relevant information. Similarly, Wieber, Thürmer, and Gollwitzer (2013) demonstrated that implementation intentions can help groups to call a halt to striving for a failing project. Furnishing the goal to make reasonable investment decisions with an implementation intention to judge a project as an onlooker decreased ill-advised investments when an initially promising project started to fail. Without an implementation intention, groups showed the classic *escalation of commitment* effect: They maintained high levels of investment, even when this was ill-advised. Lastly, Wieber and colleagues

[1] McGrath also distinguishes two orthogonal task dimensions (cooperation-conflict and conceptual-behavioral) that delineate the quadrants, and eight tasks types, two in each quadrant. However, while McGrath's typology is still widely used to select representative group tasks (as in the present research, see also Wooley et al, 2010), the task dimensions and task types have been criticized (e.g., Larson, 2010). Thus, McGrath's quadrants provide optimal guidance for selecting representative tasks in the present research.

(Wieber, Gollwitzer, Fäsche, et al., 2013) showed that an implementation intention specifying a cooperative response in the then-part, but not control instructions without the if-then format, increased cooperative behavior and performance in an interdependent puzzle task.

Following this initial evidence, my GSG-II working model distinguishes between goal striving in groups with and without implementation intentions (see Table 1, top row). However, research on goal setting suggests that goals referring to the group and goals referring to the individual within the group can lead to markedly different outcomes, suggesting that implementation intention theory should be extended to consider this difference. I will now introduce this second proposition of my GSG-II model.

Table 1
Working Model of Goal Striving in Groups with Implementation Intentions (GSG-II) and Expected Outcomes

Goal Striving Referent	Intention	
	Goal only	Goal and implementation intention
Individual	Deliberative, individual goal striving	Strategic automaticity in individual goal striving: Implementation intention (II)
Collective	Deliberative, collective goal striving	Strategic automaticity in collective goal striving: Collective implementation intention (cII)

Proposition 2: Individual and Collective Goal Striving are Possible in Groups

This section discusses my second proposition: that group members can strive individually by referring to themselves or collectively by referring to the group. To lead to this, I will discuss small group theory that distinguishes between the collective (group) and the individual within the group (group member). Research on goal setting and motivation shows that this individual-collective distinction is crucial for goals in groups. This should also be true for goal striving and volition. I will thus apply this individual-collective distinction to goal striving in groups, my second proposition.

Groups as Systems and Goal Setting

Groups have no *bodily existence* beyond their members, that is, you can touch group members, but not a group per se. While social identity theory addresses this issue by postulating an internalized membership (i.e., one has a salient social identity and thus feels and acts as a group member), small group theory commonly emphasizes the importance of the interdependence between group members (Kelley & Thibaut, 1978; Larson, 2010; Nijstad, 2009; Steiner, 1972; Wegner, 1987). Through the relation between group members, a group attains features that are not easily attributed to its individual members (e.g., attain cognitive products, Levine, Resnick, & Higgins, 1993). Lewin (1939) draws an analogy to Gestalt psychology. For instance, when several letter *E*s are arranged in the shape of an *A*, we can also perceive the A (i.e., the *Gestalt* of an A). This is because of the (spatial) relation of the Es. Similarly, groups can have properties that are different from the properties of its individual members due to the relation between the members. In a soccer team, one player can be good at passing and one can be good at shooting. However, they will only score if they interact effectively, that is, if the first player passes the ball to the second player who shoots to score. Even if this interaction can be described from the perspective of the two individuals (player one passed the ball to player two who shot at the goal because they both know that they are on the same team), it is more parsimonious to describe it at the group level (the team passed, shot, and scored). Groups can thus be treated as dynamic systems with smaller systems (members) embedded within them (Arrow, McGrath, & Berdahl, 2000). This assumption is important for the present purpose[2] because it allows for the possibility that a group member holds either collective goals (and strives for them) or individual goals (and strives for them) while still being in the group (see Hornsey & Jetten, 2004; Spears, Ellemers, Doosje, & Branscombe, 2006, for social identity accounts to the individual within the group).

Although new to implementation intention theory and goal striving, goal setting theory (reviews by Locke & Latham, 1990, 2006, 2012) has incorporated the individual-collective distinction (Crown, 2007; Crown & Rosse, 1995; Locke & Latham, 1990). Goal setting theory maintains that difficult

[2]I do not mean to imply that immediate, face to face interaction between members is always necessary to study groups. Larson (2010) refers to interaction as "any observable behaviour exhibited by a group member that is directed toward, performed in concert with, and/or in the presence of others in the group" (p. 5) and this explicitly includes "behaviours that may be enacted remotely and asynchronously" (p. 6). In line with this definition, small group approaches have made use of highly-controlled laboratory settings where participants believe they are interacting with other participants but actually perform independently (e.g., in examining the Köhler effect, see Kerr & Hertel, 2011, for a review). Therefore, key to the definition of small groups as systems for the present work is that individuals in groups act interdependently and experience this.

and specific goals lead to better performance than low or unspecific goals, and this principle has also been applied to groups (review and metaanalysis by Kleingeld, van Mierlo, & Arends, 2011; O'Leary-Kelly et al., 1994). It has been argued that "groups offer the potential for setting goals at multiple levels of performance" (van Mierlo & Kleingeld, 2010). For groups, high-specific goals can refer to the entire group (collective goals) or the individual within the group (individual goals). Importantly, the effect of setting collective goals and individual goals can be quite different. While collective goals promote group performance, individual goals can also have detrimental effects. In a study by Mitchell and Silver (1990), triads worked on a tower building task. They either received the individual goal to add at least seven blocks each, the collective goal to collectively add at least 21 blocks to their tower, both goals, or no difficult and specific goal. Although the individual goal and the collective goal are apparently similar (7 parts by each of the three members equals 21 parts), both led to markedly different outcomes: The collective goal led to performance similar to a non-specific goal or both goals. However, the individual goal by itself *decreased* performance, apparently because it led participants to choose less cooperative task strategies. In line with this finding, a recent meta-analysis on goal setting in groups showed that while collective goals had on average a positive effect on performance, individual goals had on average no effect (Kleingeld et al., 2011). It is thus imperative to take the referent of goal setting into account (Crown & Rosse, 1995; van Mierlo & Kleingeld, 2010). As argued earlier, successful goal pursuit requires goal setting and goal striving. Thus, I apply the individual–collective distinction to goal striving.

Individual and Collective Goal Striving

I suggest that groups offer the potential to strive for goals at different levels. A group member can either refer to himself or herself during goal striving (*individual goal striving*) or to the group (*collective goal striving*). While individual goal striving concerns what an individual does independently, collective goal striving concerns what a group member does interdependently in relation to the other group members. This distinction between individual and collective goal striving that I suggest is therefore *not* synonymous with striving while being in a group versus striving while not being in a group. Certainly, one cannot strive collectively without a relevant group membership; however, being a member of a group does not mean that one cannot strive individually (possibly with extreme exceptions such as deindividuation, Diener, 1979; Zimbardo, 1969; see Postmes & Spears, 1998, for meta-analysis). In performance groups, the individual thus can both act collectively towards group performance and individually towards individual performance (that may or may not be in line with group performance). At

least two questions follow from this individual-collective distinction in goal striving.

The first question is: How can group members strive individually? From a small group perspective, this is not a theoretical challenge. Group members are intact systems in themselves who have some independence from the group (Arrow et al., 2000). Whenever the individual within the group strives for a goal that he or she has set for him- or herself (i.e., that refers to the individual and not the group), this is to be termed individual goal striving. For social identity theory, this question poses a challenge: If group membership is internalized and the difference between individual and collective self-regulation is whether a social identity is salient (Sassenberg & Woltin, 2008), striving individually while identifying as a group member is contradictory. Different explanations within social identity theory resolve this (seeming) contradiction (e.g., Postmes & Jetten, 2006). However, the small group approach is more parsimonious for the present purpose.

Second, goal striving concerns the actions and responses that reduce the discrepancy between actual state and goal (desired endstate). This raises the question: How can these actions and responses be collective? As collective goals, collective goal striving refers to the group. Groups do not have a bodily existence (are *non*-physical), and the actions and responses for collective goal striving therefore still need to be performed by individuals (see Bratman, 1987; Searle, 1995; Tuomela, 2006, for accounts in philosophy). Collective actions are thus a product of individual contributions made towards a collective goal (cf. Hinsz, Tindale, & Vollrath, 1997). In order to act collectively, a group member therefore needs cognitive representations of the group and the task, himself or herself as a group member, and the intention to contribute to a group performance (cf. von Cranach, Ochsenbein, & Valach, 1986). Further, this raises the question of how groups combine their members' contributions into the group product. Steiner (1972) refers to this as *permitted processes* and distinguishes three different combinations of contributions. In *conjunctive tasks*, all group members have to contribute equally (the exact same amount) and the group result therefore depends on the weakest member. A common example for conjunctive tasks is a climbing crew that shares a rope. No crew member can ascend any faster than the slowest member of the crew because they are tied together. In the laboratory, small group researchers often use interdependent endurance tasks where all group members have to hold a weight together. In *additive tasks*, all members' performances contribute fully to the group performance as all contributions are added together. An example is an idea generation task where each member's ideas are counted and the sum of all ideas is the group result. Lastly, in *disjunctive tasks*, the performance of one group member alone represents the group performance. Examples are a quiz show where one group member is chosen by the host to answer to a question, or when one group member gets to do the shopping for the group. Even though another

group member might know the answer (or make more favorable shopping decisions), the group does not score (shop well) unless the chosen person answers correctly (buys the right things).[3] Thus, group members can strive collectively when they intentionally act or respond in order to contribute to a group performance and the group combines all members' contributions.

In sum, group members can strive individually for their own goals or collectively for group goals by intending to contribute to a group performance. My GSG-II model thus distinguishes between individual goal striving and collective goal striving (see Table 1). However, implementation intentions traditionally refer to the individual, and thus support individual goal striving. How then can collective goal striving be supported? I suggest extending implementation intention theory with a new type of plan for collective goal striving: collective implementation intentions.

Collective Implementation Intentions

Collective implementation intentions (cII) refer to the group and specify when, where, and how a group wants to act towards their collective goal. Given that group members can pursue collective goals (e.g., Weldon & Weingart, 1993) and given that implementation intentions are also effective in groups (Wieber et al., 2012), forming a cII should create a situation-response link that aids collective goal striving. When group members have a collective goal to perform well and pre-plan when, where, and how to act or respond towards this goal collectively (i.e., form a cII), this should help them master the challenges of collective goal striving. For instance, when group members face a challenge to staying on track with goal striving while performing the group task, a cII should help them master this challenge. In turn, this should increase the group members' contribution to the group performance. When groups successfully integrate these contributions, this improves performance. In sum, I suggest that cII support group members in making a contribution towards a collective goal and improve group performance in the face of obstacles.

In line with this reasoning, implementation intentions referring to the group improved performance in two of the earlier mentioned studies. In Wieber, Thürmer, and Gollwitzer's (2013) escalation of commitment study, the implementation intention "When *we* are about to make an investment decision, then *we* will judge the project as observers who are not responsible for earlier decisions" (emphases mine) reduced ill-advised investments. Similarly, in Thürmer, Wieber, and Gollwitzer's (2013) decision making study,

[3]When the group gets to choose which performance represents the group, they will usually choose the best member's performance (if they can identify it, e.g., in tasks with high demonstrability, Laughlin & Ellis, 1986). However, this is not a defining feature but merely a special case of a disjunctive task (see Larson, 2010, for a discussion).

the implementation intention "And when *we* finally take the decision sheet to note our preferred alternative, then *we* will go over the advantages of the non-preferred alternatives again" (emphases mine) significantly improved group decisions. In addition to improving this group-level outcome (the decision cannot be attributed to a single group member), group members also revised more important information items before the group decision was made. As it was made clear that all the information available was important for the group decision, this suggests that the implementation intention supported group members in contributing to group performance. In sum, both experiments suggest that implementation intentions referring to the group (cII) can improve performance.

However, these two studies were not conducted to test the effectiveness of cII and did not embed cII into a theoretical framework (such as the GSG-II). To investigate the effectiveness of cII systematically, tasks should pose obstacles to collective goal striving that are similar to the obstacles to individual goal striving. If implementation intentions help overcome obstacles to individual goal striving, cII should help overcome similar obstacles to collective goal striving. As argued earlier, staying on track should be a challenge in collective goal striving during maximizing tasks with quantitative outcomes. Thus, in group tasks that face expected obstacles such as muscle pain, suppression cII should improve group performance; in group tasks that face unexpected obstacles such as group norms, action cII should improve performance; and in group tasks that face goal conflict such as mixed motive decisions, prioritization cII should improve group performance. In sum, cII should help master common challenges to staying on track with collective goal striving.

Furthermore, the assumptions that individual and collective goal striving are different (i.e., that the referent matters) needs to be tested. If individual and collective goal striving were identical, cII and II should show identical processes and outcomes, and distinguishing both types of implementation intentions would have no benefit. Similarly, evidence is needed that cII effects replicate across tasks. This is because the task type heavily influences group performance (e.g., Hackman & Morris, 1975), and performance gains observed in one task might not generalize to another. Classifications, such as the previously discussed permitted processes to combine contributions (conjunctive, additive, disjunctive; Steiner, 1972) and performance quadrants (execute, generate, choose, negotiate; McGrath, 1984) provide guidance and ensure that research systematically covers representative tasks. If cII are a general action control phenomenon, their effectiveness should not be limited to one task type but generalize. The present research thus investigates individual and collective goal striving with and without implementation intentions in performance groups (see Table 1) across tasks.

Present Research

Six experiments tested the prediction that cII improve group performance. I chose four tasks that can be expected to pose common types of obstacles to staying on track in collective goal striving: an expected obstacles (muscle pain), an unexpected obstacle (the impact of detrimental norms on behavior), and goal conflict (with a selfish, individual goal). Suppression, action, and prioritization II are known to help deal with respective obstacles to individual goal striving; therefore, I predicted that respective cII would improve collective goal striving. Moreover, to ensure that the expected effects are not task-specific, tasks covered all four performance quadrants (McGrath, 1984) and all three permitted processes (Steiner, 1972). Individual-referent conditions (II and individual control) were added to experiments to investigate the relation between cII and II. To make sure that only the referent in goal striving (individual or collective) would cause the expected differences, all participants in each study, regardless of condition, were members of the same kind of group, were made aware of this, and acted in the same group context.

Experiment 1: Suppression cII and Expected Obstacles

The first prediction from my GSG-II model is that implementation intentions (II) and collective implementation intentions (cII) can help overcome respective obstacles to goal striving in groups, leading to performance gains in comparison to mere goals. When an obstacle to goal striving threatens individual and collective goal striving similarly, both forming II or forming cII should improve performance in comparison to respective goals without if-then plans. However, in interactive groups, the individual-collective distinction should become evident during goal striving. Within the group, members can strive either collectively by cooperating more and supporting each other or individually by cooperating less and keeping to themselves. Indeed, recent research (van Mierlo & Kleingeld, 2010) found that goal setting referring to the group (i.e., setting collective goals) leads group members to use more cooperative task strategies than referring to the individual (i.e., setting individual goals). My GSG-II model assumes that implementation intentions can refer to the individual (II) or to the group (cII) and that each type of implementation intention supports the respective type of goal striving. Referring to the group in an implementation intention (i.e., forming a cII) should thus support interactive, cooperative goal striving. Referring to the individual (i.e., forming II) should support less interactive, less cooperative goal striving within the group.

A task to test these predictions has to fulfill at least three conditions. First, to allow for critical testing of performance gains, group performance should usually be high in the task. This is because it is more difficult to achieve further performance gains when performance is high rather than low. Second, individual and collective goals should improve performance, and interaction should be possible but not necessary for the task. Supporting the respective goal with a (collective) implementation intention can be expected to have an effect only if individual and collective goals can improve performance. Moreover, to be able to observe differences in goal striving, verbal interaction should be possible but not necessary. When interaction is necessary for task performance, the individual goals that improve performance

should also increase interaction and thus mask the expected differences in interaction between individual and collective goal striving (i.e., that collective goal striving is more reliant on interaction). Only if the task can be performed with different degrees of interaction should the difference between individual and collective goal striving show. Third, to test whether both II and cII improve performance, collective and individual goal striving should encounter similar obstacles, which can be overcome by respective implementation intentions. The same implementation intention (i.e., with the same situation and response) should then improve performance both when the individual and the when the collective is the referent (i.e., in an II and in a cII).

Physical persistence tasks from McGrath's execute quadrant can fulfill these conditions. First, interacting groups perform better in physical persistence tasks than non-interacting individuals (Köhler, 1926; Witte, 1989; see Kerr & Hertel, 2011, for review). Given the ubiquitous performance losses in interacting groups (e.g., Kerr & Tindale, 2004), this indicates that groups perform very well in such physical persistence tasks. This group performance gain in physical persistence tasks has most commonly been observed when every group member has to contribute equally to the performance (conjunctive task demands, Steiner, 1972), each group member's contribution can be compared the other group members' contribution (social comparison, Stroebe, Diehl, & Abakoumkin, 1996), and each group member is aware that the group outcome depends on their individual contribution (indispensability; B. Weber & Hertel, 2007). When a physical persistence task fulfills these conditions, interacting groups can be expected to perform very well even without the support of if-then plans, and further performance gains are difficult to achieve.

Second, past research suggests that individual and collective goals can promote performance in physical persistence tasks. The group-performance gain has been attributed to at least two different processes (Kerr & Hertel, 2011; Kerr et al., 2007). The first process concerns the individual member within the group: Realizing that the other group members are still performing (persisting), motivates continued task performance (upward social comparison, Stroebe et al., 1996). Although many explanations have been offered for this source of group performance gain (e.g., Kerr, Messé, Park, & Sambolec, 2005; Stroebe et al., 1996), most of these explanations concern outcomes for or evaluations of the individual (e.g., not wanting to be the worst). Thus, the social comparison process is best described by the goal "I want to perform well." The second process concerns the group as a whole. Under conjunctive task demands, each group member has to contribute equally (the exact same amount, Steiner 1972), and therefore each group members' contribution is necessary for the group to perform well (is indispensable). Different explanations have been offered for this source of group performance gain (Hertel, Kerr, & Messé, 2000; Hüffmeier, Krumm,

Kanthak, & Hertel, 2012) and most concern the success of the group as a whole (e.g., caring about the welfare of the group). The indispensability process is thus best described by the goal "We want to perform well." Both indispensability and social comparison have been shown to contribute to group performance gains in conjunctive tasks (Kerr & Hertel, 2011), indicating that setting individual goals as well as setting collective goals can improve performance. Supporting these goals with respective implementation intentions that help overcome obstacles to goal striving should thereby improve performance. Moreover, interdependent physical persistence tasks do not require verbal interaction (i.e., can be performed silently) but allow for it. The difference between individual and collective goal striving should therefore be apparent in naturally occurring verbal interaction.

Third, aching muscles should limit collective and individual goal striving in conjunctive physical persistence tasks. Despite high task motivation, prolonged exercise leads to aching muscles (an expected obstacle). On the one hand, aching muscles are uncomfortable and draw attention, making this unpleasant internal state difficult to ignore. However, focusing on it can increase (rather than decrease) its detrimental impact (cf. Wegner, 1994). On the other hand, aching muscles are often interpreted as a sign of exhaustion (Cook, O'Connor, Eubanks, Smith, & Lee, 1997), leading to doubts about one's ability to continue to perform the task. Clearly, both discomfort and doubt are obstacles to individual goal striving in this task. But doubts and discomfort should also pose an obstacle to collective goal striving under conjunctive task demands. The group depends on every members' contribution and all members have to contribute equally. Thus, group members cannot compensate for each other: As soon as one group member can no longer contribute to the group performance, collective goal striving comes to a halt. Aching muscles should therefore also disrupt collective goal striving.

Individual and collective suppression implementation intentions should help deal with aching muscles and improve performance. The if-then format helps recognize the specified situation immediately and triggers the specified response before the detrimental stimulus or state becomes overwhelming (Schweiger Gallo et al., 2009). Applying this reasoning to physical persistence finds support from a study using a persistence handgrip task (Wieber, Gollwitzer, et al, 2009): The implementation intention "If my muscles hurt, then I will ignore it" improved persistence but respective control instructions without the if-then format did not. In addition, motivational self-speech (e.g., telling oneself "I can do it!"; Bandura, 1982) helps overcome doubts about one's ability to perform well by restoring one's sense of efficacy. This strategy should be particularly effective when applied once one encounters the disruptive state (aching muscles). Implementation intentions have been shown to promote responding at the right time (Dholakia & Bagozzi, 2003), and including motivational self-speech into an if-then plan should improve its benefits (Bayer & Gollwitzer, 2007). Combining an ignore-response with

motivational self-speech should therefore be particularly effective (Thürmer, McCrea, & Gollwitzer, in press) and help with overcoming expected obstacles to goal striving such as aching muscles in physical persistence (see also Achtziger et al., 2008, Study 2). In sum, a suppression implementation intention to ignore muscle pain and to remind oneself that one can do it should improve physical persistence.

Experiment 1 tested these predictions using a well-established physical persistence task (Bray, 2004). To investigate whether suppression II and cII improve persistence, respective control groups received a control plan without the if-then format. This is a highly conservative test of cII because interacting groups have been shown to perform very well in this task. To investigate how the expected performance improvements come about, naturally occurring verbal interaction was recorded and analyzed.

Method

Participants and design. One hundred and fifty-six students from the University of Konstanz (117 female) with a mean age of 22.58 years (*SD* = 4.40) participated in return for coffee vouchers, 4 € (i.e., about 5 $), or partial course credit. Participants were invited to the laboratory in same-sex triads (52 triads, 39 female) and the experiment followed a 2 (implementation intention: yes vs. no) × 2 (referent: individual vs. collective) between-participants design.

Procedure. Upon arrival, the experimenter interviewed participants about their fitness to ensure that the persistence task did not pose any risk and then obtained informed consent. The experimenter explained that the purpose of the study was to investigate team-persistence and that the task was to hold a medicine ball as long as possible. For this task, groups were asked to form the goal: "I (we) want to hold the ball as long as possible" (collective phrasing in parentheses). All participants read the goal from a board, repeated it under their breaths, and spoke it out aloud together. To ensure that the group members got to know each other and identified with their group, participants were asked to come up with a group name related to their goal, to write it on a sticker, and to display it on their shirt. Participants were tested for their handedness (Oldfield, 1971), and the medicine ball task was explained to participants in detail (see *Persistence task*). Participants then performed the first round of the task. Next, participants receive a plan-training that manipulated the referent and implementation intention factors (see *Manipulation*). To measure the impact of this manipulation, a second, experimental round of the persistence task followed. To rule out differences in goal commitment and group identification between the conditions, participants responded to three goal commitment items (e.g., "How much effort did you put in to hold the medicine ball as long as pos-

sible?", 1: *none* – 7: *very much*, Cronbach's $\alpha = .71$) and seven group identification items (e.g., "It is important to me to belong to my group", 1: *disagree* – 7: *agree completely*, Cronbach's $\alpha = .84$). Finally, participants provided demographic information, were debriefed, thanked, and paid.

Persistence task. The experimenter instructed participants to stand in an imagined isosceles triangle, stretch out their dominant arm and move towards each other until their fingertips touched but their hands did not overlap. When participants had understood and practiced this instruction, the experimenter explained that each trial began when he placed the medicine ball on participants' hands and that each trial ended when the ball was elevated above head-level, sunk below shoulder-level, fell to the floor, or one of the participants moved towards the center of the imagined triangle. It was emphasized that all participants had to hold the ball together (conjunctive task demands). Lastly, participants learned that they would perform two rounds of the task with a break in between, and then performed the first round (baseline). The medicine ball used was a standard 2.5 kg (i.e., about 5.5 lbs) medicine ball borrowed from the university gym. The weight of the ball was chosen so that holding it over a long period would be possible but uncomfortable. Each trial was audio taped to be able to investigate the amount of verbal group interaction.

Manipulation. After finishing the first round, groups received a plan-training. The experimenter explained that merely having a goal (e.g., to hold the ball as long as possible) is not always sufficient, but that a concrete plan had been shown to be effective. Group members then received a sheet of paper that reminded them of their respective goal and instructed them to form "plans." To test whether implementation intentions improve persistence, experimental groups added the if-then plan: "And if my (our) muscles hurt, then I (we) will ignore it and tell myself (ourselves): I (we) can do it!" To make sure that control groups had the same task-relevant knowledge, they were asked to add: "I (We) will ignore my (our) muscle pains and tell myself (ourselves): I (we) can do it!" (collective phrasing in parentheses). The referent factor was thus manipulated by either referring to the individual (I) or to the group (we). All trainings were phrased very similarly: The content did not differ apart from the if-then structure of the implementation intentions (but not the control instructions) and the collective phrasing of the collective referent conditions (but not the individual referent conditions). Participants read the training individually, repeated their plans under their breaths, envisioned them in their mind's eye, and finally wrote them down. This training procedure took about five minutes. After completing the training, participants performed the second, experimental round of the medicine ball task.

Dependent measures. How long groups held the medicine ball was recorded in seconds per trial. After a preliminary analysis of the baseline measure (see below), the difference between the experimental and the

baseline measure was computed to measure the impact of the planning manipulation on persistence. The audio recordings made during the trials were transcribed, a computer program counted the number of words spoken per trial, and the difference between the experimental and the baseline measure was computed as a measure of change in verbal interaction through the planning manipulation.

Results and Discussion

Manipulation checks and baseline analysis. One participant reported pain from a past injury (the trial was aborted immediately), one group was not recorded because of hardware failure, and one group stated during debriefing that they knew implementation intention theory;[4] 49 triads (36 female) remained for analyses. Group identification scores, M = 5.26, SD = .96, and commitment scores, M = 6.00, SD = .78, were generally high and did not differ between conditions, Fs < 1, ps > .50. Therefore, any difference in persistence cannot be attributed to increased goal commitment or group identification.

Entering baseline persistence in a preliminary ANOVA of the first round (baseline) with implementation intention (yes vs. no) and referent (individual vs. collective) as between factors revealed an Implementation Intention × Referent interaction, $F(1,45) = 4.73$, $p = .04$, part. $\eta^2 = .10$, see Table 2 for means and standard deviations. This is surprising as the implementation intention factor was not manipulated until after this baseline measure. However, entering group age and height (mean and standard deviation of group members) as covariates into the model eliminated the effect, $F(1,41) = .90$, $p = .35$, part. $\eta^2 = .02$. Consequently, the difference between experimental and baseline measure (Round 2 – Round 1) was calculated to measure the impact of the manipulation that was administered between the two rounds; the covariates age and height were included in the following persistence analysis.

Persistence. Overall, groups deteriorated from baseline to experimental round, M = -18.27, SD = 49.50 (higher scores represent relatively longer persistence in the experimental Round 2). This is in line with previous research using physical persistence measures (e.g., Lount, Kerr, Messé, Seok, & Park, 2008). To test whether forming if-then plans improved persistence, the persistence score was entered into an ANOVA with implementation intention (yes vs. no) and referent (individual vs. collective) as between factors. As expected, groups with a suppression implementation intention, M = .09, SD = 57.32, persisted relatively longer in the experimental round than groups without an implementation intention, M = -33.22, SD = 36.78, $F(1,41) = 6.10$, $p = .02$, part. $\eta^2 = .13$ (see Figure 1). This supports my

[4]The pattern of results did not change when including this group in the analyses.

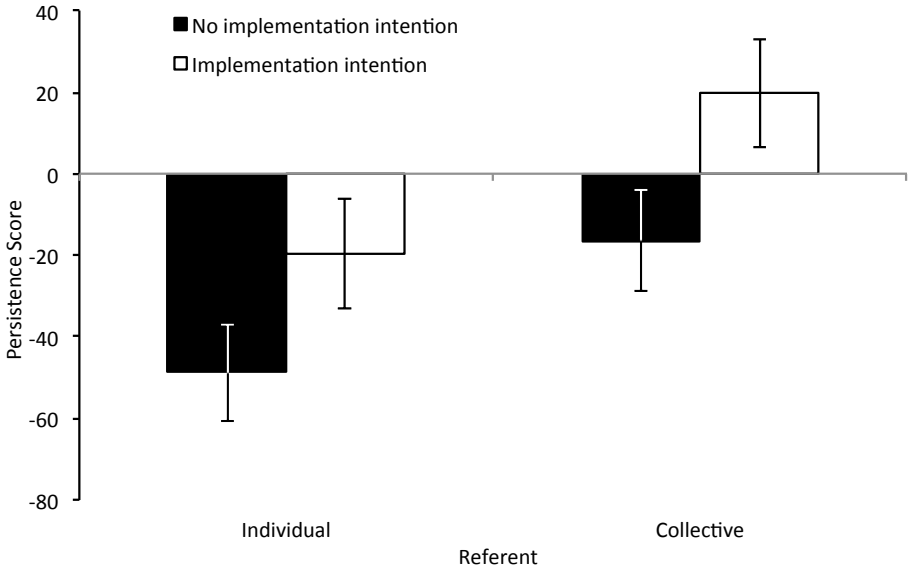


Figure 1: Mean persistence scores (experimental [sec] - baseline [sec]) by implementation intention and referent (Experiment 1). Error bars represent standard errors.

prediction that II as well as cII to ignore muscle pain and tell oneself one can do it improve persistence.

Moreover, a main effect of referent occurred, $F(1,41) = 7.00$, $p = .01$, part. $\eta^2 = .15$: Groups who had set collective goals and plans, $M = .17$, $SD = 40.28$, persisted relatively longer than groups with individual goals and plans, $M = -35.96$, $SD = 51.77$. In sum, the observed results are in line with the idea that individual and collective goal striving are different but can both be supported by respective implementation intentions. The question is whether the two types of implementation intentions rely on different processes.

Group interaction. I argued that collective goal striving is more cooperative than individual goal striving and thus predicted that groups striving collectively would interact more than groups striving individually. To test this prediction, the word count difference score (experimental – baseline) was entered into an ANOVA[5] with implementation intention and referent as predictors. Indeed, a main effect of referent occurred, $F(1,43) = 9.91$, $p < .01$, part. $\eta^2 = .19$. Groups striving collectively, $M = -9.33$, $SD = 68.51$, spoke relatively more in the experimental round than groups striving individually, $M = -68.16$, $SD = 76.47$ (see Figure 2). However, this main effect was qualified by an Implementation Intention × Referent interaction, $F(1,43) = 4.06$, $p = .05$, part. $\eta^2 = .09$: Control conditions did not dif-

[5]The heights covariates were not included in this ANOVA.

Table 2
Persistence, Interaction, and Interaction Content Measures by Implementation Intention (II) and Referent (Experiment 1)

	Referent			
	Individual		Collective	
Measure	II: no	II: yes	cII: no	cII: yes
Persistence				
Baseline (sec)	190.86	215.00	195.77	139.82
	(54.14)	(77.57)	(74.61)	(44.54)
Experimental (sec)	142.07	195.36	179.31	159.64
	(44.20)	(73.36)	(71.27)	(41.58)
Difference	-48.79	-19.64	-16.46	19.82
(dependent measure)	(28.75)	(69.53)	(38.06)	(34.76)
Interaction: Number of Words Spoken				
Baseline	96.57	176.27	124.31	100.73
	(86.62)	(128.96)	(116.16)	(84.80)
Experimental	52.14	77.91	108.54	99.00
	(60.81)	(101.36)	(148.53)	(91.02)
Difference	-44.43	-98.36	-15.77	-1.73
(dependent measure)	(56.94)	(89.60)	(85.90)	(42.69)
Interaction Content: Pronoun Ratio				
Singular	.0371	.0428	.0457	.0392
(Baseline)	(.0325)	(.0257)	(.0325)	(.0272)
Plural	.0290	.0251	.0244	.0317
(Baseline)	(.0239)	(.0167)	(.0151)	(.0467)
Singular	.0225	.0538	.0378	.0349
(Experimental)	(.0280)	(.0467)	(.0344)	(.0281)
Plural	.0092	.0118	.0275	.0407
(Experimental)	(.0154)	(.0144)	(.0369)	(.0407)

Note. Standard Deviations are in parentheses.

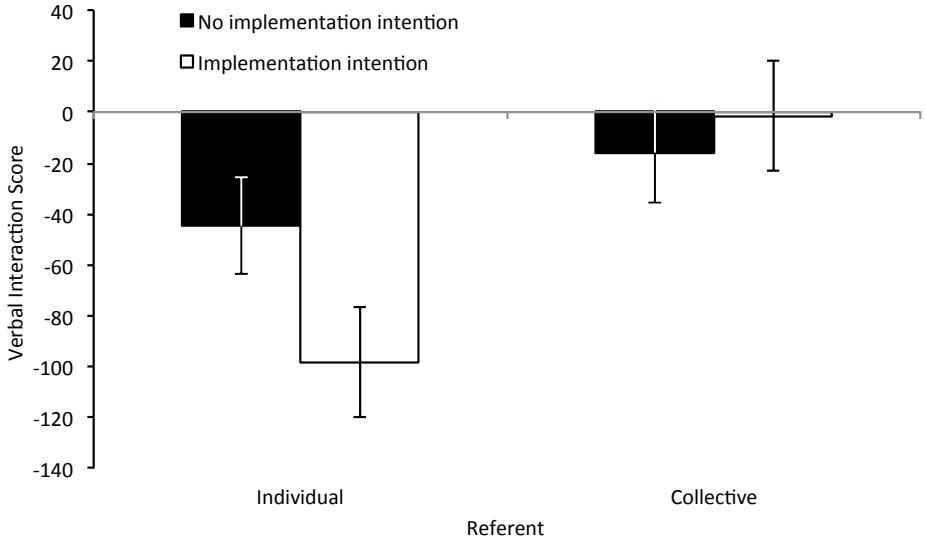


Figure 2: Verbal interaction scores (number of words experimental - baseline) by implementation intention and referent (Experiment 1). Error bars represent standard errors.

fer in the amount they spoke, $F(1,43) = .64$, $p = .43$, but implementation intention conditions did, $F(1,43) = 11.54$, $p < .01$: Implementation intentions reduced the amount of communication in comparison to cII. Indeed, planned contrasts showed that II led to less communication than all other conditions, $t(46) = 3.36$, $p < .01$, and cII led to more communication than all other conditions, $t(46) = 2.30$, $p = .03$. Given that both implementation intentions and collective implementation intentions improved performance, this finding suggests that both types of implementation intentions did so in different ways: While collective implementation intentions left group interaction intact, implementation intentions reduced interaction. Apparently, implementation intentions made group members focus on themselves (individual goal striving) but collective implementation intentions maintained a group focus (collective goal striving). To investigate this assumption, the content of the verbal interaction was analyzed.

Research in linguistics emphasizes the importance of personal pronouns (Pennebaker, Mehl, & Niederhoffer, 2003) and group research has shown the importance of group-related pronouns for group processes (Brewer & Gardner, 1996; Perdue, Dovidio, Gurtman, & Tyler, 1990). As collective implementation intentions refer to the group and promote collective goal striving, the group members should refer more to the group during interactions by using plural personal pronouns. Vice versa, implementation intention groups should use more singular personal pronouns as they refer to the individual and promote individual goal striving. To test this prediction, a

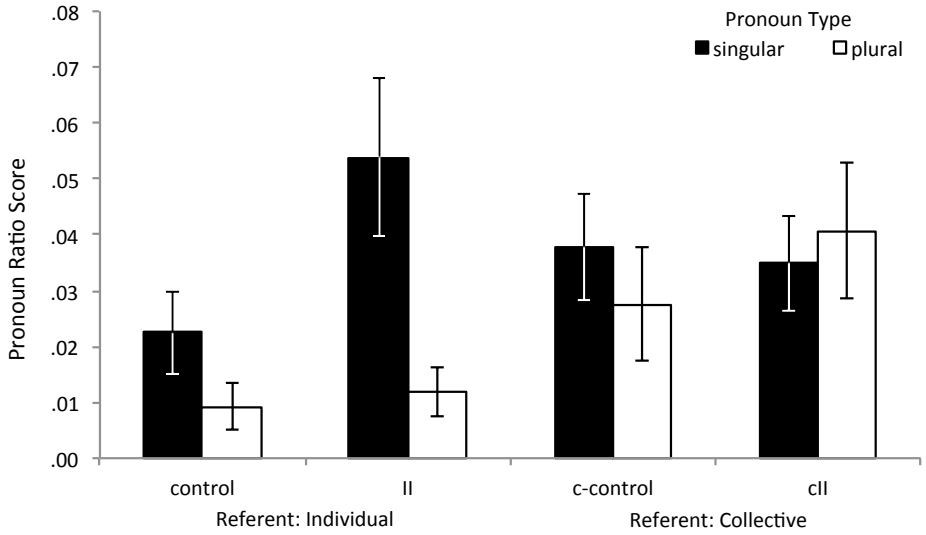


Figure 3: Plural and singular pronoun ratios (pronouns/words overall) by implementation intention and referent (Experiment 1). Error bars represent standard errors.

computer program counted the singular and plural personal pronouns per round. To control for the amount of words spoken, a ratio score (pronouns / overall amount of words) for each pronoun type was computed. Entering these scores into a mixed repeated ANOVA with type of pronoun (singular vs. plural) as repeated factor, baseline pronoun ratios as covariates, and implementation intention and referent as between factors showed a Referent × Pronoun Type interaction, $F(1,43) = 5.98$, $p = .02$, part. $\eta^2 = .12$, that was qualified by the expected Referent × Implementation Intention × Pronoun Type 3-way interaction, $F(1,43) = 5.54$, $p = .02$, part. $\eta^2 = .11$, see Figure 3. Planned contrasts showed that groups with II tended to refer to the individual using singular personal pronouns (e.g., I, me, mine) more than groups in the other conditions, $t(45) = 1.86$, $p = .07$, and cII groups referred to the group using plural personal pronouns (e.g., we, us, ours) more than groups in the other conditions, $t(45) = 2.46$, $p = .02$. This supports the assumption that cII led to increased group focus but II led to increased individual focus. As the control instructions also referred to the individual or the group, this difference between the implementation intention conditions cannot be attributed to priming the respective referent (I vs. we).

However, one might argue that participants interpreted the provided strategy to tell themselves they can do it as an instruction to actually say "We can do it!" (or "I can do it!"), and that participants in the collective conditions followed this instruction more readily than individual participants, leading to the observed differences in verbal interaction. To test this

alternative explanation, an independent coder coded how often this strategy was mentioned, and a ratio score (number of times strategy mentioned/total words) was calculated. Groups seldom mentioned the strategy ($M = .004$, $SD = .02$) and entering this ratio score into an ANOVA with implementation intention and referent as predictors revealed no main effects or interactions, all ps $> .15$. Thus, the observed differences in the interaction patterns cannot be attributed to the strategy information participants received but are better explained by the different types of goal striving (individual vs. collective).

In sum, Experiment 1 showed that II and cII both support group performance but lead to different interaction patterns. While implementation intentions reduced interaction and led to more self-reference, collective implementation intentions left group interaction intact and led to more group reference. This pattern thus supports the assumption that group members can strive individually or collectively, and that forming respective if-then plans supports goal striving. Naturally occurring verbal interaction was analyzed: Groups were neither instructed to communicate nor were they instructed to remain silent. Thus the results, although obtained in a highly controlled laboratory setting, can be expected to have high external validity. However, one might wish to confirm the causal direction of this effect by manipulating the permitted process (interaction); Experiment 2 tested this.

Experiment 2: Should Implementation Intention Referent and Task Demands Match?

Collective implementation intentions are theorized to support collective goal striving but implementation intentions are theorized to support individual goal striving. Each type of implementation intention should thus lead to better performance if the task promotes the respective type of goal striving: II should lead to better performance when the task is less cooperative (e.g., interaction is prevented) than when the task more cooperative (e.g., interaction is promoted). The opposite should be true for cII: Because cII are assumed to support collective goal striving, they should lead to better performance when the task is more cooperative than when the task is less cooperative. In sum, a match between the task demands (less cooperative: prevents interaction vs. more cooperative: promotes interaction) and the implementation intention (individual vs. collective) should lead to the best performance outcomes. Related to this, one might wonder whether the interdependent persistence task is better performed silently or with communication. The main effect of referent on the performance in Experiment 1 suggests that collective goal striving might be better suited for these tasks.

To test these predictions, the task demands were manipulated in Experiment 2: Groups either could communicate with each other while performing the persistence task or were prevented from communicating, and formed II (individual referent) or cII (collective referent) between the baseline and the experimental round. As both individual and collective implementation intention groups outperformed respective control groups in Experiment 1, these two conditions were dropped. A manipulation check measure was adapted from previous research (van Mierlo & Kleingeld, 2010) to confirm that the task manipulation indeed led to perceiving the task as more versus less cooperative.

Method

Participants and design. One hundred and twenty-six university students (93 female) with a mean age of 22.13 years (SD = 2.85) participated in return for coffee vouchers for the university coffee shop, 4 €, or partial course credit. Participants were invited to the laboratory in same-sex triads (42 triads, 31 female) and the experiment followed a 2 (implementation intention referent: individual vs. collective) × 2 (communication: promote communication vs. prevent communication) between-triads factorial design.

Procedure. Experiment 2 followed the same procedure as Experiment 1, with the following exceptions: At the beginning of the study, task instructions were varied to manipulate the communication factor. In the prevent-communication condition, groups were instructed not to talk to each other, to look at a marked point on the wall away from the group, and to wear a headset over their ears; in the promote-communication condition, groups were instructed that they were allowed to talk to each other, could face each other, and to wear a headset around their neck. Audio recordings were made to check whether this communication manipulation was successful.

After performing the baseline round of the task, groups received a plan-training. Groups either formed an II (individual condition) or a cII (collective condition, collective phrasing in parentheses): "And if my (our) muscles hurt, then I (we) will ignore it and tell myself (ourselves): I (we) can do it!" Groups then performed the experimental round of the task. Lastly, besides the commitment (Cronbach's α = .74) and group identification measures (Cronbach's α = .91) used in Experiment 1, participants also received three-item questionnaires to assess their plan commitment (e.g., "I would like to fulfill my plan", 1: *not at all* – 7: *very much*, Cronbach's α = .80) and how cooperative they perceived the group task (e.g., "We worked on the task as a team", 1: *not agree at all* – 7: *agree completely*, Cronbach's α = .89, adapted from van Mierlo & Kleingeld, 2010). Plan commitment was assessed to check that participants committed to individual as well as collective plans. The task measure was included to check whether the communication manipulation was effective in changing the task demands to be more (vs. less) cooperative.

Results and Discussion

Manipulation checks. One group withdrew informed consent after participation and three did not follow experimenter instructions. Thirty-eight triads (26 female) remained for analysis. Goal commitment (M = 5.10, SD = .78), plan commitment (M = 4.02, SD = .75), and group identification (M = 5.33, SD = 1.11) were high and did not differ between conditions, Fs < 2.20, ps > .14. Participants across conditions thus equally wanted

Table 3
Persistence Measures by Implementation Intention Referent and Task Communication (Experiment 2)

	Implementation Intention Referent			
	Individual (II) Task communication		Collective (cII) Task communication	
	Prevented	Promoted	Prevented	Promoted
Baseline (sec)	118.90	190.11	134.22	154.50
	(43.24)	(60.43)	(57.63)	(44.17)
Experimental (sec)	120.00	139.22	97.22	132.20
	(61.10)	(37.47)	(28.28)	(51.37)
Difference	1.10	-50.89	-37.00	-22.30
	(42.37)	(48.60)	(34.97)	(25.86)
Mean deterioration in communication condition	-16.95	-35.84	-16.95	-35.84
	(42.70)	(39.90)	(42.70)	(39.90)
Corrected difference (dependent measure)	18.05	-15.05	-20.05	13.54
	(42.37)	(48.60)	(34.97)	(25.86)

Note. Standard Deviations are in parentheses.

to comply with their respective goal and plan. The baseline audio recordings were transcribed and a computerized word count of the first trial was performed to check whether the task type manipulation was successful. Entering the measure into an ANOVA with referent and communication as between subject factors showed that promote-communication groups spoke more than prevent-communication groups, $F(1,34) = 25.67$, $p < .01$, part. $\eta^2 = .43$. No main effect of referent or Referent $\times$ Communication interaction occurred, Fs < 1, ps $> .30$. Thus, the communication manipulation was successful.

To check whether this difference of communication was indeed perceived as more versus less cooperative, the cooperation scale was entered into an ANOVA with the communication and referent factors as predictors. As expected, the task was perceived as more cooperative when it promoted verbal interaction, $M = 4.46$, $SD = .50$, than when it prevented verbal interaction, $M = 4.03$, $SD = .58$, $F(1,34) = 5.58$, $p = .02$, part. $\eta^2 = .14$. No main effect of or interaction with referent occurred, Fs < 2, ps $> .19$.

Persistence and communication. To test whether the persistence task was better performed silently or with communication, the persistence baseline measure was entered into an ANOVA with the communication and referent factors as predictors. Groups who were allowed to communicate, $M = 171.37$, $SD = 54.15$, outperformed groups who were not allowed to communicate, $M = 126.16$, $SD = 49.73$, $F(1,34) = 7.48$, $p = .01$, part. η^2

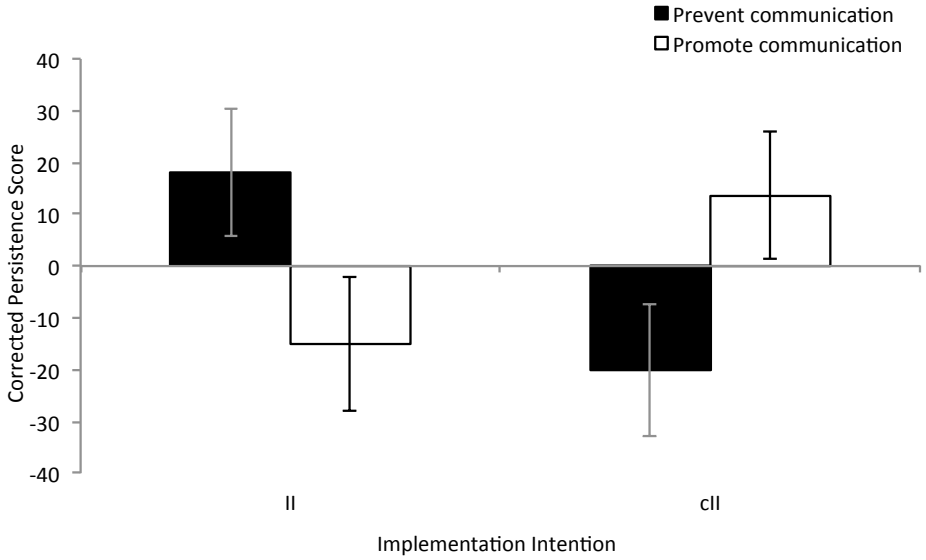


Figure 4: Corrected persistence scores (Experimental [sec] - Baseline [sec] + mean deterioration in communication condition) by implementation intention type and communication (Experiment 2). Error bars represent standard errors.

= .18 (see Table 3). There were no unexpected baseline main- or interaction effects of the implementation intention referent at this point before the manipulation, ps $> .13$.

Persistence and if-then planning. To test how individual and collective if-then planning impacted performance, a difference score between the experimental measure and the baseline measure was calculated. Groups in the communication condition persisted longer at baseline, potentially leading to greater fatigue. To account for this baseline effect, the mean deterioration in the respective communication condition (prevent communication M = -16.95; promote communication M = -35.84) was added to the score. Entering the corrected persistence score as dependent variable into an ANOVA with implementation intention referent and communication as between subject factors revealed the expected Referent × Communication interaction, $F(1,34) = 7.04$, $p = .01$, part. $\eta^2 = .17$: While implementation intention groups performed better silently, $M = 18.05$, $SD = 42.37$, than with communication, M = -15.05, $SD = 48.60$, $F(1,34) = 3.47$, $p = .07$, part. $\eta^2 = .09$, collective implementation intention groups performed better with communication, $M = 13.54$, $SD = 25.86$, than silently, M = -20.05, $SD = 34.97$, $F(1,34) = 3.57$, $p = .07$, part. $\eta^2 = .10$ (see Figure 4). Thus, matching goal striving referent and task demands did improve performance.

Experiments 1 and 2 tested a key prediction of my GSG-II working model; namely, that the two types of implementation intentions (II and cII) support the two respective type of goal striving (individual and collective). In line with this prediction, both II and cII improved persistence in comparison to individual and collective control instructions, respectively. However, II decreased naturally occurring verbal interaction but cII left interaction intact (Experiment 1). Experiment 2 investigated the causal direction of this effect by manipulating the task demands. The observed fit effect suggests that when the task allows for striving collectively (e.g., when communication is possible), cII are called for; when the task does not allow for striving collectively (e.g., communication is not possible) II are called for. Both studies are consistent with the claims that both types of goal striving are possible in groups, that they are different from one another, and that they can both be supported by respective implementation intentions.

However, one can expect aching muscles to interfere with performing in a persistence task, and aching muscles occur at the individual level. One might wonder whether cII can also help overcome unexpected obstacles at the group level. Dealing with unexpected obstacles might be difficult because one cannot prepare for an obstacle one does not expect. Dealing with group-level obstacles might be difficult for cII as they refer to the group, potentially highlighting group level obstacles. Experiment 3 thus investigates whether cII can help overcome the unexpected impact of detrimental group norms.

Experiment 3: Action cII and Unexpected Obstacles

Can action cII shield collective goal striving from unexpected disruptions? By forming action implementation intentions that link an opportune situation to a goal-directed response, individuals can delegate the control of the goal-directed behavior to the specified environmental cue (Gollwitzer, 1999). Because the environmental cue triggers the goal-directed action automatically, even unexpected obstacles cannot disrupt individual goal striving. At the individual level, planning with action II thus shields goal striving against disruption by unexpected obstacles (Bayer et al., 2010; Gollwitzer et al., 2011). In line with this reasoning, forming action implementation intentions has been shown to help deal with unexpected obstacles, such as primed detrimental goals (Gollwitzer et al., 2011), detrimental implicit stereotypes (Mendoza, Gollwitzer, & Amodio, 2010, Study 2), or detrimental internal states (Bayer et al., 2010). For instance, in one study (Bayer et al., 2010, Study 2), participants first performed a task known to tax self-regulatory resources (i.e., had to control their emotions while watching funny videos) or performed a less taxing task (i.e., watching the funny video without suppressing their emotions) and then worked on an anagram task. For this second task, all participants formed the goal to solve as many anagrams as possible; implementation intention participants added the action II "And if I have solved an anagram, then I will immediately start to work on the next!" Replicating previous ego-depletion research, participants without an implementation intention and who had suppressed their emotions performed worse than participants who had not suppressed their emotions. However, implementation intention participants performed well no matter whether they had suppressed their emotions or not. The action II thus shielded participants from the detrimental impact of ego-depletion on performance. Importantly, the action II did not include information that ego depletion might occur and be an obstacle in the following task; ego-depletion can thus be considered an unexpected obstacle. My GSG-II model assumes that cII also create a situation-response link. If this collective situation-response link indeed allows for strategic automaticity in collective goal striving, as II do

in individual goal striving, action cII should shield collective goal striving against unexpected obstacles.

Among unexpected obstacles those that occur at the group level are best suited to test this hypothesis critically. Referring to the group in goal striving should increase the impact of group-level obstacles because goals that one is striving for (i.e., that one is committed to and has not achieved or abandoned yet) have a high cognitive accessibility (e.g., Zeigarnik, 1927). When a goal refers to the group (i.e., a collective goal), group properties, including group-level obstacles, should thus be more salient. Therefore, group-level obstacles to goal striving should have a greater impact on collective goal striving than on individual goal striving. Group norms can represent such a group-level obstacle to goal striving. Group norms are "rules and standards that guide and/or constrain social behavior without the force of laws" (Cialdini & Trost, 1998, p. 151; see also Sherif, 1936; Turner, 1991, 2010). However, relevant norms only guide behavior when they are "in focus" (Cialdini & Goldstein, 2004, p. 597), that is, norms are tied to certain situations (e.g., Aarts & Dijksterhuis, 2003) or groups (e.g., Terry & Hogg, 1996). Norms should thus have a stronger impact on behavior when the group holding the norm is the referent in goal striving (i.e., in collective goal striving). Indeed, normative influences on consumer decisions have been found to be stronger among collectivists (who set their goals with respect to their group, Hofstede, 1980) than among chronic individualists (Lee & Kacen, 2008; Mourali, Laroche, & Pons, 2005). Moreover, people are often unaware of the impact norms have on their behavior (Nolan, Schultz, Cialdini, Goldstein, & Griskevicius, 2008). When acting in a situation or with a group that holds a certain norm, one is not necessarily aware that one acts differently because of that norm. Overcoming detrimental norms in collective goal striving should thus be difficult.

In group idea generation tasks (see Lamm & Trommsdorff, 1973; Mullen, Johnson, & Salas, 1991; Paulus & Brown, 2007; Stroebe, Nijstad, & Rietzschel, 2010, for reviews) from McGrath's generate performance quadrant, a general collectivist norm is detrimental to performance. Goncalo and Staw (2006) had participants deliberate about either the importance of the groups they belong to (*collectivistic norm* condition) or about the importance of what distinguishes them from others (*individualistic norm* condition). Before performing an idea generation task, participants were instructed to come up with either creative ideas (*creative goal* condition) or practical ideas (*practical goal* condition). Overall, collectivistic groups produced less creative ideas than individualistic groups, even with the goal to be creative. Recent research shows that a collectivist norm is detrimental to idea generation because it entails viewing oneself as interdependent with others (Bechtoldt, Choi, & Nijstad, 2012). As collective goals are pursued more interdependently than individual goals, striving for the collective goal to

be creative should lead to worse performance in idea generation tasks than striving for the individual goal to be creative.

This detrimental impact of collectivist norms on collective goal striving in idea generation should be difficult to deal with because norms influence behavior outside one's awareness (Nolan et al., 2008), but action cII should stabilize collective goal striving against this detrimental impact (Bayer et al., 2010; Gollwitzer et al., 2011). Experiment 3 tested this prediction. The idea generation task from McGrath's (1984) generate quadrant was introduced as an additive task (Steiner, 1972): Each group member's ideas were allegedly counted towards a group score. All participants equally believed to belong to and to be acting in the service of a small group, but actually performed an idea generation task fully independently (see Jackson & Williams, 1985, for a similar approach). Interaction between group members was limited in this way because Experiments 1 and 2 demonstrate that cII effects are stronger with increased group interaction. In non-interacting groups, cII performance gains should thus be more difficult to achieve, thereby providing a more critical test. Moreover, the assumption is that cII do not solely rely on group interaction but also create an intra-individual if-then link for collective goal striving. cII effects should thus also occur without face-to-face interaction. In sum, in line with existing research, participants regulating individually were expected to outperform participants regulating collectively. However, I predicted that action cII reduce this difference.

Method

Participants and design. One hundred and twenty-three bachelor students from the University of Konstanz (63 female) with a mean age of 21.72 years (SD = 3.96) participated in return for course credit or 6 € (approx. 8 $). Between sessions, participants were randomly assigned to a 2 (implementation intention: yes vs. no) × 2 (referent: individual vs. collective) between factorial design. Every participant in each session was assigned to the same condition to ensure they would not overhear different plan content.

Procedure. Participants were tested in groups of three to five. The experimenter introduced the cover story, supported by flip charts, to all participants at once. Participants learned that the study was on group creativity and that they would perform one of two tasks together, depending on their creativity level. All participants in one session were first asked to generate a group name together that was related to their group's logo (a green star), allegedly because they would work together on a future task. Interaction between group members and a common future are commonly assumed to be important aspects of groups (Arrow et al., 2000); thus, this procedure was used to create strong and meaningful group identification. The experimenter then explained that highly creative groups would use DVDs and a MacBook

computer to develop ideas for TV and movie scripts (an interesting task, see *pretest*) but that less creative groups were not as well-suited for this task and thus would develop a financial plan for a TV or movie production with detailed lists from three folders (a boring task). Materials for both tasks (a MacBook computer with DVDs and three full, large folders that all read "Cost Accounting" and had different sub-headings such as "Best Boy" or "Filming Equipment") were placed so that every participant could see them and the experimenter referred to the materials during instructions. Participants then learned about the creativity task (see *creativity task*), received a training sheet (see *manipulation*), and performed the idea generation task. Lastly, all participants completed questionnaires to assess group identification (as in Experiment 1, Cronbach's $\alpha = .85$), goal commitment (5 items, e.g., "This is a goal to shoot for", 1: *disagree* – 7: *agree completely*, Cronbach's $\alpha = .73$), and plan commitment (as in Experiment 2, Cronbach's $\alpha = .76$), were fully debriefed, thanked, and paid.

Pretest. A pretest ($N = 33$) was conducted to test whether students actually preferred coming up with ideas for a movie script to designing a financial plan. Participants in the pretest read a description of the respective task and answered a three-item scale to indicate how much they liked the task (e.g., "I would work on this task in my free time" 1: *not at all* – 7: *a lot*; Cronbach's $\alpha = .84$). The order of the tasks was counterbalanced. Indeed, students preferred writing a script ($M = 4.08$, $SD = 1.25$) to developing a financial plan ($M = 2.81$, $SD = 1.24$), $F(1, 32) = 12.71$, $p < .01$. The future task thus was a further incentive to perform well in the creativity level task and increased the importance of the group.

Creativity task. Participants learned that they would have to come up with as many uses of a common object as possible. A box was given as an example of an object and two uses were provided. The group's "creativity level" would be determined by adding all group members' ideas together (additive task demands). This task characteristic was emphasized by a flip chart showing that the sum of all group members' ideas equaled the group creativity level. Moreover, the experimenter made clear that the group's maximum creativity level (their optimal performance) was of interest and that the group would receive training to achieve this. Lastly, the experimenter presented a graphic of a standard keyboard and pointed out which key is the Enter key to ensure that every participant would understand the training (see below). Participants were seated at separate tables and received a training sheet (see *manipulation*). After completing the training, participants worked on the idea generation task individually: On personal computers, the task was explained again in writing and participants had 5 min to come up with as many uses of a common knife as possible. After typing one idea, participants pressed the Enter key to move on to the next field and type in a new idea.

Manipulation. The referent factor and the implementation intention factor were manipulated in the training sheets participants received before performing the creativity task: All participants set the goal "I (we) want to achieve my (our) maximum creativity level" (collective referent phrasing in parentheses). In addition, participants in the implementation intention conditions formed the implementation intention "When I (we) press Enter, then I (we) will think of another use immediately." To ensure that all participants had the same task-relevant knowledge, control participants added "I (we) will think of further uses when I (we) press Enter." Thus, the only difference between implementation intention instructions and control instructions was the if-then format of the implementation intentions, and the only difference between the individual and the collective instructions was the referent (individual vs. group). The expected differences between the conditions could thus only be due to the if-then format and the referent. Every participant in one session received the same training so that participants could not learn of a plan other than that assigned (e.g., from another participant asking about his/her plan).

Dependent measures. All ideas generated were checked for repetition (e.g., to use a knife to cut bread and to cut an apple) by two independent raters. Disagreements were seldom (35 out of 1365 different ideas checked, or 2.56 % of the observations) and easily resolved through discussion. The number of non-redundant ideas was calculated for each participant. Moreover, similar ideas were grouped into categories (e.g., food preparation), and the categories used by each participant were counted as a measure of idea originality (Rietzschel, Nijstad, & Stroebe, 2007).

Results and Discussion

Manipulation checks. Five participants indicated that they were not actually (bachelor) students and thus did not fit the study requirements.[6] Because of potential interdependence, the data of all the participants in the four sessions that included these five participants were discarded. Further, one group of participants did not follow instructions. One hundred and four participants (52 female) remained for analysis. Participants generally indicated high identification with their group ($M = 4.66$, $SD = 1.05$) and medium plan commitment ($M = 3.51$, $SD = .82$), and no referent or implementation intention effects occurred, all Fs < 1.78, all ps $> .19$. Goal commitment was also high ($M = 4.75$, $SD = .77$) but unexpectedly differed between conditions: A main effect of implementation intention (more commitment among participants with implementation intentions, $M = 4.87$, $SD = .71$, than without, $M = 4.58$, $SD = .82$), $F(1,100) = 4.47$, $p = .04$,

[6]Both age and education impact creative performance, such as idea generation (Amabile, 1996). The pattern of results remains unchanged when including all participants.

part. $\eta^2 = .04$, and of referent (more commitment among participants with individual goals and plans, $M = 4.88$, $SD = .80$, than with collective goals and plans, $M = 4.62$, $SD = .71$), $F(1,100) = 4.12$, $p = .05$, part. $\eta^2 = .04$, occurred. However, entering goal commitment as a covariate did not change the following results.

Main analysis: ideas generated. The number of non-redundant ideas was entered into an ANOVA[7] with implementation intention (yes vs. no) and referent (individual vs. collective) as predictors. In line with past research (Goncalo & Staw, 2006), I expected that striving for the collective goal to be creative would lead to generating fewer ideas than the individual goal to be creative. Indeed, participants striving collectively generated less uses of a common knife, $M = 15.46$, $SD = 4.88$, than participants striving individually, $M = 16.78$, $SD = 3.62$, $F(1,100) = 4.60$, $p = .03$, part. $\eta^2 = .04$ (see Figure 5). This finding supports the idea that striving for the collective goal to be creative is more difficult than striving for this individual goal.

However, I predicted that cII create a powerful if (situation)-then (response) link that stabilizes collective goal striving. In line with this prediction, the main effect of referent was qualified by the predicted Referent × Implementation Intention interaction, $F(1,100) = 6.46$, $p = .01$, part. $\eta^2 = .06$. Pairwise comparisons revealed that cII participants, $M = 16.50$, $SD = 5.12$, outperformed collective controls, $M = 13.61$, $SD = 3.88$, $F(1,100) = 5.53$, $p = .02$, part. $\eta^2 = .05$, and that cII, $M = 16.50$, $SD = 5.12$, led to similarly high performances as II, $M = 16.17$, $SD = 3.21$, $F(1,100) < 0.1$, $p = .75$. Individual controls, $M = 17.54$, $SD = 4.01$, did not differ from II, $M = 16.17$, $SD = 3.21$, $F(1,100) = 1.45$, $p = .23$. Experiment 3 thus showed that furnishing a collective goal with a cII improved idea generation performance. In fact, post-hoc contrasts showed that cII led to performance identical to individual goals and plans, $t(100) = .38$, $p = .71$, suggesting that cII overcame the obstacle of striving collectively for the goal to be creative.

One might argue that cII only increase the *quantity* of ideas generated and that this is not necessarily creative (e.g., when a lot of similar ideas from the same category are generated). However, entering the number of idea-categories into an ANOVA with implementation intention and refer-

[7] As noted, independence of participants within groups might be violated. For this reason, the analyses were repeated with hierarchical linear modeling with HLM (Hox, 2010) that takes the structure of the data into account (Level 1: participants in Level 2: groups). The small-to-medium (Hox, 2010) intra class correlation (ICC=.12; the ICC denotes the proportion of the overall variance that can be attributed to the Level-2 unit, in this case the group) partially supported this assumption, but testing the model

$$IDEAS_{ij} = \gamma_{00} + \gamma_{01} * Referent_j + \gamma_{02} * Intention_j + \gamma_{03} * Referent \times Intention_j + u_{0j} + r_{ij}$$

showed the same main effect and interaction (Fixed effects: Referent, $\gamma_{01} = -3.87, t(20) = -2.49, p = .02$, Intention,$\gamma_{02} = -0.94, t(20) = -0.94, p = .36$, Referent × Intention, $\gamma_{03} = 4.14, t(20) = 2.06, p = .05$). Thus, for ease of interpretation, the ANOVA is reported.

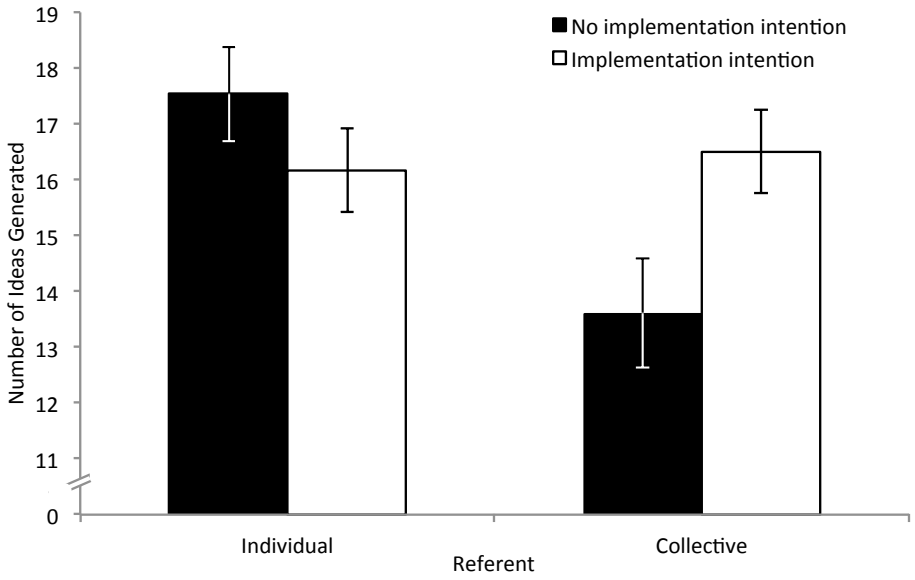


Figure 5: Number of ideas (uses of a common knife) generated by implementation intention and referent (Experiment 3). Error bars represent standard errors.

ent as predictors showed identical results: Participants striving individually generated uses from more different categories, $M = 7.15$, $SD = 1.72$, than participants striving collectively, $M = 6.54$, $SD = 2.01$, $F(1,100) = 5.47$, $p = .02$, part. $\eta^2 = .05$, but this main effect was qualified by a Referent $\times$ Implementation Intention interaction, $F(1,100) = 9.43$, $p < .01$, part. $\eta^2 = .09$: Collective control participants generated ideas from fewer categories, $M = 5.67$, $SD = 1.41$, than individual control participants, $M = 7.63$, $SD = 1.88$, but cII participants, $M = 7.03$, $SD = 2.15$, generated uses from as many categories as II participants, $M = 6.77$, $SD = 1.50$. This finding supports the assumption that cII lead to creative idea generation despite collective goal striving.

The finding that II did not lead to better performance than individual control instructions might seem surprising given the well-documented effectiveness of implementation intentions in improving performance in general (Gollwitzer & Sheeran, 2006) and idea generation in particular (Gollwitzer, Bayer, & McCulloch, 2005). Bayer and Gollwitzer (reported in Gollwitzer et al., 2005) had individuals generate ideas and submit them anonymously with other participants, conditions that are known to foster withdrawal of effort (*social loafing*, Karau & Williams, 1993). This social loafing effect was successfully reduced by forming implementation intentions. However, in the current experiment, group members got to know each other, performance was incentivized through the alleged future task, and the ideas generated

by each participant were identifiable. Under these conditions, social loafing is unlikely (Karau & Williams, 1993) and idea generation is a fun and easy task for individuals (cf. Diehl & Stroebe, 1987; Stroebe et al., 2010). Past research has demonstrated that forming implementation intentions is beneficial when striving for difficult goals or under detrimental conditions but not when striving for easy goals under supportive conditions (Dewitte, Verguts, & Lens, 2003; Hall, Zehr, Ng, & Zanna, 2012). It is thus not surprising that II did not lead to further performance gains in the current experiment when no detrimental collective norm was present (see also Thürmer et al., in press; Webb, Christian, & Armitage, 2007; Wieber, Odenthal, & Gollwitzer, 2010).

The present experiment thus demonstrates that action cII improve idea generation despite a collectivistic norm in collective goal striving. As the action cII did not include information about the detrimental norm, this provides evidence that action cII stabilize collective goal striving and shield it against disruptions by obstacles—even when these obstacles are unexpected. Moreover, the present experiment shows how crucial it is to consider the referent of goal striving in groups. While individual goal striving in groups seemed to be successful without implementation intentions, collective goal striving was only successful with cII. However, Experiment 3 did not test the assumption that individual goal striving was successful without if-then planning, as there was no respective no-goal control condition. If individual goal striving was successful without if-then plans, they should improve performance in comparison to a no-goal control. Further, a collectivist norm in collective goal striving is quite general and one might wonder whether cII can also overcome group-specific norms. This might be more difficult when the norm has long been established in the group. Experiment 4 thus included a no-goal control condition and tested whether cII can help overcome an existing and specific group norm.

Experiment 4: Can Action cII Curb Impulse Shopping Norms?

Well-established and specific norms have a strong impact on behavior (Levine & Moreland, 1994), leading to the question whether cII stabilize collective goal striving to a degree that even such norms cannot disrupt it. If-then planning has been shown to protect goal striving in unfavorable situational and social contexts, including established detrimental norms. A recent study investigated the impact peers have on each others' readiness to drink (Webb, Sheeran, Gollwitzer, & Trötschel, 2012, Experiment 2). Participants either formed a goal to drink modestly and an if-then plan to ignore their urge to drink (relevant suppression II) or a goal to snack modestly and to ignore their urge to snack (irrelevant II), and then either answered questions concerning socializing with peers (peer prime) or concerning studying (control prime). While participants with an irrelevant plan showed an increased readiness to drink (as indicated by faster response latencies to alcohol stimuli) after the peer prime than after the control prime, participants with the relevant II did not show this speedup effect after the peer prime. This suggests that if-then plans can counter a detrimental peer norm. In line with these laboratory findings, a recent field study showed that action II specifying an alternative behavior to consuming alcohol decreased self-reported binge drinking among undergraduate students (Hagger et al., 2012). Action cII should thus shield collective goal striving against established norms.

A day-to-day task that is influenced by social norms is shopping (Howard, 2012; W. Wood & Hayes, 2012), and the influence of social norms is strong when it comes to impulse purchases (e.g., Luo, 2005; Mangleburg, Doney, & Bristol, 2004). In the marketing literature, impulse purchases are defined as unplanned purchases at the point of sale (Kollat & Willett, 1967; Stern, 1962) that are characterized by a sudden urge to possess the product (Rook, 1987) and by an on-the-spot purchase decision with limited information and time available (M. Wood, 1998). Certain product categories are more likely to be purchased impulsively (Jones, Reynolds, Weun, & Beatty, 2003), such

as alcoholic beverages (Ariely & Levav, 2000), clothing (Han, Morgan, Kotsiopulos, & Kang-Park, 1991), or unhealthy food (Verplanken, Herabadi, Perry, & Silvera, 2005). In order to predict impulse purchases, existing literature has focused on situational factors and individual differences (see Beatty & Ferrell, 1998, for a comprehensive model) such as mood (Rook & Gardner, 1993), overall shopping goals and objectives (Bell, Corsten, & Knox, 2011), personality and personal norms (Rook & Fisher, 1995; Verplanken & Herabadi, 2001), or self-regulatory resources (Baumeister, 2002; Vohs & Faber, 2007). At the group level, social norms have been shown to impact impulse shopping. While being with peers (norm to indulge) promotes impulse purchasing, being with family (norm to be frugal) reduces it (Luo, 2005). This suggests that resisting the temptation to make an impulse purchase is difficult in the context of one's peers. When a social norm supports indulgence, thoughts about and actual impulse purchases are likely to arise and interrupt collective striving for the goal to be frugal. On the other hand, when striving individually and not referring to the peer group, the impact of this norm should be less pronounced (Mourali et al., 2005). In other words, the group norm to indulge represents an obstacle to striving for a saving-goal collectively.

However, an action cII to take only what one really needs should help overcome the detrimental impact the peer norm to indulge has on collective saving goals. As soon as the specified shopping situation is encountered, the response to take only what one really needs should be triggered. This should protect against unplanned impulse purchases. One might argue that the action to take only what one really needs requires reflection and that reflection cannot be promoted by simple if-then plans. However, recent research has demonstrated that implementation intentions can even facilitate reflective responses such as revising important information before coming to a decision (Thürmer et al., 2013) or reflecting on the effectiveness of a chosen strategy (Henderson, Gollwitzer, & Oettingen, 2007). The action cII to take only what one really needs should thus lead to better shopping decisions and curb impulse purchases.

As an initial test of this prediction, I adapted a well-established vignette paradigm[8] from consumer research (Rook & Fisher, 1995): Students read vignettes describing a target who wants to shop less and plans individually or with friends, and with either an implementation intention or a control plan. Additionally, an unrelated control plan condition without the saving-goal

[8]To my knowledge, no study to date has manipulated implementation intentions and measured the outcome in a vignette paradigm. However, a recent quasi-experimental study measured implementation intentions and outcomes successfully with vignettes (Grimshaw et al., 2011) and a recent experimental field study suggests that reading implementation intentions formed by others leads to forming these implementation intentions oneself (Fennis, Adriaanse, Stroebe, & Pol, 2011). I therefore adapted Rook and Fisher's (1995) well-established impulse shopping paradigm for the present experiment.

was established to test whether striving individually was successful without an action II. The target then encounters tempting shopping situations. To determine the strength of the shopping impulse participants experienced in each situation, participants were asked to indicate what the target would experience and buy (adapted from Luo, 2005; Rook & Fisher, 1995). I expected that striving for the goal to be frugal collectively with ones friends would be difficult because of a detrimental indulgence norm that encourages impulse shopping (Luo, 2005). However, an action cII to take only what one really needs referring to the friend-group should help overcome this group norm. On the other hand, when striving individually, the group norm should have less impact and goal achievement should be easier.

Method

Participants and design. Four hundred and twenty-three pupils (232 female) from southern Germany with a mean age of 17.64 years ($SD = 1.34$) completed the study questionnaires voluntarily in group-testing sessions after lectures held at the University of Konstanz for prospective students. Minors (below age 16), teachers, and incomplete questionnaires were not included in the sample. The study followed a 2 (implementation intention: yes vs. no) × 2 (referent: individual vs. collective) design with an additional, unrelated plan condition (unrelated individual goal with a control plan).

Procedure. After giving informed consent, participants learned that the study concerned the shopping attitudes of young adults, they would read several short texts (scenarios), and would be asked to answer a few questions about each scenario. It was emphasized that they should imagine the scenarios vividly. Four texts followed, describing day-to-day situations of a target person, Jan or Jana. The two names were used to manipulate the target's sex as a control factor; besides being orthographically similar, both names were very common in the cohorts under investigation (Bielefeld, 2012). Thus, possible differences between the two versions could most likely be attributed to the targets' gender. Finally, participants were asked to recall one critical aspect about each scenario, to indicate how seriously (1: *not at all* – 5: *very much*) the target took the goal (5 items, e.g., "Jan wants to achieve his goal", $\alpha = .47$) and the plan (3 items, e.g., "Jan wants to fulfill his plan", $\alpha = .68$),[9] provided demographic information, and were debriefed.

Manipulation. The first scenario served to manipulate the intention and referent factors. Participants either read that the target himself/herself (individual referent) or the target and his/her two best friends (collective referent) liked shopping but wanted to be frugal with their money. Partic-

[9]Because of their low reliabilities, both scales were only checked descriptively (see *Manipulation checks*).

ipants in the implementation intention condition read that the target (and friends) formed a plan to reach this goal: "When I (we) want to put something in my (our) shopping basket, then I (we) will take only what I (we) really need" (collective referent phrasing in parentheses). To ensure that the if-then format of the implementation intentions would be the only difference to the control conditions, control participants read that the target added: "I (we) will only put things in my (our) shopping basket that I (we) really need!" The if (situation)-then (response) link was thus the only difference between the implementation intentions and control instructions. A further control condition was established to determine the no-saving goal baseline: Participants in this control condition read that the target likes television but wants to be frugal with his/her time and thus plans: "I will only watch TV programs that I really like!" This control instruction was chosen because it also contains the verb "frugal" and addresses the individual. If priming the word frugal was effective in reducing impulse shopping, this plan should also decrease impulse shopping. The individual phrasing was used because it can be expected to decrease the impact of group norms in comparison to a collective phrasing (Experiment 3), and thus constitutes a more conservative control group than the collective phrasing. The respective plan was mentioned several times in this first scenario, and all participants were asked to print the goal and the plan at the bottom of the page. Only the respective plan differed between conditions in this scenario. The second scenario served to emphasize the importance of the two best friends to the target person. All participants read that the friends supported Jan (Jana) when he (she) had to master a difficult task (take an important test at school). Participants indicated how important his (her) friends were to the target (1: *not important* – 7: *very important*). This scenario was used to ensure that all participants knew that his (her) peer group was important to the target.

Impulse shopping measure. Two scenarios describing shopping situations followed: In the first scenario, the target goes into town to buy socks but finds a nice sweater. In the second scenario, the target goes to the mall to buy a travel bag but finds a nice satchel. After reading each scenario, participants indicated how impulsive the target felt and acted (1: *only takes the intended item*; 2: *takes the intended item but is tempted by the other item*; 3: *only buys the tempting item, not the intended item*; 4: *buys both items*; 5: *buys both items and another unintended item*). This measure was adapted from previous research as it has been shown to be a good indicator of impulse purchases (Luo, 2005; Rook & Fisher, 1995).

Results and Discussion

Manipulation checks. Twenty-seven participants did not believe that the target took the goal and the plan seriously (mean score 2 or below, bottom

3 %) and 3 did not answer any item concerning the scenarios correctly. After excluding these participants, 393 (220 female) remained for analysis. Participants generally indicated that the two best friends were important to the target, $M = 4.30$, $SD = .70$, and there were no differences between conditions, $F(4,388) = .86$, $p = .49$. The friends and their respective norm can thus be expected to be equally salient to participants across conditions. A preliminary analysis with shopping scenario as repeated factor showed that participants indicated less impulse shopping in the mall, $M = 2.18$, $SD = .86$, than in town, $M = 2.33$, $SD = .95$, $F(2,385) = 7.58$, $p < .01$; no interactions with any of the factors occurred. To account for this difference between the scenarios, the shopping measure was centered per scenario and missing values (7 instances or 1 % of the observations) were replaced with the mean before calculating the impulse shopping measure across both scenarios; for ease of interpretation, uncentered means are reported. Entering the centered shopping measure into an ANOVA with target sex and participant sex as predictors showed no main effect of target sex, $F(1,385) = .07$, $p = .80$. A participant sex effect (females indicated more impulse shopping), $F(1,385) = 3.54$, $p = .06$, and a marginal Target Sex × Participant Sex interaction occurred (female participants indicated more impulse shopping for a female target than for a male target; male participants were not influenced by the target's sex), $F(1,385) = 2.72$, $p = .10$; including both variables as covariates did not change the following results.

Main analysis. To test whether cII help achieve one's saving goal with one's peers, the impulse shopping measure was entered into an ANOVA with implementation intention (yes vs. no) and referent (individual vs. collective) as between factors. As predicted, striving for the saving goal with friends led to higher impulse shopping scores, $M = 2.31$, $SD = .74$, than striving for this goal individually, $M = 2.10$, $SD = .63$, $F(1,305) = 7.93$, $p < .01$, part. $\eta^2 = .03$ (see Figure 6). No main effect of implementation intention occurred, $F(1,305) = 1.58$, $p = .21$. The referent main effect was qualified by the expected Referent × Implementation Intention interaction, $F(1,305) = 3.94$, $p = .05$, part. $\eta^2 = .01$: Without an implementation intention, participants striving collectively indicated higher impulse shopping scores, $M = 2.44$, $SD = .75$, than participants striving individually, $M = 2.07$, $SD = .63$, $F(1,305) = 10.80$, $p < .01$, part. $\eta^2 = .03$; however, cII, $M = 2.19$, $SD = .71$, led to equally low impulse shopping scores as II, $M = 2.13$, $SD = .63$, $F(1,305) = .37$, $p = .54$. Indeed, in line with the idea that the success of collective striving for the goal to be frugal depends on if-then planning, cII led to lower impulse shopping scores than collective control instructions, $F(1,305) = 5.52$, $p = .02$, part. $\eta^2 = .02$.

Individual control instructions and II led to similarly low impulse shopping scores, $F(1,305) = .25$, $p = .62$, indicating that participants striving individually achieved their saving goal without an if-then plan. To test this explanation, planned comparisons were calculated with the additional no-

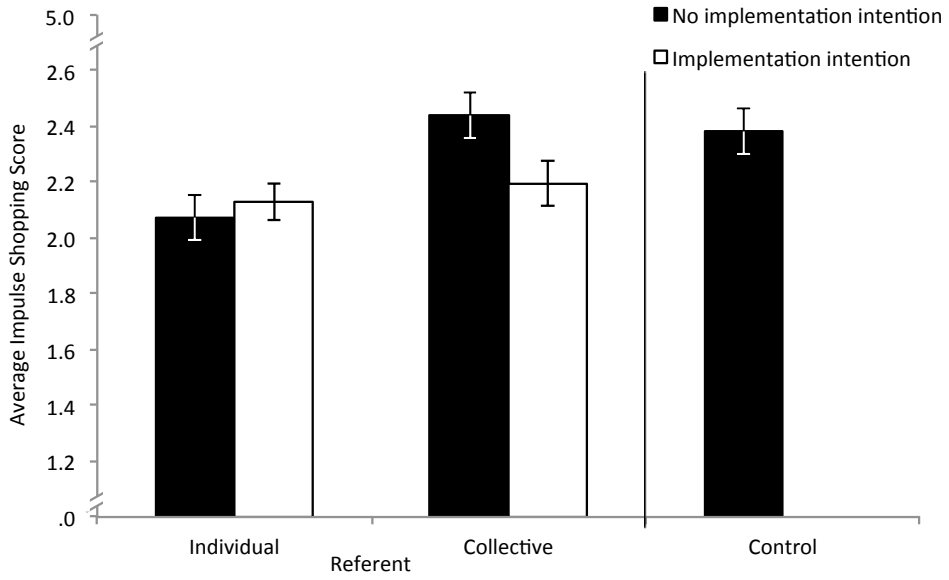


Figure 6: Reported impulse shopping by referent and implementation intention, with control condition (Experiment 4). Error bars represent standard errors.

saving goal control condition. If implementation intentions and individual control instructions were both successful in striving for ones goal to be frugal, they should indicate lower impulse shopping scores than participants without this goal. In line with this prediction, individual control instructions, $M = 2.07$, $SD = .63$, and II, $M = 2.13$,

$SD = .63$, reduced impulse shopping in comparison to the no-saving goal instructions, $M = 2.38$, $SD = .73$, Ts$(385) > 2.20$, ps $\leq .02$. Also cII, $M = 2.19$, $SD = .71$, tended to reduce impulse shopping in comparison to the no-saving goal instructions, $T(385) = 1.78$, $p = .08$. Contrary to this, collective control instructions, $M = 2.44$, $SD = .75$, lead to similar impulse scores as the no-saving goal instructions, $T(385) = .54$, $p = .59$. Striving for the collective goal to be frugal with friends thus was unsuccessful unless supported by a respective cII.

In the present experiment, striving individually for one's saving goal was successful even without forming an if-then plan. However, in the shopping situations participants encountered, the main obstacle was a detrimental group norm. As predicted, this group-level obstacle had less impact on individual goal striving than on collective goal striving. However, it seems plausible that individual-level obstacles can also prevent individuals from achieving their saving goals (e.g., detrimental consumption habits; Ji & Wood, 2007). In such cases, individual saving goals might also need implementation intentions to be achieved (Gollwitzer & Sheeran, 2009). Ad-

ditionally, one might need implementation intentions to overcome personal norms or more general norms that are not specific to a small group. In line with this idea, recent research by Wieber and colleagues (Wieber, Gollwitzer, Sheeran, Schoch, & Tidswell, 2013) showed that mere privacy goals were not sufficient to counter the general norm to reciprocate information disclosure; only if-then plans ensured that participants kept private information to themselves, even when their conversation partner disclosed such information. Similarly, as group norms become privately accepted (e.g., the peer norm to drink alcohol to socialize), individual goal striving also needs if-then planning to be successful (Webb et al., 2012).

In sum, Experiment 4 showed that striving for a saving goal with friends is difficult, unless supported by an action cII to take only what one really needs. In contrast, the finding that individual goal striving was successful even without implementation intentions confirms the importance of considering the referent of goal striving in groups. A limitation of the present results is the small effect size: Participants across conditions indicated very little impulse shopping. This might be related to the paradigm used: Although the paradigm is well-established (Luo, 2005; Rook & Fisher, 1995) and allows for high experimental control (e.g., confronts every participant with the same choice), the vignettes might not have included the shopping items that tempt every participant to impulse shop. Moreover, reading about a situation is certainly not as vivid as actually encountering it. In real life, consumers face actual products that they have experience with, making it difficult to control their urge to impulse shop. The question then is whether and how action cII shield goal striving against these urges. Experiment 5 tested this.

Experiment 5: Does the If-Then Format Improve cII?

The aims of Experiment 5 were threefold. First, I sought to replicate the effectiveness of action cII in reducing impulse shopping in a more familiar and tempting shopping environment. As norms are stronger when they have been applied repeatedly (Kameda, Takezawa, & Hastie, 2005), their detrimental impact should be even more difficult to overcome when facing a familiar shopping situation. Grocery shopping in a supermarket represents such a situation (Park, Iyer, & Smith, 1989). In line with previous findings that implementation intentions support achieving difficult goals (Gollwitzer & Sheeran, 2006), I predicted that action cII to take only what one really needs can even support achieving one's saving goal in a tempting supermarket situation. A related question concerns how a cII is best phrased to counter such strong obstacles.

Thus, second, I sought to investigate the importance of the if-then format for cII. Research shows that implementation intentions are particularly effective in the if-then format (Chapman et al., 2009). This is because the if-then format creates a strong situation-response link that leads to swift response as soon as the specified situation arises (Webb & Sheeran, 2007). My GSG-II model assumes that cII create an if-then link for collective goal striving. Thus, cII should be more effective in the if-then conditional format than the same strategy information without the if-then format.

Third, and related to this, I sought to investigate whether cII replace detrimental group norms or indeed work by supporting goal striving. One might argue that forming an action cII replaces an existing detrimental norm by linking counter-normative behavior to the group, and that the effectiveness of cII thus relies on changing group properties not directly related to goal striving. However, norms are tied to certain groups (e.g., Terry & Hogg, 1996): They influence behavior in context of the group that holds them but not when acting in the context of a group that does not hold them. If cII replaced a group norm, they should have no effect in a group without this norm. On the other hand, in line with implementation intention theory, the GSG-II assumes that cII improve goal striving because they

create a situation-response link and thus should also be effective in groups without a detrimental norm. Even if no group norm promotes impulse purchases, the situation-response link created by cII should help decrease residual impulse decisions.

To investigate these three predictions, I systematically varied the if-then format and the strategy content across three planning conditions, used an alternative group that does not hold favorable indulgence norms as controls, and used a newly developed supermarket shopping paradigm that represents a familiar and tempting shopping situation (see *Pilot*) in Experiment 5. This task from McGrath's (1984) choose quadrant has disjunctive task demands (Steiner, 1972) as participants did the shopping for their respective group and the other group members could not influence the outcome. I will now report how the new paradigm was developed and a pilot study designed to test its properties. Then I will turn to Experiment 5 that tested the aforementioned predictions.

Experiment 5: Pilot

To identify relevant group memberships with and without detrimental norms, I conducted a focus group with 15 students in their second year of study and discussed possible groups.[10] All students agreed that their fellow students (i.e., friends they study with) and their friends from home are important groups to them. While being a student is associated with having little money to spend and being frugal, being a friend from home is associated with being looked after and having pocket money to spend. Together, we developed vignettes containing typical activities and situations related to each group (e.g., meeting with a study group vs. meeting with friends at home) to make the respective group membership salient. Moreover, we developed a new shopping paradigm: Participants' task was to shop for ingredients for a meal (spaghetti and tomato sauce) in a setting that resembled a typical German supermarket. Dependent measure was the number of purchased items unrelated to cooking the meal. As a preliminary test of this paradigm, only the salience of the two groups was manipulated before performing the shopping task.

Method

One hundred and three students (68 female) from the University of Konstanz with a mean age of 22.10 years ($SD = 3.21$) participated in return for chocolate or course credit. Participants were randomly assigned to one of two group conditions (friends from home or fellow students). After giving

[10] I thank my 2011 *Empirie-Praktikum: Gruppen Prozesse* students for their help developing this paradigm.

informed consent, all participants learned that the study consisted of two independent parts: Part 1 concerned imagery and Part 2 consumer behavior. It was emphasized that both parts were independent to ensure that the respective group norm and not the situation described (see below) would cause the expected effects.

Participants then received the first questionnaire. They were asked to imagine a situation described in a following text as vividly as possible. This is where the group condition was manipulated: While fellow-student-group participants read a text describing typical student activities (e.g., meeting at a fellow student's house to study and talking about exams), friends-from-home-group participants read a text describing typical friend-from-home activities (e.g., meeting at a friend's house to catch up and talking about the old days). Participants then summarized the contents of the text, responded to three manipulation check items designed to measure how realistic the text was (e.g., "It was easy to imagine being the person described in the text", 1: *not at all* – 5: *very much*, Cronbach's $\alpha = .77$), and were informed that had completed Part 1.

Part 2 was introduced as a study on consumer behavior. Participants learned that their task was to shop for spaghetti with tomato sauce for their fellow students or friends from home, respectively. The instructions referred to the respective group to ensure that participants remembered their group membership. It was emphasized that participants were only shopping for this meal. Participants were then seated in front of a printed picture of a shopping cart with models of a wide range of food items placed behind it. The items were always arranged in the same order, which was closely modeled on German supermarkets. Participants learned that they could buy items by putting them in their cart, and that they could buy as many items as they wished. When participants had finished their shopping, they were seated at a different table to provide demographic information. The experimenter unobtrusively noted the shopping items in the cart and handed out the incentive. The number of items in the shopping cart that were unrelated to spaghetti and sauce served as dependent measure; the number of spaghetti-and-sauce items were checked to ensure that participants across conditions performed that task equally.

Results

Manipulation check. All participants summarized the important points in their respective text and participants generally indicated that the texts were realistic, $M = 4.02$, $SD = .77$. Participants across conditions bought an equal amount of ingredients for spaghetti and tomato sauce, friends from home: $M = 3.16$, $SD = 1.08$, fellow students: $M = 3.02$, $SD = 1.02$, $F(1,101) = .47$, $p = .50$.

Dependent variable: impulse purchases. When looking at the number of items in the shopping cart that are not ingredients for spaghetti and tomato sauce (impulse purchases), the predicted main effect of group occurred, $F(1,101) = 3.71$, $p = .06$, part. $\eta^2 = .04$: Participants shopping for their friends from home bought more items, $M = 5.96$, $SD = 2.99$, than participants shopping for their fellow students, $M = 4.92$, $SD = 2.46$. This result suggests that shopping for one's friends from home indeed is influenced by a detrimental impulse shopping norm, but shopping for ones fellow students is not. The question now is whether collective planning can curb this difference in impulse shopping.

Experiment 5: Main Experiment

Method

Participants and design. One hundred and twenty-four Konstanz students (34 female) with a mean age of 22.03 years ($SD = 4.02$) participated in return for 5 € or course credit. The experiment followed a 2 (group: fellow students vs. friends from home) × 3 (cII: if-then control without strategy vs. strategy control without if-then conditional vs. cII with strategy as if-then conditional) design.

Procedure. The main experiment followed the same procedure as the pilot, with the following exception: At the beginning of Part 2, participants received a training sheet for the upcoming shopping task. This is where the cII factor was manipulated: cII participants formed the collective if-then plan: "When we want to put something in our shopping cart, then we will take only what we really need." Strategy control participants added: "We will only put things in our shopping cart that we really need!" Thus, the if (situation)-then (response) link was the only difference between the cII and strategy control instructions. If-then control participants did not receive the strategy, but task information in the if then format: "If we want something that we really need, then we will put it in our shopping cart!" Importantly, this control condition included the if-then format as well as all relevant words in the cII (e.g., shopping cart, really need) but did not create a useful if (situation)-then (response) link as it did not specify when, where, and how to act in a goal-directed manner. After reading, envisioning, and printing the respective plan, participants performed the shopping task (shop for spaghetti and sauce). The dependent measure was the number of items participants put in their cart that were unrelated to spaghetti and sauce.

Results and Discussion

Manipulation check. Three participants did not complete the manipulations and one indicated that she did not take the experiment seriously. One

hundred and twenty participants (32 female) remained for analysis. Participants across conditions bought an equal amount of ingredients for spaghetti and tomato sauce, overall $M = 2.78$, $SD = 1.09$, Fs $< .1.30$, ps $> .28$. As in the pilot, participants indicated that the group scenarios were realistic, overall $M = 4.13$, $SD = .77$. Unexpectedly, although the cII factor was manipulated after this measure, a Group × cII interaction occurred (cII and strategy control-participants in the friend-from-home condition, Ms = 4.45 and 4.57, SDs = .61 and .56, rated their text as being more realistic than participants in the fellow-student condition, Ms = 3.70 and 3.76, SDs = .92 and .77, while if-then control participants rated both texts as being equally realistic, Ms = 4.23 and 4.13, SDs = .67 and .74), $F(2,114) = 3,27$, $p = .04$, *part.* $\eta^2 = .05$. However, entering this measure as a covariate did not change the following results.

Main analysis. The pilot study showed that participants shopping for their friends from home did more impulse shopping, as indicated by more unplanned purchases, than participants shopping for their fellow students. To investigate whether cII reduce this effect, I entered the number of items unrelated to spaghetti and sauce in an ANOVA[11] with group and cII as predictors. A main effect of group occurred, replicating the pilot experiment, $F(1,114) = 4.06$, $p < .05$, *part.* $\eta^2 = .03$: Participants shopping for their friends from home made more impulse purchases, $M = 3.19$, $SD = 2.31$, than participants shopping for their fellow students, $M = 2.38$, $SD = 1.78$ (see Figure 7). Moreover, the expected main effect of cII occurred, $F(1, 114) = 3.40$, $p = .04$, *part.* $\eta^2 = .06$: In comparison to an if-then control plan, $M = 3.39$, $SD = 2.35$, a strategy control plan led to less impulse shopping, $M = 2.75$, $SD = 1.92$. However, the fewest impulse purchases were made by cII participants, $M = 2.15$, $SD = 1.80$, and a polynomial contrast comparing the three conditions showed a significant linear effect, $p = .01$.

These findings are in line with my prediction that action cII shield collective goal striving against the impact of detrimental norms. First, cII to take only what one needs reduced impulse shopping despite a strong detrimental indulgence norm, even in this highly familiar and tempting supermarket context. Indeed, cII participants shopping for their friends from home made about the same number of impulse purchases, $M = 2.50$, $SD = 2.04$, as strategy control participants shopping for their fellow students, $M = 2.29$, $SD = 1.74$. This suggests that cII can even support collective goal striving in the face of strong unfavorable group norms. Second, the if-then format indeed contributed to the effectiveness of cII. Merely mentioning relevant

[11] For count-variables with means below 10, ordinary least squares statistics (e.g., F-test statistics) may produce biased results, and some authors recommend using Poisson regression instead (Coxe, West, & Aiken, 2009). However, repeating the main analysis with this procedure showed similar main effects of cII, $Wald\ \chi^2$ (2, $N = 120$) = 6.73, $p = .04$, and Group, $Wald\ \chi^2$ (1, $N = 120$) = 7.99, $p = .01$. For ease of interpretation, I report the ANOVA.

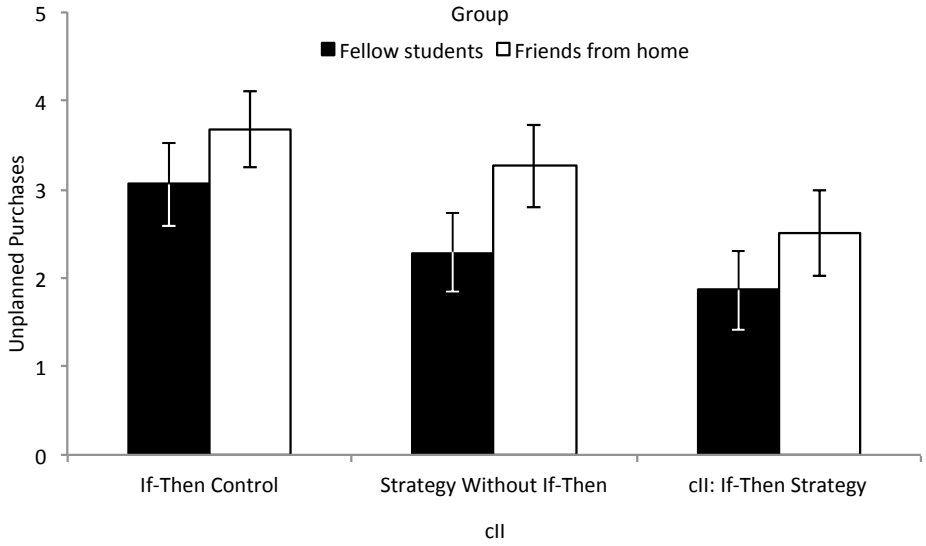


Figure 7: Number of unplanned purchases by cII condition (Experiment 5). Error bars represent standard errors.

words in an if-then format led to the most impulse shopping. Thus, knowing that the if-then format is helpful for goal striving and reading relevant words was the least effective. Knowing a helpful response (i.e., taking only what one really needs) somewhat reduced impulse purchases. However, in line with implementation intention theory and my GSG-II model, collective if-then plans (cII) were most effective, which suggests that the if-then format contributed to strategy application. This interpretation is in line with previous research showing that implementation intentions in the if-then format are most effective (Chapman et al., 2009). Lastly, further support for the assumption that cII support collective goal striving comes from the control groups without a detrimental norm. Even when shopping for a group without a detrimental norm, cII reduced impulse purchases. This suggests that cII do not merely override detrimental norms, but indeed support collective goal striving.

Experiments 3 to 5 tested whether cII can overcome group-level obstacles to collective goal striving (i.e., general and specific norms). Indeed, collective goals with cII led to higher rates of goal attainment than collective goals without cII. Moreover, group members with individual goals showed higher rates of goal attainment than group members with collective goals (Experiments 3 and 4). These results suggest that group-level obstacles such as detrimental norms affect collective goal striving more than individual goal striving. This is in line with the assumption that individual and collective goal striving are possible in groups but face obstacles to different degrees. However, collective if-then planning can even help overcome group-level ob-

stacles, as indicated by similar rates of goal achievement of II and cII. A remaining prediction is that cII only support group goal striving and not cooperation in general. Experiment 6 investigated this in a mixed motive situation.

Experiment 6: Prioritization cII and Goal Conflict in Mixed Motive Situations

A remaining question concerning cII is whether they selectively support collective goals. Gollwitzer and colleagues (2008) noted: "Because implementation intentions are subordinate to goal intentions, they should operate in the service of meeting their superordinate goal intentions; they should not be mechanized as plans that influence behavior, regardless of the state of the superordinate goals" (p. 330). In line with this claim, past research has demonstrated that implementation intentions impact behavior when commitment to the superordinate goal is sufficient, but not when commitment is low (e.g., Orbell, Hodgkins, & Sheeran, 1997; Sheeran, Webb, & Gollwitzer, 2005, Study 1) or the goal has not been activated (Sheeran et al., 2005, Study 2). cII are theorized to support collective goals held by a group. When a collective goal is cooperative and directed towards the group, it cannot be achieved when encountering a non-group member. In this case, cII should therefore not impact one's behavior. An alternative still to be tested, however, is that cII support general cooperation, for instance by priming other-related concepts (Drouvelis, Metcalfe, & Powdthavee, 2010; Wong & Hong, 2005). If this was the case, cII should increase cooperation, regardless of whether it serves the group's goal or not.

To pit these explanations against each other, a task is needed where acting towards the collective goal can be distinguished from acting towards the individual goal. This is the case when collective and individual goals are opposed and striving for one hampers the other. Conflicting individual and collective goals naturally arise when performing *mixed motive tasks* (Dawes, 1980; Hardin, 1968; van Vugt, 2009) from McGrath's (1984) negotiate quadrant. In mixed motive tasks, everybody is better off when everybody cooperates, but one individual is better off when he or she defects. Examples include using natural resources such as fresh air, contributing to commons such as public broadcasting, or actively supporting institutions such as going to vote. Everybody can enjoy the benefits of clean air, public broadcast-

ing, and a democratically elected government, even if he or she excessively pollutes the air, does not pay fees, and does not go to vote. However, if everybody pollutes the air, refuses to pay fees, and does not go to vote, the commons cease to exist and nobody can enjoy the benefits. Despite the differences between these tasks, they all pose a conflict between individual self-interest and collective interest.

Among mixed motive tasks, social dilemma games make this conflict very explicit (Dawes, 1980; Messick & Brewer, 2005; J. M. Weber, Kopelman, & Messick, 2004). In this type of economic game, the individual goal of making maximal profit is an obstacle to the collective goal of securing common profit: Whenever one acts in line with one's short-term personal profit goal, one hampers the collective profit goal. Payoff-matrices show this conflict explicitly, which makes it even more difficult to resolve. Indeed, even when committed to the collective goal of securing common, long-term benefits, individuals often act selfishly and in line with their individual goal (Komorita & Parks, 1995). Sejits and Latham (2000) even noted: "A social dilemma appears to be a boundary condition for the normally positive effect of group goal setting on group performance" (p. 104). In short, it is difficult to prioritize the collective goal over the conflicting individual goal in social dilemma situations.

This conflict between individual and collective goals is even stronger in dilemma games with monetary incentives and when participants do not interact repeatedly (i.e., in *one-shot* games). When decision-dependent monetary incentives are offered, the task poses a real conflict to participants (Smith, 1976) and prioritizing group welfare on the spot becomes even more difficult than in hypothetical tasks. Similarly, in one-shot games, a competitor cannot reciprocate cooperation. Reciprocity (including punishment) is known to increase cooperation in iterated dilemma games (Axelrod & Hamilton, 1981; Fehr & Gächter, 2002). Thus, as reciprocity is impossible in one-shot games, defection becomes the dominant strategy as it yields greater payoffs for the individual regardless of the competitor's choice (Camerer, 2003). In sum, one-shot dilemma games with decision-dependent monetary incentives instill a strong individual goal to defect, which makes it difficult to prioritize the collective goal to cooperate.

Past research on goal conflict and implementation intentions has demonstrated that prioritization II can resolve even strong goal conflicts (Kirk et al., 2011; van Koningsbruggen et al., 2011). The response in a prioritization implementation intention is to remind oneself of the focal goal, and the if-part refers to a situation when one easily acts against this goal. The if-then link created by the implementation intention swiftly activates the representation of the focal goal as soon as the critical situation is encountered and prioritizes the focal goal over conflicting goals. In line with this idea, in a recent study (van Koningsbruggen et al., 2011, Study 1) a prioritization II increased the accessibility of goal-related concepts (dieting) when faced

with cues of a conflicting goal (tempting food), as indicated by more dieting-related word completions in a subsequent word-search task. Furnishing the collective profit goal with a prioritization cII should thus help one to achieve the goal to cooperate, even under the influence of a detrimental individual goal. However, this effect should be goal-dependent: The collective goal to cooperate refers to one's group and thus cannot be achieved when faced with a non-group member. Thus, when facing a non-group member, cII should not increase cooperation.

To test these predictions, I developed a dilemma task based on previous research (Sheldon & Fishbach, 2011): Participants assumed the role of the CEO of an airline that was part of an alliance with other airlines (group). The CEO's task was to make pricing decisions (standard or discount) for a number of different routes, each also serviced by another airline. The other airline on each route was either part of the alliance or not, and both airlines' pricing decisions impacted each other in a social dilemma fashion. Participants were paid according to one of their decisions (monetary incentive) and did not learn about the other participants' decisions until after the experiment (i.e., played multiple one-shot dilemma games). At the beginning of the experiment, the dilemma structure was explained to participants in detail to implicitly evoke both the collective goal and the conflicting individual goal. To test whether cII help prioritize the collective goal and increase cooperation, each participant then either formed a cII, a neutral control plan, or an II. Then, participants made pricing decisions for routes serviced by their airline and another alliance member followed by decisions for routes serviced by their airline and a non-alliance member. I expected cII participants to make more cooperative choices than II or control participants, but only when faced with an alliance member. A pilot study was run to ensure that the individual profit goal was sufficiently strong to pose an obstacle to collective goal striving and that the group (alliance) was meaningful to participants (i.e., decreases defections). After reporting this pilot study, I will turn to the main experiment.

Experiment 6: Pilot

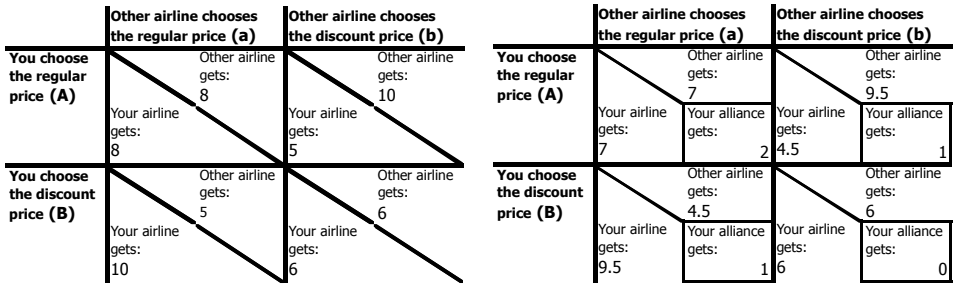
Method

Participants and design. Twelve students from the University of Konstanz (4 female, mean age = 22.83 years, $SD = 2.79$) participated in return for decision-contingent payment (see below) and earned 3.29 € on average ($SD = .95$). The pilot was run to ensure that the dilemma task provided a sufficient incentive for uncooperative choices (i.e., defection) and whether the group (alliance) was meaningful to participants. The pilot thus followed a 2 (competitor: alliance vs. non-alliance) within design.

Procedure. After giving informed consent, all participants learned that the study concerned economic decision making and that they would receive payment according to their decisions: At the end of the experiment, one trial would be chosen randomly, their decision in this trial would be matched with the decision of another, actual participant, and they would receive their decision-payoff in Euro. To ensure that participants knew that actual decisions were used, it was made clear that the results of other participants were available as printouts[12] and there was no deception concerning the payoff. It was implied that participants assume different roles (represented different airlines) to provide a meaningful competition context.

Actually, all participants assumed the role of the *International Airline* CEO, and learned that it was important for this study to remember this airline name well and were prompted to type it (free recall). Participants then learned that they were to decide on the pricing of their tickets for different routes their airline services (see Sheldon & Fishbach, 2011, for a similar task): They can choose either standard pricing (viz., cooperate) or discount pricing (viz., defect). However, each route is also serviced by another airline that also chooses between the two pricing options, and the outcome of both airlines' decisions influence each other. An example payoff-matrix was provided (see Figure 8a) and explained as follows: If both choose standard-pricing, both earn well (A, a). However, if International Airline chooses discount pricing while the other airline chooses standard pricing (B, a), International Airline attracts more passengers and thus makes greater revenue. The other airline earns less because fewer passengers use its service. The opposite situation (International Airline cooperates and the competitor defects; A, b) was also explained: In this case, International Airline earns less and the competitor earns more. Lastly, if both airlines choose discount pricing (B, b), the numbers of passengers remains stable but, due to the reduced price, both earn less than they would if both chose standard pricing. It thus is more profitable for the individual to choose the discount price (viz., defect) regardless of the competitors decision (B,a > A,a; B,b > A,b) but both competitors are better off when both choose standard pricing (viz., cooperate) instead of discount pricing (defect; B,b < A,a). To further emphasize the mixed motive structure of the task, the four outcome situations were summarized on a slide (A,a; B,a; B,b; A,b). Four questions followed that presented participants with hypothetical decision situations (e.g., *Consider the following situation: You choose discount pricing and the other airline chooses standard pricing. How much do you earn?*) The situations of mutual cooperation, mutual competition, and one competing while the other cooperates were included in the examples. Participants could only continue if they entered the correct answer and were otherwise prompted to correct

[12] For the first participants, actual decisions from voluntary pretesters blind to hypotheses were used.



(a) Example payoff matrix no-alliance *(b)* Example payoff matrix alliance

Figure 8: Payoff matrices (Experiment 6).

their response; if needed, the experimenter reiterated the instructions. All participants can thus be expected to have implicitly formed the individual goal to defect and the collective goal to cooperate through the instructions.

Next, the group (alliance) was introduced: International Airline, Air Oceanea, and Metropolis Airways founded the *Flug-Allianz* in order to market residual tickets.[13] Participants were informed that the alliance was important to the task, asked to memorize the alliance name, and type it (free recall). This procedure has been shown to create a meaningful group (Pinter & Greenwald, 2011). An example slide with the alliance situation was presented (see Figure 8b) and explained thoroughly: The alliance-revenue for each connection is divided between the two airlines servicing the respective route 50/50. When both airlines choose standard pricing (A,a), the alliance has a lot of tickets to market and makes a lot of revenue. Discount pricing by one airline (A,b; B,a) reduces the number of residual tickets and the alliance's revenue. When both airlines choose discount pricing (B,b), there are no tickets left for the alliance to market leading to no alliance revenue. The pattern of the alliance payoffs thus reflected the joint payoff of both airlines. However, the matrices were constructed so that actual payoffs were identical to the non-alliance matrices (see *Payoff-matrices*). Again, participants had to respond to four questions correctly before they could continue with the experiment.

Eight alliance trials followed (see *Payoff-matrices*). Each payoff matrix was used once with each competitor and the order was randomized. After a 30 sec break, participants worked on eight trials of the no-alliance task, allegedly against two non-members (*Fly Jet* and *City Connext*). To maintain one-shot dilemmas, participants did not learn about other participants' decisions until after the experiment. Finally, participants provided

[13]To prevent any previous association, all airline names, the alliance, and the 3-letter airport codes were invented and the list of International Air Traffic Administration (IATA, 2012, retrieved from http://de.wikipedia.org) codes was checked to ensure that no respective companies or airports existed.

demographic information and were debriefed. The computer program automatically printed a sheet with the participant's decisions, a randomly selected decision to be implemented (i.e., to be paid to the participant), and a randomly selected past participant whose decision on this trial served as the competitor's choice. Decisions in this trial were checked against the payoff-matrix and the participant was compensated accordingly.

Payoff-matrices. Four payoff-matrices were constructed for the decision task as follows: Cooperation-cooperation payoffs (a, A) ranged from 4 to 7; this difference was deemed sufficiently small to prevent high-stakes effects (Burton-Chellew & West, 2012). All other payoffs in the respective matrix were determined by subtracting a fixed amount (for the player: B,a +2, A,b -3, B,b -2). Thus, payment differences were held constant across payoff-matrices to keep the temptation to defect constant (Smith, 1976). Alliance matrices were constructed by subtracting equal amounts from both competitors in the respective field of the payoff matrix. As the alliance payoffs were divided equally between both airlines servicing the route (50/50), this left the economic payoff unchanged. Only the alliance context differed between both types of trials. Moreover, in order to prevent effects from making the same decision repeatedly, each decision slide indicated a different flight route by two fictitious 3-letter airport codes (e.g., STB-LMT).

Dependent measures. Dependent measures were the number of defections (i.e., number of trials where *discount pricing* was chosen) in both alliance and non-alliance trials.

Results

All participants responded to the manipulation check items correctly. On average, participants defected more than they cooperated ($M = 11.83$ out of 16 trials, $SD = 3.13$). This indicates that the task provided a sufficient incentive to act selfishly (defect). To test whether group membership affected participants' pricing decisions, the defection score was entered into a repeated-measure ANOVA with competitor (alliance member vs. non-alliance member) as within-factor. As expected, participants defected less when faced with an alliance member ($M = 5.25$ out of 8 trials, $SD = 2.30$) than when faced with a non-alliance member ($M = 6.58$ out of 8 trials, $SD = 1.38$), $F(1,11) = 4.63$, $p = .05$, part. $\eta^2 = .30$. In line with this, participants reported medium-to-high identification with the Flug-Allianz, $M = 4.29$, $SD = 1.27$. Together, the findings confirm that the task provides a high incentive to defect and that the alliance is a meaningful group for participants.

Experiment 6: Main Experiment

To test whether collective implementation intentions merely increase general cooperation or selectively support collective goal striving, Experiment 6 used this paradigm and equipped participants either with cII, II, or control instructions. If cII merely promote cooperation, they should lead to more cooperative decisions no matter whether the competitor is an alliance member or not. On the other hand, if cII selectively support collective goal striving, they should only promote cooperation when competing with an alliance member, as the collective goal only applies in this context. When competing with a non-alliance member, the collective goal does not apply (i.e., cooperation does not help the group) and cII should not promote cooperation.

As explicit self-report measures of commitment are not a reliable indicator of the strength of implicit goals in dilemma situations (Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trötschel, 2001, Experiment 2), I used a different research strategy: In addition to forming implicit collective and conflicting individual goals through the task instructions, participants either formed the individual goal or the collective goal explicitly and I measured goal commitment to the respective goal after task performance. By manipulating whether the individual or the collective goal is made explicit, the present experiment can also show whether explicitly set collective goals might be strong enough to foster cooperation.

Method

Participants and design. One hundred and thirty-four Konstanz students (80 female) with a mean age of 20.90 years ($SD = 2.58$) participated in return for a decision-dependent monetary incentive (as in the pilot study) and earned 4.51 € on average ($SD = 2.20$). The experiment followed a 2 (competitor: alliance member vs. non-alliance member) × 3 (implementation intention: control vs. II vs. cII) × 2 (explicit goal: individual vs. collective) mixed design with competitor as within-participant factor.

Procedure. The procedure of the main experiment was largely the same as in the pilot study, with the following exceptions: To manipulate the explicit goal, participants either received the explicit individual goal "I want to maximize International Airline's revenue" after learning the non-alliance task or the explicit collective goal "We want to maximize Flug Allianz' revenue" after the learning the alliance task. To make sure that all participants equally took time to think about the respective task, participants who did not receive a respective explicit goal at this point were instructed to reflect on how best to decide.

Moreover, before working on the decision trials, participants received a printed training sheet to manipulate the implementation intention factor.

Participants in the cII condition set the collective if-then plan "And when we are about to make our decision, then we will make sure that Flug Alliance receives the most;" participants in the II condition set the individual if-then plan "And when I am about to make my decision, then I will make sure that International Airline receives the most." To minimize the differences between conditions, control participants received the neutral control plan "When a decision screen appears, then a decision has to be made." This plan was also phrased in the if-then format, also referred to deciding and to the task, but referred to neither the individual nor the group.

After finishing with the decision task, participants answered several questionnaires concerning their commitment to the explicitly set goal (e.g., "This is a goal to shoot for", 1 *not at all* – 7 *completely*, Cronbach's $\alpha = .70$, Klein, Wessen, Hollenbeck, & DeShon, 2001), commitment to their plan (e.g., "It is important to me to fulfill my plan", 1 *not at all* – 5 *very much*, Cronbach's $\alpha = .86$), and group identification (as in Experiment 1, Cronbach's $\alpha = .83$). Lastly, participants played a hypothetical trust game (adapted form Fischbacher, Gächter, & Fehr, 2001). Each participant learned that International Airline (their airline) had € 10k that can be invested in a common project account with Metropolis Airways (an alliance member) or be kept in one's own account. Metropolis Airways would also have this choice. Money in one's own account was ones to keep and safe. All the contributions to the common project account would be added, and each airline would receive 75 % of this sum. Investing was thus a good opportunity to make money if both contributed, but required trusting the other airline to contribute equally. Importantly, this game is structurally equivalent to the dilemma game played in the main experiment but relies more on trust. It is thus well suited to examining whether cII led to generalized trust or created a situation-specific if-then link. Participants indicated how much of their € 10k they would transfer to the project account. Next, the same hypothetical game was played against a non-alliance member (Fly Jet).

Results and Discussion

Manipulation checks. All participants responded to the manipulation check questionnaires correctly, reported medium to high group identification, $M = 4.57$, $SD = 1.06$, commitment to their plan, $M = 3.56$, $SD = .94$, and commitment to their explicit goal, $M = 4.86$, $SD = .74$. Importantly, goal commitment did not differ between the explicit individual and the explicit collective goal condition, $F(2,128) = 1.07$, $p = .30$, part. $\eta^2 < .01$. This suggests that one can hold explicit individual and collective goals in the current task. Unexpectedly, a main effect of implementation intention on goal commitment occurred, $F(2,128) = 3.21$, $p = .04$, part. $\eta^2 = .05$: Participants with the control intention (unrelated, neutral if-then plan) reported more commitment to their explicit goal than participants with individual

or collective implementation intentions. Including goal commitment as a covariate did not change the following analyses. No other effects for any of the control variables occurred, Fs < 2, ps $> .15$.

Main analyses. To investigate whether cII can help group members to overcome their detrimental individual goal, I entered the number of defections in a mixed ANOVA[14] with competitor (alliance member vs. non-alliance member) as repeated factor and implementation intention (control vs. II vs. cII) and explicit goal (individual vs. collective) as between factors. I argued that cII support collective goal striving and thus should only increase cooperation when facing a group member. In line with this reasoning, the expected Competitor × Implementation Intention interaction occurred, $F(2,128) = 9.60$, $p < .01$, part. $\eta^2 = .13$: When competing against an alliance member, cII groups defected less, $M = 3.20$, $SD = 2.67$ (out of 8 trials, see Figure 9), than both II, $M = 5.52$, $SD = 2.26$, and control participants, $M = 5.67$, $SD = 2.33$. However, as expected, there was no difference between conditions when competing against a non-alliance member. cII thus did not blindly promote cooperation but selectively supported collective goal striving.

A second question was whether explicitly setting a cooperative goal might be sufficient to overcome a detrimental individual goal. However, neither a main effect of explicit goal, $F(2,128) = .23$, $p = .64$, nor an Competitor × Explicit Goal interaction occurred, $F(2,128) = 2.64$, $p = .11$. Explicitly setting a collective goal was thus not sufficient to prevent selfish decisions, but powerful collective if-then plans were necessary. As the implementation intention and explicit goal factors were crossed, the data can also speak to the effectiveness of cII when facing explicit detrimental goals: The reported Competitor × Implementation Intention interaction was not qualified by a Competitor × Implementation Intention × Explicit Goal interaction, $F(2,128) = .06$, $p = .94$, indicating that cII were even effective in dealing with explicitly set detrimental goals.

One might argue that, although cII did not lead to general cooperation outside the group, they lead to general cooperation within the group and are therefore not situation-specific. General cooperation within the group should then spill over, for instance to the trust game participants played at the end of the experiment. Entering the trust measures into an Implementation Intention (control vs. II vs. cII) × Explicit goal (individual vs. collective) × Competitor (alliance member vs. non-alliance member) ANOVA with repetitions on the last factor neither showed a main effect of implemen-

[14] As noted earlier, ordinary least squares statistics (e.g., F-test statistics) may produce biased results for counts with means below 10, and some authors recommend using Poisson regression instead. Repeating the main analysis with this procedure showed similar effects: A cII main effect occurred with alliance competitors, $Wald\ \chi^2\ (2,\ N = 134) = 35.49$, $p < .01$, but not with non-alliance competitors, $Wald\ \chi^2\ (2,\ N = 134) = 2.18$, $p = .34$. No other effects occurred, ps $> .10$. For ease of interpretation, I report the ANOVA.

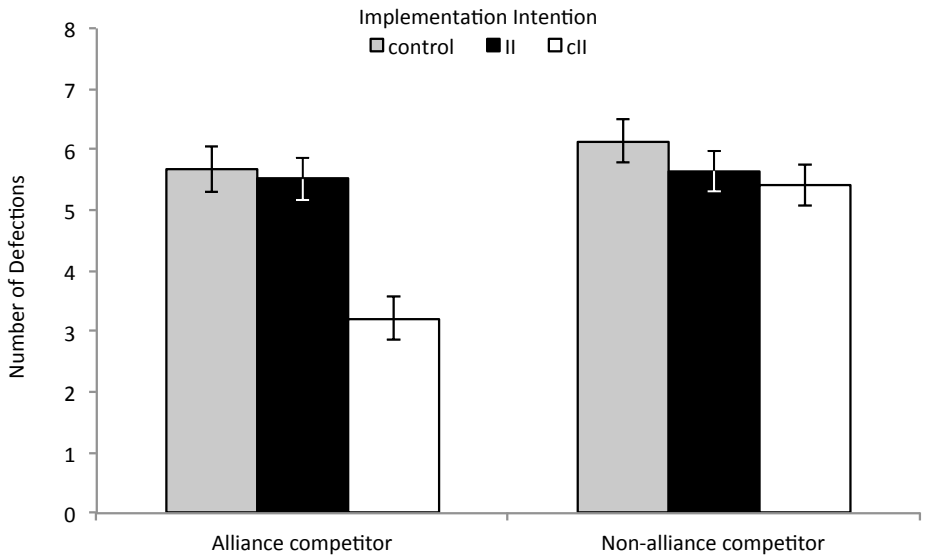


Figure 9: Number of defections by cII condition and competitor (Experiment 6). Error bars represent standard errors.

tation intention, $F(2,127) = .47$, $p = .63$, nor an Implementation Intention $\times$ Competitor interaction, $F(2,127) = 1.63$, $p = .20$. This indicates that cII did not lead participants to generally trust their competitors, not even when they were members of their group (alliance). This is in line with the prediction of my GSG-II model that cII create a specific if (situation)-then (response) link for collective goal striving.

One might be surprised, on the other hand, why II supporting the individual goal did not further decrease cooperation. One reason might be that rates of defection among control participants were already relatively high, indicating goal achievement. This interpretation is in line with recent findings that suggest that striving for a selfish individual goal in mixed motive situations requires few self-regulatory resources (Sheldon & Fishbach, 2011). Implementation intentions, however, are known to promote striving for difficult goals or under unfavorable conditions, but not easy goals or under favorable conditions (Dewitte et al., 2003; Hall et al., 2012). Thus, when an individual-collective goal conflict hinders striving for one's individual goal, implementation intentions should promote individual goal striving in groups (Wieber et al., 2012). Future research on action control in dilemma situations should test this prediction.

In sum, collective goals with cII were uniquely capable of overcoming detrimental individual goals, even if these goals were explicitly set. However, cII did not increase cooperation when the collective goal did not apply (i.e., when facing non-group members) or in an unrelated trust game. This

supports the assumption that cII lead to collective, goal-dependent automaticity. To my knowledge, this experiment is the first to show that prioritization if-then planning can promote cooperation in dilemma situations that are highly detrimental to cooperation (i.e., a one-shot dilemma using monetary incentives). The present findings thus support the assumption that cII are a powerful, goal dependent tool for supporting collective goal striving.

General Discussion

The present research systematically tested whether if-then plans that refer to the group (collective implementation intentions, cII) improve collective goal attainment in performance groups. As predicted, suppression, action, and prioritization cII helped groups overcome common obstacles to staying on track including expected muscle pain (Experiments 1 and 2), the unexpected impact of norms (Experiments 3-5), and conflicting individual goals (Experiment 6), as indicated by improved group performance. This effect was predicted and observed across performance quadrants (execute, generate, choose, and negotiate; McGrath, 1984) and permitted processes (conjunctive, additive, and disjunctive; Steiner, 1972). Moreover, as is known about II, cII were more effective in the if-then format (Experiment 5) and selectively supported (collective) goals (Experiments 6). Unlike II, cII left group interaction intact (Experiment 1) and were more effective when the task promoted group interaction (Experiment 2).

Contribution and Limitations

To evaluate the contribution of the present research, a classification of research on new concepts by Zanna and Fazzio (1982) is helpful. It distinguishes three generations of research questions. First generation-research questions concern the existence of the phenomenon or effect: (1) Is there an effect? Second- and third-generation research questions concern the boundary conditions and processes underlying the effect: (2) When does the effect occur? (3) How does the effect come about? To my knowledge, the present research is the first to systematically test the concept of cII, and I therefore focused on the first-generation research question "Is there an effect?" The present research used group tasks posing three obstacles to collective goal striving–the expected obstacle of aching muscles, the unexpected obstacle of detrimental norms, and goal conflict with a selfish individual goal. To deal with these obstacles, groups formed suppression, action, or prioritization cII or received control instructions. Suppression, action, and prioritization implementation intentions are known to help individuals stay on track with goal striving when they face expected obstacles, unexpected obstacles, or

goal conflict; I predicted and found that groups profit from forming respective cII when encountering these obstacles, as indicated by improved performance. As this effect was observed across performance quadrants (McGrath, 1984) and across permitted processes (Steiner, 1972), it is unlikely to be task-specific but seems be a general goal striving phenomenon in performance groups. This is an important finding given the large variations of group performance across task types (e.g., Hackman & Morris, 1975). One might object that cII groups had more task-specific knowledge such as strategy information that helped them outperform control groups. However, control groups across experiments also received the same task-relevant information and the only difference was that cII groups specified when to use this strategy in an if-then format. The observed performance gains thus support the assumption that cII lead to strategic automaticity in collective goal striving. In sum, the present research suggests that cII support collective goal striving in performance groups.

II had no further benefit for individual goal striving when a group-level obstacle was present (i.e., a group norm, Experiments 3 and 4). Apparently, individual goals without II were sufficient in dealing with a detrimental norm. Support for this interpretation comes from Experiment 4 which included a no-goal control condition: Both, II participants and individual controls outperformed no-goal participants, as indicated by less impulse shopping. Similarly, the selfish goal to focus on one's own profit did not benefit from an II (Experiment 6) presumably because the selfish choice (defection) is dominant in dilemma situations (Sheldon & Fishbach, 2011). Together, these studies suggest that goal difficulty can vary according to the referent: Individual goals and collective goals that are apparently similar can have different outcomes (see also Mitchell & Silver, 1990) and might not always need implementation intentions. However, it is important to note that II geared towards group performance (Experiments 1-4) did not have a detrimental effect. In other words, although forming II did not benefit individual goals in Experiments 3 and 4, forming II was not harmful to group performance (with the exception of Experiment 6 where the individual goal was not in line with group performance). One might further argue that because II refer to the individual, their beneficial effects do not occur in groups. However, Experiment 1 indicates that II support goal achievement when an individual-level obstacle (e.g., aching muscles) is present and recent research has also shown positive II effects in groups (Wieber, Gollwitzer, Fäsche et al., 2013).

Besides this main contribution of demonstrating the cII effect and its relation to II, the present research also touches on second- and third-generation topics, thus contributing to answering the questions *When does the cII effect occur?* and *How does it come about?* Experiment 6 suggests that cII effects are dependent on collective goals and specific to the situation included in the if-part. Also, the present research provides first evidence concerning

the processes. The observed cII effects were not accompanied by systematic variations in goal commitment, and the if-then format increases cII effects (Experiment 5). This is in line with the assumption that cII improve performance because they create a situation-response link for collective goal striving and not because they increase commitment. Further evidence that cII are actually a goal striving phenomenon comes from Experiments 5 and 6: cII did not merely replace group norms, as indicated by an effect in a group without a detrimental norm (Experiment 5). Also, cII effects did not spill over to an unrelated situation (i.e., unrelated trust game, Experiment 6), which suggests that they actually create a specific situation-response link. Experiments 1 and 2 suggest that cII rely more on interaction between group members than II, which further supports the assumption that II and cII are not identical. In sum, I can answer the first-generation question *Is there an effect?* with a somewhat confident *yes* and I have found plausible candidates for answers to the second-generation questions *When does the cII effect occur?* and *How does it come about?*

Limitations. The present research also has its limitations. First, the difference between II and cII was defined parsimoniously and only in terms of the referent (individual or group), and manipulated merely by singular or plural phrasing of the plans.[15] Intact groups might come up with a cII together or group member could explicitly share a cII. Both participation (e.g., Wegge, 2000) and sharing (e.g., the experience of sharing self-relevant attributes, Pinel, Long, Landau, Alexander, & Pyszczynski, 2006; or interpretations of reality, Shteynberg & Galinsky, 2011; and actual sharedness of information and task representations, Tindale, Smith, Dykema-Engblade, & Kluwe, 2012) are important inter-personal and group processes, and thus might improve cII effects. Moreover, in the present research, all members of one group received the same plan, and the present research thus did not address if cII are still effective when only some group members hold them (i.e., when actual sharedness is limited). It seems plausible that cII do not work when one group member realizes that another group member opposes the plan (e.g., publicly announces that he or she does not want to act on it) or one observes other group members violating the plan. Future research should investigate this possible boundary condition of the cII effect.

Second, the present research investigated one type of goal striving problem (staying on track) and used tasks across two task classifications (McGrath's performance quadrants and Steiner's permitted processes). One might wonder how the present finding that cII improve group performance generalizes to other goal striving problems. For instance, one might argue that getting started is less of a problem in interacting groups because many

[15]Experiment 6 somewhat deviates as the group name was explicitly mentioned in the manipulation; in Experiment 4, vignettes indicated that cII but not II were shared among peers.

group members can recognize an opportune situation and remember to act (i.e., forgetting might be less of a problem). Support for this idea comes from a study showing that implementation intentions when and where to vote increased voter turnouts in single-voter households but not in multiple-voter households (Nickerson & Rogers, 2010). This might indicate that forming an implementation intention was not necessary in multiple-voter households. Also, the present research investigated maximizing (i.e., the more quantity, the better the performance), unitary tasks (i.e., the task cannot be divided into subtasks, Steiner, 1972). Groups also perform optimizing tasks where one correct or best result has to be attained. cII might also help in optimizing tasks if they support processes that support performance quality. In line with this idea, cII led to more informed decisions in the earlier-mentioned decision-making study (Thürmer et al., 2013).

Lastly, the present research was conducted in the laboratory (with the exception of Experiment 4) under highly controlled conditions. In the service of experimental control, group interaction was limited (Experiments 3-6). Although small group research acknowledges that interaction can vary from face-to-face interaction to temporally and physically distant communication, or even mere presence (e.g., Larson, 2010), group researchers and practitioners might wonder whether all of the present findings generalize to face-to-face groups and applied field settings. Although the present research cannot answer these questions conclusively, Experiments 1 and 2 used interacting groups and demonstrated cII effects. This is in line with recent studies showing performance improvements through cII (Thürmer et al., 2013; Wieber, Thürmer, et al., 2013) and II (Wieber, Gollwitzer, Fäsche, et al., 2013) in interacting groups (see Wieber et al., 2012, for a review).

Evaluation of the GSG-II model. I developed the prediction that cII improve group performance from the two propositions that (a) individual and collective goal striving are possible in groups, (b) with and without implementation intentions. Although primarily designed to test this one prediction, the present research can also speak to the value of my working model of goal striving in groups with implementation intentions (GSG-II, see Table 1). Both the referent and the implementation intention factors had an impact on group performance across experiments. Most importantly, interaction effects suggest that it is imperative to consider both factors simultaneously. Researchers and practitioners using implementation intentions in groups should thus consider the plan referent and make an informed choice whether to use II or cII. In sum, the GSG-II model (see Table 1) received empirical support and provides a useful framework for studying goal striving in groups with implementation intentions.

Integration: Implementation Intention Research

The present research shows that striving collectively by referring to the group does not limit the effectiveness of implementation intentions. One might have expected that referring to a group in an if-then plan limits its effectiveness because it is unclear who exactly should act (e.g., diffusion of responsibility, Darley & Latane, 1968). The present research demonstrates that this is not the case: Implementation intentions that refer to the group (cII) were as effective as implementation intentions that refer to the individual (II). Moreover, plan commitment measures showed that participants were as committed to collective plans as they were to individual plans (Experiments 2, 3, and 6). This supports the idea that a plan referring to a group is perceived as equally important and attainable as a plan referring to the individual. The present research thus suggests that the actor an implementation intention refers to does not always have to be the individual; an implementation intention can also refer to the group.

Indeed, health psychology research shows that collaborative planning interventions in dyads can improve the performance of health behaviors such as self-examination to detect breast cancer early (Prestwich et al., 2005) or regular physical exercise (Prestwich et al., 2012), although some research also suggests that patients might use dyadic planning spontaneously (Burkert, Scholz, Gralla, Roigas, & Knoll, 2011; see also Scholz & Hornung, 2008). Collaborative planning accounts thereby define collaborative implementation intentions as plans that are set together *and* refer to "we." I define cII as implementation intentions that refer to the group. This allows an individual to be in a group and have an II (that refers to the individual) or a cII (that refers to the group). The group context and the plan referent can thus be investigated separately (e.g., by keeping the group context constant). Indeed, the present research suggests that the mere difference between referring to the group or the individual can lead to different outcomes.

Lastly, the present findings extend recent research that shows that implementation intentions can prevent the negative impact of detrimental social contexts (e.g., help deal with momentary social stress, Scholz et al., 2009; and chronic social anxiety, Webb, Ononaiye, Sheeran, Reidy, & Lavda, 2010) and detrimental intergroup stereotypes (Achtziger, 2003; Bayer et al., 2010, Study 2; Stewart & Payne, 2008). In the present research, the social context was the group and the group was not only the source of obstacles (e.g., detrimental norms) but also of beneficial influences. The present findings support the idea that cII can promote collective goal striving—a positive group outcome. Also in line with the idea that if-then planning can support positive social influences, cII even increased persistence further when the group already had a positive impact (Experiments 1 and 2). This is in line with the idea that implementation intentions do not merely support cer-

tain goals or influences, but can be used strategically to promote or prevent various different actions or responses.

Integration: Small Group Performance Research

Group performance is "the process and outcome of members' joint efforts to achieve a collective goal" (Levine & Moreland, 1990, p. 612). In line with this common definition, the present research demonstrates that considering the goal striving process can yield group performance gains. This is in line with the idea that groups set goals to perform tasks and extends this notion by postulating that obstacles during goal striving might hinder performance (see also Wieber et al., 2012); the observed performance gains through cII support this reasoning. This perspective contributes to small group research in several ways. First, the "ubiquitous finding" (Kerr & Tindale, 2004, p. 625) is that groups do not perform to a set standard (e.g., individual performance, see Larson, 2010; Steiner, 1972, for theory, review, and discussion). It thus is an important question how group performance can be improved. The present research contributes to answering this question. However, the present approach was not to test group performance against individual performance but against control groups (with different goals and plans). This present approach is in line with Kerr and Tindale's (2004) recommendation that it is "probably ultimately more productive to document work conditions or interventions that improve group performance" (p. 625) than comparing groups to a set standard.

Second, poor group performance is often attributed to faulty process (e.g., Steiner, 1972). However, it has recently been noted that "poor performance by groups does not need to be explained by bad processes, but can simply result from groups being groups" (Kerr & Tindale, 2012, p. 580). Indeed, Tindale and colleagues (2012) theorized and found that the very processes that make groups effective in some performance contexts, make groups inefficient in other performance contexts. From this view, it is not advisable to eliminate certain group processes (if this is possible) but to regulate their impact strategically. Simple if-then planning allows strategically regulating various processes at will. In this sense, the present research suggests that cII allow for the strategic (e.g., situation-specific, see Experiment 6) regulation of group processes. This enables groups to perform better–and still be groups.

Lastly, the present research draws on individual-level theory and presumably intra-individual processes (i.e., the creation of an if-then link) but also investigated the impact on group-level, inter-individual processes (group interaction). Given that groups have no bodily existence but rely on their members' contributions in order to perform tasks, this perspective is helpful in understanding and (ultimately) improving the processes underlying

group performance. Both group-level processes (e.g., effective coordination and communication) and individual-level processes (e.g., behavior regulation) are necessary to achieve top group performance. The present research thus shows how group members can most effectively contribute to a group performance.

GSG-II and Group Goal Pursuit

The GSG-II and implementation intention theory offer a complimentary perspective to existing accounts to group goal pursuit. The arguably most prominent account of motivation in groups is goal setting theory (GST, Locke & Latham, 1990, 2006, 2012). As discussed earlier, the main prediction and finding is that setting difficult and specific goals increases goal achievement, and this also holds true for groups (Kleingeld et al., 2011; O'Leary-Kelly et al., 1994). Arguably, deciding when, where, and how to act towards a goal (forming an implementation intention) adds specificity as it spells out goal striving. However, this is a different kind of specificity: Implementation intentions lay out concrete actions and responses for how to achieve a goal (Gollwitzer, 1999); specific goals in the GST sense define a measurable, specific outcome (Locke & Latham, 1990) and do not explicate how to achieve this outcome. Likewise, the processes underlying the II and GST effects are different. Setting difficult and specific goals is commonly assumed to increase performance because it increases effort, directs attention to the task, and fosters the use and acquisition of task-relevant knowledge (Locke & Latham, 2006). All these processes are effortful in the sense that they require deliberation. Forming II, on the other hand, heightens the mental activation of the situation and creates a situation-response link, and thereby delegates action control to the environment (Gollwitzer & Sheeran, 2006). Implementation intentions thus allow for strategic automaticity that does not require further conscious intent (Bayer et al., 2009).

The present research also compliments existing accounts to self-regulation in groups. First, small group approaches to self-regulation address how groups attempt to regulate their members' behavior (e.g., through roles and norms) and how the group members react to these attempts (e.g., by capitulating or resisting; see Levine, Alexander, & Hansen, 2010; Peterson & Behfar, 2005, for reviews). The GSG-II takes a different but complimentary perspective as it addresses how group members can plan to act in accordance with a collective goal. In line with implementation intention theory, cII are goal-dependent and the respective group member needs to be committed to the respective collective goal (see Experiment 6). Thus, a pre-requisite for cII effects might be that the group member accepts his or her role and pertinent group norms because he or she would otherwise lack commitment to the collective goal.

Second, the earlier mentioned *group based self-regulation* account (Jonas, Sassenberg, & Scheepers, 2010; Sassenberg & Woltin, 2008) assumes that by identifying as a group member, one self-regulates in the service of a group. These self-regulation processes are assumed to be the same as those at the individual level. According to the group based self-regulation account, the difference between individual and collective goal striving therefore is "whether participants' personal or social identity was made salient" (Sassenberg & Woltin, 2008, p. 132). The GSG-II also acknowledges the importance of intra-individual processes in the service of the group but takes a different perspective on goal striving. The GSG-II defines collective goal striving in terms of the referent (i.e., the group is the referent in collective goal striving). This allows a distinction between being a group member and striving collectively. In other words, the GSG-II allows group members to strive individually. In support of this perspective, in the present research, the referent in goal striving caused performance differences that were not accompanied by systematic differences in group identification.

Lastly, the present work contributes to existing research on planning in groups. A wide variety of activities and outcomes have been included in the definition of planning such as goal setting, creating an open climate for communication, and defining roles (Stout, Cannon-Bowers, Salas, & Milanovich, 1999). Planning activities in groups have been shown to promote performance in complex tasks (Kleingeld, van Mierlo, & Arends, 2011; Mumford, Schultz, & van Doorn, 2001; Weldon, Jehn, & Pradhan, 1991) by facilitating the emergence of shared mental models (Stout et al., 1999), and by increasing communication, coordination, and the implementation of strategies (Gurtner, Tschan, Semmer, & Nägele, 2007; Janicik & Bartel, 2003). Importantly, most research has investigated under which circumstances planning is most likely to occur (e.g., when difficult, specific goals have been set, Weldon, Jehn, & Pradhan, 1991). The performance-enhancing effect of planning observed in group research is in line with the present research and the vast implementation intention literature (Gollwitzer & Sheeran, 2006). However, the present research is less interested in the activity of (spontaneously) generating a plan but more in the effects of having a plan (which can be self-generated or provided, Achtziger et al., 2008; Armitage, 2009). The present research thus speaks to the effects of groups having a specific type of plan, a cII. Given that groups seldom engage in spontaneous planning (Hackman, Brousseau, & Weiss, 1976) and that "the processes that underlie successful planning in teams are not well understood" (DeChurch & Haas, 2008, p. 543), the present finding that assigning cII improves group performance extends the literature on planning in groups and might be of interest to small group researchers and practitioners.

Outlook and Future Research

The present research suggests a number of avenues for future research. Concerning the cII effect, avenues include if-then link processes, group interaction, and goal dependency. The present research provides first evidence that cII also create an if-then link between the specified situation (if-part) and the specified response (then-part). This if-then link allows for strategic automaticity (Webb & Sheeran, 2007), an inter-individual cognitive process. Future research should investigate how this cognitive process runs off in groups and whether it exhibits the same characteristics as on the individual level (e.g., immediacy). This could lead to new insights on the immediacy and efficiency of intra-group member processes (Brewer, 1979). Second, and related to this, the present research suggests that cII maintain group interaction and are more effective in tasks that allow for interaction than in tasks that prevent interaction. Future research should investigate if this greater reliance on interaction has benefits in terms of coordination between members and costs in terms of the efficiency of the response initiation. Findings would then contribute to the literature on group-level cognitive processes (Hinsz et al., 1997; Levine et al., 1993). Lastly, the present research demonstrates that cII only impact behavior when striving for the underlying collective goal. Future research should follow up on this finding to investigate further boundary conditions that limit the applicability of a collective goal. For instance, when a group expels a member, the collective goal should no longer apply and a cII should have no effect. Similarly, as mentioned earlier, the acceptance of norms and roles might be a prerequisite.

Concerning the relation of II and cII, one might wonder how they can be combined, and whether they only support the respective type of goal (i.e., with the same referent). Extending my argument that group members within the group can have individual or collective plans, one might suspect that they can also set both simultaneously (cf. Kleingeld et al., 2011). A boundary condition for the positive impact of combining II and cII should be that both are formed in support of the group performance. Because implementation intentions are goal dependent (see Experiment 6), this raises the question whether cII (alone or in combination with II) can only support collective goals and vice versa. As long as the II or cII supports the superordinate goal, it should be effective. This assumption is in line with the earlier mentioned decision study (Thürmer et al., 2013) which used an individual goal and a cII, and the earlier mentioned cooperation study (Wieber, Gollwitzer, Fäsche, et al., 2013) that used a collective goal and an II to cooperate (which supported group performance). Future research should not only investigate whether crossing the goal and plan referent is possible but also boundary conditions (potentially benefits) and underlying processes.

Lastly, future research should investigate if cII effects improve existing behavior change interventions and generalize to applied settings. Although

effective in themselves, behaviour change interventions might profit from including cII. This is because cII can ensure that effective strategies are actually applied. Indeed, recent research demonstrated that implementation interventions can enhance effective behaviour change interventions (e.g., mental contrasting, Adriaanse et al., 2010; voter mobilization calls, Nickerson & Rogers, 2010; hypnosis; Schweiger Gallo, Pfau, & Gollwitzer, 2012). Similarly, other types of groups, such as social support groups (Davison, Pennebaker, & Dickerson, 2000), might profit from equipping their goals with cII. Related to these questions is whether cII generalize to the field. Although little data concerning cII in the field is available (but see Burkert et al., 2011; Prestwich et al., 2012, for collaborative planning), implementation intention effects have generalized well to various field settings, including the promotion of health behaviors such as dental flossing (Schüz, Wiedemann, Mallach, & Scholz, 2009) or eating healthily (Adriaanse, Vinkers, De Ridder, Hox, & De Wit, 2011), education behaviors such as turning up for class (Webb et al., 2007) or studying despite test anxiety (Parks-Stamm, Gollwitzer, & Oettingen, 2010), and environmentally friendly behavior such as choosing low-carbon emission modes of travel and groceries (Bamberg, 2002). These findings suggest that cII effects also generalize to the field, an assumption that needs to be tested empirically.

Conclusion

In closing, I return to Kurt Lewin, whom I quoted at the outset and who arguably had a great impact on the study of goals (e.g., Lewin et al., 1944) and the study of groups (e.g., Lewin, 1947a). Lewin's positive influence on psychology as a whole, including the study of goals, is widely accepted (e.g., Wheeler, 2008), but his role in small group research is less clear. In reviewing Lewin's influence on small group research, Moreland (1996) noted that "Lewin is thus nowhere and everywhere at the same time, when one searches the literature" (p. 8). Moreland concludes that Lewin's emphasis on individual-level theory (*field theory* in particular) and controlled laboratory experimentation ultimately contributed to the decline of small group research. One might even argue that Lewin never was a true group researcher in the sense that his interest in groups was mostly confined to his late life and to application instead of theory development (Moreland, 1996). Doubtlessly, Lewin did not fully integrate his individual-level theories and his methodological approach of the controlled laboratory experiment with his small group approach and his field methodology (but see Lewin, 1947b). However, I see this as an opportunity and argue that what developed in the tradition of Lewin's individual level theory (e.g., today's psychology of action and implementation intention theory) can be applied to the group level. This can extend both the study of goals and the study of groups. I

thus hope that present research is of interest both to researchers interested in group performance or goals. At the least, the present research demonstrates that action control with implementation intentions is not confined to the individual level but extends to the group level. Planning how to strive for collective goals with collective implementation intentions helps overcome common obstacles to staying on track with performance goals. This is not only good news for the explorers of Antarctica but for all groups, teams, and collaborators who strive for their goals collectively.

References

Aarts, H., & Dijksterhuis, A. (2003). The silence of the library: Environment, situational norm, and social behavior. *Journal of Personality and Social Psychology, 84*, 18-28. doi: 10.1037/0022-3514.84.1.18

Aarts, H., Dijksterhuis, A. P., & Midden, C. (1999). To plan or not to plan? Goal achievement or interrupting the performance of mundane behaviors. *European Journal of Social Psychology, 29*, 971-979. doi: 10.1002/(SICI)1099-0992(199912)29:8< 971::AID-EJSP963 > 3.0.CO;2-A

Ach, N. (1935). *Analyse des Willens.* Berlin: Urban & Schwarzenberg.

Achtziger, A. (2003). *Kognitionspsychologische Aspekte der willentlichen Stereotypenkontrolle* [Cognitive aspects of volotary stereotype control]. Unpublished Dissertation. University of Konstanz. Konstanz.

Achtziger, A., Bayer, U. C., & Gollwitzer, P. M. (2012). Committing to implementation intentions: Attention and memory effects for selected situational cues. *Motivation and Emotion, 36*, 287-300. doi: 10.1007/s11031-011-9261-6

Achtziger, A., Gollwitzer, P. M., & Sheeran, P. (2008). Implementation intentions and shielding goal striving from unwanted thoughts and feelings. *Personality and Social Psychology Bulletin, 34*, 381-393. doi: 10.1177/0146167207311201

Adriaanse, M. A., Oettingen, G., Gollwitzer, P. M., Hennes, E. P., de Ridder, D. T. D., & de Wit, J. B. F. (2010). When planning is not enough: Fighting unhealthy snacking habits by mental contrasting with implementation intentions (MCII). *European Journal of Social Psychology, 40*, 1277-1293. doi: 10.1002/ejsp.730

Adriaanse, M. A., Vinkers, C. D. W., De Ridder, D. T. D., Hox, J. J., & De Wit, J. B. F. (2011). Do implementation intentions help to eat a healthy diet? A systematic review and meta-analysis of the empirical evidence. *Appetite, 56*, 183-193. doi: 10.1016/j.appet.2010.10.012

Amabile, T. M. (1996). *Creativity in context: Update to "the social psychology of creativity."* Boulder, CO: Westview Press.

Ariely, D., & Levav, J. (2000). Sequential choice in group settings: Taking the road less traveled and less enjoyed. *Journal of Consumer Research, 27*, 279-290. doi: 10.1086/317585

Armitage, C. J. (2009). Effectiveness of experimenter-provided and self-generated implementation intentions to reduce alcohol consumption in a sample of the general population: A randomized exploratory trial. *Health Psychology, 28*, 545-553. doi: 10.1037/a0015984

Arrow, H., McGrath, J. E., & Berdahl, J. L. (2000). *Small groups as complex systems: Formation, coordination, development, and adaptation.* Thousand Oaks, CA: Sage Publications.

Austin, J. T., & Vancouver, J. B. (1996). Goal constructs in psychology: Structure, process, and content. *Psychological Bulletin, 120*, 338-375. doi: 10.1037/0033-2909.120.3.338

Axelrod, R., & Hamilton, W. (1981). The evolution of cooperation. *Science, 211*, 1390-1396. doi: 10.1126/science.7466396

Bagozzi, R. P., & Dholakia, U. (1999). Goal setting and goal striving in consumer behavior. *Journal of Marketing, 63*, 19-32. doi: 10.2307 /1252098

Bamberg, S. (2002). Implementation intention versus monetary incentive comparing the effects of interventions to promote the purchase of organically produced food. *Journal of Economic Psychology, 23*, 573-587. doi: 10.1016/S0167-4870(02)00118-6

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist, 37*, 122-147. doi: 10.1037/0003-066X.37.2.122

Bargh, J. A. (1994). The four horsemen of automaticity: Awareness, intention, efficiency, and control in social cognition. In R. S. Wyer, Jr. & T. K. Srull (Eds.), *Handbook of social cognition* (2nd ed., Vol. 1, pp. 1-40). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Bargh, J. A. (2007). *Social psychology and the unconscious: The automaticity of higher mental processes.* New York, NY: Psychology Press.

Bargh, J. A., & Barndollar, K. (1996). Automaticity in action: The unconscious as repository of chronic goals and motives. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (pp. 457-481). New York, NY: Guilford Press.

Bargh, J. A., & Chartrand, T. L. (1999). The unbearable automaticity of being. *American Psychologist, 54*, 462-479. doi: 10.1037/0003-066x.54.7.462

Bargh, J. A., Gollwitzer, P. M., Lee-Chai, A., Barndollar, K., & Trötschel, R. (2001). The automated will: Nonconscious activation and pursuit of behavioral goals. *Journal of Personality and Social Psychology, 81*, 1014-1027. doi: 10.1037/0022-3514.81.6.1014

Baumeister, R. F. (2002). Yielding to temptation: Self-control failure, impulsive purchasing, and consumer behavior. *Journal of Consumer Research, 28*, 670-676. doi: 10.1086/338209

Bayer, U. C., Achtziger, A., Gollwitzer, P. M., & Moskowitz, G. B. (2009). Responding to subliminal cues: Do if-then plans facilitate action pre-

paration and initiation without conscious intent? *Social Cognition, 27*, 183-201. doi: 10.1521/soco.2009.27.2.183

Bayer, U. C., & Gollwitzer, P. M. (2007). Boosting scholastic test scores by willpower: The role of implementation intentions. *Self and Identity, 6*, 1-19. doi: 10.1080/15298860600662056

Bayer, U. C., Gollwitzer, P. M., & Achtziger, A. (2010). Staying on track: Planned goal striving is protected from disruptive internal states. *Journal of Experimental Social Psychology, 46*, 505-514. doi: 10.1016 /j.jesp.2010.01.002

Beatty, S. E., & Ferrell, M. E. (1998). Impulse buying: Modeling its precursors. *Journal of Retailing, 74*, 169-191. doi: 10.1016/S0022-4359(99)80092

Bechtoldt, M. N., Choi, H.-S., & Nijstad, B. A. (2012). Individuals in mind, mates by heart: Individualistic self-construal and collective value orientation as predictors of group creativity. *Journal of Experimental Social Psychology, 48*, 838-844. doi: 10.1016/j.jesp.2012.02.014

Bell, D. R., Corsten, D., & Knox, G. (2011). From point of purchase to path to purchase: How preshopping factors drive unplanned buying. *Journal of Marketing, 75*, 31-45. doi: 10.1509/jmkg.75.1.31

Bielefeld, K. (2012). Beliebte Vornamen [popular names] Retrieved 05/10/ 2011, from http://www.beliebte-vornamen.de/jahrgang/j1989

Brandstätter, V., Lengfelder, A., & Gollwitzer, P. M. (2001). Implementation intentions and efficient action initiation. *Journal of Personality and Social Psychology, 81*, 946-960. doi: 10.1037/0022-3514.81.5.946

Bratman, M. (1987). *Intention, plans, and practical reason.* Cambridge, MA: Cambridge University Press.

Bray, S. R. (2004). Collective efficacy, group goals, and group performance of a muscular endurance task. *Small Group Research, 35*, 230-238. doi: 10.1177/1046496403260531

Brewer, M. B. (1979). In-group bias in the minimal intergroup situation: A cognitive-motivational analysis. *Psychological Bulletin, 86*, 307. doi: 10.1037/0033-2909.86.2.307

Brewer, M. B., & Gardner, W. (1996). Who is this 'We'? Levels of collective identity and self representations. *Journal of Personality and Social Psychology, 71*, 83-93. doi: 10.1037/0022-3514.71.1.83

Brown, R. (2000). Social identity theory: Past achievements, current problems and future challenges. *European Journal of Social Psychology, 30*, 745-778. doi: 10.1002/1099-0992(200011/12)30:6< 745::AID-EJSP24 > 3.0.CO;2-O

Burkert, S., Scholz, U., Gralla, O., Roigas, J., & Knoll, N. (2011). Dyadic planning of health-behavior change after prostatectomy: A randomized-controlled planning intervention. *Social Science & Medicine, 73*, 783-792. doi: 10.1016/j.socscimed.2011.06.016

Burton-Chellew, M. N., & West, S. A. (2012). Correlates of cooperation in a one-shot high-stakes televised prisoners' dilemma. *PLoS ONE, 7*, e33344. doi: 10.1371/journal.pone.0033344

Camerer, C. F. (2003). *Behavioral game theory: Experiments in strategic interaction*. New York, NY: Russell Sage Foundation.

Cantor, N. (1990). From thought to behavior: 'Having' and 'doing' in the study of personality and cognition. *American Psychologist, 45*, 735-750. doi: 10.1037/0003-066x.45.6.735

Carver, C. S., & Scheier, M. F. (1982). *Attention and self-regulation: A control-theory approach to human behaviors*. New York, NY: Springer.

Chapman, J., Armitage, C. J., & Norman, P. (2009). Comparing implementation intention interventions in relation to young adults' intake of fruit and vegetables. *Psychology & Health, 24*, 317-332.

Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. *Annual Review of Psychology, 55*, 591-621. doi: 10.1146/annurev.psych.55.090902.142015

Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity, and compliance. In D. T. Gilbert, S. T. Fiske & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., Vol. 2, pp. 151-192). New York, NY: McGraw-Hill.

Compton, R. J. (2003). The interface between emotion and attention: A review of evidence from psychology and neuroscience. *Behavioral and Cognitive Neuroscience Reviews, 2*, 115-129. doi: 10.1177/1534582303002002003

Cook, D. B., O'Connor, P. J., Eubanks, S. A., Smith, J. C., & Lee, M. (1997). Naturally occurring muscle pain during exercise: Assessment and experimental evidence. *Medicine & Science in Sports & Exercise, 29*, 999-1012. doi: 10.1097/00005768-199708000-00004

Coxe, S., West, S. G., & Aiken, L. S. (2009). The analysis of count data: A gentle introduction to poisson regression and its alternatives. *Journal of Personality Assessment, 91*, 121-136. doi: 10.1080/00223890802634175

Crown, D. F. (2007). The use of group and groupcentric individual goals for culturally heterogeneous and homogeneous task groups. *Small Group Research, 38*, 489-508. doi: 10.1177/1046496407300486

Crown, D. F., & Rosse, J. G. (1995). Yours, mine, and ours: Facilitating group productivity through the integration of individual and group goals. *Organizational Behavior and Human Decision Processes, 64*, 138-150. doi: 10.1006/obhd.1995.1096

Darley, J. M., & Latane, B. (1968). Bystander intervention in emergencies: Diffusion of responsibility. *Journal of Personality and Social Psychology, 8*, 377-383. doi: 10.1037/h0025589

Davison, K. P., Pennebaker, J. W., & Dickerson, S. S. (2000). Who talks? The social psychology of illness support groups. *American Psychologist, 55*, 205. doi: 10.1037/0003-066X.55.2.205

Dawes, R. M. (1980). Social dilemmas. *Annual Review of Psychology, 31*, 169-193. doi: 0.1146/annurev.ps.31.020180.001125

DeChurch, L. A., & Haas, C. D. (2008). Examining team planning through an episodic lens. *Small Group Research, 39*, 542-568. doi: 10.1177/1046496408320048

Dewitte, S., Verguts, T., & Lens, W. (2003). Implementation intentions do not enhance all types of goals: The moderating role of goal difficulty. *Current Psychology, 22*, 73-89. doi: 10.1007/s12144-003-1014-6

Dholakia, U. M., & Bagozzi, R. P. (2003). As time goes by: How goal and implementation intentions influence enactment of short-fuse behaviors. *Journal of Applied Social Psychology, 33*, 889-922. doi: 10.1111/j.1559-1816.2003.tb01930.x

Diehl, M., & Stroebe, W. (1987). Productivity loss in brainstorming groups: Toward the solution of a riddle. *Journal of Personality and Social Psychology, 53*, 497-509. doi: 10.1037/0022-3514.53.3.497

Diener, E. (1979). Deindividuation, self-awareness, and disinhibition. *Journal of Personality and Social Psychology, 37*, 1160-1171. doi: 10.1037/0022-3514.37.7.1160

Dijksterhuis, A., & Aarts, H. (2010). Goals, attention, and (un)consciousness. *Annual Review of Psychology, 61*, 467-490. doi: 10.1146/annurev. psych.093008.100445

Drouvelis, M., Metcalfe, R., & Powdthavee, N. (2010). Priming cooperation in social dilemma games. *Social Science Research Network*. Retrieved from http://ssrn.com/abstract=1631098

Ellemers, N., & Haslam, S. A. (2012). Social identity theory. In P. A. M. Van Lange, A. W. Kruglanski & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (Vol. 2, pp. 379-398). London: Sage.

Emmons, R. A., & King, L. A. (1988). Conflict among personal strivings: Immediate and long-term implications for psychological and physical well-being. *Journal of Personality and Social Psychology, 54*, 1040-1048. doi: 10.1037/0022-3514.54.6.1040

Fehr, E., & Fischbacher, U. (2003). The nature of human altruism. *Nature, 425*, 785-791. doi: 10.1038/nature02043

Fehr, E., & Gächter, S. (2002). Altruistic punishment in humans. *Nature, 415*, 137-140. doi: 10.1038/415137a

Fennis, B. M., Adriaanse, M. A., Stroebe, W., & Pol, B. (2011). Bridging the intention–behavior gap: Inducing implementation intentions through persuasive appeals. *Journal of Consumer Psychology, 21*, 302-311. doi: 10.1016/j.jcps.2010.12.003

Fischbacher, U., Gächter, S., & Fehr, E. (2001). Are people conditionally cooperative? Evidence from a public goods experiment. *Economics Letters, 71*, 397-404. doi: 10.1016/S0165-1765(01)00394-9

Frese, M., & Zapf, D. (1994). Action as the core of work psychology: A German approach. In H. C. Triandis, M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (2nd ed., Vol. 4, pp. 271-340). Palo Alto, CA: Consulting Psychologists Press.

Gilbert, S. J., Gollwitzer, P. M., Cohen, A.-L., Oettingen, G., & Burgess, P. W. (2009). Separable brain systems supporting cued versus self-initiated realization of delayed intentions. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 35*, 905-915. doi: 10.1037/a0015535

Gollwitzer, P. M. (1990). Action phases and mind-sets. In E. T. Higgins & R. M. Sorrentino (Eds.), *The handbook of motivation and cognition: Foundations of social behavior* (Vol. 2, pp. 53-92). New York: Guilford Press.

Gollwitzer, P. M. (1999). Implementation intentions: Strong effects of simple plans. *American Psychologist, 54*, 493-503. doi: 10.1037/0003-066X.54.7.493

Gollwitzer, P. M. (2012). Mindset theory of action phases. In P. Van Lange, A. W. Kruglanski & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (pp. 526-545). London: Sage Publications.

Gollwitzer, P. M., Bayer, U., & McCulloch, K. (2005). The control of the unwanted. In R. Hassin, J. Uleman & J. A. Bargh (Eds.), *The new unconscious* (pp. 485-515). Oxford: Oxford University Press.

Gollwitzer, P. M., & Oettingen, G. (2012). Goal pursuit. In R. M. Ryan (Ed.), *The Oxford handbook of human motivation* (pp. 208-231). New York, NY: Oxford University Press.

Gollwitzer, P. M., Parks-Stamm, E. J., Jaudas, A., & Sheeran, P. (2008). Flexible tenacity in goal pursuit. In J. Y. Shah & W. L. Gardner (Eds.), *Handbook of motivation science* (pp. 325-341). New York, NY: Guilford Press.

Gollwitzer, P. M., & Sheeran, P. (2006). Implementation intentions and goal achievement: A meta-analysis of effects and processes. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 38, pp. 69-119). San Diego, CA: Elsevier Academic Press.

Gollwitzer, P. M., & Sheeran, P. (2009). Self-regulation of consumer decision making and behavior: The role of implementation intentions. *Journal of Consumer Psychology, 19*, 593-607. doi: 10.1016/j.jcps.2009.08.004

Gollwitzer, P. M., Sheeran, P., Trötschel, R., & Webb, T. L. (2011). Self-regulation of priming effects on behavior. *Psychological Science, 22*, 901-907. doi: 10.1177/0956797611411586

Goncalo, J. A., & Staw, B. M. (2006). Individualism–collectivism and group creativity. *Organizational Behavior and Human Decision Processes, 100*, 96-109. doi: 10.1016/j.obhdp.2005.11.003

Grimshaw, J., Eccles, M., Steen, N., Johnston, M., Pitts, N., Glidewell, L., et al. (2011). Applying psychological theories to evidence-based clinical practice: Identifying factors predictive of lumbar spine x-ray for low back pain in UK primary care practice. *Implementation Science, 6*, 55. doi: 10.1186/1748-5908-6-55

Gurtner, A., Tschan, F., Semmer, N. K., & Nägele, C. (2007). Getting groups to develop good strategies: Effects of reflexivity interventions on team process, team performance, and shared mental models. *Organizational Behavior and Human Decision Processes, 102*, 127-142. doi: 10.1016/j.obhdp.2006.05.002

Hackman, J. R., Brousseau, K. R., & Weiss, J. A. (1976). The interaction of task design and group performance strategies in determining group effectiveness. *Organizational Behavior and Human Performance, 16*, 350-365. doi: 10.1016/0030-5073(76)90021-0

Hackman, J. R., & Morris, C. G. (1975). Group tasks, group interaction process, and group performance effectiveness: A review and proposed integration. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 8, pp. 45-99). Waltham, MA: Academic Press.

Hagger, M. S., Lonsdale, A., Koka, A., Hein, V., Pasi, H., Lintunen, T., et al. (2012). An intervention to reduce alcohol consumption in undergraduate students using implementation intentions and mental simulations: A cross-national study. *International Journal of Behavioral Medicine, 19*, 82-96. doi: 10.1007/s12529-011-9163-8

Hall, P. A., Zehr, C. E., Ng, M., & Zanna, M. P. (2012). Implementation intentions for physical activity in supportive and unsupportive environmental conditions: An experimental examination of intention–behavior consistency. *Journal of Experimental Social Psychology, 48*, 432-436. doi: 10.1016/j.jesp.2011.09.004

Han, Y. K., Morgan, G. A., Kotsiopulos, A., & Kang-Park, J. (1991). Impulse buying behavior of apparel purchasers. *Clothing and Textile Research Journal, 9*, 15-21. doi: 10.1177/0887302X9100900303

Hardin, G. (1968). The tragedy of the commons. *Science, 162*, 1243-1248. doi: 10.1126/science.162.3859.1243

Heckhausen, H., & Gollwitzer, P. M. (1987). Thought contents and cognitive functioning in motivational versus volitional states of mind. *Motivation and Emotion, 11*, 101-120. doi: 10.1007/BF00992338

Henderson, M. D., Gollwitzer, P. M., & Oettingen, G. (2007). Implementation intentions and disengagement from a failing course of action. *Journal of Behavioral Decision Making, 20*, 81-102. doi: 10.1002/bdm.553

Henrich, J., McElreath, R., Barr, A., Ensminger, J., Barrett, C., Bolyanatz, A., et al. (2006). Costly punishment across human societies. *Science, 312*, 1767-1770. doi: 10.1126/science.1127333

Hertel, G., Kerr, N. L., & Messé, L. A. (2000). Motivation gains in performance groups: Paradigmatic and theoretical developments on the Köhler effect. *Journal of Personality and Social Psychology, 79*, 580-601. doi: 10.1037/0022-3514.79.4.580

Higgins, E. T. (1997). Beyond pleasure and pain. *American Psychologist, 52*, 1280-1300. doi: 10.1037/0003-066X.52.12.1280

Hinsz, V. B., Tindale, R. S., & Vollrath, D. A. (1997). The emerging conceptualization of groups as information processes. *Psychological Bulletin, 121*, 43-64. doi: 10.1037/0033-2909.121.1.43

Hofstede, G. (1980). *Culture's consequences*. Beverly Hills, CA: Sage.

Hogg, M. A. (2006). Social identity theory. In P. J. Burke (Ed.), *Contemporary social psychological theories* (pp. 111-136). Palo Alto, CA: Stanford University Press.

Hornsey, M. J., & Jetten, J. (2004). The individual within the group: Balancing the need to belong with the need to be different. *Personality and Social Psychology Review, 8*, 248-264. doi: 10.1207/s15327957pspr0803_2

Howard, D. J. (2012). Introduction to special issue: Social influence and consumer behavior. *Journal of Consumer Psychology, 7*, 131-133. doi: 10.1080/15534510.2012.694023

Hox, J. J. (2010). *Multilevel analysis: Techniques and applications* (2nd ed.). New York, NY: Routledge/Taylor & Francis Group.

Hüffmeier, J., Krumm, S., Kanthak, J., & Hertel, G. (2012). "Don't let the group down": Facets of instrumentality moderate the motivating effects of groups in a field experiment. *European Journal of Social Psychology, 42*, 533-538. doi: 10.1002/ejsp.1875

IATA. (2012). *Liste der IATA-Airline-Codes* Retrieved November 5, 2012, from http://de.wikipedia.org/wiki/Liste_der_IATA-Airline-Codes

Jackson, J. M., & Williams, K. D. (1985). Social loafing on difficult tasks: Working collectively can improve performance. *Journal of Personality and Social Psychology, 49*, 937-942. doi: 10.1037/0022-3514.49.4.937

James, W. (1896). *The will to believe and other essays in popular philosophy.* New York, NY: Longmans, Green and Co.

Janicik, G. A., & Bartel, C. A. (2003). Talking about time: Effects of temporal planning and time awareness norms on group coordination and performance. *Group Dynamics: Theory, Research, and Practice, 7*, 122-134. doi: 10.1037/1089-2699.7.2.122

Ji, M. F., & Wood, W. (2007). Purchase and consumption habits: Not necessarily what you intend. *Journal of Consumer Psychology, 17*, 261-276. doi: 10.1080/10577400701542403

Jonas, K. J., Sassenberg, K., & Scheepers, D. (2010). Self-regulation within and between groups. *Group Processes & Intergroup Relations, 13*, 131-136. doi: 10.1177/1368430209359982

Jones, M. A., Reynolds, K. E., Weun, S., & Beatty, S. E. (2003). The product-specific nature of impulse buying tendency. *Journal of Business Research, 56*, 505-511. doi: 10.1016/s0148-2963(01)00250-8

Kameda, T., Takezawa, M., & Hastie, R. (2005). Where do social norms come from? The example of communal sharing. *Current Directions in Psychological Science, 14*, 331-334. doi: 10.1111/j.0963-7214.2005.00392.x

Karau, S. J., & Williams, K. D. (1993). Social loafing: A meta-analytic review and theoretical integration. *Journal of Personality and Social Psychology, 65*, 681-706. doi: 10.1037/0022-3514.65.4.681

Kelley, H. H., & Thibaut, J. W. (1978). *Interpersonal relations: A theory of interdependence*. New York, NY: Wiley.

Kerr, N. L., & Hertel, G. (2011). The Köhler group motivation gain: How to motivate the 'weak links' in a group. *Social and Personality Psychology Compass, 5*, 43-55. doi: 10.1111/j.1751-9004.2010.00333.x

Kerr, N. L., Messé, L. A., Park, E. S., & Sambolec, E. J. (2005). Identifiability, performance feedback and the Köhler effect. *Group Processes & Intergroup Relations, 8*, 375-390. doi: 10.1177/1368430205056466

Kerr, N. L., Messé, L. A., Seok, D.-H., Sambolec, E. J., Lount, R. B., & Park, E. S. (2007). Psychological mechanisms underlying the Köhler motivation gain. *Personality and Social Psychology Bulletin, 33*, 828-841. doi: 10.1177/0146167207301020

Kerr, N. L., & Tindale, R. S. (2004). Group performance and decision making. *Annual Review of Psychology, 55*, 623-655. doi: 10.1146/annurev.psych.55.090902.142009

Kerr, N. L., & Tindale, R. S. (2012). Scientific inquiry on how groups decide: The Davisonian approach. *Group Processes & Intergroup Relations, 15*, 577-584. doi: 10.1177/1368430212455119

Keyton, J. (2005). *Communication and organizational culture: A key to understanding work experience*. Thousand Oaks, CA: Sage.

Kirk, D., Gollwitzer, P. M., & Carnevale, P. J. (2011). Self-regulation in ultimatum bargaining: Goals and plans help accepting unfair but profitable offers. *Social Cognition, 29*, 528-546. doi: 10.1521/soco.2011.29.5.528

Klein, H. J., Wesson, M. J., Hollenbeck, J. R., Wright, P. M., & DeShon, R. P. (2001). The assessment of goal commitment: A measurement model meta-analysis. *Organizational Behavior and Human Decision Processes, 85*, 32-55. doi: 10.1006/obhd.2000.2931

Kleingeld, A., van Mierlo, H., & Arends, L. (2011). The effect of goal setting on group performance: A meta-analysis. *Journal of Applied Psychology, 96*, 1289-1304. doi: 10.1037/a0024315

Köhler, O. (1926). Kraftleistungen bei Einzel- und Gruppenabeit. [Physical performance in individual and group situations]. *Industrielle Psychotechnik, 3*, 274-282.

Kollat, D. T., & Willett, R. P. (1967). Customer impulse purchasing behavior. *Journal of Marketing Research, 4*, 21-31. doi: 10.2307/3150160

Komorita, S. S., & Parks, C. D. (1995). Interpersonal relations: Mixed-motive interaction. *Annual Review of Psychology, 46*, 183-207. doi: 10.1146/annurev.ps.46.020195.001151

Kuhl, J. (1992). A theory of self-regulation: Action versus state orientation, self-discrimination, and some applications. *Applied Psychology, 41*, 97-129. doi: 10.1111/j.1464-0597.1992.tb00688.x

Lamm, H., & Trommsdorff, G. (1973). Group versus individual performance on tasks requiring ideational proficiency (brainstorming): A review. *European Journal of Social Psychology, 3*, 361-388. doi: 10.1002/ejsp.2420030402

Larson, J. R., Jr. (2010). *In search of synergy in small group performance.* New York, NY: Psychology Press.

Laughlin, P. R., & Ellis, A. L. (1986). Demonstrability and social combination processes on mathematical intellective tasks. *Journal of Experimental Social Psychology, 22*, 177-189. doi: 10.1016/0022-1031(86)90022-3

Lee, J. A., & Kacen, J. J. (2008). Cultural influences on consumer satisfaction with impulse and planned purchase decisions. *Journal of Business Research, 61*, 265-272. doi: 10.1016/j.jbusres.2007.06.006

Levine, J. M., Alexander, K. M., & Hansen, T. (2010). Self-control in groups. In R. R. Hassin, K. N. Ochsner & Y. Trope (Eds.), *Self control in society, mind, and brain* (pp. 449-472). New York, NY: Oxford University Press.

Levine, J. M., & Moreland, R. L. (1990). Progress in small group research. *Annual Review of Psychology, 41*, 585-634. doi: 10.1146/annurev.ps.41.020190.003101

Levine, J. M., & Moreland, R. L. (1994). Group socialization: Theory and research. *European Review of Social Psychology, 5*, 305-336. doi: 10.1080/14792779543000093

Levine, J. M., Resnick, L. B., & Higgins, E. T. (1993). Social foundations of cognition. *Annual Review of Psychology, 44*, 585-612. doi: 10.1146/annurev.ps.44.020193.003101

Lewin, K. (1926). Vorsatz, Wille und Bedürfnis. [Intention, will, and need]. *Psychologische Forschung, 7*, 330-385. doi: 10.1007/bf02424365

Lewin, K. (1939). Field theory and experiment in social psychology: Concepts and methods. *American Journal of Sociology*, 868-896. doi: 10.1086/218177

Lewin, K. (1947a). Frontiers in group dynamics: Concept, method and reality in social science; Social equilibria and social change. *Human Relations, 1*, 5-41. doi: 10.1177/001872674700100103

Lewin, K. (1947b). Frontiers in group dynamics: II. Channels of group life; social planning and action research. *Human Relations, 1*, 143-153. doi: 10.1177/001872674700100201

Lewin, K., Dembo, T., Festinger, L., & Sears, P. S. (1944). Level of aspiration. In J. M. Hunt (Ed.), *Personality and the behavior disorders* (pp. 333-378). Oxford: Ronald Press.

Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice-Hall.

Locke, E. A., & Latham, G. P. (2006). New directions in goal-setting theory. *Current Directions in Psychological Science, 15*, 265-268. doi: 10.1111/j.1467-8721.2006.00449.x

Locke, E. A., & Latham, G. P. (Eds.). (2012). *New developments in goal setting and task performance*. New York, NY: Routledge Academic.

Locke, E. A., Smith, K. G., Erez, M., Chah, D.-O., & Schaffer, A. (1994). The effects of intra-individual goal conflict on performance. *Journal of Management, 20*, 67-91. doi: 10.1177/014920639402000104

Lount, R. B., Jr., Kerr, N. L., Messé, L. A., Seok, D.-H., & Park, E. S. (2008). An examination of the stability and persistence of the Köhler motivation gain effect. *Group Dynamics: Theory, Research, and Practice, 12*, 279-289. doi: 10.1037/1089-2699.12.4.279

Luo, X. (2005). How does shopping with others influence impulsive purchasing? *Journal of Consumer Psychology, 15*, 288-294. doi: 10.1207/s15327663jcp1504_3

Mangleburg, T. F., Doney, P. M., & Bristol, T. (2004). Shopping with friends and teens' susceptibility to peer influence. *Journal of Retailing, 80*, 101-116. doi: 10.1016/j.jretai.2004.04.005

McGrath, J. E. (1984). *Groups: Interaction and performance.* Englewood Cliffs, NJ: Prentice Hall.

Mendoza, S. A., Gollwitzer, P. M., & Amodio, D. M. (2010). Reducing the expression of implicit stereotypes: Reflexive control through implementation intentions. *Personality and Social Psychology Bulletin, 36*, 512-523. doi: 10.1177/0146167210362789

Messick, D. M., & Brewer, M. B. (2005). Solving social dilemmas: A review. In M. H. Bazerman (Ed.), *Negotiation, decision making and conflict management* (pp. 98-131). Northampton, MA: Edward Elgar Publishing.

Metcalfe, J., & Mischel, W. (1999). A hot/cool-system analysis of delay of gratification: Dynamics of willpower. *Psychological Review, 106*, 3-19. doi: 10.1037/0033-295x.106.1.3

Mischel, W. (1974). Processes in delay of gratification. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 7, pp. 249-292). Waltham, MA: Academic Press.

Mischel, W., & Ebbesen, E. B. (1970). Attention in delay of gratification. *Journal of Personality and Social Psychology, 16*, 329-337. doi: 10.1037/h0029815

Mischel, W., Shoda, Y., & Rodriguez, M. L. (1989). Delay of gratification in children. *Science, 244*, 933-938. doi: 10.1126/science.2658056

Mitchell, T. R., & Silver, W. S. (1990). Individual and group goals when workers are interdependent: Effects on task strategies and performance. *Journal of Applied Psychology, 75*, 185-193. doi: 10.1037/0021-9010.75.2.185

Moreland, R. L. (1996). Lewin's legacy for small-groups research. *Systems practice, 9*, 7-26. doi: 10.1007/bf02173416

Mourali, M., Laroche, M., & Pons, F. (2005). Individualistic orientation and consumer susceptibility to interpersonal influence. *Journal of Services Marketing, 19*, 164 - 173. doi: 10.1108/08876040510596849

Mullen, B., Johnson, C., & Salas, E. (1991). Productivity loss in brainstorming groups: A meta-analytic integration. *Basic & Applied Social Psychology, 12*, 3-23. doi: 10.1207/s15324834basp1201_1

Nickerson, D. W., & Rogers, T. (2010). Do you have a voting plan? *Psychological Science, 21*, 194-199. doi: 10.1177/0956797609359326

Nijstad, B. A. (2009). *Group performance*. New York, NY: Psychology Press.

Nolan, J. M., Schultz, P. W., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2008). Normative social influence is underdetected. *Personality and Social Psychology Bulletin, 34*, 913-923. doi: 10.1177/0146167208316691

O'Leary-Kelly, A. M., Martocchio, J. J., & Frink, D. D. (1994). A review of the influence of group goals on group performance. *The Academy of Management Journal, 37*, 1285-1301. doi: 10.2307/256673

Oettingen, G., Pak, H. J., & Schnetter, K. (2001). Self-regulation of goal-setting: Turning free fantasies about the future into binding goals. *Journal of Personality and Social Psychology, 80*, 736-753. doi: 10.1037/0022-3514.80.5.736

Oldfield, R. C. (1971). The assessment and analysis of handedness: The Edinburgh inventory. *Neuropsychologia, 9*, 97-113. doi: 10.1016/0028-3932(71)90067-4

Orbell, S., Hodgkins, S., & Sheeran, P. (1997). Implementation intentions and the theory of planned behavior. *Personality and Social Psychology Bulletin, 23*, 945-954. doi: 10.1177/0146167297239004

Park, C. W., Iyer, E. S., & Smith, D. C. (1989). The effects of situational factors on in-store grocery shopping behavior: The role of store

environment and time available for shopping. *Journal of Consumer Research, 15*, 422-433. doi: 10.1086/209182

Parks-Stamm, E. J., Gollwitzer, P. M., & Oettingen, G. (2007). Action control by implementation intentions: Effective cue detection and efficient response initiation. *Social Cognition, 25*, 248-266. doi: 10.1521/soco.2007.25.2.248

Parks-Stamm, E. J., Gollwitzer, P. M., & Oettingen, G. (2010). Implementation intentions and test anxiety: Shielding academic performance from distraction. *Learning and Individual Differences, 20*, 30-33. doi: 10.1016/j.lindif.2009.09.001

Paulus, P. B., & Brown, V. R. (2007). Toward more creative and innovative group idea generation: A cognitive-social-motivational perspective of brainstorming. *Social and Personality Psychology Compass, 1*, 248-265. doi: 10.1111/j.1751-9004.2007.00006.x

Pennebaker, J. W., Mehl, M. R., & Niederhoffer, K. G. (2003). Psychological aspects of natural language use: Our words, our selves. *Annual Review of Psychology, 54*, 547-577. doi: 10.1146/annurev.psych.54.101601.145041

Perdue, C. W., Dovidio, J. F., Gurtman, M. B., & Tyler, R. B. (1990). Us and them: Social categorization and the process of intergroup bias. *Journal of Personality and Social Psychology, 59*, 475-486. doi: 10.1037/0022-3514.59.3.475

Peterson, R. S., & Behfar, K. J. (2005). Leadership as group regulation. In D. M. Messick & R. M. Kramer (Eds.), *The psychology of leadership: New perspectives and research* (pp. 143-162). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.

Pinel, E. C., Long, A. E., Landau, M. J., Alexander, K., & Pyszczynski, T. (2006). Seeing I to I: A pathway to interpersonal connectedness. *Journal of Personality and Social Psychology, 90*, 243-257. doi: 10.1037/0022-3514.90.2.243

Pinter, B., & Greenwald, A. G. (2011). A comparison of minimal group induction procedures. *Group Processes & Intergroup Relations, 14*, 81-98. doi: 10.1177/1368430210375251

Postmes, T., & Jetten, J. (Eds.). (2006). *Individuality and the group: Advances in social identity.* Thousand Oaks, CA: Sage Publications, Inc.

Postmes, T., & Spears, R. (1998). Deindividuation and antinormative behavior: A meta-analysis. *Psychological Bulletin, 123*, 238-259. doi: 10.1037/0033-2909.123.3.238

Prestwich, A., Conner, M., Lawton, R., Bailey, W., Litman, J., & Molyneaux, V. (2005). Individual and collaborative implementation intentions and the promotion of breast self-examination. *Psychology and Health Education Research, 20*, 743-760. doi: 10.1080/14768320500183335

Prestwich, A., Conner, M. T., Lawton, R. J., Ward, J. K., Ayres, K., & McEachan, R. R. C. (2012). Randomized controlled trial of collaborative implementation intentions targeting working adults' physical activity. *Health Psychology.* doi: 10.1037/a0027672

Rietzschel, E. F., Nijstad, B. A., & Stroebe, W. (2007). Relative accessibility of domain knowledge and creativity: The effects of knowledge activation on the quantity and originality of generated ideas. *Journal of Experimental Social Psychology, 43*, 933-946. doi: 10.1016/j.jesp.2006.10.014

Rodriguez, M. L., Mischel, W., & Shoda, Y. (1989). Cognitive person variables in the delay of gratification of older children at risk. *Journal of Personality and Social Psychology, 57*, 358-367. doi: 10.1037/0022-3514.57.2.358

Rook, D. W. (1987). The buying impulse. *Journal of Consumer Research, 14*, 189-199. doi: 10.1086/209105

Rook, D. W., & Fisher, R. J. (1995). Normative influences on impulsive buying behavior. *The Journal of Consumer Research, 22*, 305-313. doi: 10.1086/209452

Rook, D. W., & Gardner, M. P. (1993). In the mood: Impulse buying's affective antecedents. *Research in Consumer Behavior, 6*, 1-28.

Rubin, M., & Hewstone, M. (1998). Social identity theory's self-esteem hypothesis: A review and some suggestions for clarification. *Personality and Social Psychology Review, 2*, 40-62. doi: 10.1207/s15327957pspr0201_3

Ryan, R. M. (2012). *The Oxford handbook of human motivation.* New York, NY: Oxford University Press.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*, 68-78. doi: 10.1037/0003-066x.55.1.68

Sassenberg, K., & Woltin, K.-A. (2008). Group-based self-regulation: The effects of regulatory focus. *European Review of Social Psychology, 19*, 126-164. doi: 10.1080/10463280802201894

Scholz, U., & Hornung, R. (2008). Social exchange processes, health behaviour, and health behaviour change. *Zeitschrift für Gesundheitspsychologie, 16*, 131-134. doi: 10.1026/0943-8149.16.3.131

Scholz, U., La Marca, R., Nater, U. M., Aberle, I., Ehlert, U., Hornung, R., et al. (2009). Go no-go performance under psychosocial stress: Beneficial effects of implementation intentions. *Neurobiology of Learning and Memory, 91*, 89-92. doi: 10.1016/j.nlm.2008.09.002

Schröder, T., & Thagard, P. (2012). The affective meanings of automatic social behaviors: Three mechanisms that explain priming. *Psychological Review.* doi: 10.1037/a0030972

Schüz, B., Wiedemann, A. U., Mallach, N., & Scholz, U. (2009). Effects of a short behavioural intervention for dental flossing: Randomized-

controlled trial on planning when, where and how. *Journal of Clinical Periodontology, 36*, 498-505. doi: 10.1111/j.1600-051X.2009.01406.x

Schweiger Gallo, I., Keil, A., McCulloch, K. C., Rockstroh, B., & Gollwitzer, P. M. (2009). Strategic automation of emotion regulation. *Journal of Personality and Social Psychology.*, 11-31. doi: 10.1037/a0013460

Schweiger Gallo, I., Pfau, F., & Gollwitzer, P. M. (2012). Furnishing hypnotic instructions with implementation intentions enhances hypnotic responsiveness. *Consciousness and Cognition, 21*, 1023-1030. doi: 10.1016/j.concog.2012.03.007

Scott, R. F. (1910). Plans of the British antarctic expedition, 1910. *The Geographical Journal, 36*, 11-20. doi: 10.2307/1777649

Searle, J. R. (1995). *The construction of social reality.* London: Lane.

Shah, J. Y. (2005). The automatic pursuit and management of goals. *Current Directions in Psychological Science, 14*, 10-13. doi: 10.1111/j.0963-7214.2005.00325.x

Sheeran, P. (2002). Intention-behavior relations: A conceptual and empirical review. *European Review of Social Psychology, 12*, 1-36. doi: 10.1080/14792772143000003

Sheeran, P., Webb, T. L., & Gollwitzer, P. M. (2005). The interplay between goal intentions and implementation intentions. *Personality and Social Psychology Bulletin, 31*, 87-98. doi: 10.1177/0146167204271308

Sheldon, O. J., & Fishbach, A. (2011). Resisting the temptation to compete: Self-control promotes cooperation in mixed-motive interactions. *Journal of Experimental Social Psychology, 47*, 403-410. doi: 10.1016/j.jesp.2010.11.003

Sherif, M. (1936). *The psychology of social norms.* Oxford: Harper.

Shteynberg, G., & Galinsky, A. D. (2011). Implicit coordination: Sharing goals with similar others intensifies goal pursuit. *Journal of Experimental Social Psychology, 47*, 1291-1294. doi: 10.1016/j.jesp.2011.04.012

Smith, V. L. (1976). Experimental economics: Induced value theory. *American Economic Review, 66*, 274. doi: 10.2307/1817233

Spears, R., Ellemers, N., Doosje, B., & Branscombe, N. (2006). The individual within the group: Respect! In T. Postmes & J. Jetten (Eds.), *Individuality and the group: Advances in social identity* (pp. 175-195). Thousand Oaks, CA: Sage Publications, Inc.

Steiner, I. D. (1972). *Group process and productivity.* New York, NY: Academic Press.

Stern, H. (1962). The significance of impulse buying today. *Journal of Marketing, 26*, 59-62.

Stewart, B. D., & Payne, B. K. (2008). Bringing automatic stereotyping under control: Implementation intentions as efficient means of thought control. *Personality and Social Psychology Bulletin, 34*, 1332-1345. doi: 10.1177/0146167208321269

Stout, R. J., Cannon-Bowers, J. A., Salas, E., & Milanovich, D. M. (1999). Planning, shared mental models, and coordinated performance: An empirical link is established. *Human Factors: The Journal of the Human Factors and Ergonomics Society, 41*, 61-71. doi: 10.1518/001872099779577273

Stroebe, W., Diehl, M., & Abakoumkin, G. (1996). Social compensation and the Köhler effect: Toward a theoretical explanation of motivation gains in group productivity. In E. H. Witte & J. H. Davis (Eds.), *Understanding group behavior: Small group processes and interpersonal relations* (Vol. 2, pp. 37-65). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Stroebe, W., Nijstad, B. A., & Rietzschel, E. F. (2010). Beyond productivity loss in brainstorming groups: The evolution of a question. In M. P. Zanna & J. M. Olson (Eds.), *Advances in experimental social psychology* (Vol. 43, pp. 157-203). Waltham, MA: Academic Press.

Stroebe, W., van Koningsbruggen, G. M., Papies, E. K., & Aarts, H. (2013). Why most dieters fail but some succeed: A goal conflict model of eating behavior. *Psychological Review*, 110-138. doi: 10.1037/a0030849

Tajfel, H., & Turner, J. C. (1986). The social identity theory of intergroup behavior. In S. Worchel & W. G. Austin (Eds.), *Psychology of Intergroup Relations* (2nd ed., Vol. 1, pp. 7-24). Chicago, IL: Nelson-Hall.

Terry, D. J., & Hogg, M. A. (1996). Group norms and the attitude-behavior relationship: A role for group identification. *Personality and Social Psychology Bulletin, 22*, 776-793. doi: 10.1177/0146167296228002

Thürmer, J. L., McCrea, S. M., & Gollwitzer, P. M. (in press). Regulating self-defensiveness: If-then plans prevent claiming and creating performance handicaps. *Motivation and Emotion.* doi: 10.1007/s11031-013-9352-7

Thürmer, J. L., Wieber, F., & Gollwitzer, P. M. (2013). *An action control perspective on hidden profile problems: If-then planning to review information improves group decisions.* Unpublished manuscript. University of Konstanz.

Tindale, R. S., Smith, C. M., Dykema-Engblade, A., & Kluwe, K. (2012). Good and bad group performance: Same process—different outcomes. *Group Processes & Intergroup Relations, 15*, 603-618. doi: 10.1177/1368430212454928

Tuomela, R. (2006). Joint intention, we-mode and I-mode. *Midwest Studies In Philosophy, 30*, 35-58. doi: 10.1111/j.1475-4975.2006.00127.x

Turner, J. C. (1991). *Social influence.* Belmont, CA: Thomson Brooks/Cole Publishing Co.

Turner, J. C. (2010). The analysis of social influence. In T. Postmes & N. R. Branscombe (Eds.), *Rediscovering social identity* (pp. 273-286). New York, NY: Psychology Press.

van Koningsbruggen, G. M., Stroebe, W., Papies, E. K., & Aarts, H. (2011). Implementation intentions as goal primes: Boosting self-control in tempting environments. *European Journal of Social Psychology, 41*, 551-557. doi: 10.1002/ejsp.799

van Mierlo, H., & Kleingeld, A. (2010). Goals, strategies, and group performance: Some limits of goal setting in groups. *Small Group Research, 41*, 524-555. doi: 10.1177/1046496410373628

van Vugt, M. (2009). Averting the tragedy of the commons. *Current Directions in Psychological Science, 18*, 169-173. doi: 10.1111/j.1467-8721.2009.01630.x

Verplanken, B., & Herabadi, A. (2001). Individual differences in impulse buying tendency: Feeling and no thinking. *European Journal of Personality, 15*, 71-83. doi: 10.1002/per.423

Verplanken, B., Herabadi, A. G., Perry, J. A., & Silvera, D. H. (2005). Consumer style and health: The role of impulsive buying in unhealthy eating. *Psychology & Health, 20*, 429-441. doi: 10.1080/08870440412331337084

Vohs, K. D., & Faber, R. J. (2007). Spent resources: Self-regulatory resource availability affects impulse buying. *Journal of Consumer Research, 33*, 537-547. doi: 10.1086/510228

von Cranach, M., Ochsenbein, G., & Valach, L. (1986). The group as a self-active system: Outline of a theory of group action. *European Journal of Social Psychology, 16*, 193-229. doi: 10.1002/ejsp.2420160302

Webb, T. L., Christian, J., & Armitage, C. J. (2007). Helping students turn up for class: Does personality moderate the effectiveness of an implementation intention intervention? *Learning and Individual Differences, 17*, 316-327. doi: 10.1016/j.lindif.2007.03.001

Webb, T. L., Ononaiye, M. S. P., Sheeran, P., Reidy, J. G., & Lavda, A. (2010). Using implementation intentions to overcome the effects of social anxiety on attention and appraisals of performance. *Personality and Social Psychology Bulletin, 36*, 612-627. doi: 10.1177/0146167210367785

Webb, T. L., & Sheeran, P. (2007). How do implementation intentions promote goal attainment? A test of component processes. *Journal of Experimental Social Psychology, 43*, 295-302. doi: 10.1016/j.jesp.2006.02.001

Webb, T. L., & Sheeran, P. (2008). Mechanisms of implementation intention effects: The role of goal intentions, self-efficacy, and accessibility of plan components. *British Journal of Social Psychology, 47*, 373-395. doi: 10.1348/014466607X267010

Webb, T. L., Sheeran, P., Gollwitzer, P. M., & Trötschel, R. (2012). Strategic control over the unhelpful effects of primed social categories and goals. *Zeitschrift für Psychologie, 220*, 187-193. doi: 10.1027/2151-2604/a000112

Weber, B., & Hertel, G. (2007). Motivation gains of inferior group members: A meta-analytical review. *Journal of Personality and Social Psychology, 93*, 973-993. doi: 10.1037/0022-3514.93.6.973

Weber, J. M., Kopelman, S., & Messick, D. M. (2004). A conceptual review of decision making in social dilemmas: Applying a logic of appropriateness. *Personality and Social Psychology Review, 8*, 281-307. doi: 10.1207/s15327957pspr0803_4

Wegge, J. (2000). Participation in group goal setting: Some novel findings and a comprehensive model as a new ending to an old story. *Applied Psychology, 49*, 498-516. doi: 10.1111/1464-0597.00028

Wegner, D. M. (1987). Transactive memory: A contemporary analysis of the group mind. In B. Mullen & G. R. Goethals (Eds.), *Theory of group behavior* (pp. 185-208). New York, NY: Springer-Verlag.

Wegner, D. M. (1994). Ironic processes of mental control. *Psychological Review, 101*, 34-52. doi: 10.1037/0033-295x.101.1.34

Weldon, E., Jehn, K. A., & Pradhan, P. (1991). Processes that mediate the relationship between a group goal and improved group performance. *Journal of Personality and Social Psychology, 61*, 555-569. doi: 10.1037/0022-3514.61.4.555

Weldon, E., & Weingart, L. R. (1993). Group goals and group performance. *British Journal of Social Psychology, 32*, 307-334. doi: 10.1111/j.2044-8309.1993.tb01003.x

Wheeler, L. (2008). Kurt Lewin. *Social and Personality Psychology Compass, 2*, 1638-1650. doi: 10.1111/j.1751-9004.2008.00131.x

Wieber, F., Gollwitzer, P. M., Fäsche, A., Heikamp, T., Spitzner, I., & Trommsdorff, G. (2013). *Improving children's cooperation at school by if-then planning.* Unpublished manuscript. University of Konstanz.

Wieber, F., Gollwitzer, P. M., Sheeran, P., Schoch, P., & Tidswell, K. (2013). *Varying social automaticities at will.* Unpublished manuscript. University of Konstanz.

Wieber, F., Odenthal, G., & Gollwitzer, P. (2010). Self-efficacy feelings moderate implementation intention effects. *Self & Identity, 9*, 177-194. doi: 10.1080/15298860902860333

Wieber, F., & Sassenberg, K. (2006). I can't take my eyes off of it - Attention attraction effects of implementation intentions. *Social Cognition, 24*, 723-752. doi: 10.1521/soco.2006.24.6.723

Wieber, F., Thürmer, J. L., & Gollwitzer, P. M. (2012). Collective action control by goals and plans: Applying a self-regulation perspective to group performance. *American Journal of Psychology, 125*, 275-290. doi: 10.5406/amerjpsyc.125.3.0275

Wieber, F., Thürmer, J. L., & Gollwitzer, P. M. (2013). *An action control perspective on group decision making: Implementation intentions reduce the escalation of commitment.* Unpublished manuscript. University of Konstanz.

Wieber, F., von Suchodoletz, A., Heikamp, T., Trommsdorff, G., & Gollwitzer, P. M. (2011). If-then planning helps school-aged children to ignore attractive distractions. *Social Psychology, 42*, 39-47. doi: 10.1027/1864-9335/a000041

Witte, E. H. (1989). Köhler rediscovered: The anti-Ringelmann effect. *European Journal of Social Psychology, 19*, 147-154. doi: 10.1002/ejsp.2420190206

Wong, R. Y.-m., & Hong, Y.-y. (2005). Dynamic influences of culture on cooperation in the prisoner's dilemma. *Psychological Science, 16*, 429-434. doi: 10.1111/j.0956-7976.2005.01552.x

Wood, M. (1998). Socio-economic status, delay of gratification, and impulse buying. *Journal of Economic Psychology, 19*, 295-320. doi: 10.1016/s0167-4870(98)00009-9

Wood, W., & Hayes, T. (2012). Social influence on consumer decisions: Motives, modes, and consequences. *Journal of Consumer Psychology, 22*, 324-328. doi: 10.1016/j.jcps.2012.05.003

Zander, A. (1971). *Motives and goals in groups*. New York, NY: Academic Press.

Zanna, M. P., & Fazio, R. H. (1982). The attitude-behavior relation: Moving toward the third generation of research. In M. P. Zanna, E. T. Higgins & C. P. Herman (Eds.), *Consistency in social behavior: The Ontario Symposium* (Vol. 2). Hillsdale, NJ: Erlbaum.

Zeigarnik, B. (1927). Das Behalten erledigter und unerledigter Handlungen. [Memory for completed and interrupted tasks]. *Psychologische Forschung, 9*, 1-85. doi: 10.1007/bf02409755

Zimbardo, P. G. (1969). The human choice: Individuation, reason, and order versus deindividuation, impulse, and chaos. *Nebraska Symposium on Motivation, 17*, 237-307.

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Appendix

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Appendix E: Materials Experiment 6

Deutsche Zusammenfassung

Zielstreben in Gruppen mit Implementation Intentions: Kollektives Planen verbessert die Leistung

Gruppen erbringen Leistung, indem sie Ziele setzen und sie verfolgen. Gruppenleistung zu verbessern bedeutet darum, die Zielerreichung von Gruppen zu verbessern. Die Handlungspsychologie (Lewin, Dembo, Festinger, & Sears, 1944) unterscheidet zwischen Zielsetzung und Zielstreben. Selbst wenn Ziele erfolgreich gesetzt wurden, kann die Zielerreichung scheitern, wenn die Herausforderungen des Zielstrebens nicht gemeistert werden (Sheeran, 2002). Bei Zielen, die nicht mit einer einzigen Handlung erreicht werden, muss beispielsweise angefangenes Zielstreben fortgesetzt werden, um die Zielerreichung sicherzustellen. Da die Herausforderungen des Zielstrebens mit bloßen Zielen schwer zu meistern sind, schlägt Gollwitzer (1999) vor, Ziele mit Implementation Intentions auszustatten, also zu planen, wann, wo und wie das gesetzte Ziel verfolgt werden soll. Dies ist im Wenn-Dann Format (*Wenn Situation X eintritt, dann zeige ich Reaktion Y!*) besonders effektiv. Implementation Intentions erhöhen die mentale Verfügbarkeit der Situation (Wenn-Teil) und schaffen eine Situations-Reaktions-Verknüpfung. Sobald die spezifizierte Situation eintritt, wird sie sofort erkannt und löst die spezifizierte Reaktion aus. Diese strategische Automatizität hilft, Probleme wie die Fortsetzung angefangenen Zielstrebens, zu überwinden. Da Gruppenleistung häufig auch kontinuierlichen Zielstrebens bedarf, wird vorgeschlagen, dass auch Gruppen von solchen Plänen profitieren können (Proposition 1).

Kleingruppentheorie unterscheidet zwischen der Gruppe und dem Gruppenmitglied (Arrow, McGrath, & Berdahl, 2001). Diese Sichtweise erlaubt es, Ziele sowohl auf individueller Ebene (individuelle Ziele) als auch auf Gruppen-Ebene (kollektive Ziele) zu setzen. Selbst scheinbar ähnliche individuelle und kollektive Ziele können die Gruppenleistung unterschiedlich beeinflussen. Ich schlage darum vor, diese Individuell-Kollektiv-Unterscheidung auch für das Zielstreben zu treffen (Proposition 2). Gruppenmitglieder können sich also während des Zielstrebens auf sich selbst beziehen (individuelles Zielstreben) oder auf die Gruppe beziehen (kollektives Zielstreben). Aus diesen zwei Propositionen folgt mein Arbeitsmodell des Zielstrebens

in Gruppen mit Implementation Intentions (Goal Striving in Groups with Implementation Intentions, GSG-II): Gruppen können mit oder ohne Implementation Intentions und individuell oder kollektiv Ziele verfolgen. Da Implementation Intentions (II) sich auf das Individuum beziehen, folgt aus diesem Modell ein neuer Typ Plan, der sich auf die Gruppe bezieht: *collective Implementation Intentions* (cII, z.B. *Wenn Situation X eintritt, dann zeigen* wir *Reaktion Y!*). Die vorliegende Arbeit untersuchte die Vorhersage, dass cII Gruppenleistung verbessern, wenn das Zielstreben in Gruppen Hindernissen gegenübersteht.

Überblick über die Experimente

Sechs Experimente testeten die Vorhersage, dass cII Gruppenleistung verbessern, wenn Hindernisse des Gruppenzielstrebens bestehen. In allen Experimenten wurden cII Bedingungen etabliert, indem Gruppenmitglieder angeleitet wurden, sich einen Wenn-Dann-Plan, der sich auf die Gruppe bezieht, zu fassen. In allen Experimenten (mit Ausnahme von Experiment 2) wurde eine Kontrollbedingung mit kollektivem Ziel, aber ohne cII etabliert, um die Vorhersage zu testen, dass cII Gruppenleistung im Vergleich zu kollektiven Zielen verbessern; in allen Experimenten (mit Ausnahme von Experiment 5) wurden weitere individuelle Bedingungen mit und ohne II etabliert, um die Beziehung von II und cII zu untersuchen. Die Aufgaben wurden so gewählt, dass sie jeweils einem von drei bekannten Hindernissen der Fortsetzung des Zielstrebens gegenüberstehen, und eine jeweils passende Handlungsstrategie (Suppression, Aktion, Priorisierung) wurde in die verschiedenen Plan-Formate gefasst. Da der Aufgabentyp die Gruppenleistung beeinflussen kann, wurden Aufgaben anhand von zwei gut etablierten Taxonomien systematisch variiert (Steiner 1972, McGrath, 1984).

Experiment 1

In einer interdependenten Persistenz-Aufgabe wurde vorhergesagt und gefunden, dass Suppressions-cII und -II helfen, Muskelschmerzen zu ignorieren. Analysen der verbalen Interaktion während der Aufgabendurchführung zeigten, dass cII Gruppeninteraktion intakt ließen, II aber die Gruppeninteraktion unterdrückten. Da sowohl II als auch cII die Gruppenleistung verbesserten, deutet dies darauf hin, dass II tatsächlich individuelles Zielstreben und cII kollektives Zielstreben unterstützten.

Experiment 2

Um diese Annahme weiter zu testen, wurden in Experiment 2 die Aufgabenanforderungen manipuliert: Gruppen konnten entweder miteinander sprechen oder nicht. Die Ergebnisse zeigten den erwarteten Passungs-Effekt:

Während cII zu besserer Leistung führten, wenn verbale Kommunikation möglich war, führten II zu besserer Leistung, wenn verbale Kommunikation nicht möglich war. Dies unterstützt die Annahme, dass sowohl individuelles als auch kollektives Zielstreben in Gruppen möglich ist, beide Arten von Zielstreben aber auf unterschiedlichen Prozessen beruhen.

Experiment 3

Es stellt sich nun die Frage, ob cII auch dabei helfen, Probleme auf der Gruppenebene zu meistern. Gruppennormen können ein solches Problem darstellen, da Menschen sich oft nicht des Einflusses von Normen auf ihr Verhalten bewusst sind (Nolan, Schultz, Cialdini, & Goldstein, 2008). In Ideengenerierungsaufgaben ist eine kollektivistische Norm hinderlich (Goncalo & Staw, 2006), was kollektives Zielstreben erschweren sollte. Experiment 3 untersuchte deshalb Aktions-II und -cII im Vergleich zu jeweiligen Kontrollbedingungen in einer Ideengenerierungsaufgabe. Tatsächlich entwickelten Gruppenmitglieder mit kollektiven Zielen weniger Ideen (Gebrauchsmöglichkeiten eines Messers) als Gruppenmitgliedern mit individuellen Zielen. Wie vorhergesagt bestand dieser Unterscheid jedoch nicht in den Implementation-Intention-Bedingungen: cII verbesserten die Gruppenleistung auf das Niveau von II. Jedoch wurde keine weitere Verbesserung von II gegenüber individuellen Kontrollinstruktionen beobachtet. Das könnte damit zusammenhängen, dass das Ziel, viele Ideen zu generieren, für individuelles Zielstreben einfach ist und so auch ohne Wenn-Dann-Pläne erreicht wird.

Experiment 4

Um diese Annahme zu testen, wurde in Experiment 4 eine weitere Kontrollbedingung etabliert, in der die Teilnehmer ein nicht-relevantes Ziel fassten. Sollte individuelles Zielstreben auch ohne Wenn-Dann-Plan erfolgreich sein, sollte sich im Vergleich zur Kontrollbedingung eine Verbesserung der Zielerreichung zeigen. Weiterhin sollten cII zu einer besseren Leistung führen als kollektive Ziele ohne cII. In einer Impulsshoppingaufgabe, bei der die Peer-Norm sich zu verwöhnen einem Sparziel entgegensteht, bestätigten sich diese Annahmen.

Experiment 5

Um die Prozesse, die für den cII Effekt verantwortlich sind, weiter zu untersuchen, wurde Experiment 5 durchgeführt. Zum einen wurde dazu der Planinhalt noch differenzierter manipuliert: Teilnehmer fassten entweder cII (Aufgaben-relevante Strategie im Wenn-Dann Format), erhielten die aufgabenrelevante Strategie ohne Wenn-Dann Format oder Aufgaben-Informationen im Wenn-Dann Format, die jedoch keine zielführende Strategie darstell-

ten. Zudem wurden Vergleichsgruppen etabliert, die keine negative Norm hatten. Tatsächlich verbesserten cII im Wenn-Dann Format das Einkaufsverhalten bei einem simulierten Supermarkt-Einkauf am meisten, was dafür spricht, dass sie eine Wenn-Dann Verknüpfung herstellen. Zudem verbesserten cII auch die Leistung in Gruppen ohne hinderliche Norm. Dies spricht dafür, dass cII tatsächlich Zielstreben unterstützen und nicht Gruppennormen ersetzen.

Experiment 6

Abschließend wurde untersucht, ob cII tatsächlich selektiv Ziele der Gruppe unterstützen. Man könnte annehmen, dass cII dazu führen, alle eigenen Ziele aufzugeben und sich jedem beliebigen Kollektiv unterzuordnen. Andererseits geht das GSG-II davon aus, dass cII selektiv kollektives Zielstreben unterstützen. Im Einklang mit dieser Vorhersage führten cII zu mehr kooperativem Verhalten in einem ökonomischen Dilemma-Spiel, wenn der Mitbewerber ein Gruppenmitglied war (also das kollektive Kooperationsziel erreicht werden konnte), jedoch nicht, wenn es sich um ein Nicht-Gruppenmitglied handelte (also das kollektive Kooperationsziel nicht erreicht werden konnte). Dies spricht dafür, dass cII eine ziel-spezifische Wenn-Dann Verknüpfung schaffen. Tatsächlich generalisierte der cII Effekt auch nicht auf ein strukturell identisches, jedoch anderes Vertrauens-Spiel (Trust Game). Somit konnte gezeigt werden, dass cII weder zu unspezifischem, noch zu generellem gruppenbezogenem Vertrauen führen, sondern tatsächlich eine situationsspezifische Wenn-Dann Verknüpfung für kollektives Zielstreben schaffen.

Diskussion

Somit zeigt die vorliegende Arbeit, dass Gruppenleistung mit Hilfe kollektiver Wenn-Dann Pläne (cII) verbessert werden kann. Wie individuelle Wenn-Dann-Pläne scheinen auch cII eine spezifische Situations-Reaktions-Verknüpfung herzustellen, unterstützen selektiv (kollektive) Ziele, und helfen so, Probleme des Zielstrebens zu meistern. cII waren über Aufgabentypen hinweg effektiv.

Die vorliegende Forschung zeigt also, dass geplantes Zielstreben nicht alleine ein individuelles Phänomen ist, sondern sich auch auf die Gruppe beziehen kann. Diese Erkenntnis leistet einen Beitrag zu Handlungspsychologie, die sich zumeist auf Individuen bezieht. Auch zur Gruppenforschung leistet dies einen Beitrag, da Gruppen ihr Leistungspotential oft nicht ausschöpfen (Larson, 2010). Mithilfe von cII können Gruppen und Teams ihre Leistung verbessern und so schlummernde Potentiale nutzen.

Zur Anwendung kommen könnten cII in Arbeitsgruppen, der Konsumenten-Forschung, oder in Selbsthilfegruppen. Zwar liegen bisher wenige Felddaten zu cII vor, jedoch wurden II erfolgreich in etlichen Anwendungsgebie-

ten getestet. Auch cII könnten so im Feld und in der Anwendung effektiv sein—eine Annahme die zukünftige Forschung überprüfen sollte. Abschließend zeigt die vorliegende Arbeit, dass gruppenbezogene Wenn-Dann-Pläne die Zielerreichung verbessern und so schlummernde Leistungspotentiale ausnutzen können.