Are groups more or less than the sum of their members? The moderating role of individual identification

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Abstract: This paper seeks to make a theoretical and empirical case for the importance of differentiated identities for group function. Research on groups has found that groups sometimes perform better and other times perform worse than the sum of their individual members. Differentiation of selves is a crucial moderator. We propose a heuristic framework that divides formation of work or task groups into two steps. One step emphasizes shared common identity and promotes emotional bonds. In the other step, which we emphasize, group members take increasingly differentiated roles that improve performance through specialization, moral responsibility, and efficiency. Pathologies of groups (e.g., social loafing, depletion of shared resources/commons dilemmas, failure to pool information, groupthink) are linked to submerging the individual self in the group. These pathologies are decreased when selves are differentiated, such as by individual rewards, individual competition, accountability, responsibility, and public identification. Differentiating individual selves contributes to many of the best outcomes of groups, such as with social facilitation, wisdom-of-crowds effects, and division of labor. Anonymous confidentiality may hamper differentiation by allowing people to blend into the group (so that selfish or lazy efforts are not punished), but it may also facilitate differentiation by enabling people to think and judge without pressure to conform. Acquiring a unique role within the group can promote belongingness by making oneself irreplaceable.

Keywords: accountability; brainstorming; groups; group process; identity; self; social facilitation; social loafing

Research and theory about the self developed over many years, largely independently of research and theory about groups. When theorists occasionally would seek to merge group theory and self theory, the focus was generally on the group self, as in shared group identity. In this manuscript, we make a case for the value of *differentiated* selves: Groups benefit greatly from differentiation of selves. The emergence of human selfhood might have been shaped by selective adaptation for playing an individual role in a group.

Allport (1924) wrote, "There is no psychology of groups that is not essentially and entirely a psychology of individuals" (p. 4). The point of departure for this manuscript is that Allport's assertion is fundamentally, even outrageously, wrong. In our view, the relationships among individuals are not fully reducible to properties of the separate individuals. On this, we think we are in good company (see Asch 1952; Lewin 1952; Mead 1934; Sherif 1936). Economic marketplaces cannot be reduced to the acts and choices of individuals; they comprise complex interactive systems.

Much of social psychology's long tradition of research on groups has emphasized that groups are different from and more than the mere aggregate of their individual members. Selves thus do not constitute the group but rather play roles within the group's system. And differentiated roles make more powerful and effective systems.

A careful reading of the literature on groups yields not one but two thematic traditions denying that a group is equal to the sum of its parts. Unfortunately, their themes contradict each other. One line of work, dating back at least to Le Bon's (1896/1960) depiction of the group mind, depicts groups as generally worse than individuals acting alone. The other, whose exponents include the seminally influential economist Adam Smith (1776/1991), extols how groups produce and achieve far more than collections of independent, isolated individuals ever could.

The tension between these two traditions was apparent in two of the earliest works in social psychology. Triplett (1898) observed and then confirmed empirically that people performed better in a group than when alone, in

such domains as racing bicycles and winding fishing rods. Not much later, Ringelmann (1913b; see also Kravitz & Martin 1986) observed and confirmed empirically that people performed worse in groups than when alone, such as when pulling a heavy load together. Research in the modern era has continued to yield findings of both sorts, namely that being in groups sometimes makes people work harder and perform better but sometimes makes them slack off and perform worse than when alone.

In this manuscript, we propose, first, that both traditions of group research have valid points and important findings. It is quite true that sometimes groups are better than the sum or average of their parts – and in other cases they are far worse. Second, we shall propose the hypothesis that the difference can be explained largely on the basis of differentiation of individual selves. That is, groups surpass individuals when members of the group are individually identified and responsible, and when they contribute as distinct entities. Meanwhile, the worst outcomes of group processes come when individual identities are submerged in the group. By *submerged in the group*, we mean any of the following: People are held neither accountable nor responsible, they are not in competition or playing a distinct role, and they are not publicly identified or rewarded. It is a loss of individual or collective awareness of how group members differ from each other. Submersion of the self into the group is thus the opposite of differentiation.

An exhaustive review of all relevant work may be impossible – and certainly is impossible within the length constraints of journals such as this. Hence, our review is admittedly incomplete and selective. We reiterate that we seek to make the case for a theoretical position, and we welcome commentaries that provide alternate theories and additional evidence.

1. Theory: Why groups differentiate selves

People generally live in interacting groups, and they have done so everywhere on earth and throughout history. Groups confer benefits to individuals and can accomplish things that loners cannot. Groups also extract sacrifices. Group systems require individuals to set aside some self-interest, but members are tempted to pursue self-interest at group expense. Hence, group benefit depends on overcoming selfish desires so that people cooperate and contribute rather than free-ride or cheat. To be sure, the motivations of individual group members may vary from prosocial to selfish, as well as from eager for information to indifferent (De Dreu et al. 2008). Managing the diverse and sometimes problematic motivations of individual members is often key to a group's success.

Two classes of reasons beyond self-interest will motivate people to contribute to group welfare, even at cost to themselves. First, if they love the group or identify passionately with it, they will want to advance its welfare and derive satisfaction from doing so. Second, they may contribute because the other group members put pressure on them to do so, such as by material incentives (e.g., rewards, punishments) and social incentives (e.g., moral reputation, laws). The second set of reasons thus reverts to appealing to the individual's self-interest and aligning it with pro-group, prosocial behavior.

Some readers may regard the distinction between group goals and individual goals as artificial because groups consist of individual members and cannot really have motivations except in the minds of its members. Discussion of group goals is shorthand for saying that individual goals, right down to survival and reproduction, are facilitated by participation in groups, but achieving the benefits of groups often requires efforts, contributions, and sacrifices by individual members. Maximum individual advantage can be attained by sharing in group benefits without contributing, but if all members follow that strategy, there will be nothing to share. Groups therefore confer their advantages (and prevail over rival groups, thus also benefiting members) insofar as they motivate people to contribute, even to the short-term detriment of individual selfish goals.

1.1. Two complementary steps

The emergence of group activity can be divided heuristically into two steps. The first step involves the simple advantages of being in a group rather than alone. Belonging to the group is sufficient to furnish benefits that include collective vigilance, sharing of resources and information, and competitive advantages. Cohesiveness is a high priority for the group because it keeps members loyal and motivated to work with the group. The individual's goal is acceptance. Differentiation is not as important as shared identity at this stage.

The second step, our main focus, involves role differentiation. Role differentiation creates advantages and opportunities. It is no accident that all large corporations, governments, sports teams, and other such groups rely on

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it extensively. Larger groups permit more differentiated systems. Although animal groups may have some role differentiation, animal sociality does not have organizations with anything approaching the differentiated specializations found in a large (or indeed even a small) corporation or university.

Our account of these heuristic steps bears some resemblance to Tuckman's (1965) theory of group formation. He proposed that all groups require a "forming" stage, where acceptance and agreement are emphasized. This is followed by a "storming" stage, emphasizing differences and disagreements.

One key difference between the steps is whether the group functions mainly on the basis of how the various members are the same versus different. The benefits of shared group identity have been the focus of much theory and research, especially under the aegis of social identity theory (e.g., Hogg et al. 2004; Turner & Tajfel 1982). We seek to complement that work with an elucidation of the benefits of differentiation. Differentiation in this sense involves being individually identified and/or performing a distinct role as part of a system. Indeed, the effectiveness of the system may be based on different selves playing different roles. Differentiation should facilitate the gains drawn from systems as well as moral control of individuals by the group.

Role differentiation is thus not merely difference for the sake of difference but rather difference for the sake of facilitating systems. We use the term *system gain* to refer to the margin by which the members of a systematically organized group can achieve better results than the same number of individuals working together but without a system. A group may consist of various talented individuals who come together to compete against others in a battle, marketplace, or sports arena. That same group would be more likely to succeed, however, if they adopted a system that fosters performing complementary roles. The difference is system gain.

The crucial point is that system gain depends on differentiated selves. System gain capitalizes on members performing different roles. Specialization increases efficiency (individuals gain skill at their specific tasks and do not have to learn or perform other tasks) and quality (everything is done by an expert) (Smith 1776/1991). In contrast, if everyone is the same and does the same things, that is hardly a system, and there will be no system gain. Differentiation underlies many features of groups that will figure in our literature review, including accountability and evaluation, responsibility, indispensability, and independent judgment.

The second step thus builds on the first. Although both steps (cohesive identification and differentiation) can occur at any point, we think there would generally be a sequence. The benefits of a cohesive group may occur quite early in group formation. Passionate commitment to the group (the first step) may motivate people to do their best in the short run, but in the long run it will almost certainly be useful for the group to hold individuals responsible for their actions, and so differentiation is needed.

Crucially, the individual's goals change at the second step. Merely securing acceptance is no longer sufficient. Being similar to everyone else and being a moral actor are key to the first step (gaining acceptance), but performance of individual, differential roles is key to the second. Hence, being different may become an important strategy in service of belongingness: A group cannot afford to lose a member who performs a unique function for the group, and so acquiring a unique skill can make someone indispensable. Being liked may be sufficient for the first step (gaining approval), whereas earning respect (by competent, ethical performance) becomes important at the second step.

The assertion that people have both a motivation to be different and a motivation to be the same as others in the group is the centerpiece of Optimal Distinctiveness Theory (Brewer 1991; 2012). The present approach acknowledges its debt to that theory and proposes one substantial change. In Optimal Distinctiveness Theory, the differentiation motive is postulated as something that requires no further explanation but is also linked to not being included in the group (Brewer 1991, p. 477). The implication is that people want to be close but not too close to others, and so they increase or decrease their conformity to gain acceptance or gain distance, respectively. In an important sense, then, the motive to differentiate is treated in that theory as going against the need to belong. This view has been preserved in many other influential theories about group processes (e.g., De Dreu et al. 2008; Hinsz et al. 1997). In contrast, we regard differential individuation as a strategy to *promote* belongingness.

1.2. Forestalling potential misunderstandings

It is useful to distinguish two main kinds of group tasks: productive achievement and information use (e.g., sharing and accumulating knowledge, group decision-making). Both can benefit from differentiated selves, but the role of group control is different. When productive achievement costs effort or other resources, groups benefit from public differentiation, which lets them monitor individual efforts and hold people responsible, such as by rewarding high contributors and punishing slackers and cheaters (Leary & Forsyth 1987). For informational tasks, private differentiation benefits the group by promoting individual thought and judgment, whereas group control promotes conformity and undermines independent thinking.

Anonymity is thus not the opposite of differentiation and at times can even facilitate it. Anonymity protects individuals from being controlled by the group. For informational tasks, such as voting, anonymity can help ensure independence of judgment. However, in performance contexts, anonymity may detract from good group outcomes by protecting free riding and other selfish, antisocial acts.

Selfishness is not the same as human selfhood and in fact long precedes it. Selfishness is rooted in the very nature of life, insofar as every living organism delineates a boundary between itself and its environment. It lives or dies as a totality, and its motivations are designed by natural selection to promote and prolong its life (plus kin and offspring). Human selves have this same selfish core – alongside additional features that enable them to overcome this natural selfishness if there are good reasons to do so. The desire to achieve social acceptance within a group may provide just such a reason.

1.3. Moral control in large groups

Groups benefit insofar as individuals follow the rules and do what is best for the group – that is, groups benefit from

moral behavior. The first step, identifying with the group, can motivate people to do what is good for the group, and so it can yield some improvement in moral behavior. With the second step, however, the group can exert control over individuals by holding them accountable. Thus, the first step relies on inspiration and voluntary self-sacrifice to improve moral quality, which can be effective at times, especially when there are strong emotional bonds. The second step enforces moral behavior by rewarding virtue and punishing vice, and so in the long run it is likely more effective than the first at promoting moral behavior. The sequence is evident in macrosocial trends. Friedman (2002) pointed out that moral rules and laws generally promote quite similar behaviors, but the motivational basis changes as societies evolve. In small groups characterized by stable relationships based on emotional bonds, people care about each other and reputation, and so people are motivated to act morally. As society grows larger and interactions with strangers increase, the (weaker) emotional ties become inadequate to ensure good behavior, and so moral suasion is replaced by law enforcement.

We assume competition among groups has been an important factor in human evolution. Successful competition depends on size and system. In many competitions, larger groups tend to prevail. Primitive battles were generally won by the larger group (e.g., Morris 1965), and achieving numerical superiority has been a major goal of modern military efforts, too. In fact, many major wars have ended with twice or three times as many soldiers under arms as began the war (Hubbard & Kane 2013) – despite extensive casualties.

As groups became larger and more evenly matched, a second factor, role differentiation, provided powerful advantages (e.g., McNeill 1982). This is the crux of our model: Groups do best when they start by developing commitment and identification in a group of individuals and then move to instantiating and emphasizing distinct identities and roles, especially as the group gets larger.

An authoritative review by Levine and Moreland (1990) concluded that most factors that make groups effective and satisfying deteriorate as group size increases. On that basis, one might anticipate that people would eschew large groups, whereas in empirical fact historical progress has seen gradual increases in operative group size. Large groups must thus have some compelling advantages – yet they also must become able to function without some of the motivational processes found in small groups. These advantages may derive from simple numerical advantage (e.g., more warriors on the battlefield), but many depend on differentiation. Large groups can provide much more differentiation and specialization than can small groups. Hence, large markets, large universities, and large corporations have advantages over smaller ones, especially in terms of greater specialization. Both informational and performance goals are served by having many individuals contributing their unique talents, knowledge, and expertise.

The emphasis on differentiation thus may come after initial drives for acceptance, partly because of the tendency for successful groups to grow larger and less intimate over time. It is well established that in large groups, feelings of social connection are weaker than in small groups (e.g., Levine & Moreland 1990; Mueller 2012). A larger group is therefore more likely to have slackers and other rule breakers, and so individual identification is useful for motivating people with rewards and punishments.

An example from ancient Chinese history helps illustrate our two-stage model. At one point, ten-thousand (!) independent political domains consolidated into seven. According to Fukuyama (2011), this was accomplished mostly by larger groups conquering and integrating their smaller neighbors (so having many members was decisive for group success). The ensuing process by which the seven merged into one China was dominated by the complex administrative and military systems using extensive role differentiation developed by the Qin (so system gain was decisive).

2. Review of evidence

We turn now to a presentation of research findings. Our central hypothesis is that groups will produce better results if the members are individuated than if their selves blend into the group. We posited that being identified with and accepted into the group is essential in the initial stages. Self-sacrifice for the group's goals can come at this stage, following from commitment to the group. Later, the group will be successful to the extent that it fosters individuality.

The section first addresses the two main types of group process: group task performance (2.1) and then informational processes (2.2). Following this, two further sections examine the broader question of group moral control (2.3) and then evidence about the two-step sequence (2.4).

2.1. Task performance

2.1.1. Social facilitation. Social facilitation largely involves improvements in effort and performance caused by the presence of others. To be sure, sometimes the mere presence of others impairs performance, especially when complex, poorly learned tasks are involved (Zajonc 1965). But such tasks mainly require skill, and there is little a group can do in the short run to improve skilled performance. Performance gains are presumably based on increased effort. These fit our theme that groups seek to control individuals and improve their performance by means of identifying them individually so as to incentivize effort.

Several factors amplify social facilitation: individual identification, accountability, and anticipated evaluation (which motivates the desire to be favorably regarded by others) (for reviews, see Bond & Titus 1983; Geen & Gange 1977; Guerin 1986). These are possible only based on identifying people individually.

Competition pits individuals against each other and thus invokes evaluation, accountability, and other hallmarks of individuality. VanTuinen and McNeel (1975) showed that performance improved with explicit competition but not when participants merely worked together. In another condition, performance improved based on a cash incentive despite working alone. Thus, improvement stemmed either from competing against someone or from working as an individual for a contingent reward. Both differentiate the self (to compete and to seek individual reward).

Many studies have provided evidence that one reason performance improves in the presence of others is that

people want to perform well so others will think well of them (evaluation apprehension; Cohen & Davis 1973; Feinberg & Aiello 2006; Henchy & Glass 1968; Martens & Landers 1972; Rajecki et al. 1977). Good (1973) showed that performance improved when participants were told that the experimenter (as opposed to a computer) would evaluate their performance. In a further twist, Good found that only participants who had been led to expect a favorable evaluation showed the performance improvement, which suggests that expecting an unfavorable evaluation can wipe out the gains from evaluation apprehension (see also Bray & Sugarman 1980; Green 1979). (Thus, perhaps *evaluation optimism* rather than *evaluation apprehension* would be the more precise term for what causes performance to improve.)

Evaluation by others, rather than self-evaluation, appears to be crucial for social facilitation (Szymanski et al. 2000). Thus, social facilitation is about the self as seen by others. Bond (1982) showed that performance is not simply a matter of arousal and item difficulty – rather, it depends on the composite image of self that one thinks is being communicated in that situation. He showed that when easy items were embedded in a set of mostly difficult items, performance was impaired even on the easy ones. Conversely, when a few difficult items were embedded in a mostly easy problem set, performance was unimpaired.

The Köhler effect is the change in performance due to a person's awareness of its impact on others: The least-capable member of the group sometimes performs better in the group than he or she would if performing alone (Köhler 1926). Swimmers and track athletes often do better as part of relays than when alone, with gains found mainly among the weaker members (Hüffmeier & Hertel 2011; Osborn et al. 2012).

To summarize: The idea that people perform better in groups is one of the fundamental arguments for the value of groups, and so social facilitation is likely adaptive. Crucially, however, these benefits occur mainly when people are individually identified and motivated to care about how others will evaluate them – consistent with the view that differentiated selfhood facilitates group function.

2.1.2. Social loafing. Social loafing is the tendency for people to reduce effort when in a group. The reduction of effort produces an overall loss of output, because the members of the group do poorer work and produce less than they would produce individually. Ringelmann (1913b) first verified a drop in performance in the context of teams of men pulling together with less force than the sum of their individual efforts. With methodological refinements, Latané et al. (1979) replicated the phenomenon: Participants worked harder when alone than when part of a group. Latané et al. found loafing even when people actually performed alone but merely believed they were part of a group. Williams et al. (1981) showed that identifying people individually eliminated social loafing.

The theory of social loafing derived from earlier work on diffusion of responsibility, a pattern by which the pressure to take action is divided among the group members (Darley & Latané 1968). Being anonymous, so that one's identity is submerged in the group, increases the tendency for everyone to leave difficult or risky jobs for someone else (e.g.,

Schwartz & Gottlieb 1976; 1980). The larger the group, therefore, the more diffusion of responsibility.

A meta-analytic review by Karau and Williams (1993) confirmed that social loafing is reduced by making people identifiable, especially when individual evaluation is possible. Also, social loafing is reduced by giving people nonredundant roles in the group (i.e., indispensability), so that one member's lack of contribution will not be offset by another member's performance. Karau and Williams proposed that social loafing depends on people's appraisal of how much the group performance depends on their own contribution, how much group outcomes depend on group performance, and how much the individual will benefit from the group's performance and outcomes. People work hardest when they believe their individual effort contributes to outcomes that benefit both the group and the self (also Karau & Williams 1995). For example, Weldon and Mustari (1988) provided evidence that social loafing occurs mainly when people believe their contribution to the group is dispensable. Likewise, they found that feeling that one's own work is indispensable could motivate high effort and good work even when one is anonymous.

Evidence for the importance of moral control was provided by work on perceived procedural fairness (De Cremer et al. 2012). Leaders often punished the least-contributing member of the group. Such practices communicate to group members that their behavior is being individually tracked. Group performance improved as a result of this sort of legitimate individuation and punishment.

In sum, the social loafing literature confirms the general pattern that group performance is harmed when people feel submerged in the group and improved when group members are individually identified. It also shows that people perform well when they have unique roles and make contributions they regard as indispensable. These fit the main themes of our theory. Individual identification facilitates responsibility and accountability, thus putting moral pressure on individuals to behave well. Indispensability involves differentiating members' roles, which is useful for groups that have complex systems. There are certainly ample signs of the first step of group work: Caring about the group and identifying with it reduce social loafing. But differentiation improves the group's ability to motivate people to exert themselves on behalf of group goals.

2.1.3. Division of labor. Division of labor is one powerful process by which individual differentness can improve outcomes via system gain. Adam Smith's (1776/1991) classic treatise on economics began by discussing the benefits of division of labor in a pin factory. Division of labor enabled the factory to produce far more pins than a comparable number of individuals working separately. Babbage (1832) explicated the monetary savings to an organization that stemmed from extending division of labor to subtasks. Artisans who built entire products needed a wide range of skills and hence were expensive. Dividing the task into segments, each performed by a different person with a narrow skill set, reduced labor costs considerably while also improving quality (because of specialization). Thus, seemingly paradoxically, a collection of individuals with relatively limited skills could outperform a collection of experts who did not specialize.

The benefits of division of labor are now widely accepted. Without it no large organization could be successful. West (1999) compared flute manufacturing at two factories that were quite similar except that one used a 19-step division of labor whereas the other had no division of labor. Productivity was almost four times higher with than without division of labor. Another study with a Japanese bank found improved performance due to specialization, which is another aspect of division of labor (Staats & Gino 2012).

Although division of labor is mainly a topic for other disciplines, such as economics and sociology, psychology has made some useful contributions. Research on transactive memory has found that groups remember things better insofar as they assign various members to specialize in remembering different things (Wegner 1986). A meta-analysis, including studies of actual organizations and ongoing workgroups in business, sports, and military combat, found that performance was indeed substantially improved insofar as group members specialized in their knowledge and kept track of who knows what (DeChurch & Mesmer-Magnus 2010). Crucially, they found that the benefits of differentiation tended to emerge over time, which is consistent with our two-step model. Shared identity is crucial in the first stage and promotes quick gains, whereas differentiation improved performance over the long run.

That groups spontaneously seek to divide labor so as to maximize outcomes was suggested by Chatman et al. (2008). They showed that when a group contained only one member of a particular gender, others deferred to that person on tasks relevant to that gender, and the person's performance improved. Thus, having an individual identity within the group that marks one out as likely to be good at something causes one be accorded something like expert status on that task, as reflected in being treated as a leader – and it improved performance of the differentiated person.

The benefits of division of labor arise not just from having different people do different things but also from coordinating them into an integrated system. Specialized expertise at making one part of a flute is useless unless there are other specialists who make the other parts. A group performance study (Stasser et al.1995) used a hidden profile mystery task in which the solution was known only when the group integrated information possessed by different members. The best performance came from groups in which members knew which other members had which kinds of relevant information. The researchers concluded that cognitive division of labor requires group members to know who knows what. This is relevant to our theme that the benefits of the group require that members know each other's differentiated identities within the group.

A field study at several call centers in India manipulated the initial training to emphasize either trainees' individuality and unique potential contribution, the greatness of the organization, or skills training (neutral control group) (Cable et al. 2013). Individual differentiation yielded the best results, both in terms of performance (measured by customer satisfaction) and staying with the organization over six months. A laboratory study yielded similar results, with performance, retention (returning for a second session), and subjective engagement highest among those whose initial instructions had emphasized individual, unique contribution rather than emphasizing being part of a group that already does wonderful things. In this case, at least, being different was more motivating than being the same.

In sum, division of labor is one of the founding principles of economic organization and human group performance because it confers huge benefits on most task performance. Division of labor is a paradigmatic example of system gain, and it is essentially based on differentiated selves who perform distinct, yet complementary, tasks. Its benefits are especially pronounced when members know who will do what and trust each other to follow through.

2.2. Information, judgment, decision

We turn now to reviewing phenomena related to the informational function of groups. Thinking in groups differs from thinking by individuals, for example, in being simpler and more homogeneous (Hinsz et al. 1997). Le Bon's (1896/1960) characterization of the group mind as primitive and irrational provided an influential statement of the pessimistic view that groups are less intelligent than individuals. Optimism is, however, apparent in many quarters, not least in the endless proliferation of committees in all institutions.

2.2.1. Pooling information for group decisions. Work by Stasser and colleagues (e.g., Stasser & Titus 1985; 1987) cast doubt on the value of committees. Their studies used the hidden profile research design: Certain information is given to individual members, other information is given to the group as a whole. Stasser et al. gave a large amount of information favoring one position "privately" to many individual group members. For the group as a whole to accurately gauge the strength of this position, all members needed to reveal the information they possessed. On the other hand, less support for the contrasting position was provided, but this information was given "publicly" – that is, to the group as a whole. The primary rationale for having committees is that members can pool their various knowledge to produce a full picture (i.e., reveal the hidden profile). Unfortunately, the usual finding has been that group members talk about the information they all have in common, and the individually held bits of information get left out of the discussion and decision-making processes. Hence, committees make inferior decisions because they fail to capitalize on the differentiated knowledge of individual members (Stasser 1999; Wittenbaum & Park 2001; Wittenbaum & Stasser 1996).

A meta-analysis by Lu et al. (2012) confirmed that these effects are quite large. Groups talked about shared information far more than individually held information. The larger the group, the more members focused on what information they had in common and the more that tendency degraded the quality of the decision. In short, hidden profiles generally remained hidden, especially in larger groups.

We have observed that groups often treat cohesion as a goal. Although cohesion may seem especially desirable when consensus is sought, it does not necessarily improve the quality of group decisions. If group members know there is dissent among them, they become more likely to bring up their unshared knowledge, improving the quality of group decision (Brodbeck et al. 2002). More broadly, research on minority influence has shown that a persistent minority can stimulate the majority to think more carefully

about the issue facing the group, thus ultimately improving the group (Nemeth 1986). Disagreeing minorities may thus reduce cohesion (by undermining consensus), but in the long run they can facilitate better information and decision-making processes.

Indeed, the mere fact of dissent seems to improve decision quality, even if the dissent consists wholly of advocating different non-optimal options. Schulz-Hardt et al. (2006) showed the positive effect of dissent nicely, instructing three-person groups to make a hiring decision among four candidates. When group members started out arguing between two non-optimal candidates, they talked long enough to allow the hidden profile (favoring a third candidate) to emerge. Nemeth (1986) also found that dissenting minorities could benefit the group even if the majority were not won over to the minority's view because the majority would respond to dissent with divergent thinking and thereby might discover new facts and options. The value of differentiated selfhood is therefore not restricted to cases in which a minority advocates the best answer – differentiation helps even if no one initially advocates the best answer.

2.2.2. Brainstorming.

The purpose of brainstorming is to generate creative ideas. The practice was first developed in advertising agencies (see Osborn 1953). In brainstorming, group members share insights and ideas, stimulating each other toward more creative output.

In general, the early enthusiastic reports of brainstorming's effectiveness were followed by a mass of sobering data that repeatedly found brainstorming groups produced fewer and lower-quality ideas than the same number of individuals working alone (for meta-analysis, see Mullen et al. 1991). These results could be a result of social loafing or to reduced effort on the part of members who feel their contributions are not unique – or even that those contributions may be dispensable.

Early rules for brainstorming groups prohibited criticism. In practice, members did sometimes criticize each other, and this was regarded as a deterrent to productivity. Recent work, however, suggests that the performance of brainstorming groups actually improves when people criticize each other (Nemeth et al. 2004). Thus, again, differentiating individual identities appears to improve the performance of groups.

2.2.3. Conformity.

One finding that stimulated conformity research came from Asch's (1952) research, in which participants provided answers that were clearly false if those answers were given by all other members of the group (who were confederates of the researchers). A review by Bond and Smith (1996) upheld the basic finding and concluded that conformity is higher to the extent that people are emotionally invested in the group and wish to maintain cohesion. Deutsch and Gerard (1955) showed that when pressure to conform was reduced by offering anonymity, members were more likely to express their individual opinions: Anonymous members therefore made fewer mistakes than identified ones. Being identified to someone outside the group (i.e., the experimenter) also improved accuracy. Increasing the pressure for conformity, however, heightened the tendency to agree with the group's false assertion. More recent work has confirmed that people who resist the tendency to conform to the group's opinion can improve

the informational performance of groups (Madirolas & de Polavieja 2014).

The benefits of anonymity for judgment quality contrast with its costs in effortful performance (as the social loafing section showed). Making people anonymous rather than identifiable increased social loafing but improved their willingness to express novel opinions during group decision tasks. In both cases, however, the optimal result depends on getting the person to behave as an autonomous, independent, responsible individual. As we explained in the theory section, anonymity shields the individual from group control, which can facilitate laziness and free riding but also frees people to think and judge independently.

Although early work by Schachter (1951) showed that groups tend to dislike and reject dissenters who espouse opinions at odds with the emerging consensus, dissenters can be extremely valuable in improving group decisions. Schachter (1954) found that some groups even ended up agreeing with the dissenter. But groups often reject a dissenter despite his or her potential value. As we theorized, the first step in group formation involves harmonious relationships to integrate individuals, and the second step improves performance by means of differentiated roles. Dissent may detract from the first even while benefiting the second. Research on minority influence, in particular, has shown that a dissenting minority can improve the thinking of the majority, despite some negative reactions deriving from the initial loss of consensus (Nemeth 1986). Moreover, the negative emotional and interpersonal reactions to dissenters constitute palpable pressure on people to conform – and many do, to the detriment of the group's ability to profit from the diverse perspectives and knowledge of its members. Groups even go as far as ejecting dissenters if given the chance (Schachter 1951; Tata et al. 1996).

2.2.4. Groupthink.

Janis's (1972) influential critique of group cognition and decision-making, under the rubric of *groupthink*, also highlighted the role of dissolving into the crowd. Janis showed how committees and other groups had made costly and seemingly avoidable errors when all members focused their thinking on the same assumptions and information. Having reviewed the literature, Esser (1998) remarked on the contrast between the hundreds of articles that cite groupthink and the relatively few direct empirical tests. Still, she concluded that the theory of groupthink had fared reasonably well empirically, although some factors, such as time pressure and group cohesion, had not played the vital roles the theory had suggested. The general implication is that group decision-making is improved by differentiation and impaired by uniformity.

Some of the relatively poor thinking of groups is likely produced by social loafing, diffusion of responsibility, and the consequent reduction of cognitive effort. Petty et al. (1980) showed that participants put less effort into various evaluative tasks when they were working in groups of 10 or 15 than when alone. Informational input (e.g., quality of argument) had stronger effects on individuals than on groups, and individual evaluations were stronger and more extreme than group ones, again reflecting the pattern of people putting less effort into the decision when they are part of a large group.

2.2.5. Accountability.

Accountability has been defined as the expectation that one may have to justify one's beliefs,

feelings, and actions to others (Lerner & Tetlock 2003; Scott & Lyman 1968; Semin & Manstead 1983; Tetlock 1992). Accountability emphasizes the responsibility of individuals to behave autonomously and present a valid basis for their actions, so it individuates group members. This can help the group succeed even when the motivations of individuals might be counterproductive, such as by being selfish or having low interest in the group's informational goals (De Dreu et al. 2008).

Accountability can overcome some of the informational failures already covered, such as the committee effect. Scholten et al. (2007) improved the quality and accuracy of group decisions by telling participants that they would have to explain the decision process later. De Dreu and van Knippenberg (2005) showed that process accountability (i.e., knowing that one would have to justify how one reached one's decisions) reduced the negative reactions to people who brought up contrary views.

Likewise, accountability can improve the otherwise poor performance of brainstorming groups. When participants expected to have to explain and justify the process of generating ideas, they generated more ideas than in the non-accountable groups (Bechtoldt et al. 2010). Indeed, one procedure that greatly improved the performance of brainstorming groups involved having participants first generate ideas individually and then bring them together to evaluate and combine them (Lamm & Trommsdorff 1973; Mullen et al. 1991). Thus, individualizing the process improved group performance.

Accountability makes people think more thoroughly and carefully about their tasks than they would otherwise. This benefits the group by improving quality. Tetlock (1983) had participants simulate being jurors and form judgments about a defendant's guilt. An irrational (primacy) bias was eliminated by telling participants in advance they would have to explain and justify their decisions. Weldon and Gargano (1988) likewise found that accountability (expecting to have to explain one's ratings and decisions) reduced diffusion of responsibility and social loafing.

A review by Lerner and Tetlock (1999) concluded that only some types of accountability increase mental effort, and moreover that increased effort is not necessarily beneficial. Being accountable to an audience or authority who values accuracy and fair process motivates people to try to be fair, objective, and accurate. But accountability to a biased authority or audience who desires a particular conclusion can increase bias toward that conclusion (Tetlock et al. 1989). Accountability may also increase bias when the biased option is easiest to justify to others. Subsequent work found that sometimes people react to accountability with evasive tactics and buck-passing, so as not to be blamed for problematic stances (Green et al. 2000). Still, in general its effects are beneficial more often than not.

Thus, the general pattern seems to be that accountability makes the person do what the group wants. This motivation is helpful when it leads to more careful and systematic thinking and therefore greater accuracy, but it is detrimental when it leads to embracing the group's biases. Admittedly, classifying those outcomes as helpful versus detrimental rests on assumptions that finding the truth is the supreme goal. Group cohesion and agreement may sometimes be higher priorities than the truth, and certainly many groups have been more interested in supporting their values and ideologies than in an open-minded quest for truth. Such groups might therefore regard accountability as helpful even in some cases that we have labeled detrimental.

2.2.6. Wise groups. Despite the accumulation of findings indicating collective stupidity, it is possible for groups to perform feats of remarkable intelligence. Surowiecki (2004) presented multiple lines of evidence to indicate that the pooled knowledge of individuals can often outperform even experts. In one dramatic study, he compiled data from the television game show *Who Wants to Be a Millionaire?*, on which stumped contestants can consult various helpers. Contestants who asked their favorite expert did fairly well, getting the question right 65% of the time. Surprisingly, however, those who polled the studio audience did better, with a remarkable 91% correct.

How can crowds of individuals outperform knowledgeable experts? Surowiecki (2004) concluded that collective wisdom arises from highly individualized judgments: People make their own choices, largely independent of what everyone else thinks. For example, sports bettors win or lose money based on their individual bets. Groupthink and conformity pressures are minimal and hence unable to influence how an individual votes. Random errors will cancel each other out in a large sample, but if people make similar errors (because of, for example, bias or common intuitive processes) then accuracy will be reduced (Simmons et al. 2011).

The wisdom of crowds is also, clearly, the principle underlying the usefulness of democratic voting by secret ballot. Some evidence has confirmed the benefits of secret voting. Two investigations used random assignment to condition in order to engineer how inhabitants of 299 villages in Afghanistan and Indonesia made decisions on which projects they wanted to pursue as part of a program funded by international nongovernmental organizations. In half of the villages, elites or other representatives made the decisions, whereas in the other half, villagers voted by secret ballot to decide which projects to pursue. The villages were generally unfamiliar with secret ballots, whereas decision by elites had the advantages of tradition and familiarity. Yet large, robust findings indicated that the secret ballot yielded better outcomes, including objectively superior choices, greater satisfaction, and more perceived benefits among the villagers even a year later (Beath et al. 2012; Olken 2010).

Comparison of voting records of people who do versus do not believe that their votes are secret show that those beliefs have effects (Gerber et al. 2013). Labor union members who doubted the secrecy of their votes were less likely to vote against the union's preferred candidates than those who believed their votes were safely confidential.

2.2.7. Conclusion. The intelligence of groups has been much discussed and debated, and replicable examples of both collective wisdom and collective stupidity have been found. The positive outcomes reflecting intelligent, wise decisions, and good, creative problem-solving performance are generally associated with people acting as independent selves, whereas submersion of individual selves in the group produces the negative outcomes. Expecting to be evaluated individually (accountability) and performance of unique, independent roles in the group tend to produce

the best results. Thus, again, groups benefit from the autonomous operation of individual selves.

2.3. Prosocial and antisocial behavior

Thus far, we argued that group task performance and information management are both facilitated by differentiating selves, but the difference depends on implications of group moral control of the individual. Lack of identification frees individuals to misbehave by slacking off on effort tasks but frees them to think individually on information tasks. If public identification facilitates groups' moral control (good for effort management, bad for information and judgment diversity), it should generally push toward more prosocial than antisocial choices. For example, anonymous donations to charity are vastly smaller than identified ones (Satow 1975).

2.3.1. Commons dilemma and other social dilemmas.

Hardin (1968) invoked the "tragedy of the commons" to explain the destructive depletion of commonly held grazing areas. When individuals are responsible for their land and livestock, they maintain their herd and land so that the grass continues to grow back, thereby making the resource sustainable – but when the land is held in common, individuals grow their herd and let it consume freely until the resource is overused to the point that it fails to renew.

Many studies have shown that identification and accountability can improve outcomes in the commons dilemma and similar situations. For example, De Kwaadsteniet et al. (2007) manipulated accountability by telling people that other group members would know how much they took from a renewable common resource pool and by telling them they would have to justify their actions later. Accountability improved the sustainability of the resource and thereby improved the entire group's long-term outcomes. Several studies have shown that the larger the group, the less cooperation and restraint members show, presumably because large groups increase diffusion of responsibility (Messick & Brewer 1983; Orbell & Dawes 1981).

With resource-contribution games, selfishness prescribes not contributing whereas the group benefits if everyone contributes. Cabrera and Cabrera (2002) concluded from multiple studies that publicly recognizing people's individual contributions increased the total contributed. One important aspect of the commons dilemma is that people expect the resource to be depleted despite any restraint on their own part; if one does not take extra resources someone else inevitably will. In other social dilemmas, too, the belief that one's own efforts or contributions can be replaced by others may contribute to making individuals behave selfishly.

There are at least two ways to break this destructive cycle of self-fulfilling expectations of mutual failure. One is to foster the belief among members that they can count on each other to serve the greater good rather than narrow self-interest. De Cremer et al. (2001) showed that people's willingness to restrain themselves and help the group depended substantially on whether they could trust others to do likewise. Both steps in the model are relevant: People may trust others to contribute because the group members share feelings of solidarity and commitment or

because members are accountable and free riders can be found out and punished.

The other antidote to destructive expectations (i.e., that one's lack of contribution will not matter because others will compensate) is to structure the situation so that each person's contribution is indispensable in some way. This pertains to the second step in our model, which highlights the importance of differentiation. Multiple investigations have shown that making individual contributions indispensable can help solve social dilemmas (Kerr & Bruun 1983; Lynn & Oldenquist 1986; Stroebe & Frey 1982; Van de Kragt et al. 1986). Indispensability obviously depends on differentiation: One's role in the group is not unique insofar as one's contribution can easily be replaced by other members.

Indeed, accountability improves prosocial behavior in social dilemmas. People contribute more to the group resource pool if there is a system for punishing free riders (Fehr & Gächter 2002). But such systems are costly to maintain because members must make sacrifices to enforce punishment. De Cremer and Van Dijk (2009) showed that people make more such contributions if they expect to have to justify their actions, as compared to no accountability.

As for trust, research in accounting has suggested that individualized record keeping can enhance it and thereby facilitate system gain. Basu et al. (2009) conducted an experiment with the economic trust game to show that in complex environments, allowing people to keep records of everyone's prior actions increased trust and increased the total yield on investment, thereby enriching everyone. Record keeping enabled mutually beneficial exchanges to increase, whereas defection and exploitation were penalized, thereby improving the moral quality of the social group. The authors extrapolated from their findings to note that in human history, the advent of record keeping (which depends on individual identification and accountability) enabled substantial gains in trade, wealth, and morality.

Some findings indicate that people sometimes do things to benefit the group as a result of feeling personally identified with the group. These findings point to the first step in group formation (developing a common bond), the precursor to our emphasis on role differentiation. The more that members identify with the group, the more they contribute to public goods games (De Cremer & van Dijk 2002; De Cremer et al. 2008). Kramer and Brewer (1984) found that people sustained the resource longer in a commons dilemma game if their collective social identity was made salient (see also Goldstein et al. 2008; Tyler & Degoey 1995).

Various other studies have also shown improved cooperation in commons dilemma and other social dilemma situations as a result of enhancing a sense of group identity (Brewer & Kramer 1986; Dawes et al. 1988; Rapoport et al. 1989). By way of explanation, Van Lange et al. (1992) proposed that "group identity leads to feelings of we-ness and personal responsibility, which enhances self-restraint" (p. 20). De Cremer and van Vugt (1999) proposed that identifying strongly with the group increases cooperation in social dilemmas because people place extra high value on the group's collective project and welfare. They found that increasing group identification improved cooperation mainly among the members who started out oriented

toward self and personal gain. Thus, personally endorsing the group's goals and welfare improved cooperation.

2.3.2. Aggression and mob violence. Riots, football hooliganism, violent protest demonstrations, gang battles, and similar phenomena epitomize some of the worst, most vicious and destructive tendencies of groups. In general, these are characterized by reducing individuality and submerging the self within the group. Le Bon (1896/1960) argued early on that the "group mind" was predisposed to simplistic thinking and violent action. Notions of the group mind led to a flurry of research on deindividuation, defined as a temporary reduction in self-awareness, personal responsibility, and evaluation apprehension, usually brought about by immersing the self in a group. Assorted findings linked the deindividuated state to aggressive, antisocial behavior (e.g., Beaman et al. 1979; Diener et al. 1976; Mann et al. 1982; Nadler et al. 1982; Rogers & Ketchen 1979; Zimbardo 1969). Submersion in the group and loss of differentiated identity has been linked to lynch mob violence and wartime atrocities (Mullen 1986; Watson 1973).

A meta-analysis by Postmes and Spears (1998) concluded that deindividuation was mainly a matter of submerging oneself in the group and thus, following situational norms, such that when the group engages in bad behavior like cheating or stealing, deindividuation increases those tendencies. The primary effect of deindividuation was to reduce accountability, especially in enabling people to take illicit selfish benefits (e.g., cheating, stealing). They also found that problem behaviors increased with group size. All of those points are consistent with our analysis, including their conclusion that deindividuation effects are less a matter of inner states and more a matter of group or mob rule. Deindividuation thus submerges the self in the group, and one may go along with doing harmful, destructive things.

Converging evidence about the aggressive tendencies of group processes can be found in research on the interindividual intergroup discontinuity effect, as reviewed by Wildschut et al. (2003). In laboratory studies with prisoner's dilemma and similar games, groups generally are less cooperative than individuals, in the sense that groups will choose more exploitative moves and fewer cooperative ones than individuals. Behavior becomes more antisocial and less cooperative when people are not being held individually responsible for their actions. In a group setting, individuals can support selfish and aggressive group decisions without taking responsibility, and if challenged they can say that their own support for such actions was simply a reaction to others' initiative. When people are identified, the nastiness of groups (relative to individuals) is mitigated (e.g., Schopler et al. 1995). Likewise, simulated, anonymous jurors tended to make guilty judgments and recommend harsh punishments, but individually identified jurors were more lenient (Hazelwood & Brigham 1998).

Mob violence, antisocial behavior, and the aggressive tendencies of groups (more so than individuals) are in large part a result of the submerging of the self into the group. A lack of personal responsibility and awareness of ethical standards – hallmarks of the deindividuated state – emerge when groups do not hold individuals accountable. Moral control is far improved when individuals come to the fore, in support of the second step of our model. In further support, one study involved a group context in which some group members believed they might have to be personally accountable for their actions, whereas others were not given accountability information. Aggression toward helpless victims was reduced in the accountability condition (Prentice-Dunn & Rogers 1982). Differential identification of individual selves – the literal opposite of deindividuation – is what enables group moral control.

2.4. Evidence for two complementary steps

We began by proposing that many of the most successful groups make use of two steps. The first involves building a sense of shared social identity, thus emphasizing sameness and cohesion among members. The second step involves increasing differentiation of roles and individuality.

A survey of managers at a Dutch bank about their middle-management teams provides evidence for both steps in our theory (Janssen & Huang 2008). A strong sense of shared identity promoted good citizenship behavior, such as helping and caring about others, but was irrelevant to creative performance. In contrast, a strong belief in one's distinctiveness (e.g., highlighting one's unique skills) was linked to high creativity but was irrelevant to citizenship. Thus, the first step of shared social identity promotes cohesion and helping, but the second step of differentiation contributes to group performance.

Spencer-Rodgers et al. (2007) studied perceptions of various groups. Being stable, having well-defined boundaries, and having highly similar members were characteristics ascribed to groups based on social categories (e.g., Californians, Jews, elderly). In contrast, task groups (e.g., juries, committees, theater troupes) were seen as much more differentiated, as well as more agentic and entitative. Thus, social perceptions affirm the importance of both steps. In particular, groups that have a job to do are seen as having higher levels of role differentiation, consistent with the view that differentiation facilitates performance.

Assorted evidence supports the value of shared group identity for promoting good citizenship, helping, harmony, and loyalty to the group (Kirkman & Shapiro 2001; Moorman & Blakely 1995; Penner et al. 2005; Van Vugt & Hart 2004; Zdaniuk & Levine 2001). Various findings have also shown that identifying with the social group increases contributions in public goods and sharing resources situations (e.g., De Cremer et al. 2008; Tyler & Degoey 1995). The first step of building shared identity is undeniably useful for the group. Nonetheless, the second step of differentiation provides substantial advantages over the long run.

One possible proxy for the first step would be group cohesion, which seemingly expresses the members' embrace of the common group identity. A meta-analysis by Mullen and Copper (1994) noted that there has been considerable debate about whether cohesion is linked to group performance at all. They concluded that the link is real but small. Moreover, the causal arrow points both ways, and the increase in cohesion following good performance is stronger than the (nonetheless still real) causal effect of cohesion on performance. The effect is also stronger in small groups than large ones. All of these findings are congenial to our analysis, which emphasizes that shared identity can occasionally help performance but is not a major factor, so that the second step (differentiation) is more important.

We also suggest that competition among groups led to forming ever-larger groups, so although shared identity might have been sufficient with small groups, differentiation would become more important over time, as groups become larger. A small group, such as a team relay, may succeed by motivating members with shared identity even if there is no differentiation of roles, but the competitiveness of large organizations depends heavily on an effective system of differentiated roles and individual accountability.

Commons dilemma and other social dilemma patterns provide valuable evidence that both steps of group formation are important. They require a person to choose between immediately selfish, antisocial actions and enlightened self-interest through prosocial cooperation. Restraint and cooperation benefit the self only if others act the same, however, and so trust in the group is required. Findings show that identifying strongly with the group and embracing a shared social identity are helpful (e.g., Step 1 of our theory) – as are individual identification and the associated effects of responsibility and accountability (Step 2). These are not contradictory findings but rather complementary phenomena. The first step of group formation is *embracing the shared social identity*, which helps promote trust and willingness to cooperate. The second step is *differentiation of selfhood*, which enforces responsibility and motivates people to sustain the prosocial behavior that enables the entire group to benefit in the long run.

Abrams et al. (1990) reported a conformity study that manipulated both steps. They used an Asch conformity measure, in which confederates gave erroneous answers to a judgment task, and the measure was how much the true participants went along with those erroneous answers. The confederates were presented as belonging either to the participant's in-group or to an out-group, and the participant's responses were either public or private and anonymous. In private, the group made no difference, but conformity was high when participants made public responses in front of the in-group (and not in public responses to the out-group). Thus, shared identity led to poor performance by increasing conformity, presumably motivated by desire for acceptance based on similarity. Anonymity allowed people to think for themselves, thereby creating the benefits of differentiation.

Leaders can either suppress different perspectives by telling everyone what to do and think or solicit inputs from all and strive to integrate them. Lorinkova et al. (2013) compared these styles in a laboratory study. Groups with directive leaders came together faster and performed best in the early rounds, whereas the groups with leaders who heeded different inputs floundered. After the fifth round, however, the performance results shifted heavily in favor of groups with leaders who sought to include all viewpoints. Thus, sameness based on cohesion as directed by a take-charge leader worked best at first, but in the long run, capitalizing on differentiation produced the best results.

A meta-analysis of the effects of work group diversity on innovation by Hülsheger et al. (2009) reported separate analyses for background diversity (gender, ethnicity, age) and job-related diversity (differences in specialized function, skills, training, expertise, etc.). Background diversity is relevant to the first step because it complicates the formation of shared identity (Mannix & Neale 2005). Sure

enough, this form of diversity failed to improve innovation and had, if anything, a negative effect. This supports the view that the first step benefits from common identity (which contributes only weakly, if at all, to performance). In contrast, diversity of skills and roles had a positive effect on innovation, producing better results for both the individual members and for the group as a whole.

We have reported multiple findings indicating that enthusiastic identification with the group can overcome individuals' selfish tendencies, thus strengthening the group (e.g., with social loafing). This, too, seems congenial to the argument that accountability becomes useful over time. Newly formed groups may often generate enthusiasm for the shared identity, so that all pitch in and work hard, but at some point, some members may be tempted to pursue a selfish agenda, and so accountability is needed. Consistent with that view, Van Vugt and de Cremer (1999) found that instrumental leaders who punished noncontributing members had more effective groups than leaders who focused on simply building harmony in the group, particularly when group identification was low. When members identified strongly with the group, the two types of leaders were equally effective. Apparently, then, moral control of individuals is conducive to long-term success.

3. Discussion

We began by noting the paradoxical contradiction between two traditions of research on groups: Groups have been shown to be both better and worse than sets of individuals working alone. Much of the difference can be explained on the basis of differentiation of selves. A broad and diverse set of evidence converged to indicate that groups function better when members have differentiated identities than when individuality is lost as people blend into the group.

We suggested that groups form in two heuristic steps. The more fundamental one involves the construction of a shared group identity, which when embraced by individuals motivates them to work on behalf of the group. The second step (our main focus) involves a vast increase in performance and efficiency. Its key is not sameness but difference, insofar as different members use different skills to perform different roles in an interlocking, interactive system.

Differentiation does not contradict but rather builds on the sense of shared identity, which continues to be helpful. Indeed, we reviewed multiple lines of evidence that strong personal identification with the group (strong social identity) can motivate high effort and good behavior – very much unlike loss of individuality into the group, which had largely negative effects. Shared social identity is beneficial, whereas sameness in thought and action was often less helpful for the group than differentiation. Put another way, differences among group members are often crucial to the group's success. Groups may flourish by recognizing and capitalizing on those differences. In a highly competitive environment, they may need to do so to survive. Even some findings that emphasize identification with the group as beneficial also show the importance of individual identification, such as in procedural justice and accountability. Also, the historical and worldwide shift toward ever larger groups suggests that shared group identification will become less important (partly

because big groups do not inspire such strong effects) whereas differentiation (e.g., specialization) will become increasingly important.

Again and again, we found that people contributed better as individually identified members and did worse when individual identity was downplayed or lost. In performance settings, people worked harder and did better insofar as they were individually identified, accountable, individually competing or otherwise evaluated, eligible for rewards contingent on individual performance and the like. Social loafing occurred when people felt like indistinguishable members of the group, especially in the sense that their own efforts and contributions would not be known to other group members. Knowing one's work would be individually identified to the other group members was a powerful cure for social loafing and other detrimental processes.

Another antidote to social loafing was a feeling of being indispensable: People did well even under relative anonymity if they believed that their individual contribution to the group was unique and necessary for the group's success. That signifies differentiation. If others could substitute for oneself with no penalty to the self, then one loafed. In social dilemma situations, groups managed their resources best when people were individually identified, whereas anonymous and nonaccountable systems tended to deplete resources and do poorly. When judgments had to be made, accountable members put in more thought and effort than others, and they also produced more output. Generally, keeping track of individual selves improved group performance in multiple ways. These furnish a basis for arguing that human selves evolved to facilitate successful performance by groups.

Turning to the informational functions of groups, we found evidence that groups benefit when members participate as separate, autonomous individuals. Pressure to conform to the group's consensus often yielded detrimental results, whereas independent thinking and even overt dissent often helped the group reach more accurate judgments and make better choices. The superiority of secret ballots over other systems of group decisions is one familiar sign of this phenomenon: The shield of anonymity frees the individual from having to conform to the group's (or the leader's) preferred views, thereby enabling each person to think and choose autonomously. Other work has shown that anonymity and independent thought enable groups to be wiser even than experts. Conversely, pressures to conform to the group can bias judgments (especially toward the group's favored views), can curtail information sharing, and may foster groupthink and its costly errors.

Moral behavior was also relevant. Morality generally encourages people to overcome selfish impulses and do what is best for the broader group (though this fact becomes complicated when groups engage in immoral activities). Higher moral principles and virtuous actions were generally facilitated by individual identification and accountability. In such cases, anonymity enabled people to indulge their prejudices, overconsume precious resources, and claim a share of collectively available benefits while contributing little or nothing to meeting the costs.

Indeed, the benefits of individuation go beyond what we have reviewed. People are more helpful when individually identified than when submerged in the group, as in research on diffusion of responsibility (Darley & Latané 1968; Latané & Nida 1981). Conversely, they are more aggressive when submerged in the group, as in cases of mob violence, football hooliganism, wartime atrocities, and tendencies for groups to be more destructive and antagonistic than identified individuals are. Individual identification of group members reduces these antisocial behaviors.

What matters is thus the relationship of the individual to the group, not the mere fact of anonymity or structure of the individual self. When individuals function as autonomous individuals who contribute to the group and are responsible to it, groups benefit. Systems bring gains but only if members play their distinctive, complementary roles. Individual selfishness is often an obstacle to effective group functioning, so the group either finds ways to restrain selfishness (e.g., with moral punishment) or to harness selfishness to the group goals. Indeed, the tortuous history of deindividuation research led to the conclusion that it is not an individual state of mind but a group phenomenon, involving submerging individual identity into the group (Postmes & Spears 1998). It is not the self acting on its own to exploit the group *but rather the self participating in the group as a differentiated, yet cooperative member* that yields the best results.

Many of these findings reflect the individual's desire for social approval and acceptance, and hence the group's ability to exert moral control over individual members by putting pressure for proper behavior. Publicly identified persons work hard in the expectation of being favorably evaluated by group members. Unfortunately, however, those same desires and pressures can undermine independent thought and therefore degrade the quality of group information processing, yielding poor judgments, bias, and bad decisions. As we proposed in the introduction, information processing is best served by having each individual think and conclude as an autonomous, independent self and then contribute as such to the group discussion. Even arguing different sides of an issue is often valuable. We cited evidence that groups benefit from dissent, even in cases in which no member initially supports the best decision – because arguing helps to air all relevant facts, so that the group can come around to the best answer.

The group uses individually identified, differentiated selves as a tool for controlling behavior. The group works best if it makes many individual members do what they are supposed to do. It accomplishes that in part with rewards and punishments, but those depend on accountability and selfhood. With appropriate rewards and punishments, the group can increase effort and improve the moral quality of behavior. But it can also suppress independent thought, thereby degrading the informational quality of the group's knowledge base and decision processes.

To be sure, not all manifestations of differentiation are beneficial. Narcissism, in particular, may produce ill effects insofar as people overvalue themselves and feel entitled to exploit others (e.g., Twenge & Campbell 2003). There also are cases in which anxiety over evaluation can inhibit participation in groups and reduce overall performance (e.g., Camacho & Paulus 1995). And excessive diversity in groups, especially diversity of ethnicity or background, can hamper communication, reduce cohesiveness, and otherwise impair performance (Mannix & Neale 2005). It is possible to regard such instances as too much of a good thing or as irrelevant to the basic point that groups mostly benefit from differentiated selves. Because of space

constraints, we sought to make the case for the view that differentiation of identity is useful, rather than to survey all findings, and so we have not dealt with every possible counterexample. We think that even if differentiation is not invariably helpful to groups, it is helpful far more often than not, which is sufficient for our argument that one basic function of the human self is to facilitate group processes.

3.1. Implications for self theory

The view that groups benefit from differentiated selves offers a possible basis for a theory about the functional origins of human selfhood. If our view is correct, human selfhood emerged not out of some peculiar inner dynamic such as motivational or brain processes (though those presumably mediated the emergence of human selfhood), but as a vital adaptation to capitalize on the immense potential advantages of group life and group action. Indeed, some analyses have concluded that the very survival of the species depended on the development of advanced social systems (i.e., with division of labor and economic trade) based on differentiated selves (Horan et al. 2005). With their large bodies and brains, individual Neanderthals would have competed effectively against individual humans – but Neanderthals were unable to match the human gift for developing social systems. Collectively they were unable to compete with modern humans' Cro-Magnon ancestors, and they lost out and became extinct.

One perennial puzzle in self theory is why human selfhood is so much more advanced and complex than what has been observed in any other species. Our findings suggest that a major part of the answer lies in the usefulness of differentiated selves for human groups – especially large ones. Larger groups permit more complex and thus more differentiated systems than small ones, so role identities can be more specialized. (Hence, many selves are labeled with names that refer to occupational roles; e.g., Shoemaker, Smith, Baumeister, Tailor). Even shared aspects of identity may gain complexity as groups expand. As Moffett (2013) explained, humans and a few insects are the only species that have cooperative groups larger than about 150 members with strict boundaries. (Large grazing herds have casual boundaries, such that animals can move from one herd to another without much ado.) The insects accomplish this without highly differentiated selves: An ant can apparently not recognize a particular other ant, though it can distinguish between an ant from its own versus a rival colony. Humans, however, build their large groups with differentiated individual identities, thus permitting much more complex systems to emerge.

We assume that groups using complex social systems had competitive advantages over groups lacking such systems. Systems are made up of roles, and so it was adaptive for human selves to become able to perform these roles. Insofar as the human self evolved to facilitate cultural groups, it had to acquire the capability to operate in such systems. In other words, human selfhood has to furnish players for the differentiated roles that populate such systems.

Recent efforts to understand the essential nature of human selfhood have struggled to locate it, despite mountains of data about various concepts and processes of the self. The lack of any specific brain seat for the self has led some to speculate that the self is an illusion or fiction (Metzinger 2009), a view echoed on other conceptual grounds by some social psychologists (Swann & Buhrmester 2012), who define it as a functional fiction. Self-concepts do indeed often contain liberal doses of fiction, but the flexible capacity to perform real roles in complex real groups may be a vital basis for genuine selfhood.

Thus, our review offers another way to ground self theory. Complex social systems depend on differentiated identities and in fact benefit most from a high level of differentiation. The human brain may not be organized with a central, controlling "self" in it, but it learns to operate a self within the social system. The present evidence indicates that human groups derive advantages from having differentiated selves. One may therefore speculate that human minds evolved the capacity to capitalize on those advantages. Individuals would have benefited by joining groups composed of members with differentiated selves because these would likely have outperformed less differentiated groups. Survival and reproduction could thus have benefited from developing the capacity to participate in groups with differentiated selves. In this view, the self is not fiction – it is a reality, albeit a social one, that an individual physical body learns, acquires, and *becomes*.

Our findings also suggest which aspects of selfhood are most conducive to effective group functioning. Agentic control of effort, autonomous thought and judgment, and moral responsibility were all repeatedly found to benefit group outcomes. If the human self did partly evolve to facilitate human group processes, those three aspects would likely have been central.

3.2. Implications for group theory

Our analysis offers one resolution to the seeming contradiction in the literature on groups. Two distinguished traditions of empirical research have documented at length how groups are sometimes much more and better than the sums of their individual members – but are at other times much less and worse. Differentiated selfhood provides one vital conceptual key to account for what enables the positive outcomes, and its absence (submerging individuality in the group) helps explain many negative ones.

We reiterate that differentiated selfhood is not the opposite of identification with the group. Shared group identity promotes cohesion and various prosocial behaviors. The benefits of role differentiation may often combine with the enthusiastic embrace of shared identity for best results, as in a sports team with strong team spirit plus highly differentiated task roles. Identifying with the group can in principle be based on a highly personal, individual decision or could be a matter of losing identity into the group (e.g., Swann et al. 2012). Our findings also broadly fit the heuristic division of the group formation process into two steps, in which the first builds a shared identity and the second differentiates roles. Shared identity may be quite helpful, especially at first, but in the long run and perhaps in larger, more impersonal groups, differentiation becomes vital for effective group functioning.

4. Conclusion

Sometimes groups are much more than the sum of their parts, sometimes much less. Individually identified

separate selfhood is one key difference. Most of the bad effects of groups (e.g., social loafing, collective resource depletion) come when the individual self is lost or forgotten as identity is submerged in the group. When group members blend together, responsibility is lost, enabling extreme and antisocial behaviors. Then the group is less or worse than the sum of its individuals. In contrast, when members are accountable and responsible, and they fill different roles in interacting systems (family, the local economy, division of labor and specialized expertise), then the system gain can make the group more than the sum of its parts.

The very definition of group invokes some sameness: The members all belong to the same group and presumably share some goals, values, and identity. In practice, moreover, many groups push for sameness on many dimensions. In order to thrive, however, groups may need to go beyond the sameness of their members and capitalize on differences. Shared social identity is useful, but lack of individual identification can be costly. Differentiated selves and accountable individuality provide keys to the immense success of human groups.

Open Peer Commentary

The hows and whys of "we" (and "I") in groups

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Abstract: Informed by our interdisciplinary research program on collaborative recall, we argue that Baumeister et al. should consider: (1) group success as a *balance* between differentiation and integration (not differentiation alone); (2) variation in constellations of people and processes within and across groups; and (3) nuanced measurement of what people bring to, do in, and get out of groups.

Like Baumeister et al., for more than 10 years we too have asked the question: Are groups more or less than the sum of their individual parts? Whereas Baumeister et al.'s answers mostly are informed by social psychology, ours are informed by experimental cognitive psychology (the "collaborative recall" literature; e.g., Barnier et al. 2008; Harris et al. 2008), by philosophical ideas about "distributed cognition" (where philosophers argue that human cognition extends beyond the mind of an individual to incorporate external resources; e.g., Sutton et al. 2010), and by memory studies in the humanities. Our research aims to draw links between the remembering practices of one person and the remembering practices of two people, three people, groups of people, and communities, cultures and nations. From this perspective, we comment on three aspects of Baumeister et al.'s ambitious and provocative article.

First, we are less convinced than Baumeister et al. that differentiation of selves predicts "many of the best outcomes of groups" (abstract) and that "most of the bad effects of groups …

come when the individual self is lost or forgotten as identity is submerged in the group" (sect. 4, para. 1). We agree that "relationships among individuals are not fully reducible to properties of the separate individuals" (para. 2). However, we do not agree that differentiated roles within social groups necessarily "make more powerful and effective systems" (para. 2). In our interdisciplinary research program on collaborative remembering by strangers, friends, family groups, organizational teams, and long-married couples, we find that successful group performance depends on a balance between both *integration* and *differentiation* of knowledge, information, and/or expertise of individuals in groups (Wegner 1987), as well as a balance between individual and group identity and individual and group cognitive strategies and processes. Indeed, individual (vs. group) focus and strategies often lead to the poorest group outcomes (e.g., Barnier et al. 2014; Harris et al. 2011).

In section 2.1.3., Baumeister et al. briefly introduce Wegner's (1987) "transactive memory theory" (para. 3). Wegner proposed that people in well-established groups share encoding, storage, and retrieval of information such that groups may perform better than the sum of their individual parts and may show "emergent" outcomes. Baumeister et al. describe a meta-analysis and three studies highlighting differentiation, drawn from the large transactive memory literature in organizational psychology. This literature has blossomed recently with contributions on collaborative recall (from cognitive psychology) and distributed cognition (from philosophy) (e.g., Barnier et al. 2008; Hirst & Echterhoff 2012). We believe there is even more insight to be gained from transactive memory theory, especially from research with the kinds of intimate family groups that Wegner developed his theory to explain, where successful group processes (Baumeister et al.'s second step) may depend on a balance between differentiation and integration. That is, where "I" and "we" operate in harmony to predict both group and later individual performance (e.g., Harris et al. 2011).

Second, any account of the success or failure of groups needs to consider and explain the huge variation in constellations of people and processes that take place within and across groups. Baumeister et al. argue that a two-step process predicts positive group outcomes. The implication is that in research studies, as in life, all groups that follow these two steps will be successful, whether in a group of three people recalling a set of information, a team building a device, or a committee making a decision. But underneath group-level effects (where groups that collaborate on average perform differently from groups that do not collaborate), we have noticed substantial differences in the ways in which groups of the same type operate, which seem to reflect meaningful yet unexplained variation in group membership, function, dynamics, strategies and/or something else (e.g., Harris et al. 2014a).

Third, understanding group performance requires, we believe, nuanced measurement (of the sometimes idiosyncratic profiles) of what individuals bring to, do in, and get out of groups; where the unit of analysis sometimes is the individual and sometimes is the group. Consider, for example, how Baumeister et al. (and the broader group-processes literature) count superior group performance: as better or worse than "the sum or average of their parts" (para. 5). Sums and averages, however, can miss the subtleties of what's going on in groups. In our research, we have asked long-married, elderly couples to recall names of their families and friends either alone or together (e.g., Harris et al. 2011). Imagine couple 1, who together recall lots of names, one name after another, rapidly cross-cuing each other with names. The husband and wife each recall 10 names in this way. Now imagine couple 2. The husband recently suffered a stroke and has memory problems. He recalls 4 names and his wife recalls 16 names, scaffolding their joint recall and dominating the conversation. For both groups, their sum is 20 and the average is 10, but discrepancies across individuals (e.g., in ability or expertise) within these same kinds of groups tell a

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richer story of the individual and joint processes that give rise to the group's performance.

Finally, Baumeister et al. might consider more the broader functions or goals of group performance. It is crucial to understand what individuals and groups themselves explicitly or tacitly count as success or failure. In the domain of memory, for example, simply remembering more or remembering correctly (as measured by standard *amount* and *accuracy* outcome variables) often is not as important to people as the broader functions of telling and sharing stories, including building individual and group identities and understandings (Harris et al. 2014b).

Exploring when and how "I" becomes "we" is crucial because in everyday life, across our lives, we engage in many cognitive activities – such as remembering – in the presence of, prompted by, and in partnership with others (Barnier 2010). Complementary, albeit challenging, views from across psychology and across disciplines can help us understand the relationship between the cognitive and social lives of individuals and groups.

Identity matters to individuals: Group assessment cannot be reduced to collective performance

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Abstract: Although we agree that both identification and differentiation play a key role in explaining individual behaviour in groups, we suggest that (1) cohesion and differentiation should be better articulated, (2) the proposal carries implicit value choices that are not necessarily universal, and (3) the success of a group in shaping individual behaviour should refer to the values of individual members.

We highly appreciate the intent of the authors to underline the role of both identification and differentiation in explaining individual behaviour in groups. We would like to suggest that (1) cohesion and differentiation should be better articulated, (2) the proposal carries implicit value choices that are not necessarily universal, and (3) the success of a group in shaping individual behaviour cannot be judged using *a priori criteria* but should refer to the values of individual group members.

Refine articulation between cohesion and differentiation. We are not convinced that cohesion and differentiation are two sequential steps within group formation, and we would like to suggest that the model should be more dynamic. These two dimensions could be articulated along two main directions. First, the two dimensions can coexist. The same individuals can act cohesively in relation to some shared goals and also develop differentiation in relation to other tasks or projects. Furthermore the coexistence of cohesion and differentiation is precisely a core principle for some organizations (see the literature on high reliability organizations, e.g., Weick & Roberts 1993). Second, both processes interact permanently. In fact, a cohesive group action usually enriches and further differentiates individual agents. Differentiated agents, in turn, have stronger identities. They are thus more likely to both modify and adhere to group prescriptions. Finally,

although cohesion and differentiation do not necessarily work in opposite directions, they may do so in some cases. Agents that are too highly differentiated can also lead to group disaggregation. To sum up, rather than characterizing two successive steps of group life, cohesion and differentiation coexist and permanently interact in many directions.

The proposal carries implicit value choices that are not necessarily universal. The proposed model is very abstract and tends to generalize observations made in particular contexts. However, some key aspects are not well-defined, taken as universal, or kept implicit. We observe that (1) no definition of the concept of group is provided, (2) an historical perspective shows that the concept of differentiation is far from being universal, and (3) a great part of the argument relies on the definition of success/failure, or system gain.

As a matter of fact, the authors do not provide a definition of the concept of group. The nature of the groups they refer to is unclear. For example, they quote in the same paragraph Le Bon, who refers to crowds, and Smith, who refers to hierarchical organizations, namely factories. Social theory distinguishes different processes of individual identification/differentiation according to group characteristics: whether it is based upon anonymous or face-to-face relations, formal or informal, primary or secondary, and so forth.

The concept of individual was not yet elaborated in the ancient Greece (See, e.g., Jaynes 1976). The philosopher Descartes is credited with introducing the concept of differentiation in the seventeenth century. Japanese society is still very influenced by Confucian ethics, in which the process of integration/differentiation is very different from that of Western societies as the authors describe it (see Geertz 1974). It is thus quite unclear to what extent the conclusions of the authors can be generalized.

The same outcome can be judged a success or a failure, depending upon the assessment criteria. Because they define "system gain" in terms group productivity or performance, they implicitly value the group over the individual; this choice should be made explicit. Moreover, "system gain," as Baumeister et al. define it, is not necessarily a primary motivation for all groups. And it is probably even less so for individuals.

The success of a group in shaping individual behaviour should refer to the values of group individual members. Since Pareto's (1916) *Trattato di Sociologia Generale,* and more exactly a paper he published a few years earlier (Pareto 1913), it is quite clear to social scientists that what is best for a group generically differs from what is best for the individuals who compose it. This divergence makes it clear that individual and group objectives have to be distinguished.

Clearly, the benchmark of group behaviour should be group objectives. The paper focuses on how group behaviour (productivity) emerges from individual behaviour and group organization. It ignores completely the question of how individual objectives are incorporated into group objectives. The whole literature on Social Choice makes it clear that the relationship is almost never straightforward, except in very particular and unrealistic circumstances, such as when all individuals have a cleardefined, common goal (Arrow 1951/1963).

Moreover, the very fact that identification to the group and differentiation matters is a clear proof that individuals do not care for productivity only. Thus, there is, if not a contradiction, at least a great reductionism in adopting total productivity as the group objective or as a criteria for measuring its performance.

To sum up, we greatly appreciate the efforts of the authors in attempting to incorporate systematically both identification and differentiation into the analysis of group behaviour. We propose that their approach (1) be extended to allow both aspects to play a key role simultaneously, (2) could benefit from making their value choices more explicit, and (3) should account for the fact that group objectives generally differ from those of the individuals that compose it.

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The unique role of the agent within the romantic group

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Abstract: In this commentary, we apply the authors' view to small groups consisting of two people who are in a committed romantic relationship. Our focus is on the circumstances that make it more likely that people will stay within such a group and minimize the chances that they will replace their partner. In our restless society, such ongoing replacement is a pressing issue.

Baumeister and colleagues' insights about large groups and their individual members are also applicable to the small group of two people who are in a committed romantic relationship (often marriage). More specifically, they tell us something about the circumstances that make it more likely that people stay within such a group and less likely that they replace their partner. Ensuring that love endures is an acute problem in our current society, glittering as it is with many alluring romantic options. In this society, remaining in one place – namely, in the same romantic group – is often regarded as treading water. We will not address here the moral issue of whether it is right to leave a romantic group, but rather the psychological issue of whether staying within the group contributes to the agent's wellbeing.

Baumeister et al. indicate that sometimes groups perform better than the sum of their individual members. This clearly also holds for a couple in a marriage (and in other types of committed relationships). Indeed, various findings confirm the advantages of these groups (see, e.g., Waite 1995; 2000). Nevertheless, low-quality marriages have significant negative effects on the overall well-being of both agents. Remaining unhappily married is associated with lower levels of overall life satisfaction and health as compared with being unmarried or being happily married (e.g., Hawking & Booth 2005).

We take the following insight of Baumeister et al. to be central for enhancing the value of committed relationships and making the beloved less replaceable: "Acquiring a unique role within the group can promote belongingness by making oneself irreplaceable" (target article abstract).

The easy accessibility and alluring pull of alternate partners in our society give rise to feelings of *romantic compromise* in those within committed romantic groups. Two main types of romantic compromises are: (1) compromises on romantic freedom when entering the committed group, and (2) compromises on the choice of the partner while remaining within the group. In the first type, the major concern is giving up tempting alternatives while still continuing to yearn for them. In the second type, another concern is added: accepting the negative aspects of your romantic partner (Ben-Ze'ev 2011). We believe that the best way to meet both concerns is for each individual to acquire a unique role within the romantic group. This promotes belongingness by making the agent less replaceable.

When the partner's value is assessed merely by the aggregate value of her individual characteristics – independent of her activities within the group – the agent can easily compare this value to the value of other people. This in turn may lead to yearning and searching for a higher-value person, prompting a strong and painful feeling in the agent of having relinquished a promising alternative and of being stuck in a romantic compromise. The partner's negative characteristics will typically gain further weight under such conditions. However, when the partner's value is assessed by her characteristics as a partner within the given romantic group – that is, by her unique contribution to the thriving of the relationship

(as well as to the agent's individual thriving) – feelings of being romantically compromised are less likely to emerge. This is because it is more difficult to estimate the potential contribution of a stranger with whom you have never even interacted.

Our need for uniqueness is indeed a basic emotional craving: "We don't always see ourselves as *superior*, but we almost always see ourselves as *unique*" (Gilbert 2007, p. 252). In many matters, uniqueness outranks exclusiveness. Exclusivity is characterized in negative terms that establish rigid behavior and boundaries: It entails "not permitting" and "restricting." Uniqueness is characterized in positive terms that establish distinctiveness: "being one of a kind," "different from others in a way that makes somebody or something special and worthy of note." Emphasizing our uniqueness contributes to profound satisfaction (Ben-Ze'ev & Goussinsky 2008).

When emphasis is put on uniqueness, the partner's individual characteristics no longer constitute her major romantic value; rather, the value lies in her contribution to the romantic connection. The thriving of the romantic group becomes the central concern of the lovers. Achieving such thriving requires spending time with each other and getting to know each other fully. In addition to making comparison harder, this also gives the current partner a better starting point. Moreover, it provides an incentive for the agent to further develop and deepen the existing relationship, rather than frequently replacing the partner with someone who seems to have better individual characteristics, but whose suitability as a good partner is completely unknown.

The above considerations are further supported by the *Dialogue Model* of romantic love, which has its origins with Aristotle and has recently been significantly advanced by Angelika Krebs. This model considers the connection between the partners to be at the center of love. Dialogical lovers share emotional experiences and perform joint activities; feeling and acting together amplifies the flourishing of each lover as well as the flourishing of their relationship (Krebs 2014; 2015). The Dialogue Model, which builds upon contemporary philosophical literature on collective intentionality (e.g., Bratman 1999; Gilbert 1989; Searle 1990), is a viable alternative both to the more common Fusion Model (or Siamese Twin Model; see Schnarch 1997, p. 109), and the Care Model (e.g., Frankfurt 2004). The Dialogue Model stresses the connection and the qualities of the group, which are different and more than the aggregate value of the lovers' individual characteristics. The connection gives rise to a sense of uniqueness, irreplaceability and belonging. As the American writer Tom Robbins nicely puts it: "The highest function of love is that it makes the loved one a unique and irreplaceable being" (Robbins 2003, p. 161).

Group and individual as complementary conceptual categories

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Abstract: Baumeister et al. depart from self-theories that contrast the psychology of the group with the psychology of the individual by considering how differentiated identities further collective interests. In concert with Deviance Regulation Theory, their framework offers a foundation for predicting the reward and punishment contingencies that will help groups function as more than the sum of their parts.

Psychological theories often orient around the hypothesized contrasting nature of dual-opposed constructs: conscious versus unconscious, hot versus cold, approach versus avoid. Whether such

antagonistic systems truly exist in nature, as the leverage points within conceptual frameworks, they have proved their use in aiding behavioral prediction. Included in the list of commonly contrasted conceptual categories are *individual* and *group*. Common are theories that treat the psychology of the group as something that differs from and often runs in opposition to the psychology of the individual. Examples include theories that posit shifting levels of self-abstraction – from perceiving the self as a discrete, separate, individualized entity to perceiving it as a connected, interchangeable part of the whole. Also included are theories that predict tension and conflict between the desire to distinguish self from others and the desire to associate self with others.

In their various theoretical guises, individual/group contrasts have great explanatory power, but the dominance of this one treatment has introduced blind spots. Baumeister et al. redress this concern by turning attention to the dynamic ways in which an individuated self can interact with in-group identification to further collective goals. Baumeister et al. reveal that greater self-differentiation can promote specialization, cohesiveness, and efficiency. Not elaborated in their framework – necessarily so, due to space constraints – were the mechanisms by which groups utilize a differentiated self to promote desired outcomes. That question is the focal concern in a compatible theory, *Deviance Regulation Theory* (DRT; Blanton & Christie 2003). DRT considers two qualities that groups often wish to maximize: social order and social complexity. Social order speaks to the importance of having members adhere to consensually agreed-upon codes of conduct. Social complexity speaks to the benefits groups can accrue when members exhibit diversity of thought and action.

Of interest in DRT are the ways social groups (defined as anything from small peer groups to society at large) employ contingencies to direct individual actions. Contingencies are rewards and punishments, which can be delivered in tangible forms (e.g., fines and awards) or tacit (acceptance and rejection). In DRT, as in Baumeister et al., such contingencies take hold only if there is some degree of self-differentiation. DRT differs from Baumeister et al. in that it defines differentiation based on deviation from social norms (both descriptive and injunctive), but the two approaches speak to similar dynamics. Drawing on a broad range of theories in both social and cognitive traditions, DRT assumes that counternormative actions and attributes (which by definition cause the individual to break from in-group descriptive and injunctive norms) contribute to the individual's (differentiated) sense of self, more than their normative counterparts.

The resulting asymmetry in the "information value" of counternormative versus normative expressions has direct implications for the differing effects of rewards and punishments on behavior (see Blanton & Hall 2009). To maintain and promote social order, DRT predicts that groups should (and typically do) punish those who break from the status quo in undesired ways. In contrast, to promote complexity and diversification, groups should (and typically do) reward those who separate from the herd in desirable ways. It is this latter, reward function of groups that is largely missing from the early small-groups literature (e.g., Festinger 1950; Schachter 1951). Expressions of uniqueness have more typically been treated as the prerogative of the individual (e.g., Snyder & Fromkin 1980) and at times conceptualized as a motive that runs in opposition to collectivistic interests (Brewer 1991). In contrast, both DRT and Baumeister et al. explore how uniqueness arises from group influence.

The Baumeister et al. analysis goes far beyond the focus of DRT, but together they might provide a broader foundation for predicting the in-group contingency structures that promote optimal functioning of groups facing complex, external challenges. The first factor (*differentiation*) is an individuated self. Once groups cohere around common identities and bonds, their survival in challenging and competitive worlds might depend on conditions that promote identifiable (differentiated, accountable) as opposed to hidden (anonymous, submersed) identities, as Baumeister et al. argued in convincing fashion.

Individuation can allow contingencies to take hold, but it how contingencies are employed also matters. DRT suggests a second factor: *balance*. There are dangers in tilting too heavily either in the direction of punishments or rewards. Overly punitive groups will excel primarily at producing uniformity of opinion and action – which, in the words of Baumeister et al., can cause them to become less than the sum of their parts. In contrast, overly rewarding groups might dissolve under the strains of unfocused, poorly regulated diversity. But the proper use of punishment and reward is not just one of balancing relative emphases.

A third factor, also suggested by DRT (*matching*), focuses on the framing of contingencies. Negative contingencies should be utilized when conformity is desired. One need look no further than modern criminal justice systems to see the emphasis placed on punishment when the goal is to stamp out unwanted deviations. However, punishment does little to motivate excellence. To promote diversity and specialization, groups should reward a wide range of desired but "optional" actions that members can choose from.

Finally, the Baumeister et al.'s analysis reveals a limitation to the DRT narrative on matching and the importance of another factor (*movement*). Many examples in the target article illustrate how complexity arises over time, presumably facilitated by individuals moving out of past roles where they floundered and into ones where they will succeed. This suggests ways that even punishment might promote diversity. Punishment can play this role when it causes individuals to leave pursuits where they lack either the ability or motivation to excel in favor of alternative (optional) pursuits, where rewards are more obtainable. To encourage movement of this sort, groups might practice "contingent love" – efficiently punishing and discouraging failure but also allowing and rewarding fruitful redirection.

These four features (*differentiation, balance, matching,* and *movement*) might help groups become more than the sum of their parts. If so, their derivation from Baumeister et al. and DRT points to the value of theories that treat "individual" and "group" as complementary, rather than oppositional conceptual categories.

But is it social? How to tell when groups are more than the sum of their members

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Abstract: Failure to distinguish between statistical effects and genuine social interaction may lead to unwarranted conclusions about the role of self-differentiation in group function. We offer an introduction to these issues from the perspective of recent research on collaborative cognition.

Baumeister et al. argue that self-differentiation is key to understanding why groups sometimes perform better and other times worse than the sum of their individual members. We do not challenge this hypothesis. Instead, we argue that it is important to use the appropriate measures when assessing the influence of social processes on group function. If this is not done, one may conclude that synergistic social effects are at play, when in fact group performance is merely what would be expected from statistical aggregation.

Failures to distinguish social interaction from statistical effects can be seen in studies of the wisdom of crowds and perceptual discrimination. At first blush it may seem remarkable that the average estimate of the weight of an ox by a crowd is more

Table 1. *(Brennan & Enns). A toy data set of response times on four trials. Values are in seconds.*

	Trial 1	Trial 2	Trial 3	Trial 4	Mean
Person A =	2.00	3.00	4.00	2.00	2.75
Person B =	3.00	2.00	4.00	5.00	3.50
Team (Person A+B) =	2.25	2.25	2.70	2.40	2.40

accurate than the best individual estimate (Galton 1907; Surowiecki 2004), and that dyads who communicate their confidence to one another outperform the same persons working alone to detect visual signals (Bahrami et al. 2010). Yet a closer look at these studies reveals that they may not be measuring social synergy because they compare group performance to a benchmark that does not account for statistical facilitation. Indeed, research has shown that similar effects can be obtained *without* social collaboration. Wise crowds can be produced by statistical aggregation alone: Averaging multiple estimates increases precision (Soll 1999), even when it is the same individual providing repeated estimates (Herzog & Hertwig 2009; Lewandowsky et al. 2009). Also, the signal detection benefit by dyads can be replicated by simply selecting the response of the more confident individual (Koriat 2012).

It is therefore critical to distinguish between two potential types of group effects (both benefits and costs): those that accrue as a consequence of aggregating independent correct responses and errors (*statistical facilitation*) versus those that arise from communicating information or influence between individuals (*social interaction*). We caution against generalizing the self-differentiation hypothesis without first distinguishing statistical facilitation from social interaction.

We recently made this distinction in a study of cognitive collaboration, an emerging field that aims to understand social influences on visual attention (Böckler et al. 2012), visual perception (Samson et al. 2010), long term memory (Weldon & Bellinger 1997), and language (Tylén et al. 2010). In our studies (Brennan & Enns 2015a; 2015b), we adapted the race model inequality (RMI; Miller 1982; Ulrich et al. 2007) to compare group performance to a model that accounts for the expected statistical effects of aggregating individual contributions. We demonstrate how this differs from other measures in Table 1.

Some would see this as evidence of social interaction because the team mean (2.40) is faster than the mean of the fastest individual on each trial ((2.50 = 2.00 + 2.00 + 4.00 + 2.00) / 4; e.g., Brennan et al. 2008). Others would make the same claim because the team mean (2.40) is faster than the mean of the fastest individual overall (2.75 = Person A; e.g., Bahrami et al. 2010). In contrast, the RMI compares individuals and teams in three steps: (1) All four trials of Person A and B are combined in a single distribution of eight values. (2) These values are ranked in ascending order. (3) The mean of the fastest four values represents the model of statistical facilitation, the best possible outcome of aggregating the independent contributions of two individuals over four trials. This value is 2.25 ((2.00 + 2.00 + 2.00 + 3.00) / 4). Because the team mean (2.40) is slower than this estimate based on statistical facilitation, these data provide no evidence that a collaborative social process occurred during this group task; the conclusion of social interaction is unwarranted. Note the same logic applies when accuracy is the main measure (Lorge & Solomon 1955).

This logic has consequences for Baumeister et al.'s hypothesis. Although the studies reviewed may hold evidence for social interaction in addition to statistical facilitation, to date most have not used analyses that warrant this interpretation. Consider research on the division of labor, where groups that divide tasks across their members are more efficient than individuals completing the full task (West 1999). Much efficiency is likely gained

through social interaction, but its true extent is unknown. To determine that, researchers would have to consider the variability of individual task completion times, and assess individual and group efficiency in equal detail, as illustrated in Table 1. Now consider social loafing research, where groups pulling ropes (e.g., Ringelmann 1913b) are less powerful that the sum of individual member pulls. Because group performance here does not exceed the summed individual estimate, which is even more conservative than the RMI, we can safely assume that social interaction here reduces group performance below the statistical facilitation standard. But, again, we do know by how much without measuring the distribution of individual efforts with the same rigor used to measure group function.

These two possibilities – group effects that are the result of *statistical facilitation* versus *social interaction* – have different implications for the self-differentiation hypothesis. Self-differentiation may only be relevant for one type of effect, for the other, or for both. For example, if the self-differentiation effect in a given group context is driven by statistical facilitation, then one should focus on how self-differentiation influences individual member contributions. Alternatively, if social interaction is involved, it is important to understand how self-differentiation alters the flow of information and influence from one group member to another. In this case, self-differentiation influences *group dynamics*, over and above any influence on individual members.

We believe this distinction between *social interaction* and *statistical facilitation* is critical to understanding how groups differ from one another and from individual efforts. As such, we provide this commentary as an introduction to methods that can distinguish between these two types of effect. This will allow researchers to more accurately hone in on the role of self-differentiation in groups.

Social, not individual, identification is the key to understanding group phenomena

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Abstract: Baumeister and colleagues argue for the indispensability of groups in human life. Yet, in positing individual differentiation as the key to effective group functioning, they adopt a Western-centric view of the relationship of the individual to the group and overlook an alternative *social* identity account in which depersonalisation, not individuation, is central to understanding many group phenomena.

Baumeister et al. rightly argue for the indispensability of groups in human social life. Yet, in positing individual differentiation within groups as the key to effective group functioning, Baumeister et al. adopt a Western-centric view of the individual's relationship to the group, and they also overlook an alternative *social* identity account

in which depersonalisation, not individuation, is central to understanding many group phenomena. I focus my commentary on Baumeister et al.'s account of group performance, although I believe that similar points can be made about other group phenomena that they discuss.

Baumeister et al.'s hypothesis is that there is a universal need for people to feel individually differentiated within groups and, if that need is not satisfied, groups become dysfunctional. I believe that this conceptualisation is a view rooted in individualistic Western cultures that emphasise the *independence* of the self from others. Such self-construals are by no means universal. In more collectivistic societies, the self is typically seen as *interdependent* with others (Markus & Kitayama 1991; Triandis 1989). These cultural differences in the ways people see themselves and their groups have implications for Baumeister et al.'s analysis of the conditions most likely to inhibit social loafing in groups and encourage its opposite – individuals working harder in a group than alone, what I have called "social labouring" (Brown 2000, p. 190). Drawing on Karau and Williams' (1993) meta-analysis, Baumeister et al. conclude that social loafing is reduced in settings where individuals are identifiable, feel that their contributions are indispensable and are subject to evaluation by others. What Baumeister et al. fail to note, however, is that 90% of the samples in Karau and Williams' data set involved Western participants. Once one broadens one's cultural focus, such a conclusion may no longer be warranted.

Take, for example, a well-known study (not cited by Baumeister et al.) that compared individual and group performance in China, Israel (two collectivistic societies), and the United States (a more individualistic society) (Earley 1993). Participants thought that they would be performing a task either alone (Individual condition), with a group of people from the same region as them (In-group condition), or with a group of people from a different region (Out-group condition). In the latter two conditions, they believed that the group's performance would be assessed only as a whole. In the US sample, consistent with Baumeister et al.'s hypothesis, participants worked harder in the Individual condition than in either of the two group conditions. In Israel and China, however, performance was higher in the In-group condition than in the Individual condition, clear evidence of social labouring even under conditions of low identifiability.

In another study (also not cited by Baumeister et al.), Earley (1989) compared North American and Chinese participants on an additive task, under conditions of high and low shared responsibility for the task outcome, and under differing degrees of individual accountability. More individualistic participants (mainly from the United States) worked harder under low shared responsibility and were affected by the accountability variable. However, the more collectivistic participants (mainly from China) worked harder under high shared responsibility and were unaffected by accountability – their highest performance was observed in the high shared responsibility-low accountability condition, just where Baumeister et al. would have predicted the lowest performance.

However, it is not necessary to venture beyond American shores to observe social labouring under conditions of low identifiability. According to Social Identity Theory (SIT, Tajfel & Turner 1979; 1986), in some contexts people's group memberships can acquire such psychological significance that the fortunes of the group become their fortunes too. Indeed, under conditions of maximal intergroup salience, people can become so identified with their in-group that they become "depersonalised" and start to assume many of the key group-defining attributes as their own (Turner et al. 1987). In such circumstances, group members may exert themselves more than they ever would when alone, particularly if by doing so they can achieve some positive in-group distinctiveness. Now, Baumeister et al. enlist SIT in support of their own analysis (sect. 1.1, para. 4) even if, curiously, they cite a nonexistent source for it ("Turner & Tajfel 1982") and fail to mention either of its original

formulations (Tajfel & Turner 1979; 1986) or one of its most important derivatives (Turner et al. 1987). As I hope is clear from my account of SIT above, one of its central concepts ("depersonalisation") is directly at odds with Baumeister et al.'s favoured idea, "individual differentiation."

As an example of empirical support for a SIT analysis of group performance, even in an individualistic cultural context, consider Worchel et al. (1998, experiment 3; again not mentioned by Baumeister et al.). American students first undertook a task on their own. They then carried out the same task in a group, believing that their individual contributions to the group outcome were not identifiable. They did this either in the implied presence of an out-group or where no out-group was mentioned. Their in-group identity was also made differentially salient by wearing the same colour lab coats with their team name written on it or by wearing lab coats of different colours and with no team name. The presence of an out-group resulted in social labouring; the *absence* of an out-group caused social loafing. Social identity salience qualified this main effect such that most social labouring occurred when participants wore the same uniform in the out-group "present" condition, and most social *loafing* occurred in the absence of an out-group and with no common uniform. Notice that maximal group productivity co-occurred with minimal identifiability, in direct contradiction to Baumeister et al.'s hypothesis.

In summary, then, I conclude that Baumeister et al.'s analysis of the relationship of the individual to the group suffers from a degree of cultural and theoretical myopia. It has overlooked the possibility that not everyone is "WEIRD" (Henrich et al. 2010b); and, in its neglect of the important account of the individual-group nexus provided by SIT, it too blithely assumes that individuals can be effective in groups only to the extent that they remain individuated.

The subtle effects of incentives and competition on group performance

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Abstract: We show that, under some circumstances, identification and differentiation in the form of competition and individual rewards may undermine, rather than improve, group performance. The key factor for successful group performance seems to be whether or not group members share common goals and whether or not they have aligned incentives.

The thesis of Baumeister et al.'s target article is that many group processes and their outcomes can be understood in terms of the individual members' identification with the group and their role differentiation. We draw on our work comparing groups and markets with financial incentives and competition, to identify some limitations in the ability of these two variables – identification and differentiation – to fully explain group performance.

A central premise of the target article is that differentiation induced by competition and individual rewards improves group performance in tasks involving information use (sect. 1.2). In our work on intellective tasks, which have a unique and demonstrably correct solution, we showed that introducing financial incentives in a competitive fashion had detrimental effects on group performance (Maciejovsky & Budescu 2013).

We compared the ability of four-person groups to solve the Wason (1968) selection task. In the noncompetitive groups,

participants discussed the problem for 10 minutes and then each participant solved the task individually. Participants who solved the task correctly were paid €1.50, regardless of how many other members of the group solved it. Thus, an ideal group could earn €6.00. In the competitive incentivized groups, individual payments were a function of the performance of the other group members. Correct solutions were rewarded by €6.00/number of correct solutions in the group (e.g., if two members solved the problem, each received €3.00).

Individual and group performance decreased significantly in the competitive condition. The introduction of financial incentives in a competitive fashion "differentiated the self" (to compete and seek the individual rewards), yet the overall effect was negative in terms of information sharing among, and learning from other group members. In essence, these incentives created a social dilemma where people recognized that sharing knowledge benefits the collective but reduces their private financial reward. In this case, the group identity broke down and selfish personal interests took over.

A second, and related, premise of the target article is the notion of the "differentiated self" that suggests that groups perform better (or worse) than the number of their members as a result of the "distinctiveness" of their members (or lack thereof).

In our studies, such differentiation did not necessarily improve group performance. The key factor seems to be whether the group shared a common goal and whether group members had aligned incentives (Maciejovsky & Budescu 2007). For example, providing all group members with a common goal led to better group performance than differentiating the members by means of side payments (higher individual payments and, therefore, incentivized *differentiation*). Group performance was substantially worse in these cases (Maciejovsky & Budescu 2013).

Groups of three members were instructed to identify the best of three candidates, labeled A, B, and C, in a hidden profile paradigm (Stasser & Titus 1985). Candidate B was the best, and voting for B would have resulted in payments of £4 for each of the members. In our studies, one member per group was promised side payments of £5 to convince the other two members to vote for candidate A (rather than B or C). One could claim that this member served as an advocate for candidate A. Thus, our payoff structure had all of the features of a social dilemma (i.e., higher individual payoff of £5 to the detriment of the social optimum of 3×£4). However, this differentiation had a detrimental effect on the group's ability to identify the best candidate, contrary to the prediction of Baumeister et al.'s framework.

Interestingly, we found that anonymous competitive markets (Budescu & Maciejovsky 2005), which do not allow for individual identification and eliminate accountability (every person trades for him or herself) actually outperformed groups (Maciejovsky & Budescu 2007). Traders on these markets benefited in the long run because they learned more successfully and transferred their newly acquired knowledge and skills more effectively to new problems than participants who were part of "regular" interactive groups did (Maciejovsky & Budescu 2013). It appears that the rules that govern simple markets made it extremely difficult for traders to hide their goals. The market "forces" traders who strive to achieve their private goals to act on their full information and, therefore, to "share" it with the others. This process can benefit those traders who have less (or inferior quality) information, and the group as a whole.

Other results in this market context support the authors' prediction regarding the benefits of cooperation within groups. For instance, people who traded in competitive markets as part of dyads systematically outperformed individuals on the same markets, even when accounting for the excess information and skills (Maciejovsky et al. 2013). Protocols of the dyadic discussions suggest that accountability and the necessity to justify trading solutions to fellow group members had a positive impact on trading success.

In sum, our work suggests that individual identification and differentiation may not always improve group performance. If the combined effects of financial incentives and competition are strong enough, differentiation actually reduces group performance, particularly if the incentives and competitive forces lead individuals to abandon the notion of shared group goals and focus, instead, on their individual benefits. Future work should further explore this contrast between the positive and negative effects of identification and differentiation. A refined theoretical framework would allow accounting for these boundary conditions and would, as a result, make more accurate predictions about the broad spectrum of group performance.

Considering the role of ecology on individual differentiation

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Abstract: Our commentary articulates some of the commonalities between Baumeister et al.'s theory of socially differentiated roles and Strategic Differentiation-Integration Effort. We expand upon the target article's position by arguing that differentiating social roles is contextual and driven by varying ecological pressures, producing character displacement not only among individuals within complex societies, but also across social systems and multiple levels of organization.

Baumeister et al. present a provocative paper arguing that psychological theories of group and self can be more comprehensive if they include the concept of individual differentiation, which suggests that productivity and accountability will increase in groups where individuals are assigned distinct roles. Integrative, multilevel papers like this are rare in our field; thus, this endeavor is laudatory. The authors omitted one fundamental component, however: an outline of a mechanism for determining the degree to which groups differentiate among individuals. What causes some groups to highly specialize while others remain relatively socially stagnant and undifferentiated?

Although we agree with the core of the authors' position, we also present an evolutionary ecological perspective that complements and expands upon the authors' theory by specifying how and why certain ecological factors promote individual differentiation. Specifically, Baumeister et al.'s work on individual differentiation mirrors recent work investigating the *Strategic Differentiation-Integration Effort* (SD-IE) hypothesis, which posits that specialization and role differentiation within and among individuals and groups is an evolutionary adaptation to ecological pressures.

In essence, SD-IE articulates the ecological conditions under which individual differentiation should occur and ultimately why it does. According to SD-IE theory, slow life history strategies favor the evolution and development of individuals who are strategically differentiated in cognition and behavior, fueling the proliferation of individuals into varied micro-niches (Figueredo et al. 2013). Whereas high population densities typically promote higher levels of social competition among conspecifics, SD-IE
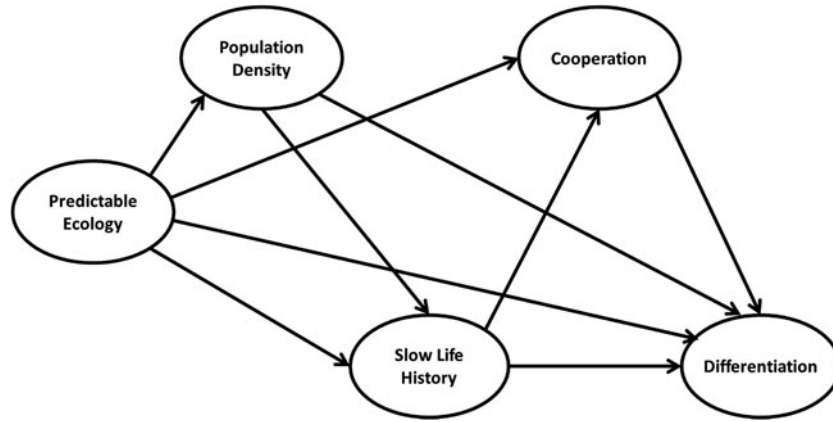
Figure 1 (Cabeza de Baca et al.).   Life history model of differentiation. Individual differentiation results from a sequence of constraints at varying levels of organization. Increases in ecological stability and thus in environmental predictability result in increased population densities and slower life history strategies. This, in turn, promotes increased cooperation and thus strategic differentiation.

permits *niche-splitting* through social specialization and role differentiation, and thus a certain degree of release from this competitive pressure. Once competitive release has been achieved, social cooperation among conspecifics, requiring more egalitarian distribution of resources, and niche specialization would increase labor productivity and extraction of resources. For example, the theory of *embodied capital* posits that division of labor between the sexes emerged as a strategy to maximize productivity and resource acquisition within the household, broadly defined (Kaplan et al. 2001).

Life history theory has informed evolutionary biology and ecology to explain human between-group differences and within-group differences (Ellis et al. 2009). These life history effects are typically found in biological traits such as birth spacing, age of maturity, life span, and so forth (Stearns et al. 2008) but have recently been shown to also involve psychological traits and certain aspects of social organization (Ellis et al. 2009; Figueredo et al. 2006; Kaplan & Gangestad 2005). Figure 1 displays a conceptual schematic of the pathways that are believed to be involved in how life history strategy affects individual differentiation within complex social groups.

Predictable and controllable ecological conditions produce environments characterized by low levels of stressors that facilitate the proliferation and habitation of individuals in the locale. Proliferation of individuals then saturates the environment with conspecifics and increases population density and stability. As a result, competition emerges between individuals as access to resources decreases relative to population increase. This source of resource scarcity is an ecological factor that influences life history strategies toward the slower end of the continuum. This is because the ecology can produce differences in life history strategies on the slow–fast continuum via development (Woodley 2011). Broadly, environments that are characterized as unpredictable and where sources of illness and death are extrinsic (i.e., uncontrollable by intrinsic forces) produce environments that foster fast life history strategies. Conversely, life history theory predicts that stable, predictable, and controllable ecological conditions favor the evolution and development of slow life history strategies (Ellis et al. 2009).

The ecology also has direct effects on the social dynamics of a collective (Figueredo et al. 2015). Resource scarcity (discussed in Ellis et al. 2009) can result from depletion of resources such as drought as well as from population saturation of an area.

Thus, high population density environments containing low resources should favor cooperative social orientations and niche specialization. In contrast, harsh and unpredictable environments would produce strategically integrated individuals who generalize across niches, maximizing their plasticity to maneuver between social niches.

Thus, slow life history strategies favor strategic differentiation into social micro-niches. Evidence for cognitive and strategic differentiation-integration has been found between individuals (Figueredo et al. 2013; Woodley et al. 2013) and at population levels (Armstrong et al. 2014; Fernandes & Woodley 2013; Woodley et al. 2014).

One place where life history strategies can impact social dynamics is through *social effort* or the allocation of time and bioenergetic resources toward cooperative and/or competitive strategies (Figueredo et al. 2015). Slow LH strategies promote prosocial, affinitive behaviors.

Socially, fast life history individuals would be oriented toward opportunistic or antagonistic social behavior such as insecure attachment, low-quality bonds, and conflict (Belsky et al. 1991; Figueredo & Jacobs 2010). Conversely, predictable environments should produce slow life history individuals who are oriented toward cooperative and affiliative social behavior.

Groups that socially cooperate will tend to differentiate because those groups with higher degrees of individual specialization are more efficient at extracting and utilizing resources from the environment (Cabeza de Baca & Figueredo 2014). This phenomenon has been termed group-level character displacement, this being the group-level analogue to individual-level character displacement (Woodley & Fernandes 2014). Nevertheless, there are costs as well as benefits: Brain growth and social skill acquisition require large investment from parents and alloparents (Alexander 1974; Lancaster & Kaplan 2009), selecting higher levels of maternal and paternal effort (Cabeza de Baca et al. 2012).

In conclusion, we suggest that the authors consider the role of ecology when examining individual-societal social dynamics and specialization as we have previously discussed (Cabeza de Baca & Figueredo 2014). We applaud Baumeister and colleagues' integration of the individual and the collective as a necessary step toward assimilating social-personality psychology with group and population studies. We do suggest, however, that the authors should clearly establish the ecological parameters that contribute toward group cohesion and system gain. We look forward to the authors' response and hope our comments enhance their theory.

Solved paradoxes and old hats? The research needed on differentiated selves

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Abstract: The idea that differentiated selves almost always improve group outcomes is overly simplistic. We argue that it is essential to distinguish between two distinct elements of differentiated selves – identifiability and specialization – and to identify conditions under which they influence group outcomes. Adopting a group-by-situation perspective, in which group and situation variables are considered jointly, is recommended to generate novel hypotheses.

Baumeister et al. devote much space to reviewing well-established research that purportedly illustrate paradoxical findings related to group formation and group performance, but fall short of moving the field forward. Much discussion centers on accepted wisdom that group members emphasise cohesiveness early in their formation, that deindividuation reduces accountability and usually produces unsavoury outcomes, as well as other maladies of group processes. More interesting, Baumeister et al. argue that such phenomena illustrate the value of differentiated selves. However, we found this focus on differentiated selves uninformative in providing new insights about the apparent paradoxical relationships between social facilitation and social loafing in a way that reaches beyond decades-old research on the importance of identifiability of group members' contributions (e.g., Harkin 1987; Karau & Williams 1993).

As McGuire (2013) observed, a key goal of research is to identify conditions that give rise to specific outcomes. Despite briefly acknowledging situations in which differentiated selves may hinder group performance, the target article is mostly a panegyric of such differentiation, which we see as a very selective read of extensive literature. This may be captured most clearly by what we consider the crux of the target article's framework, the sweeping claim that "the worst outcomes of group processes come when individual identities are submerged in the group. By *submerged in the group*, we mean *any* of the following: People are held neither accountable nor responsible, they are not in competition nor playing a distinct role, they are not publicly identified nor rewarded" (para. 5, emphasis on *any* ours). We propose that this one-sided account is an outcome of two shortcomings. First, in using the construct *differentiated selves*, the authors collapsed *identifiability* and *specialization* – which we believe are two distinct elements. Second, the framework is not refined enough to provide an appropriate foundation for understanding group-related outcomes.

The first main weakness is the creation of a single construct, differentiated selves, from two distinct ones. The quote above illustrates this by capturing under a single umbrella identifiability ("publicly identified") and specialization ("playing a distinct role"). We argue that not only are these elements conceptually different, but also there are conditions under which group outcomes will be improved when either is high or low. For example, as the target article reviewed at length, identifiable contributions increase accountability, allowing for improved outcomes at times; however, as research indicates, one of the symptoms of the undesirable groupthink is pressure on dissenters to acquiesce, which is effective mostly when the identity of the dissenters is known (Janis & Mann 1977). Similarly, while specialization often offers distinct advantages to group productivity (e.g., Stasser et al. 1995), it also places a lot of power in the hands of specific individuals with critical expertise, leaving the group vulnerable to potential demands of such individuals or when they depart the group.

Whereas the first weakness was a term-specific one, the second weakness relates to the crux of the framework as summarised in the quote above. We find this framework to be an oversimplification, inadequately reflecting thoughtful previous research in many areas, while potentially stifling future research as such a framework does not easily lend itself to the creation of refined novel hypotheses. Instead, we argue that adopting a framework of a group-by-situation (GxS) interactive perspective enables us to advance our understanding of group processes through the focus on group related variables in the context of changing landscapes, allowing for more accurate predictions to transpire.

To substantiate this critique we can consider how the GxS promotes innovative research whereas the target article's framework may stifle it. The proposition that after a stage of group building (cohesiveness) one would benefit from increased differentiation (of both identifiability and specialization presumably) neglects many common findings and moreover may fail to allow such research to flourish. To illustrate, consider research on group conflict and performance. Early models suggested that conflicts interfere with effective group performance (e.g., Hackman & Morris 1975; Pondy 1967). These approaches were later criticized for failing to account for the benefits of task (as opposed to relational) conflicts, which are "conflicts about the distribution of resources, procedures and policies, and judgements and interpretations of the facts" (De Dreu & Weingart 2003, p. 741). Following the target article's crux, it is likely that task conflicts will arise with increased identifiability as both are considered to encourage greater cognitive understanding and investment in the issues considered. However, despite the potential attractiveness of the underlying argument, a meta-analysis of the relevant research indicates that "for team performance, both task conflict and relationship conflict are equally disruptive" (De Dreu & Weingart, p. 746). Such findings not only undermine the differentiated selves' framework, but also they illustrate the target article's failure to account for many nonsupportive findings.

Just as the research on team conflict undermines the suggestion that identifiability will (almost) always improve group outcomes, other research undermines the claim that specialization will always contribute to performance. For example, a recent meta-analysis on shared leadership (which reflects decreased specialization, as an important role is occupied by multiple individuals) demonstrates its overall positive association with team performance (D'Innocenzo et al. 2014).

Limited space does not allow us to elaborate on the GxS perspective that we favor. In short, we contend that identifying relevant group variables – such as goals (e.g., ad-hoc vs. continuing; achievement vs. ideological; maintenance vs. innovation), structure (hierarchical vs. egalitarian; small vs. large; open vs. closed), dynamics (e.g., team climate; West & Anderson 1996, affective tone; George 1990), and traits (e.g., group-level traits; Smaldino 2014, members' traits; LePine et al. 1997) – in a context of specific situations (e.g., fast changing vs. stable; recurrent vs. novel; relational vs. goal-focused; simple vs. complex) will promote a more accurate and generative foundation for the identification of optimizing team outcomes. We believe that nascent research in this direction already exists (e.g., De Dreu et al. 2008) and would recommend further developing these models to capture the complexities that are absent from the framework offered in the target article.

How group members contribute to group performance: Evidence from agent-based simulations

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Abstract: The authors argue that group performance depends on the degree to which group members identify with the group as well as on their degree of differentiation. In this commentary, I discuss results from agent-based simulations, suggesting that group performance depends, at least in part, on features orthogonal to agents' caring about group performance or about how they are perceived by other group members.

In their target article, Baumeister et al. make a case for the claim that group performance depends in crucial ways on the degree to which group members identify with the group as well as on the degree of individual differentiation among group members. Baumeister et al. muster an impressive amount of evidence for this claim, where the evidence comes mostly from social psychology and personality research.

This commentary draws attention to the fact that there is still a large and important body of literature that is highly relevant to the claim made in the target article but that is entirely neglected by Baumeister et al. Computer scientists, economists, cognitive scientists, and others have in recent years systematically studied group performance by means of computational modeling, in particular agent-based simulations. Although it is generally acknowledged that the models used in these studies are idealized in a number of ways, it is noteworthy that some of the features that Baumeister et al. identify as contributing to group performance have also been identified as such in simulation-based studies of group behavior. The interesting point is that, whereas Baumeister et al. attribute those features to the attitudes of group members toward the group, or the moral behavior of those members, or – most important for their main claim – the extent to which members are identifiable within the group, in the computational modeling literature, these features arise partly from very different assumptions: for example, concerning the (mathematically characterizable) structure of the group, or the spread of opinions within the group, or sometimes even just the size of the group.

There is a vast literature on agent-based simulations, in which a variety of models have been investigated. Here, I focus on one particular type of models – the so-called Hegselmann-Krause (HK) models and their variants – and some of the results the study of these models has led to.

In their original form, the HK models simulate groups of agents who try to determine the unknown value of some parameter by exchanging information with other agents in the group. In the simplest model, the agents repeatedly update their opinions about the value of the parameter by averaging the opinions of the agents that are in their Bounded Confidence Interval (BCI), where agent A is in agent B's BCI precisely if A's opinion is "close enough" to B's. (In their own studies, Hegselmann & Krause investigated systematically different bounds on the confidence interval.) In a more interesting model, agents also receive evidence directly from the world about the value of the parameter they aim to determine, and they update their opinions by "mixing," in a specific way, that evidence and the opinions of the agents in their BCI. (For details, see Hegselmann & Krause 2002; 2005; 2006; 2009.)

In recent years, a number of extensions of the HK-models, in particular of the second one, have been proposed. For example, extensions have been studied in which communities of agents hold sets of logically related beliefs, rather than a single opinion on the value of a parameter (Riegler & Douven 2009; Wenmackers et al. 2012; 2014). And Douven and Wenmackers (in press) present results concerning a version of the second HK-model in which communities of agents update probabilities, where the focus of Douven and Wenmackers' study is the comparative efficacy of different update rules.

Some of the results obtained in the above and related studies bear directly on the topic of the target article. To mention a few: (1) Sometimes the reluctance of agents to share information with anyone but those whose opinions are extremely close to their own can be beneficial for the group as a whole (Hegselmann & Krause 2002; 2006). (2) Free riding, in the sense of agents' ignoring evidence coming directly from the world, is tolerable to a surprisingly high degree: As long as some agents do take that evidence into account, all agents will arrive at holding a true belief (or true beliefs, in some models), and the group as a whole will not be significantly slowed down by the free riders (Hegselmann & Krause 2002; 2006). (3) Giving greater weight to the opinions of experts does not always pay off for the group as a whole (Douven & Riegler 2010). (4) If the evidence the agents receive is noisy (as much real-world evidence is), then the average agent's opinion may converge *faster* on the truth if the agents do not communicate their opinions with other agents; but it may, eventually, approach the truth *more closely* if the agents do communicate their opinions (Douven 2010).

For any of these phenomena to occur, it is immaterial whether the agents can be held accountable for either their opinions or their communicative behavior, or indeed whether they are identifiable for other agents at all. This is not to suggest that the kind of explanations for group performance that Baumeister et al. canvass – at least insofar as they pertain to information use (which they distinguish from productive achievement) – are wrong or superfluous. What it does suggest is that, for at least some of the phenomena Baumeister et al. seek to explain, there is a problem of overdetermination: These phenomena may be a result of the attitudes that group members hold toward each other (etc.), but they may also arise out of much simpler facts, completely unrelated to whether agents care about how well their group does or about how they are perceived by other members of the group.

It is reasonable to hold that, in reality, both types of factors will play a role. This should give computational modelers reason to try to incorporate in their simulations the kind of factors that Baumeister et al. discuss. At the same time, the findings from the literature on agent-based simulations should give social psychologists reason to investigate which part of group performance is best explained by broadly moral considerations of the group members and which part by structural constraints on information exchange that may not be morally evaluable.

Reputational concerns as a general determinant of group functioning

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Abstract: To understand a group's (dys)functionality, we propose focusing on its members' concerns for their reputation. The examples of prosocial behavior and information exchange in decision-making groups illustrate that empirical evidence directly or indirectly suggests that reputational concerns play a central role in groups. We argue that our conceptualization fulfills criteria for a good theory: enhancing understanding, abstraction, testability, and applicability.

General determinants of group functioning. When does a group do better than we would expect from the sum of its individual members, when worse? This is the ultimate question many researchers ask, whether they are concerned with group performance, information exchange and decision-making in groups, or prosocial and antisocial behavior (cf., Allport 1962). A major

achievement of Baumeister et al.'s stimulating paper is that they bridge these fields that too often are regarded as distinct, instead of capitalizing on each other's knowledge.

Baumeister et al. suggest what they call "differentiation of selves" as a general determinant for the functioning of groups in different contexts: The more individual group members become differentiated selves, the better the group functions. Baumeister et al. offer a variety of factors that make selves differentiated, such as group members having distinct roles and specialization; being individually identifiable, accountable and responsible; getting individual rewards; and being in competition with each other. Yet, important questions remain. How do these factors differ in effectiveness across different group contexts? What are the psychological mechanisms underlying their effects?

Clearly, Baumeister et al.'s framework is a useful step toward a greater understanding of groups. Yet, we propose an alternative conceptualization as a general determinant for group functioning: reputational concerns. Our conceptualization might do equally well in terms of (a) enhancing understanding and (b) applicability to important social settings. However, it might do even better in terms of (c) abstraction (i.e., parsimony, the notion of explaining a lot with a little) and (d) testability – all of which have been emphasized as criteria for a good psychological theory (Van Lange 2013).

Reputational concerns. Anthropologist Ralph Linton (1945, p. 9) wrote that "there is very little organized human behavior" which is not to some degree directed toward fulfilling the "need for eliciting favorable responses from others." Indeed, concerns about one's own reputation have since, under different terms, been recognized as a prime human motive in the biological, behavioral, and social sciences. Baumeister (1982) himself suggested the relevance of what he called "self-presentational motives" for different social phenomena. More recent empirical evidence indicates the importance of reputational concerns in groups – both explicitly and implicitly.

First, in the broad domain of prosocial behavior, the role of reputational concerns is explicitly recognized by different research traditions. In behavioral economics, prosocial behavior is seen as partly driven by the "image" or "signaling" motivation that one is a good person (Ariely et al. 2009). Evolutionary accounts argue that concerns to build a reputation as a trustworthy cooperation partner enable indirect reciprocal helping within a group (Nowak & Sigmund 2005). Also, in social psychology some have demonstrated that a motivation to present oneself in a good light is decisive for prosociality, for example in research on "moral hypocrisy" (Batson et al. 1997).

Second, in the field of information exchange in decision-making groups reputational concerns are addressed rather implicitly, even though behavior in such situations is recognized as serving different individual and group goals (De Dreu et al. 2008). It has been argued, for example, that group members aim to gain status or influence within the group (Wittenbaum et al. 2004). Empirical research, although not directly addressing this, also implies reputational concerns are a motive in information exchange. Group members' communication is driven by their wish to be seen as having comprehensible reasoning (Faulmüller et al. 2012), and they tend to adjust the information they share so that they are perceived as more competent (Mojzisch et al. 2014), both leading to biased information exchange. When group members are familiar with one another and hence have to worry less about their social acceptance within the group, communication becomes less biased (Gruenfeld et al. 1996).

These examples illustrate that empirical evidence either directly shows a central role of reputational concerns in explaining group functioning or can be interpreted in that light. Many other examples can be found, ranging from Hollander's (1958) "idiosyncrasy credit" – the idea that status can be earned by conforming to the group's expectations and used up by deviant behavior – to empirical evidence that "impression management" could underlie the increased effort weak performers show in group settings (Kerr

et al. 2005). In sum, many group phenomena seem to be driven at least partly by the attempt to be seen favorably by others.

A focus on reputational concerns allows a more flexible view on group functioning across time than the two sequential steps Baumeister et al. advocate: first cohesive identification, later differentiation. Reputational concerns can explain why the same person within the same group can contribute both positively and negatively to this group's functionality – not depending on the group's long-term development but varying with contextual factors. For example, a timid team member in a company might not mention any ideas at the team's brainstorming session out of fear of appearing stupid (reputational concerns as impairment for group functioning). But within the same meeting, this person might contribute generously to the team's collection of charitable donations out of fear of appearing stingy (reputational concerns as enhancement for group functioning). And reputational concerns can partly explain why moderators of individual behavior can have different effects in groups (Faber et al. 2015).

Practical aspects. For these theoretical and empirical reasons, we propose reputational concerns as a general determinant of group functioning in different contexts. Furthermore, we argue that such a focus fulfills the two more practical criteria for a good theory mentioned above: testability and applicability. In empirical research, reputational concerns usually are easy to operationalize. And they can be addressed in interventions ranging from small group to state level. Letting citizens develop their own cooperative norms in local communities (Van Lange et al. 2013) or implementing policy interventions that nudge behavior that benefits the individual or the whole group (Thaler & Sunstein 2008) may serve as examples.

We do not argue that reputational concerns are sufficient to explain all cases of groups being more or less than the sum of their members. But we are confident this motive deserves broad theoretical, empirical, and practical consideration.

Humans are not the Borg: Personal and social selves function as components in a unified self-system

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Abstract: Does joining groups trigger a cascade of psychological processes that can result in a loss of individuality and lead to such outcomes as social loafing and poor decision-making? Rather than privileging the self comprising primarily individual qualities as the "true self," a multilevel, multicomponent approach suggests that, in most cases, personal and collective identities are integrated and mutually sustaining.

Baumeister et al. provide a great intellectual service by revisiting social psychology's "master problem": explaining the connection between the individual and the collective, including groups, organizations, communities, and society. Vestiges of Allport's (1924) antigroup orientation continue to influence theorists' and researchers' willingness to consider group-level concepts and processes, and Baumeister et al.'s analysis is a reminder that anyone who wants to understand something about the human condition – creativity, decision-making, productivity, or even violence – needs to understand group processes because nearly all humans are members of groups and those groups have a dramatic impact on them.

Baumeister et al. get many things right. Allport did champion a psychogenic analysis in his 1924 paper (although he amended his

position in his later writings, e.g., Allport 1962). Although coordination of action is more difficult in larger groups, most organizations cope by creating and sustaining small subgroups (e.g., Kozlowski & Bell 2013). Many individuals are motivated by self-serving aims that prompt them to maximize self-interest (unless their self-system is a collectivistic one that rejects the marked distinction between self and other that characterizes Western thought, e.g., Brewer & Chen 2007). Groups with complex social systems do tend to triumph over ones that lack such systems (as confirmed by anthropological studies of the shift from hunter-gatherer societies to agrarian and pastoral ones, e.g., Mulder et al. 2009). And threat of evaluation does increase the likelihood that group members will work harder, loaf less, communicate more carefully, offer more creative ideas, and resist conformity pressures, and it decreases the likelihood that they will exploit shared resources, riot, or act violently (but then again, evaluative pressures do that same thing to individuals who are not in groups).

They also raise a number of questions. Did the study of the self and groups proceed along independent lines? Social identity and symbolic interactionists would likely say no (e.g., Hogg et al. 1995). Do group researchers continually claim that groups are more than the sum of their parts? No, for the evidence of synergy in groups is thin (Larson 2010). Is role differentiation unique to larger groups? Roles are what distinguish any group from such aggregates as crowds and audiences and are the hallmark of one of the most common of all human groups: teams (e.g., Bunderson & Boumgarden 2010). Does social facilitation require the threat of social evaluation by others? Social evaluation certainly enhances the effect (e.g., Harkins 1987), but it is not a necessary condition, at least according to studies that have shown facilitation in species that likely worry little about evaluation (e.g., cockroaches; Zajonc et al. 1969). Do groups pass through two identifiable stages as they develop? Tuckman (1965) identified four stages, including one characterized by the formation of stable status hierarchies that promote both cohesion and individuality, but many theorists believe groups cycle repeatedly through periods of increased and decreased cohesion, productivity, and conflict (Forsyth 2014).

But what of their most provocative claim, that group membership can trigger a cascade of psychological processes that results in a loss of individuality such that "the individual self is lost or forgotten as identity is submerged in the group" (sect. 4, para. 1)? Le Bon invoked this idea back in the nineteenth century when he suggested people lose touch with their individual sensibilities when caught up in a crowd. The crowd is "anonymous, and in consequence irresponsible" (Le Bon 1896/1960, p. 30). Freud (1922) trotted out this theory to suggest that the group, as a kind of primal horde, satisfies latent aggressive and libidinal tendencies by allowing members to abandon the regulations of the superego and follow the lead of others. In 1940, Cantril invoked it again to explain why a handful of people panicked when listening to the Orson Welles broadcast of *The War of the Worlds*. In 1969, Zimbardo, in his input–process–output model of deindividuation, theorized that in anonymous groups individuals lose their sense of responsibility and individuality and so engage in irrational, emotional, and impulsive actions.

Individuals certainly do sometimes act in unusual ways when in groups, but researchers have yet to definitively document any of these hypothesized psychological transformations. McPhail's (1991) field studies of individuals submerged in mobs and crowds concluded most members of such groups act rationally. Postmes and Spears's (1998) meta-analytic review of studies of deindividuation concluded anonymity and group membership rarely trigger psychological changes or that these changes mediate the relationship between situational factors and aberrant actions. Bromley (2001), investigating the most extreme types of group identifications (e.g., cult indoctrination, religious conversions), concluded that these processes can be explained by such quotidian mechanisms as persuasion and social networking rather than by dramatic shifts in identity.

Multilevel, multicomponent models of the self, such as sociology's identity theories (e.g., Stets & Burke 2000), social identity theory (e.g., Hogg 2005b), and Brewer's (2012) optimal distinctiveness theory, consider the self to be an ongoing process that integrates individualistic, collective, and relational aspects of identity in an associative network. Rather than privileging the self comprising primarily individual qualities as the "true self," and the self that derives from group memberships as inauthentic, they suggest situational factors influence the spread of activation across this network so that some aspects of the self may be more accessible cognitively and, in consequence, regulatorily (e.g., intergroup settings, competitive contexts), but rarely will the activation of one subset of closely related elements in this set fully suppress other components of identity. Humans have sufficient cognitive resources to develop and maintain an elaborate self-system that continuously integrates multiple self-defining constituents, so only in highly unusual circumstances does the self becomes narrowly defined by only one category of self qualities (e.g., Sedikides et al. 2013; Swann et al. 2010). In most cases, personal and collective identities coexist amicably, making concepts such as mob mentality and deindividuation theoretically and empirically suspect. Humans are social, but not so social that when they join a group they risk losing touch with their individual, self-defining qualities. We are not the Borg.

Social identification is generally a prerequisite for group success and does not preclude intragroup differentiation

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Abstract: On the basis of research in the social identity tradition, we contend (a) that identification and differentiation are not mutually exclusive, (b) that a sequence in which identification gives way to differentiation is not necessarily associated with superior organizational outcomes, and (c) that social identification, and leadership that builds this, is generally a prerequisite for group success.

The central claim of Baumeister et al.'s analysis is that groups become more productive – and more moral – once their members have advanced beyond a first phase of group identification and become differentiated through processes of individuation. This is mainly because differentiation is seen to encourage greater accountability. We acknowledge the importance of both identification and differentiation for group success. However, three decades of research in the social identity tradition (after Tajfel & Turner 1979; Turner et al. 1987), points to several problems with Baumeister et al.'s analysis. In particular, this work suggests (a) that social identification and differentiation are not mutually exclusive (so that submergence of the self in the group does not necessarily preclude differentiation), (b) that the proposed temporal sequence – from social identification without an emphasis on differentiation to differentiation without an emphasis on social identification – is not necessarily associated with superior organizational outcomes, and (c) that social identification (of some form) is generally a prerequisite for group success, and that attempts to loosen or downplay this will therefore be counterproductive (at least from the perspective of the group itself).

Organizational research thus points to the fact that motivation and group productivity tend to be enhanced in groups that are characterized by high levels of *both* identification and differentiation (Ellemers et al. 2004). Moreover, rather than being in any sense natural or inevitable, when these processes contribute to group success this is a product not of content-free identification and differentiation but of active forms of *identity leadership* that create, advance, and embed an often-complex sense of shared social identity (a theory of "us"). This shared identity serves to mobilize and direct group members' energies toward particular goals (Haslam et al. 2011) and its content invariably champions intra-group *difference* (e.g., in roles, responsibilities, expertise) rather than merely "sameness" (Haslam et al. 2003; Rink & Ellemers 2007).

Speaking to these various ideas, empirical evidence underlines five key points that challenge Baumeister et al.'s main arguments (for reviews, see Haslam 2004; Haslam & Ellemers 2011).

First, organizational (like other forms of social) identification does not occur only at superordinate or individual levels; it also occurs at a *subgroup* level (a level Baumeister et al. largely ignore). Subgroup identities afford opportunities for both group identification and differentiation. Indeed, partly as a result of this, their recognition is often central to organizational success (González & Brown 2003; Peters et al. 2012).

Second, whatever a group's circumstances, it is always crucial to maintain a system in which individual efforts are aligned and individuals are motivated to coordinate their distinct contributions in the interest of achieving shared goals. As a result, group identification often becomes *more* (not less) important in the context of intragroup differentiation because without this, the activities of group members tend to be oriented toward personal rather than group ends and hence to be disorganized and lack integrative focus (Ellemers 2012; Ellemers et al. 1997). Indeed, many of the group maladies that Baumeister and colleagues discuss (e.g., loafing, plundering) result not from lack of differentiation but rather from lack of identification.

Third, because people are often heavily invested in (differentiated) subgroup identities, superordinate identities need to allow for their expression rather than suppressing them. For this reason, organizational outcomes tend to be enhanced where identification is built from a subgroup level *up*, rather than from a superordinate level down (Eggins et al. 2002; Haslam et al. 2003). In this way too, differentiation often *precedes* and is *built into* superordinate identity content and hence can be a basis for (rather than a barrier to, or a sequel of) social and organizational identification.

Fourth, multiple lines of research point to pitfalls in strategies that, in the absence of group identification, focus on individuation as a locus for personalized incentivization to enhance motivation and performance (e.g., see Bloom 1999). In corporate and sporting contexts, for example, individual-level incentives (especially for "stars") can easily undermine individuals' intrinsic motivation as well as the coordination and *esprit de corps* that is needed to achieve optimal collective outcomes (Duffy et al. 2012).

Fifth, morality is essentially independent of both identification and differentiation per se. In particular, individuation and personal accountability do not guarantee morality because, again, this depends upon the *content* (e.g., values, norms, goals) that define the superordinate and subgroup identities by which individual group members are (or are not) guided and to which they are (or are not) accountable (Ellemers et al. 2013). In the Milgram paradigm, for example, whether people behave morally – or, more accurately, whether, when they are pitted against each other, they are guided by the morality of science or the morality of society – depends upon which of these causes they are led to identify with (Reicher et al. 2012).

These various points, and others that space precludes us from discussing, undermine confidence in the general theoretical framework that Baumeister et al. present. It is nevertheless true that the target article's assumptions make sense from the standpoint of an individualistic metatheory that sees groups (and social identifications) as a necessary evil, but one that can (and should) ultimately be overcome by rediscovering the (inherently more rational and moral) power of the individual. However, 30 years of nuanced empirical work – in which research and theory about the self has been closely tied to research and theory about groups – has shown this metatheory to be inconsistent with the facts of social and organizational science (e.g., see Postmes & Branscombe 2012). As their paper's opening line announces, the core weakness of Baumeister et al.'s model is that it appears insensitive to this endeavor.

Groups need selves, but which selves? Dual selves in groups and the downsides of individuation

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Abstract: It may be true that "groups need selves," as Baumeister et al. contend. However, certain types of selfhood and too much selfhood can both be detrimental to group functioning. I draw on theory and research on dual selves in work groups and teams to outline boundary conditions to the hypothesis that emphasizing individual selves yields positive effects for groups.

Baumeister et al.'s timely analysis reminds us of the importance of selves for groups. However, their analysis fails to capture the complexities and dynamics of the self. I argue that their framework – and research on groups more generally – requires a deeper appreciation of which selves matter for group performance, when and why. I also outline ways in which individuated selves can be destructive for groups.

The central assumption of Baumeister et al.'s framework is that effective group performance requires "different selves playing different roles" (sect 1.1, para. 4). According to the authors, such individuation enables members to make distinct contributions to collective performance. Implicit in their arguments is the assumption that selves align with the roles, skills or abilities that drive group performance. However, evidence for the functioning of dual selves in groups calls into question these assumptions.

Healey et al. (2015) extended dual systems theory to the analysis of work groups to explain coordination failures that occur despite group members sharing (explicit) attitudes, goals, and beliefs. Dual systems theories posit that individuals rely on two distinct information-processing systems (e.g., Epstein 1994; Lieberman 2007; Stanovich & West 2000). The first is a fast operating and largely nonconscious (i.e., *reflexive*) system that provides affectively charged responses. The second is a slower and more deliberative (i.e., *reflective*) system that provides reasoned responses. Because the two systems can provide individuals with conflicting responses to the same object or event, the self is often differentiated *within* the person (i.e., intrapersonal dissociation; see, e.g., Epstein 1994). Hence, group members often find themselves "caught in two minds." Their actions are sometimes guided by the reflexive system (the intuitive, impulsive self) and sometimes guided by the reflective system (the reasoned, deliberative self). Which self predominates at a given time depends largely on task and situational factors (e.g., time pressure, cognitive load, degree of group interrelating). These effects are particularly obvious in natural groups, such as work teams operating in naturalistic settings that must collaborate for extended periods (Gersick & Hackman 1990). In such circumstances much of the group's work "gets done by individuals or subgroups, acting

when the 'main' group is not in session" (McGrath 1991, p. 152). Hence, different selves become more or less influential when the group is not in session.

When Baumeister et al. extol the virtues of different selves playing different roles, they overlook the fact that not all selves or even roles are relevant to effective performance of the group's task. From a dual-selves perspective, an individual member's task-focused self (i.e., the person's reflective, reasoned self) may bring unique skills to the task, even while their reflexive, intuitive self pulls them away from elements of the task (see Healey et al. 2015). When some selves run counter to the group's goals or tasks, individuation in the form of emphasizing or facilitating distinct selves can undermine group performance.

In fact, research on groups has long recognized that although task-related roles may be part of the self they do not constitute the whole self. Barnard's (1938, p. 277) classic treatise on organizations recognized that group members are often subject to competing demands (e.g., professional versus organizational roles) that create "a moral complexity and a moral conflict presumably not soluble." Bales (1951) observed that group members adopt specialized socio-emotional roles as well as task-related roles, which may conflict with one another. Similarly, Thibaut and Kelley (1959) distinguished between the roles prescribed by the group and the actual role(s) enacted by individual members. Studies of role conflict show the negative effects of such intrapersonal struggles (Jackson & Schuler 1985; Kahn et al. 1964; Rizzo et al. 1970). These range from passive (e.g., withdrawal, decision avoidance, resistance to group rules) to active (e.g., conflict) effects.

Based on the foregoing, it seems that groups performing interdependent tasks need selves that are differentiated in terms of task-relevant expertise but not in terms of self-interest. However, the two types of self can be more difficult to disentangle than Baumeister et al. acknowledge. For instance, members from different professional backgrounds may provide a group with expertise variety; but they may also bring differing attitudes, motives and stereotypes to the group setting, which can hinder coordination and cohesion (see, e.g., Ancona & Caldwell 1992).

Baumeister et al. argue that the solution to the pursuit of self-interest at the group's expense is the first step in their two-step process: establishing a common social identity. They posit that, once established, such shared identity enables a group to subsequently capitalize on the benefits of differentiated roles.

Notwithstanding the fact that, as we have seen, explicitly shared social identity beliefs can be insufficient to prevent coordination failures when group members act based on their implicit self, the idea of a one-shot common identification process as a sustainable means for restraining divergent self-interests over time is somewhat unrealistic. Rather, evidence suggests that groups require ongoing mechanisms for this purpose. Building on his observation that group members adopt specialized socio-emotional roles as well as task-related roles, Bales (1951) process analyses revealed that negative socio-emotional actions often require group members to be "reintegrated" into the group (see also McGrath 1984). Such reintegration tends to occur in the latter periods of a group's task, as others seek to reign-in the socio-emotional actions of a discrepant individual when he or she "defends or asserts self" during the task (Bales 1951, p. 193). These findings are consistent with the idea that steps for group cohesion need to reoccur over time, especially in natural groups.

I propose one final limit to the benefits of emphasizing the self in groups. Baumeister et al. highlight the group pathologies caused by the "submersion of individual selves in the group" (sect. 2.2.7), which include social loafing and groupthink. In contrast, they claim that the opposite of submergence, namely emphasizing the individuality and uniqueness of individuals' contributions, necessarily decreases pathologies. However, recent research on narcissism and identification rebuts this latter claim. Specifically, Galvin et al. (2015) found considerable evidence that narcissistic individuals subsume the identity of a group within their *own* identity, adopting the mindset that they and they alone are responsible for the group's success. This form of over-identification leads them to reduce information sharing and engage in dysfunctional behaviors such as excessive risk taking and exploitation of the group for personal ends. Their findings are consistent with the idea that emphasizing the self-as-group can be as dangerous as losing the self within the group.

Baumeister et al.'s framework needs to incorporate a more comprehensive view of the nature and influence of selves in groups. Only then will it provide an accurate account of group functioning.

We agree and we disagree, which is exactly what most people do most of the time

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Abstract: Humans are continually diverging and converging with respect to each other. Research across many domains suggests that differentiation and integration are aspects of a more complex set of dynamics, and are not step-wise but interdependent and continuous. Research on conformity in particular reveals that divergence and dissent are forms of cooperation, reflecting concerns for both individual and group integrity.

Cultural anthropologists credit the ecological success of humans to their ability to learn from each other and act collectively – cooperating, collaborating, and conforming in ways not apparent in other apes (e.g., Boyd et al. 2011; Tomasello 2009; 2014). By contrast, Baumeister et al. propose that human groups flourish when they encourage differentiation and independence, not simply belongingness. We agree. We also disagree, and that illustrates our point: Humans are continually converging and diverging with respect to each other. Explanations focused on conformity versus differentiation are too simple. Instead, groups function best when they are cooperative *and* argumentative – indeed, when they are argumentative *because* they are cooperative, working to achieve goals and realize values that are greater than individual interests or group norms (Hodges 2009; Packer & Miners 2014).

We concur with Baumeister et al. that complementary forces of integration and differentiation are crucial to collective and individual functioning. However, we believe that integration and differentiation are not generally independent or sequential processes. Specifically, we propose that adopting collective identities leads individuals to behave as agentic group members – pursuing collective interests and group goals that are multifaceted. While these goals include cohesion and belonging, they also include change, innovation, improvement, and efficacy motives. Social identification and loyalty can thus drive role differentiation. Ironically, it may be those individuals who are *not* psychologically "submerged" in the group who are most likely to need and benefit from external mechanisms of individuation (e.g., accountability, incentives). Baumeister et al.'s review properly draws attention to the importance of differentiation; here we offer a sampler of research suggesting that it needs to be scaled up and integrated into a more complex set of dynamics.

In research on conformity and nonconformity, the lion's share of psychologists' attention has been devoted to the former. The assumption has been that if we understand what drives agreement,

the inverse explains divergence; for example, if conformity arises from social identification, dissent must result from its absence. Recent approaches to divergence and dissent have challenged this assumption, however. Although identification with groups is often positively associated with conformity to group norms, the relationship is reversed if members perceive a norm as harmful to collective interests (e.g., Packer 2008; 2009; Packer & Chasteen 2010). These findings demonstrate that identified group members are not simply norm followers; rather they are motivated to pursue what they perceive as the larger interests of their groups.

Similarly, group interests are often multifaceted and people vary in how they understand collective goals, which allows them to pursue distinct but nevertheless group-oriented courses of action. For example, drawing on research showing that low-level (concrete) construals tend to orient people toward stability goals – and high-level (abstract) construals toward change and improvement goals – Packer et al. (2014) found that different construal levels altered the relationship between collective identification and conformity to group norms. Strongly (vs. weakly) identified members expressed more conforming views about group issues (e.g., downplaying group problems) when operating at low levels of construal but were more dissenting when operating at high levels of construal. Lay conceptions of what it means to be loyal may also influence decisions to deviate from one's own group (e.g., whistleblowing). Preliminary findings suggest that if loyalty is understood as in-group preference or conformity, it negatively predicts whistleblowing; however, if it is understood as dependability and integrity, loyalty can positively predict whistleblowing to legitimate authorities (Ungson & Packer, in progress).

Further evidence for the importance of divergence and for the need to place it in a larger, richer understanding of group dynamics is found in research that is routinely interpreted in terms of conformity. The Asch (1956) dilemma, for example, is cited as an example of astonishing conformity; yet by far the most frequent response for both adults and children is dissent (e.g., Corriveau & Harris 2010; Hodges & Geyer 2006). Most explanations make no attempt to account for the range and pattern of choices, and the usual explanations offered for agreeing answers (e.g., normative pressure and informational influence) are inadequate. The mean pattern (75% dissent and 25% agreement with wrong answers in Bond & Smith's 1996, meta-analysis) suggests that participants are trying to satisfy multiple values simultaneously – including social solidarity, trust and truth, all of which are markers of interdependence rather than independence (Hodges & Geyer 2006). This pattern is not atypical: Across a broad swath of paradigms in social, developmental, and anthropological research (e.g., conversational alignment, synchrony, mimicry, imitation, social influence, social referencing, evolutionary modeling), evidence abounds that divergence and differentiation go hand-in-hand with convergence and matching (Hodges 2014; in press).

Indeed, people differentiate themselves from others even in situations that invite conformity (Efferson et al. 2008). In a series of recent studies (Hodges et al. 2014), participants were placed in a position of ignorance, but heard other participants give what they could assume with high confidence were correct answers to problems. Normative and informational influence should act in concert here, yet participants in this situation chose not to agree with the correct answer about 30% of the time. Results suggested this speaking-from-ignorance effect was a result of people feeling constrained to speak truthfully and cooperatively (e.g., with appropriate warrant) about what they could see. Motivation cannot be reduced to wanting to be agreeable or correct.

Finally, we propose the dynamics of differentiation-integration are not step-wise but continuous and often simultaneous. Integration and differentiation are, in fact, self-reinforcing, forming a virtuous circle in highly functional groups (Heyes 2013). Friends, for example, are more likely than strangers to disagree when they think their peers are wrong (Matsuda 1985; McKelvey & Kerr

1988; Takano & Sogon 2008) because it is easier to disagree when trust and social solidarity are already well established (Hodges & Geyer 2006). By contrast, social loafing is more common in individualistic cultures (Smith et al. 2006) and groupthink among weakly identified group members (Packer 2009). Integration makes differentiation easier; likewise, differentiation often serves integrative purposes. What really matters is cooperation and integrity.

Group members differ in relative prototypicality: Effects on the individual and the group

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Abstract: All groups are differentiated into more or less group-prototypical members. Central members readily influence and lead the group, and they define its identity. Peripheral members can feel voiceless and marginalized, as well as uncertain about their membership status – they may engage in extreme behaviors to try to win acceptance. These relative prototypicality dynamics sometimes benefit group performance but sometimes compromise performance.

Baumeister and colleagues document how group homogeneity and differentiation affect group atmosphere, function, and performance. Their discussion focuses primarily on small face-to-face interactive task-oriented groups. The message is that these groups perform poorly when they are excessively homogeneous and undifferentiated, but well when there is role differentiation and individual members feel they have unique distinctiveness within the group.

Here, I draw on social identity theory (Turner et al. 1987; see Abrams & Hogg 2010; Hogg 2006) to argue that Baumeister and colleagues' analysis becomes more textured when the group is theorized cognitively as an identity-defining social category. This perspective, which does not fundamentally distinguish small interactive groups from large sociodemographic categories, argues that all social groups provide their members with a shared social identity that defines one's attributes as a group member.

People cognitively represent groups they are in (in-groups) and those that they are not in (out-groups) as prototypes; fuzzy sets of attributes that capture key similarities within the group and differences from relevant outgroups (cf., Cantor & Mischel 1979; Wittgenstein 1953). Because group prototypes are fuzzy, groups are by definition always internally differentiated; into those individuals or subgroups that more closely match the prototype and those that less closely match the prototype.

The implications of intragroup differentiation based on relative prototypicality are very significant for group life, particularly when people identify strongly with a group they consider an important and central part of their self-concept and identity. Under these circumstances, people are highly attentive to prototypicality (Haslam et al. 1995; Hogg 2005a). The prototype defines the group and thus one's identity as a group member; so prototypicality becomes a critical perceptual and evaluative standard. People are highly vigilant for and attentive to reliable information about the prototype; they need to know what the prototype is, how prototypical they are, and how prototypical other members are. There are at least five corollaries of group differentiation based on prototypicality.

Corollary 1. Prototypical members have most influence in the group (e.g., Abrams & Hogg 1990; Reicher et al. 1995). People pay particular attention to highly prototypical members as reliable sources of information about the prototype and thus about their identity and how they should conduct themselves. Because

prototypes are typically widely shared within a group, prototypical members have widespread and disproportionate influence across the group as a whole. Prototype-based differentiation creates an influence gradient.

Corollary 2. Prototypical members can more effectively lead their groups (Hogg & Van Knippenberg 2003; Hogg et al. 2012). Because prototypical members better embody the group's attributes and identity it is assumed that their fate is linked to the group and they can be trusted to do no harm to the group. The group follows their lead, allowing them to be normatively innovative identity entrepreneurs (e.g., Abrams et al. 2008). Innovation and identity entrepreneurship are key aspects of effective leadership. Prototype-based differentiation creates a leadership effectiveness gradient.

Corollary 3. Prototypically peripheral members not only have relatively little voice, but also they can be marginalized and treated as deviants by the group. This is particularly the case if as individuals they are viewed as having unlikable attributes that reflect poorly on the group's prestige (e.g., Marques & Páez 1994), or viewed as having attributes that blur the in-group–out-group boundary and compromise in-group entitativity and identity clarity (e.g., Marques et al. 2001). Two of the most powerful motives underpinning social identity dynamics are the pursuit of an evaluatively positive identity (e.g., Abrams & Hogg 1988) and having a clearly defined identity that reduces feelings of self and identity uncertainty (Hogg 2007; 2012). Prototype-based differentiation can marginalize nonprototypical members.

Corollary 4. Group members who feel they are, or are perceived as, prototypically peripheral can overconform to group norms and engage in extreme intergroup behaviors (Goldman & Hogg 2016; Hogg 2014). If a group and its associated identity are important and central to self-definition, feeling prototypically marginal elevates identity uncertainty and motivates behavior aimed at securing recognition, trust and membership centrality in the group. Prototype-based differentiation can cause prototypically marginal members to become zealots.

Corollary 5. Group members who constitute a minority subgroup occupying a prototypically peripheral position in the larger group not only experience membership uncertainty and marginalization as individuals, but also a threat to their subgroup identity – particularly when the overarching group subverts diversity by denying subgroup identity distinctiveness and imposing its own identity (Hogg 2015; Hogg & Wagoner 2017). Under these circumstances, prototype-based differentiation at the subgroup level can cause marginal subgroups to seek autonomy within group, exit the group, or exercise minority influence to convert the larger group.

Baumeister et al. build a case for how group heterogeneity can improve the functioning and performance of primarily small task-oriented groups. In this commentary, I have focused on the social identity function of groups to argue that all groups are internally differentiated in terms of the prototypicality of their constituent members and subgroups, and that prototype-based differentiation has far-reaching consequences.

From the perspective of group functioning prototypical individuals and subgroups have disproportionate influence that casts them in a consensually recognized leadership role. This can facilitate group functioning, but it can also place emphasis on group-based "popularity" rather than effective leadership attributes. In contrast, nonprototypical individuals can feel excluded and marginalized, causing them to overconform and engage in extreme intergroup behaviors to earn acceptance by the group. This loyal and zealous behavior can sometimes benefit the group, but can also create hostile intergroup conflict. Finally, nonprototypical minority subgroups can exit the group, restructure the group, or try to convert the group. This behavior of subgroups can compromise or enhance group functioning – for example, the group can cease to exist or be restructured to perform better.

The ubiquitous situation where members and subgroups are perceived, evaluated, and reacted to in terms of how well they fit the group's identity can have some positive consequences, but can also have negative consequences for social identity and group functioning.

Beyond old dichotomies: Individual differentiation can occur *through* group commitment, not despite it

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Abstract: The target article resuscitates an old but outdated dichotomy: a theoretical dualism between group belonging and intragroup differentiation. A convergence of evidence – including that within the social identity tradition – shows that intragroup differentiation is not incompatible with strong group identity. Indeed, when norms encourage autonomy, dissent, and individual freedom, intragroup differentiation occurs *through* group commitment, not despite it.

The target article deals with a tremendously important question: How can one promote productivity, accountability, and moral integrity in groups? The authors argue that group functioning is best promoted through a two-step procedure: Step 1 emphasizes shared common identity; Step 2 emphasizes intragroup differentiation. This formula operates from the premise that common identity is the antithesis of individual differentiation (or as expressed in the paper, that "submersion of the self into the group is the opposite of differentiation"). Working from this premise, it is understandable that the authors advocate a temporally disentangled process to promote cohesion and accountability: first an emphasis on group commonalities that "promotes emotional bonds" and only then the differentiation that reduces conformity pressures and improves performance.

The notion that there is a hydraulic relationship between group identification and individual distinctiveness is intuitively appealing. But in the last 15 years in particular, the social identity literature has moved on decisively, and it is now orthodox to accept that expressions of individual strength can go hand in hand with strong commitment to the group. As just one example, many groups enshrine the need for autonomy, dissent, debate and freedom of individual thought as a core group value (academia, of course, is one of these). Indeed, our educated guess is that the *majority* of groups that one engages with in everyday life – in schools, organizations and community groups – would profess to uphold these values. In these cases, submerging of the individual self to the group would not trigger pathological group behavior such as "failure to pool information and groupthink." Instead, precisely because individuals are "submerged" in the group, they may engage in any type of behaviors that are construed as beneficial for the group, and these behaviors include dissent, constructive criticism, individual autonomy, and healthy disobedience (Jetten & Hornsey 2014). Committed group members are socialized into respecting cohesion but also accountability; they conform to the norm of being nonconformist.

The evidence for this theoretical position is extensive. For example, when groups endorse individualistic norms, it is the high identifiers (the people who theoretically are most "submerged" in the group) who are particularly likely to think and act in ways that suggest individual distinctiveness. They are the ones who are most likely to see themselves as individuals (Jetten et al. 2002) and to support in-group dissenters (Hornsey et al. 2006). And they are the ones who are least likely to derogate others in the group who behave in an individualistic fashion

(McAuliffe et al. 2003) or to derogate rival outgroups (Jetten et al. 2006). So when the norm of the group is to be individualist, being "groupy" and being individually agentic become the same thing. This balancing of group commitment and intragroup differentiation is not paradoxical or surprising: We see it as flowing in a natural way from social identity theorizing.

Identifying with a group that values individuality and uniqueness is not the only way in which group belonging and individual distinctiveness can be achieved simultaneously. In a review paper, Hornsey and Jetten (2004) describe three other strategies: self-defining as loyal but nonconformist (a common pattern, even among high identifiers); seeing oneself as excessively normative (otherwise known as the "first among equals" effect); and engaging in role differentiation (a strategy also discussed in the target article). None of these strategies requires one to buy into the notion of a hydraulic relationship between cohesion and intragroup differentiation: They are commonsense methods that group members use to balance their desire to belong with their desire to be different.

A parallel literature on identity fusion further challenges the idea that submersion of the self in the group is the opposite of differentiation (Swann et al. 2012). There is now a convergence of research showing that willingness to fight and die for the group is greatest among those who indicate that the individual self is fused with the collective self. One interpretation is that the individual self is embedded within the collective self and is accordingly eclipsed by it. But an alternative interpretation – one that is supported by fusion theorizing – is that the individual self is potent and highly agentic among fused individuals. This principle is consistent with extant literature on extremism. For example, members of an extremist Muslim group in Turkey reported stronger *personal* identification than did nonmembers, and when they were induced to focus on their personal selves (they were asked to complete a questionnaire in front of a mirror), levels of identification with the movement increased (Baray et al. 2009).

When viewed through the lens of the last decade of group identity research in particular, old dichotomies between group cohesion (supposedly emphasizing homogeneity) and individual differentiation become unsustainable. This theoretical advance has pragmatic implications. For example, it means that group leaders do not have to engage in a temporally disentangled two-step process – cohesion followed by differentiation – to promote the positive outcomes they are striving for. Although there may be cases where this might occur, this strategy strikes us as being logistically challenging and practically awkward. A more elegant strategy would establish, from the outset, a normative climate that encouraged autonomy, critical thinking, and individual freedom as core group values. There is already evidence that doing so helps reduce many of the group-related problems identified in the paper. For example, high group identification is associated with *more* willingness to speak out about group problems (Packer 2009) and when a norm of critical engagement is present then biased sampling is reduced, with no detrimental effect on group cohesion (Postmes et al. 2001).

In sum, there is no need to quarantine efforts at intragroup differentiation from efforts at group cohesion, because there is no firewall between them. A large body of recent work makes clear that in many cases intragroup differentiation occurs *because* of, not in spite of, strong group commitment. In short, it is time to bury the old dichotomy.

Group membership: Who gets to decide?

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Abstract: In this commentary, I focus on several problems that the authors' understanding of group identity raises: the legality of avoiding background diversity, the problem of effectively unshareable knowledge, the practical quality of some outcomes arrived at by groups with homogeneous backgrounds, and moral issues about fairness. I note also that much recent research challenges the view that background diversity is more likely to be a detriment than a benefit.

Baumeister et al. argue that groups can be better than the sum of their parts, and they present in their target article a theory of what makes that possible. The theory posits two stages in successful group formation: a phase emphasizing group identity and a second phase that stresses the differentiation of the individuals, particularly with respect to their work-related capacities to contribute to the group. The authors hold that although dissent may be beneficial, "background" diversity, such as race, age, and gender diversity, may harm the first phase in a way that affects the final functioning of the group. Background diversity is thus distinct from the work-related diversity ("specialized function, skills, training, expertise, etc." [sect. 2.4, para. 9]).

A peculiar feature of the authors' claim is that there can be a harmful "excessive diversity" of ethnicity, gender, race, or age in a group, and that diversity can get to be too much of a good thing (sect 3, para. 11). The oddness of the feature is that if one were to act in light of this view, in many instances one would be in a legally questionable position. According to Title VII of the 1964 US Civil Rights Act, hiring or firing on the basis of gender, race, or age is illegal in a company of 15 or more employees. Title IX of the Education Amendments Act also places clear prohibitions on many exclusions based on background diversity.

Many theorists have argued that today appealing straightforwardly to a need to exclude members who would increase ethnic or background diversity is widely thought wrong (Brownstein & Saul 2015; Dovidio 2010; Holroyd 2012). One problem with that mode of thinking is that we find that largely unconscious, implicit biases or convictions about unsuitability may lurk behind otherwise sincere statements that there were no suitable women or people of color to include, for example. Consequently, groups deciding policies on abortion, family leave, student loans, health-care resources, welfare for unwed mothers, and so on, may not include any members of the groups most affected by the policies.

The first and most obvious question that argument raises concerns the quality of the outcomes of such group deliberations when the group does not include minorities. I am not suggesting that there are somehow purely biological or innate differences between groups of white men and groups that are more diverse with respect to gender or race. Rather, the idea is that experience grounds a great deal of our knowledge, and members of such diverse groups can have very diverse access to knowledge.

Such knowledge may not be easily shared. People occupying distinctive social positions, particularly subordinate ones, may have knowledge that is generated by their social position. Thus, in her *Lettres de Mlle Aïssé à Madame C* of 1728, Madame Cornuel famously opined, "No man is a hero to his valet" (Ratcliffe 2011, p. 111). And although that sort of knowledge is at least sometimes shareable (though perhaps not always [Harding 2004]), recent discussion of microaggressions makes it very clear that members of a dominant group may have a very hard time understanding it. Members of the majority group may see in the complaints of minorities about continual daily harassment a victim culture leading to restrictions on free speech (Schmidt 2015). Equally problematic, members of a majority group may have a great deal of difficulty retaining knowledge that comes from a minority perspective and giving it a place in their viewpoint (Burgess et al. 2007).

A second problem arises with the efficacy of the decisions homogeneous groups reach. In cases where the decisions are supposed to affect and even shape the behavior of the gender and racial minorities who are not participating, will that happen if such people have no say in the process? This question really

asks for facts that I do not have, though I note that, for example, when police, prosecutors, and grand juries can be seen to be in some sense one group, outsiders may strongly object to the process if they disagree with the result. Riots argue against the efficacy of the group's decisions.

A third question concerns morality rather than legality. Though we may find it convenient to restrict or reject inclusion based on gender, race, or age, doing so generally gets bad press when the discrimination is uncovered. It is seen as unfair.

Finally, I want to note that conflicts between diversity and group identity may be solved or at least mitigated. There has been a great deal of recent work on how to do so, and there has been definite progress (Brownstein & Saul 2015; Dovidio 2006; Gaertner & Dovidio 2000; Jones et al. 2014; Kang et al. 2014). Outcomes of diverse groups may indeed excel those of more homogeneous groups.

Task specificity and the impact on both the individual and group during the formation of groups

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Abstract: We agree with aspects of Baumeister et al.'s view that shared identities are necessary during initial stages of group formation. In contrast to their analysis, however, we provide evidence that the value of self-differentiation depends more on the task itself than on the stage of group development and challenge the authors to focus on the functions of the group.

Baumeister et al. have attempted to synthesize a diverse body of research on the reciprocal relations between self-identity and group behavior. The authors argue for two phases in group formation (shared identity followed by self-differentiation), stating that the self-differentiation phase leads to improved group and individual performance. We provide contrary evidence: The value of self-differentiation depends more crucially on the functional challenge of the task facing the group rather than identity-based stages.

We concur that shared identities are required to form groups, but we would also add further criteria to this stage. First, the behaviors of individuals that lead to the formation of groups should be evolutionary conserved at the genomic level of analysis. The group must benefit the individual for nature to select individual-level phenotypes (e.g., cognitive, emotional, behavioral differentiation) that optimize group-level outcomes. However, not all individuals benefit from group outcomes (e.g., division of labor, hierarchical stratification) and therefore group formation can sometimes result in a net cost to certain individuals. Under these circumstances the group may constitute a threat to the individual and hence favor member dissidence, defection and the dynamic formation of new groups.

Second, social emotional communication and processing should serve as the evolutionary mechanisms that regulate individual and group dynamics. Within the individual these emotional sentiments can manifest themselves as behavioral expressions of benevolence, trust, threat, and so forth toward others in one's social sphere (the composition of interactions in which an individual could possibly engage; Vigil 2009). It is these types of basic behaviors that dictate group cohesiveness or separation (i.e., approach and withdrawal outcomes), which, as Baumeister et al. point out, contribute to group performance – especially during the initial phases of

group formation (e.g., Jetten et al. 2000). At this point, our conclusions depart from that of the authors.

We contend that the value of self-differentiation to group performance is determined by the specific task that a group is challenged to complete (e.g., hunting, raiding, protecting, exploring, etc.). From this perspective, simply referring to broad performance profiles in stereotypical, subjective, and far too often morally loaded terms is probably misguided. Consider the term *social loafing*, which describes individuals providing differential contributions to a group task. Many functional examples of differential sharing of work exist in nature. For example, when large muscles are under a constant load, individual motor units (members of the muscle group) must asynchronously fire to maintain a constant force and compensate for fatigue effects (Gandevia 2001). This coordinated activity – scaling back of an individual unit's effort (i.e., resting) in combination with increases in the efforts of other units – prolongs the length of time in which a constant force output can be maintained. This is exactly the strategy observed in competitive cycling and combined lifting tasks, where groups of athletes differentially distribute the work of overcoming environmental resistance in order to maintain an output greater than that of any single individual (Hoenigman et al. 2011; Masumoto & Inui 2013; Olds 1998). Therefore, removing the capitalistic connotations and moral judgments about the nature of work and using human physiology and athletic performance as a model we offer a different interpretation of what in this case may be otherwise be interpreted as social loafing.

We draw the reader's attention to another point of the article: Which aspects of individual identities differ amongst group members is not clear. The authors cite a tension between individual sameness and difference during the two respective phases (group formation and maintenance); however, they do not specify whether the pivotal distinctions should be based on surface characteristics, self-reported perceptions of identity, or functions that individuals perform (or can potentially perform). Beyond simple categories of individuals – same versus different – the functions of the group may have very important consequences with respect to the division of labor and optimizing the precise relations within the group. For certain types of tasks, individual specialization can increase group performance (see the authors' example of the flute factory), whereas for other tasks an absolute nonredundancy of individual-level skills can hamstring the effectiveness of the group, for example if one of the members fails to participate (Landau 1969; Roberts 1990). Therefore, important considerations in redundancy must be made in the division of labor, perhaps similar to the role of redundant systems observed at all levels of biology (Kitano 2004). Even though biological redundancy can come at a cost (of decreased efficiency), it has the dramatic upside of robustness to perturbation, offering greater resistance to challenge, and ultimately enhancing the stability of success over time (i.e., reliability).

Focusing on the task, we also encourage the authors to avoid dichotomizing the role of self-differentiation in group performance. For example, learning-by-doing could affect group-level performance without any change in self-differentiation as described in Kenneth Arrow's (1962) seminal paper on organizational learning-by-doing: "It is the very activity of production which gives rise to problems for which favorable responses are selected over time" (p. 156). Additionally, a broad literature in economics and beyond explores group-level forgetting, often relating to the frequency of individual interactions within the group (e.g., Benkard 2000). Clearly, no group stage transition or associated shift in self-differentiation is necessary for these performance improvements to be observed. Finally, we submit that the value of self-differentiation may differ extensively because of the composition of individuals' traits within a given group. For example, individuals sharing trait extroversion (e.g., who are more likely to engage in higher-risk tasks) will likely respond much more positively to self-differentiation than those possessing higher levels of trait introversion – regardless of transitional stages in group

development. Therefore, an intersectionality likely exists between the composition of members' trait behavioral tendencies (containing extroverts vs. introverts) and the types of tasks that a group considers engaging in. In summary, it is the nature of the group's goals, the immediate tasks faced and combinations of members' individual traits in that group that contribute to the group's organization and its success or failure.

Member differentiation and group tasks: More than meets the eye

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Abstract: Analyzing how various forms of member similarity and difference affect group performance is a worthwhile task. I argue that the authors' analysis would be improved by distinguishing between subjective and objective forms of member differentiation and by utilizing a different typology of group tasks.

This ambitious article analyzes how similarities and differences between group members influence collective performance. The basic premises of the article, listed below, are uncontroversial:

Shared social identity is necessary, but not sufficient, for group effectiveness.
Resources (e.g., knowledge, skills) that members bring to the group are critical, and different members often bring different resources.
To optimize group performance, members' inputs must be coordinated.
The nature of the group task strongly influences the impact of member similarity and difference on collective performance.

Notwithstanding the plausibility of these premises, two features of the authors' analysis can be questioned. The first concerns their definition of member differentiation, which is a key construct in the paper. The second concerns the typology of group tasks they use to organize their literature review.

Member differentiation. A fundamental assumption of the target article is that members must be differentiated, or individuated, if the group is to succeed in achieving virtually any collective goal (though some possible exceptions are briefly noted). The authors adopt a very flexible definition of differentiation, which includes making a publicly identifiable task contribution, receiving reward contingent on one's contribution, feeling accountable for one's contribution (via the need to justify it to others), providing an independent judgment on a collective decision-making task, and playing a distinct role in a task that requires division of labor. These various types of differentiation are treated interchangeably throughout the target article. Although aggregating diverse definitions of a construct has potential benefits (in this case, differentiation), it also comes with potential costs. The major benefit is identifying commonalities across definitions, which can facilitate development of a comprehensive theory. The major cost is obscuring important distinctions between definitions, which can retard theory development.

With one major exception, the various definitions of *differentiation* in the target article involve a common psychological process, namely evaluative apprehension about how other group members will assess and respond to one's contribution. The exception is playing a distinct role in a division-of-labor task. Inclusion of this latter definition raises an important question about how the authors conceptualize differentiation, which has implications for their overall analysis. The question is whether differentiation is

a subjective or an objective phenomenon, that is, whether it refers to the extent to which group members (a) feel pressure to behave as others might wish or (b) differ in skills, knowledge, opinions, and so forth, that enable them to play complementary roles on tasks requiring specialization and coordination. Because these two forms of differentiation are potentially orthogonal (and different combinations of subjective and objective differentiation might have different effects on group performance), subsuming them both under the label of *differentiation* is problematical. In particular, given that the bulk of the target article deals with subjective differentiation, inclusion of objective differentiation vis-à-vis division-of-labor tasks muddies the conceptual waters. Therefore, my comments below are restricted to subjective differentiation and its implications for evaluative apprehension.

Group tasks. To their credit, Baumeister et al. recognize that the impact of differentiation depends on the type of task the group is working on. They identify three categories of tasks in which public and private subjective differentiation might influence group effectiveness: (1) task performance (also called productive achievement tasks), subsuming social facilitation and social loafing (and ignoring division of labor for reasons mentioned above); (2) information, judgment, and decision (also called information use tasks), subsuming information pooling, brainstorming, conformity, groupthink, accountability, and wise groups; and (3) prosocial and antisocial behavior, subsuming social dilemmas and mob violence. Their literature review suggests that public differentiation (which increases evaluation apprehension) improves group performance on productive achievement tasks and facilitates prosocial behavior/inhibits antisocial behavior. In contrast, private differentiation (which decreases evaluation apprehension) improves group performance on information use tasks.

This analysis, though interesting, is weakened by the absence of a persuasive rationale for the tripartite task typology. Rather than adopting (or adapting) one of the many extant group task typologies (e.g., McGrath 1984; Steiner 1972), for reasons that are not clear Baumeister et al. settled on the three categories I described above. The absence of a strong conceptual basis for parsing the task universe into these categories makes it difficult to draw theoretically satisfying conclusions about psychological mechanisms underlying the relationships between public and private differentiation, on the one hand, and group effectiveness, on the other hand.

An alternative typology. To clarify these mechanisms, I suggest an alternative typology of group tasks focusing on norms. Two categories of such norms are viable candidates for organizing the literature Baumeister et al. reviewed. One category prescribes that group members behave in a specified way (e.g., work hard, cooperate with others). The second category prescribes that group members act in accord with their inner states (e.g., express their opinion irrespective of what others say). Work on social facilitation and loafing, accountability, and social dilemmas fits well into the first category, where public differentiation has positive consequences. Work on information pooling, brainstorming, conformity, groupthink, and wise groups fits well into the second category, where private differentiation has positive consequences. (Work on aggression and mob violence can be forced into the first category, but doing so is probably not a good idea for two reasons. First, there are substantial differences between the large, poorly circumscribed aggregates that engage in such behavior and the small task-focused groups featured in the remainder of the target article. Second, defining "group performance" is much more difficult for aggression and mob violence than for the other kinds of group activity Baumeister et al. discuss.)

Conclusion. Baumeister et al. make a useful contribution by focusing attention on the complementary effects of members' shared social identity and their personal characteristics (e.g., skills, knowledge, opinions) on group performance. However, their analysis would be improved by distinguishing between subjective and objective forms of member differentiation and by utilizing a typology of group tasks based on norms.

Group behavior in the military may provide a unique case

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Abstract: The optimal functioning of male coalitionary behavior in a military context may run contrary to some of the arguments about the importance of individual differentiation in Baumeister et al. Incentives become institutionally inverted within military contexts. Because the history of combat exerted powerful and sustained selection pressures on male groups, individual identification can work against the successful completion of collective action problems surrounding in-group defense in military contexts.

The argument Baumeister et al. present regarding the importance of individual differentiation to prevent pathologies and achieve optimal performance in groups represents an interesting and important advance in our understanding of group behavior. However, there may be contexts, such as the military, in which this individuality may run contrary to the interests of the group, and thus differentiation will diminish, rather than heighten, optimal performance.

Human cooperation evolved, at least in part, to enable people to engage in more effective competition against out-groups. This means that strong selection pressures would have shaped the nature of male coalitionary bonds, which created and sustained groups built around combat (Bowles 2009). Such bonds would have depended less on distinctiveness than on interchangeability because any person who was injured or killed would need to be replaced or compensated for almost immediately to maximize the chances of survival for the rest of the group. Indeed, militaries invests enormous amounts of time and money to break down individual identity, forcing similarity down to clothing and haircut to diminish individuality in favor of group identity. In these contexts, the psychology of intergroup conflict reflects noticeable sex differences; one would expect that the psychological mechanisms undergirding male warriors in particular, designed to effectively counter out-group aggression, would display not only greater comfort with hierarchies, but also much stronger in-group bonds than other tasks might demand (McDonald et al. 2012; Wrangham & Peterson 1996).

Such an understanding need not be completely inconsistent with the argument put forth by Baumeister et al. because they posit a two-stage model wherein the first stage "emphasizes shared common identity and promotes emotional bonds" (target article abstract). In some domains, such as combat, the second stage, which enhances and benefits from greater individuality in rewards, responsibility, and identification, may never be reached because it runs counter to the interests of the group members both individually and collectively. In many civilian tasks, benefits from collective action may not always be equally distributed. In combat, this distinction may lose power precisely because it may both be impossible to predict who will survive any given engagement, but also because the group must function effectively for individual members to maximize their prospects for survival. Restricting the model to the first bonding phase, without proceeding to the presumptive advantages of the second phase, in this context would likely be the result of the intense pressure demanded by the fear of injury and death; group cohesion under these circumstances increases camaraderie, performance, and retention (MacCoun et al. 2006). Under such immediate and high risk of death, only sublimation of the individual to the group permits the maximum likelihood of survival for an individual. In combat, individuation would serve only to reduce fitness advantages by calling particular attention to a given person, making them a special target for the enemy or for overthrow by subordinates who object to an uncooperative or nonegalitarian leader (Boehm 1999). In this way, individuation in combat would be advantageous in most circumstances. Specialization may increase efficiency and quality in some contexts, but that only works when specialization can be distributed without causing irreparable harm to any given individual.

One important consideration in this regard relies on the recognition that not all groups are coerced or externally imposed through membership in an identity category such as race or sex; rather, many group memberships appear self-selected. This means that those individuals who might prefer to be differentiated may gravitate toward, and perform best in, groups in which their distinct identity is recognized and acknowledged. Conversely, those who join the military or other collectivist cultures may prefer, and perform best in, environments and cultures in which individual identity is assimilated into a larger whole. In fact, having a mission larger than oneself is often presented as a strong motivation for many joining the service. In this way, a recursive relationship likely exists between the overdetermined nature of a group task, and the degree of internal motivation for psychological differentiation among its participants. As we strive to understand how and why individuals choose the communities and groups they do, from academia through the military, understanding how individuals take on group identity presents an inspiring and daunting challenge for future analysis.

One of the points Baumeister et al. raise revolves around the fact that individuals need to learn to negotiate the notion of the self within complex social systems and organizations. And many of the rewards from individuated group behavior as posited by their model rely on an implicit sense of trust within the group and among its members. While accountability and individual recognition may facilitate that sense of trust in civilian groups, particularly those geared toward work or social tasks, additional features may further bond members of military teams, particularly those who have saved one another's lives, or taken the lives of others in concert. This threshold represents a psychic breach that may be hard for civilians to fully grasp. Small military teams such as those structured into Special Forces units often operate as parts of a single body do; arms may be different from legs, but each needs the others in intrinsic, indivisible ways for the whole to function. In this regard, trust represents a currency far beyond that achieved by accountability or personal rewards; rather, it transcends to become values, such as loyalty, duty, courage, and sacrifice, that become inculcated in an existential manner among all of those members of a given unit.

As scholars seek to extend the implications of this important and interesting model, it is important to keep in mind that not all groups serve the same function. The powerful and enduring pressure of combat represents a unique, albeit common, domain of group membership that may not provide the benefits resulting from individuation that derive from other contexts. The question is then what precipitates the shift from areas where individuation undermines optimal group functioning and performance to those where it might potentiate them. How does this shift take place, and what psychological trade-offs between group benefits and individual satisfaction may it demand?

Differentiation of selves: Differentiating a fuzzy concept

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Abstract: Notwithstanding the appeal of the "one size fits all" approach that Baumeister et al. propose, we argue that there is no panacea for improving group performance. The concept of "differentiation of selves" constitutes an umbrella term for similar seeming but actually different constructs. Even the same type of "differentiation of selves" can be beneficial for some and harmful for other tasks.

We applaud Baumeister et al. for taking a fresh and comprehensive look at the costs and benefits of collaborative group work. As group researchers, we sympathize with their attempt to push a "one size fits all" approach as far as they can, trying to find the one key to group synergy under all conditions, instead of the so-far-dominating "it depends" answers to the question of how groups can achieve synergy. However, we are afraid that the concept of "differentiation of selves" is not the master key that Baumeister et al. want it to be.

In our view, a central problem of this concept is that "differentiation of selves" constitutes an umbrella term for somewhat similar seeming but actually very different theoretical constructs. For example, in the target article, sometimes "differentiation of selves" refers to actual differences between group members (e.g., with regard to roles, knowledge, expertise, or pre-discussion preferences). In other places, "differentiation of selves" refers to group members having metaknowledge about each other's differentiated identities within the group. And again in other places, "differentiation of selves" refers to group members perceiving themselves as autonomous, independent, responsible, or even indispensable individuals. Arguably, these are all very different theoretical constructs.

Imagine, for example, a group consisting of four members who have exactly the same personality characteristics, task-relevant skills, amount of knowledge and experience, and so forth. We suspect in such a case there will be no (or at least not much) "differentiation of selves" in terms of actual or perceived differences between members in this group. At the same time, however, group members may feel highly indispensable to the group's success. For example, let us assume that our team consists of mountain climbers who have to pass a difficult section of a route. Despite the lack of perceived or actual differences between members, each is likely to feel indispensable to the group's success because to reach the peak of the mountain, all members have to be successful in passing the difficult section. Hence, differentiation of selves in terms of actual or perceived differences between members and perceived indispensability are completely different constructs. As empirical group performance research shows, differentiating these constructs is not only necessary for the sake of theoretical precision, but also inevitable if one wants to accurately predict the effects of these constructs on group performance (e.g., Gockel et al. 2008; Worchel et al. 1998).

However, even a more specific and less equivocal concept of differentiation of selves cannot serve as a universal key to high group performance; there is no way around one of the fundamental lessons to be learned from Ivan Steiner's (1972) seminal analysis of group performance – namely, that the requirements of the tasks that groups perform will dictate what is successful and what is not. Therefore, what is successful for one type of task might be harmful for another. For example, let us assume that we specify "differentiation of selves" in terms of differences between members on attributes such as skills, personality, beliefs, and perspectives. In that case, differentiation of selves would be identical to what is called "deep-level diversity" in group performance research (e.g., Harrison et al. 1998). As previous research has shown, such deep-level diversity can be beneficial for group performance in some tasks and detrimental in others (for a review, see Larson 2010).

For example, in the case of divisible tasks, diversity in skills is likely to have a positive impact on performance, because each subtask can be performed by the group member who is best suited for it. Given optimal subtask assignments, skill diversity is hence likely to increase group performance. By contrast, skill diversity may have negative effects in the case of conjunctive tasks (i.e., indivisible tasks where the performance of the least capable member defines the group's level of performance). In such tasks, any group member's lack of a skill cannot be compensated by the skill of another group member. In the example of our climbing team, diversity in climbing skills is likely to have a negative impact on the team's success. Let us assume, for simplicity, that each group member is above average in one specific climbing-related skill and below average in another, and that all four group members have different strengths and weaknesses. Each member has to pass all sections of a route, so each member needs to possess all of the requisite climbing skills. By necessity, this means that the member with the least expertise in a skill sets the pace whenever that skill is required. As a consequence, the team is either slowed down or, in the worst case, unable to continue. The lesson is that the impact of skill diversity on group performance critically depends on the task the group performs.

Let us now suppose that our climbing team has to make a decision about which route to take, and the team members have different choice preferences. Previous research shows that diversity in choice preferences facilitates group decision quality (e.g., Schulz-Hardt et al. 2006). At the same time, however, preference diversity may spark interpersonal conflict among members (Jehn 1994; 1995). As a consequence, such diversity is likely to hamper the implementation of decisions (e.g., White et al. 1980). In other words, preference diversity can have both positive and negative effects on group performance, depending on whether groups have to make or implement a decision.

In conclusion, there is substantial empirical evidence that even the same type of differentiation between members in a group can be beneficial for some and harmful for other tasks. Hence, in spite of what the target article by Baumeister et al. suggests, and in spite of what we all might hope for, there is and can be no panacea for improving group performance.

Differentiated selves help only when identification is strong and tasks are complex

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Abstract: Whereas differentiation is overestimated – it more often hurts than helps group performance – identification is underestimated. A more viable perspective sees identification and cooperative motivation as the sine qua non of group functioning, with differentiation helping in a relatively narrow set of cognitively complex tasks that require creativity and deep and deliberate information processing by individual members.

Baumeister et al.'s main proposition is that for groups to perform well members need to differentiate themselves from the group. Individual differentiation can be important for group performance, but Baumeister and colleagues overestimate its importance and, at the same time, underestimate the importance of identification.

That the importance of differentiation is overestimated becomes particularly clear in the discussion of social loafing, free riding, and failure to cooperate which, presumably, occurs because individual contributions are not identifiable and group members see their contributions as dispensable rather than unique or essential. Baumeister and colleagues suggest that individual differentiation will reduce these problems. This ignores the primary reason that group members do not contribute to the group: Members act out of *individual self-interest*. Indeed, social loafing in task groups and noncooperation in social dilemmas, two crucial domains of group performance in Baumeister et al.'s analysis, share as underlying causes: (1) contributing to group efficiency and success is costly for the individual, (2) group members value personal self-interest more than collective success and group efficiency – they lack cooperative motivation – and (3) members can get away with selfish actions because of, for example, anonymity and lack of accountability.

Consider, as one example, the wealth of studies using a broad range of tasks, including pulling a rope (Ingham et al. 1974; Ringelmann 1913a), shouting as loudly as possible (Latané et al. 1979; Williams et al. 1981), or puffing air into a mouthpiece (Kerr & Bruun 1983). Although not inherently interesting, these tasks require individual effort, and contributing thus is individually costly. This work shows that social loafing emerges only when contributions are costly (and individuals are not accountable), not when tasks are inherently interesting or personally involving (e.g., Brickner et al. 1986; Smith et al. 2001; Zaccaro 1984; see also Karau & Williams 1993). Furthermore, loafing is reduced or eliminated when group cohesiveness is high, when members identify highly with the group, and when members operate under collectivist rather than individualistic (cultural) norms (Karau & Williams 1993). Thus, group members who are concerned with group efficiency or collective success do not loaf, regardless whether they are identifiable, accountable, or indispensable. It is those individuals who focus on their self-interest, rather than on group goals, who differentiate too much rather than not enough, who free ride and detract from rather than contribute to the group.

Some key "pathologies of groups" thus result from group members' pursuit of self-interest rather than from a lack of individual differentiation. Because this goes unnoticed, Baumeister et al.'s analysis becomes confusing. In their analysis, anonymity can both reduce individual differentiation (as in social loafing and social dilemmas) but also increase it (as in reducing conformity), which is odd to say the least. A better way to summarize the state-of-the art may be to conjecture that anonymity (1) increases the temptation and ability to pursue self-interested goals, which results in (2) both enhanced free riding and reduced conformity. Such a conjecture would fit the well-established observation that effects of individual differentiation on group functioning and performance are strongly contingent on task type (McGrath 1984; Steiner 1972). To illustrate, we use Baumeister and colleagues' distinction between productive achievement and information use tasks. In most productive achievement tasks, group performance depends mainly on member effort, and contributions depend on the extent to which individuals make self-interest subordinate to group interest. Identification helps; differentiation hurts.

In information tasks, however, group members may have unique resources – such as information, perspectives, and ideas – and need to share them with others to ensure high group performance. Here, conformity detracts from group performance, and individual differentiation may promote group success. Even in such information tasks, however, the pivotal role of group identification cannot and should not be underestimated. In fact, the issue is not whether individuals identify *or* differentiate, but rather that individuals need to *both* identify and differentiate (as in *I* want to contribute my unique resources to the group). If group members act out of pure self-interest, rather than in the interest of the group, differentiation typically is detrimental to group performance (De Dreu et al. 2008). Under these conditions, differentiation gives rise to power struggles, strategic behavior, and lying and deception. Baumeister et al. do not acknowledge these downsides to differentiation.

With regard to group creativity, for example, it has indeed been found that individual differentiation stimulates group creative performance (Goncalo & Staw 2006), but this effect holds only for groups that have shared goals, and it is induced via a collective reward for creative achievement (Bechtoldt et al. 2012). Likewise, voicing dissent benefits creativity and innovation in groups and organizational teams but only when group members have cooperative goals and strong identification (De Dreu 2007; De Dreu & West 2001; Nijstad et al. 2014). Thus, even in information-use tasks, where individual differentiation may benefit group performance, strong identification and concern with group goals is a necessary precondition for groups to function and perform. Differentiation always needs to build on the foundation of shared and valued group goals, and concomitant group identification.

A more viable perspective to the one Baumeister and colleagues offer proceeds on the basis of the assumption that identification and differentiation jointly enhance or reduce group performance (De Dreu et al. 2008; Nijstad & De Dreu 2012). Such a perspective entails that (1) differentiation is beneficial only in more cognitive tasks such as group judgment and decision-making, creativity, or negotiation, (2) cooperative motivation (and resulting identification) is a sine qua non for the benefits of differentiation to be reaped, and (3) in such more-cognitive tasks, the benefits of differentiation materialize only when members are both required and motivated to process information thoroughly.

Disputing deindividuation: Why negative group behaviours derive from group norms, not group immersion

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Abstract: Strong social identity does not lead to lack of accountability and "bad" behavior in groups and crowds but rather causes group behavior to be driven by group norms. The solution to problematic group behavior is therefore not to individualize the group but rather to change group norms, as underlined by the relational dynamics widely studied in the SIDE tradition.

Baumeister et al. present a new, nuanced version of the old argument that "groups are bad for you" (Brown 1988). They acknowledge that strong group identity creates cohesion and empowers members to achieve things they could never achieve alone. But, they argue, strong group identity promotes mindless conformity, removes accountability and thereby subverts reason, efficiency and morality. The sole solution is to reintroduce differentiated individual identification into groups.

Historically, such views were first articulated but the elites who observed from afar and with horror the mass disruption in the late nineteenth century (e.g., Le Bon 1896/1960; for a review see Van Ginneken 1992). Similar fears of seemingly mindless mobs still

exist today (Reicher & Stott 2011). So it comes as no surprise that Baumeister and colleagues use crowds to epitomize "some of the worst, most vicious and destructive tendencies of groups" (sect. 2.3.2, para. 1). Nor is it surprising that they draw on Le Bonian theory and its modern derivative, deindividuation research, to buttress their argument. However, in doing so, they mischaracterise the evidence in ways that have serious implications for their overall argument.

First, the authors ignore half a century of crowd research that spans the disciplines of history, political science, anthropology, and psychology. Close analysis of the actual phenomena shows the traditional notion of mindless mobs to be a myth (e.g., Davis 1973; McPhail 1991; Reicher 2001; Turner & Killian 1957). Evidence from contemporary and historical events show that even a violent crowd typically acts in a highly patterned way that reflect collective norms, values, and beliefs. Crowds do not lack morality or ignore reason. Rather they subscribe to an alternative *moral economy* to that endorsed by those in authority (cf., Thompson 1971). Such studies also show how the act of representing this alternative morality as a lack of morality was an ideological act designed to discredit dissent and protect the status quo (Giner 1976).

Second, the authors misrepresent research on deindividuation processes (which refers to the consequences of losing one's individual identity through becoming an anonymous part of the group). Baumeister and colleagues cite individual studies that show a relationship between anonymity and various forms of antisocial behavior. They also cite our meta-analysis, which reviews 60 studies examining these effects (Postmes & Spears 1998). They suggest the results show that "[t]he primary effect of deindividuation was to reduce accountability, especially in enabling people to take illicit selfish benefits (e.g., cheating, stealing)" (sect. 2.3.2, para. 2).

Notwithstanding the fact that the latest statements of deindividuation theory actually distinguish this conscious accountability route from deindividuation per se (e.g., Prentice-Dunn & Rogers 1989), this is not what the empirical evidence shows. "Deindividuation" sometimes increases and sometimes decreases antisocial behavior. Overall, the effects are close to zero. Moreover, when groups are more antisocial, it is not the result of a loss of individual identity per se, but rather because of the specific norms of the groups with which people identify (Postmes & Spears 1998). Considering the amount of evidence that has been amassed on these points, we can confidently conclude that the picture of deindividuation Baumeister et al. paint is a myth. That is exactly the conclusion drawn in a prior narrative review (Diener 1980).

Anonymous members of groups neither lose accountability nor act selfishly. The key point is that there is a shift whereby the group rather than the individual becomes the basis of both accountability and interest. We become accountable for our performance as group members; we act for the collective gain rather than our personal benefit. The broader point here is that anonymity in the group in itself does not make us thoughtless or antisocial (indeed our meta-analysis shows anonymity *increases* adherence to local group norms). We deliberate on the basis of group level concerns and hence the nature of our actions will depend on group norms.

Furthermore, because groups always exist in intergroup relations, concepts such as *anonymity* and *accountability* need to be seen in relational, not absolute terms. The issue is not whether we are anonymous or accountable, but rather *to whom we are anonymous* and *to whom we are accountable*. So, in a conflict between crowd members and the police, say, whether people are more or less anonymous and accountable to the out-group (the police) or to the in-group (other crowd members) will be critical to how they act.

These multidimensional and relational dynamics have been studied widely in the SIDE tradition (Social identity model of deindividuation effects – see Klein et al. 2007; Reicher et al.

1995; Spears & Lea 1994). This literature shows that deindividuation conditions may influence not just whether norms influence behavior, but also which norms do so. That is, how do different forms of identifiability impact whether people feel inclined and enabled to act on the basis of in-group norms or else constrained to act within the terms of out-group norms?

So where does all this leave us in terms of Baumeister et al.'s overall argument? We contest the notion that strong social identity necessarily leads to lack of reason, lack of accountability, and hence "bad" behavior. We suggest that strong social identity does not remove rationality and morality but rather provides them with a different, a group basis (Spears 2010). Moreover, strong social identity empowers group members to enact their own views, whatever these might be.

Put differently, a rounded survey of the evidence shows that the problems of "bad" groups do not lie in a generic "bad" group psychology but rather in specific "bad" group norms. Violent groups normatively validate violent action. Conformist groups normatively invalidate critical comment. The solution to problematic behavior of crowds and groups, then, is not to fragment or individualize the group. To do that is to disempower people and hence to neuter alternatives to the status quo. The solution to problematic behavior of crowds and groups is to challenge and change toxic group norms.

Vicarious contagion decreases differentiation – and comes with costs

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Abstract: Baumeister et al. propose that individual differentiation is a crucial determinant of group success. We apply their model to processes lying in between the individual and the group – vicarious processes. We review literature in four domains – attitudes, emotions, moral behavior, and self-regulation – showing that group identification can lead to vicarious contagion, reducing individual differentiation and inducing negative consequences.

Shared social identity and group identification are typically viewed as positive elements of social life, with benefits to group cohesion and to the individuals in those groups (e.g., Turner & Tajfel 1982). Baumeister et al. suggest that too much identification – too much shared identity – can come with costs. When group members lack differentiation, group pathologies are more likely to emerge, such that a shift away from similarity can be beneficial for the group in general. We suggest that this model has interesting implications for the study of vicarious processes in groups, with vicarious processes often serving as an intermediate step between the individual and the group: When an individual member of a group "catches" the attitudes, emotions, and preferences of another group member, all individuals in those groups become more similar over time. Such vicarious contagion is most likely to occur for group members who are highly identified with that group, such that vicarious processes have been viewed as one means to ensure that groups are in sync.

Below, we review the literature on vicarious processes – focusing on attitudes, emotions, morality, and self-control – and discuss the implication of the Baumeister et al. model, that vicarious processes can in fact come with costs: As vicarious contagion leads group members to become less differentiated, negative consequences can accrue.

Several research paradigms have documented the role of group identification in vicarious attitude change. For example, witnessing an in-group member act against his or her previously stated

beliefs can induce vicarious dissonance – that is, vicarious discomfort resulting from imagining oneself in that in-group member's position (Norton et al. 2003). Individuals highly identified with the group align their own attitudes to the inconsistent behavior of that group member to reduce that discomfort, thereby promoting attitudinal agreement (Norton et al. 2003; Monin et al. 2004). Vicarious attitude change can also be induced experimentally: Individuals informed that another person shares their brain-wave patterns experience a merged identity and change their self-perceptions (Goldstein & Cialdini 2007). These changes can have negative consequences; for example, individuals who believe that a merged other is knowledgeable come to see themselves as more knowledgeable than they are and perform worse on knowledge-oriented tasks (Goldstein & Cialdini 2007). Identification through psychological connectedness can also become costly in decision-making. When people feel connected to others, they vicariously justify others' initial decisions, and escalate their commitment to earlier investments – as though others' sunk costs are their own (Gunia et al. 2009). These examples illustrate that vicarious processes may help groups attain attitudinal homogeneity but also hamper individual differentiation, leading group members to behave similarly even when negative consequences accrue.

Association with others not only affects attitudes and behaviors, but also shapes emotional experiences. For example, when an individual engages in wrongful behavior, observers who feel interdependent with the wrongdoer will feel guilty, and, if they share a social identity with the perpetrator, feel shame (Lickel et al. 2005). Similarly, people can feel pain by association: Individuals who witness the exclusion of another person with whom they are identified feel the pain of ostracism as their own (Wesselman et al. 2009). Indeed, vicarious experience of emotion – such as embarrassment – are subserved by unique brain regions (Krach et al. 2011). Vicarious experience of negative emotions is only a portion of the cost, as these feelings may also lead individuals to misjudge situations. For example, individuals feel more powerful when associated with a more powerful other, an association that increases their risk-taking even when they cannot leverage that power (Goldstein & Hays 2011).

Vicarious processes can also impair self-control. Acts of self-control ensure group cohesion and enable social functioning (Finkel et al. 2006; Heatherton & Vohs 1998). However, taking the perspective of another person who exerts self-control leads individuals to experience vicarious depletion and therefore exhibit less restraint (Ackerman et al. 2009). Although self-control resources can also be vicariously replenished, observers must feel they are similar to the actor who engages in self-regulatory restoration (Egan et al. 2012). These studies demonstrate that when group members lack sufficient differentiation, self-control depletion of one group member can have detrimental effects on the self-regulatory abilities of others in the group.

Finally, vicarious processes can have consequences for justification of and engagement in unethical behavior among highly identified groups. When observers feel psychologically close to a selfish actor, they are more likely to ignore the ethical elements of the decision through vicarious justifications – in turn causing observers to act unethically themselves (Gino & Galinsky 2012). Furthermore, witnessing others' successful moral behavior can also lead to vicarious moral licensing: Individuals strongly identified with a group can gain moral credentials when observing a nonprejudiced decision by an in-group member, leading them to engage in unethical behavior in subsequent tasks (Kouchaki 2011).

Baumeister et al. propose that individual differentiation is a crucial element of group success: Sharing a common identity is necessary, but it can be harmful when differentiation is lacking. We suggest that their model holds insight into the study of processes lying in the middle ground between individual and group – vicarious processes: Vicarious experiences align group members, but lack of differentiation causes vicarious contagion to come with costs.

Not even wrong: Imprecision perpetuates the illusion of understanding at the cost of actual understanding

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Abstract: The target article is plagued by imprecision, making it largely impossible to evaluate the authors' theory in a scientific manner.

Converging from many fields across the human sciences is a growing recognition of a class of phenomena to be explained: the emergence, behavior, and evolution of groups of organized, differentiated individuals (Gallotti & Frith 2013; Gowdy & Krall 2016; Page 2007; Smaldino 2014b; Theiner et al. 2010). Baumeister et al. bring a long overdue contribution from social psychology. Unfortunately, what has been contributed is mostly vapor. The target article is plagued throughout by imprecision, making it largely impossible to evaluate their theory in a scientific manner.

It is not that Baumeister et al. are necessarily wrong. It is not a tragedy for a scientific hypothesis to be wrong, and many are. Indeed, given the myriad ways one can define and test relationships between variables, it may be that *most* hypotheses are wrong (Ioannidis 2005; McElreath & Smaldino 2015; Pashler & Harris 2012). Hypotheses are more likely to be true when grounded in well-formed, well-validated, and logically consistent theoretical frameworks (Ioannidis 2014; McElreath & Smaldino 2015), and hypotheses without such grounding will often be wrong. But there are worse things than being wrong. For a hypothesis to be wrong, it must be stated precisely enough for an empirical result to definitively demonstrate its failure (Popper 1963). The hypotheses of Baumeister et al. fall short of this criterion.

Consider their "two-stage model" for the emergence of differentiated group activity: (1) Belonging to a group provides benefits, and (2) role differentiation provides benefits. This is tautological: The stability of any emergent individual or group behavior depends on it providing a net benefit to the individual or group, relative to their other options. Baumeister et al. claim the model is illustrated by the rise of the Qin Dynasty, in which many peoples were merged into large states that became organized into specialized military and administrative systems. It is unclear, however, what exactly has been illustrated. It may well be that role differentiation is more varied in large-scale societies (Smaldino, in press). However, group cohesion and role differentiation are important for *many* behaviors in both small- and large-scale societies (Smaldino 2014b). Baumeister et al. provide no causal explanation or insight into why the referenced historical events occurred when or how they did, or when and how the individual and group benefits arose, and so it is not a model in any useful sense (see Weisberg 2007).

Unclear thinking is further demonstrated by the citation of Levine and Moreland's (1990) research claiming that "most factors that make groups effective and satisfying deteriorate as group size increases" (sect. 1.3, para. 4). Baumeister et al. propose that the detrimental effect of larger group size is countered by differentiation, noting that "large groups can provide much more differentiation and specialization than can small groups" (sect. 1.3, para. 4). The implication is that more differentiation is a good thing, full stop. But, per Levine and Moreland, larger groups are less effective and satisfying to participate in. So the burden is therefore to show not just that larger groups can provide more differentiation (also: How much more? At what scales?), but also that any advantage derived thereof can overcome the inherent disadvantages of size. They fail to do this.

Perhaps the advantages to group organization can be assessed by *system gain,* which Baumeister et al. define as "the margin by which the members of a systematically organized group can achieve better results than the same number of individuals working together but without a system" (sect. 1.1, para. 5). This definition demands several questions. First, how shall we determine what constitutes "better" results – that is, by what metric is a group's output assessed? Second, how shall we define a system? Third, how shall we account for the fact that some organizational principles are at work in *any* group behavior? Because *the absence of a system* is a phrase devoid of meaning, we might instead try to compare multiple systems. Unfortunately, Baumeister et al. provide no insight into how one might do this.

Baumeister et al.'s central empirical hypothesis is that "groups will produce better results if the members are individuated than if their selves blend into the group" (sect. 2, para. 1). For this hypothesis to be testable, we require not only precise ways to differentiate between individuated and group-blended identities in the context of group behavior, but also precise ways to assess the results produced by a group. As noted, it is never clear how "better results" should be quantified, nor their antecedent behaviors defined. Are they what helps a group to survive, to acquire resources, or to propagate its organizational components? Are they what makes the individuals in the group feel warm and fuzzy inside? It is the speed at producing a solution, perhaps discounted by the quality thereof? Moreover, what is a group? Does the argument apply to dyads as well as nations? What about groups within groups? None of the empirical results presented adequately answer any of these questions.

My concern is that the type of fuzzy theorizing on display here can be seductive, particularly because it tackles an interesting set of questions. The imprecision allows a well-intentioned (if insufficiently critical) reader to construct a narrative consistent with *any* internalized experience. Horoscopes and tarot cards work in much the same way. The "theory" can then be used as a basis for additional research or, heaven forbid, policy. Any apparent incongruities can be waved away by claiming a slightly different interpretation of the theory (Gigerenzer 1998).

Verbal theories, based on words rather than equations, must permit some ambiguity. Such theories are probably necessary steps toward articulating the major problems of social behavior, an effort still in progress. Even so, our goal as scientists should be to minimize ambiguity. As Herbert Simon noted, the social sciences have strong claim to be called the "hard sciences." Attempting to understand relationships among interacting systems of such startling complexity as human beings is a daunting task. Tackling it requires that we make the greatest attempt to specify precisely what we mean. This is not always easy, and in doing so, we risk being wrong. But that is how science progresses.

Group effort in resuscitation teams

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Abstract: Baumeister and colleagues underline that individual identification and differentiation of selves are important characteristics for group performance. They name specialization, moral responsibility, and efficiency as vital components of well-functioning groups. In my commentary, I transfer their framework to the group effort within resuscitation teams to discuss for the first time how these components determine teamwork during resuscitation.

More than a century of group-related research has shown that under some circumstances, groups perform better than the sum of their individual members, whereas under other circumstances, they perform worse. Baumeister et al. explain that group performance can be improved not only through a shared identity, but also more important through the differentiation of selves. This means that group members have individual roles and identify themselves within their respective roles.

The theoretical framework of Baumeister and colleagues is largely in line with empirical evidence on performance in the corporate sector. One may wonder, however, whether their framework can be applied to teamwork in general. As a consequence, Baumeister et al. encouraged commentaries with further evidence or alternate theories. I will discuss an example that is rather different from previous considerations, making the first analogy between Baumeister et al.'s framework and group effort within resuscitation teams.

At first glance, the possibility for individuality might be rather limited during resuscitation, where the right actions must be performed quickly, leaving no room for discussion. Therefore, a resuscitation might appear directive, with a team leader determining what actions are to be carried out, and in what order, to come up with decisions that might be life-saving for the patient. Nevertheless, I will transfer the framework of Baumeister et al. to resuscitation teamwork. This transfer might prove relevant because optimal teamwork is a well-known necessity in resuscitation teams (American Heart Association 2011).

Based on many years of experience in resuscitation, guidelines have been developed to optimize resuscitation teamwork (American Heart Association 2011; Field et al. 2010; Nolan et al. 2010; Sayre et al. 2010). What all of these guidelines have in common is that a resuscitation team consists of several team members and a team leader. The team leader is responsible for assigning particular roles to each team member. She or he also has to make sure that all team members know their exact tasks. Consequently, the team leader oversees the resuscitation. That ensures the leader can coordinate the resuscitation and recognize where problems arise and if further support is needed. On the other hand, each team member has a specialized role: For example, two team members alternate in delivering chest compressions, one team member secures the airway and provides ventilation, another team member provides intravenous injections, and so forth. All team members are familiar with all tasks during resuscitation. Nevertheless, some team members carry out some tasks better than others – for example, some are more skilled in delivering chest compressions, others are more skilled in securing the airway, and so forth.

There is an interesting parallel between Baumeister et al.'s framework on group performance and resuscitation teamwork. The three components – specialization, moral responsibility, and efficiency – appear in resuscitation teams as well. Turning to specialization first, each team member has a particular role, for example, the strongest members might perform chest compressions, so they will concentrate on this aspect. Similarly, a high degree of moral responsibility can be assumed. One can expect that members of a resuscitation team feel morally responsible to do their best. Social loafing is hardly possible in a resuscitation situation. For example, if a team member has to perform chest compressions, avoidance would have the immediate consequence of making resuscitation impossible. A failure to perform one's role would also be noticed by the team leader, so the team leader could intervene. Finally, the efficiency criterion is met. For example, if the team leader detects weak points, she or he can give advice on what to do better or reassign tasks. Another aspect of the efficiency criterion is that guidelines fostering this team structure are based on empirical evidence on how to resuscitate in the most effective way. These guidelines are under continuous re-evaluation (Field et al. 2010; Nolan et al. 2010; Sayre et al. 2010).

Now one might wonder whether an analogy between the framework of Baumeister and colleagues and a resuscitation team can be made. Is individuality of team members really limited in a

resuscitation team? Obviously, the creative freedom of a team member during resuscitation is limited; for example, the team member responsible for chest compressions must perform them in the established way and rhythm known to produce optimal results. She or he must avoid unusual, creative types of compressions. Nevertheless, the team member knows his or her individual role and has acquired special knowledge in this role. Another question is whether the role of the team leader in resuscitation teams is as directive as it appears. According to current resuscitation guidelines, the role of the team leader actually encourages viewpoints from all team members. The team leader coordinates the start of a resuscitation in a directive way by assigning tasks and overseeing the resuscitation's progress, but she or he actively encourages all team members to express their viewpoints during the resuscitation (American Heart Association 2011). According to Baumeister and colleagues, who refer to the laboratory study of Lorinkova et al. (2013), directive leadership was associated with better performance at the start but worse outcomes in the long run. Lorinkova et al. attribute those worse outcomes to ignoring the views of other team members. When making a transfer to current resuscitation guidelines, however, the team leader behaves in the optimal way, being directive at the start and incorporating team members' viewpoints as the resuscitation is underway. An example of this practice is provided in the AHA training video (American Heart Association 2011). Consequently, we can draw an analogy between Baumeister et al.'s framework and resuscitation teamwork. This is particularly interesting because resuscitation is a special situation in which everyone acts under high stress levels.

I was surprised that the framework can be generalized to teamwork in resuscitation teams. In the future, I would like to see it tested in other situations of the health sector. Doing so may ultimately help improve teamwork more broadly.

Differentiated selves can surely be good for the group, but let's get clear about why

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Abstract: We applaud the goal of reconciling the self and group literatures and agree that a differentiated self may sometimes improve group outcomes. Nevertheless, greater precision regarding the underlying mechanisms is needed. Specifically, differentiated selves improve outcomes by overriding selfishness when they allow for personal regulation (being personally recognized and valued) rather than social regulation (specialization of labor).

As an antidote to the ever-increasing Balkanization of the behavioral sciences, the authors' broad integrative effort is welcome indeed. The literatures on personal versus group identities are especially ripe for such a creative integration. That said, the authors sometimes outdid themselves in the creativity department, as when they defined and then redefined some of their key constructs. Especially troubling, they defined *differentiated identities* in at least two contradictory ways, with one emphasizing personal regulation of behavior and the other emphasizing social regulation of behavior. As we explain below, the two definitions refer to fundamentally distinct processes that cannot be treated as interchangeable or even complementary. But first, we consider some themes that we resonated with.

The role of differentiated identities in groups was particularly interesting to us because this is also a major theme in our work on identity fusion theory. Identity fusion occurs when people develop a powerful sense of oneness with the group, a sense so strong that fused individuals become willing to make extreme sacrifices on behalf of the group (Swann et al. 2009). In contrast to classic social identity theory (but not the social identity *perspective*, which discarded some core principles of the classic theory), fused individuals retain salient personal identities when they become deeply aligned with the group. In fact, a strong sense of personal agency mediates the extreme behaviors of fused individuals (Gómez et al. 2011). Moreover, strongly fused persons recognize each individual group member as separate and unique. Just as family members each are indispensable parts of the whole, for fused individuals other group members are not mere interchangeable exemplars of the group prototype. The authors' point of view also resembles fusion theory in highlighting instances in which individual contributions to the group come at a cost to the individual.

But if parallels between the authors' theory and fusion theory apply when one defines differentiated self in terms of personal regulation ("individually identified and responsible," target article, para 5), they lose force when one defines a differentiated self in terms of social regulation ("members performing different roles," para. 6). Not only do those two definitions refer to two different constructs, but also, personal regulation of behavior likely contributes to the progroup actions that the authors have in mind, and social regulation does not. For example, most great armies (in fact, most great organizations) have clear division of labor (high social regulation). Yet armies vary in the degree to which they treat their foot soldiers as if they are unique individuals versus indistinguishable pawns in a game of chess. In fact, military historians have noted that battles are won when soldiers recognize themselves and each other as unique individuals and develop family-like ties to their brothers-in-arms (Swann et al. 2014). For example, in our study of fighters in the 2011 Libyan revolution, those who volunteered for frontline combat were distinguished by the fact that they reported being as strongly bonded to their battalion as they were to their own families (Whitehouse et al. 2014). Such personal ties are generally impossible without individually identifying and valuing each group member.

Depending on which conceptualization of differentiated identity one is interested in, one may also focus on different group outcomes. For example, if specialization of labor is of interest (the authors' second definition of *differentiated identity*), one may note that organizations whose members specialize financially outperform organizations without specialization (section 2.1.2, para. 6) This finding has historical precedent: the Industrial Revolution ushered in specialization of labor – and wealth creation – on a massive scale. But this specialization also involved workers becoming increasingly replaceable and deindividuated (the opposite of a "differentiated identity" using the first definition). If one's definition of differentiated self turns on recognition of the idiosyncratic identities of group members, one may note that the deindividuation of workers led to organizations' mass exploitation of employees, including women and children, which then necessitated the creation of unions and labor protection laws.

We agree that division of labor can be important and beneficial in bolstering the efficiency of groups. Nevertheless, division of labor is no panacea; it fails to solve the problem that the authors identify as being common to all groups: that "group systems require individuals to set aside some self-interest, but members are tempted to pursue self-interest at group expense" (sect. 1, para. 1). In contrast, freedom to regulate the self and valuing fellow group members promote accountability and thereby diminish self-interested behavior. The authors provide several examples of this phenomenon. In their discussion of transactive memory, for example, performance was improved when group members kept track of who knew what, and the outcomes in the Indian call center improved not because employees were assigned

different roles but because training emphasized "individuality and unique potential contribution" (sect. 2.1.3, para. 6). Thus, in such scenarios the positive group outcomes the authors discuss were not a result of division of labor but rather of individuals feeling personally identified and responsible. In other scenarios, role specialization may occur to such an extreme as to make group members truly irreplaceable and thus valued as individuals. But such instances are exceptions to the rule that role specialization is not a categorical good. Indeed, it is hard to imagine that the Enron scandal could have been avoided if only its employees had been more specialized or that a mob would be less violent if only they had agreed who would be responsible for looting the stores and who would be responsible for setting cars on fire. Here and elsewhere, when it comes to assessing the virtues of the differentiated self, the devil is in the details.

Roles and ranks: The importance of hierarchy for group functioning

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Abstract: Baumeister et al. propose that role differentiation is critical for group functioning. We propose that effective groups require rank differentiation in addition to role differentiation. We suggest that rank differentiation supports division of labor by incentivizing group members, satisfying fundamental human needs, and organizing and integrating the contributions of differentiated group members.

Baumeister et al.'s portrait of group processes renders role differentiation a sufficient remedy to various ailments that impede group functioning. We are in agreement that individuating group members allows those members to be held accountable for their actions, thereby enhancing group performance. However, we argue that role differentiation is not enough for these positive effects to emerge. Specifically, there is a large body of literature in psychology and organizational behavior that stresses the importance of rank differentiation (i.e., hierarchy) in groups. Hierarchy has been theorized to be a critical step in making sure groups function effectively (Anderson & Brown 2010; Gruenfeld & Tiedens 2010; Halevy et al. 2011). Below we provide a definition of hierarchy and briefly review three reasons why rank differentiation should be considered alongside role differentiation.

Hierarchies are systems of role differentiation in which there is a consensual understanding that the roles are differentially valued by the group. Those roles that are more valued are the high ranked, or high status roles in the hierarchy, whereas those that are less valued are lower status. The higher status roles often come with greater influence over, and deference from, others. Those in high status roles are also often (but not always) provided with access to more resources and typically rewarded more handsomely for their efforts than those in low status roles. For hierarchies to be effective, they must be seen by group members as legitimate (Tyler 2006), which requires agreement that the high status roles are in fact more valuable to the group and that the process for assigning people to roles is fair (Ellemers et al. 1993).

Hierarchy incentivizes group members. One important function of hierarchy is that it serves as an incentive structure that motivates individuals to contribute to the group. Baumeister et al. argue that individuation allows the group to hold people responsible for their actions, rewarding desirable behaviors while sanctioning undesirable ones. Although monitoring others in order to praise or punish sometimes occurs informally among peers, functions such as evaluating group members, holding them accountable, and incentivizing them are primarily performed by higher-ranking group members, especially in large organizations (for reviews, see: Fiske 2010; Magee & Galinsky 2008). Supervisors and managers, rather than peers, are typically in charge of making decisions regarding raises and promotions. In addition, the mere existence of pay dispersion in a hierarchy can often compel people to work harder to achieve promotion (Shaw et al. 2002).

In addition to the economic incentives discussed above, hierarchy also creates social incentives that motivate individuals to work hard for the group. In particular, people place a high value on attaining respect, or rising up the status hierarchy (Barkow 1975). Considerable research has shown that groups reward costly individual contributions to the group with social status which, in turn, motivates further contributions (e.g., Flynn et al. 2006; Halevy et al. 2012a; Hardy & Van Vugt 2006; Willer 2009). Thus, status conferral provides a relatively cheap method of ensuring that group members act in the group's best interest and that valuable group members are retained (Emerson 1962).

Hierarchy satisfies fundamental human needs. Beyond satisfying the needs of the group, hierarchy has also been shown to fulfill several fundamental human needs of its individual members. Baumeister et al. propose that group identification fulfills the need for affiliation, which is captured in the first step of their model. Although social connection is undoubtedly an important benefit of group formation for the individual, it is only part of the story. As mentioned earlier, hierarchy enables individual group members to fulfill their need for status, which enhances self-esteem and overall well-being (Anderson et al. 2015). Meritocratic hierarchies further satisfy the needs for achievement and fairness by providing individuals with opportunities to advance based on personal deservingness (McCoy & Major 2007). Additionally, hierarchy fulfills the desires for order and control by imposing structure on what otherwise would be seen as a random and unpredictable world (Friesen et al. 2014). Hierarchy's ability to satisfy these fundamental human needs underlies the documented preference for hierarchical group structures over more egalitarian ones (Tiedens & Fragale 2003; Tiedens et al. 2007; Zitek & Tiedens 2012).

Hierarchy organizes and integrates group member contributions. Finally, hierarchy facilitates the process of coordinating group member contributions and integrating them into a cohesive whole. A large body of evidence has accrued showing that hierarchy can increase coordination in the types of groups that Baumeister et al. discuss, including sports teams (Halevy et al. 2012b), collective action groups (Simpson et al. 2012), work groups (Ronay et al. 2012), and even mountain climbing teams (Anicich et al. 2015). Indeed, hierarchy has been put forth as not just important but crucial to solving social coordination problems in groups (de Kwaadsteniet & Van Dijk 2010; Van Vugt et al. 2008). Legitimate hierarchy establishes clear expectations from leaders and followers. It delineates who gets to demarcate group boundaries (e.g., by having the authority to fire or hire); who gets to assign roles and work to others; and who makes the final decision when the group fails to reach consensus.

As Gruenfeld and Tiedens (2010) contend, the proliferation of roles in organizations almost always coincides with a corresponding proliferation of ranks. Particularly in large groups and organizations, role differentiation on its own would not be sufficient to overcome disorder and chaos without an organizing structure to integrate inputs from these different roles. Indeed, organizational scholars have long proposed a number of problems associated with division of labor (Lawrence & Lorsch 1967; March & Simon 1958) that can potentially be addressed through differentiation in ranks. Although these problems can sometimes be overcome via solutions other than hierarchy (e.g., Heath & Staudenmayer 2000), the current evidence points to rank differentiation as having considerable advantages in making sure that groups remain organized and effective, and that their members are satisfied and motivated to contribute to the group.

Authors' Response

Differentiating selves facilitates group outcomes

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Abstract: The target article proposed that differentiation of selves is a crucial moderator of group outcomes, such that differentiation of selves contributes to beneficial outcomes of groups while limiting undesirable outcomes. In this response, we aim to complement the target article by refining and expanding several aspects of the theory. We address our conceptualization of optimal group functioning, clarify the term *differentiation of selves,* comment on the two-step nature of our model, offer theoretical connections and extensions, and discuss applications and opportunities for future research.

Some of humanity's greatest accomplishments are born of group activity and performance, from constructing the Panama Canal to landing on the moon. Other evidence of the power of groups shows their destructive side as in cases of war, genocide, and social harms. The target article aimed to address the issue of when groups are more or less than the sum of their parts. That is, when does a group outperform the summation of an equal number of individuals working alone? Our article reviewed the literature on group performance and decision processes and concluded that differentiation of selves within groups allowed for some of the best group outcomes while limiting the worst outcomes. We proposed a two-stage process that divides the formation of performance-focused groups into two steps. The first step emphasizes shared identity and belongingness within the group, and the second step emphasizes roles and the differentiation of selves within the group. We are grateful to the commenters who provided insights, connections, and challenges to our theory. Our response aims to address misunderstandings, refine the theory, and incorporate insights from the commentaries.

R1. Optimal group functioning

A central feature of our theory is that differentiation of selves promotes optimal group functioning by increasing system gain. What do we mean by that? We wrote that system gain can help members of a systematically organized group achieve "better results than the same number of individuals working together but without a system" (sect. 1.1, para. 5). **Smaldino** raised the question of what constitutes "better" results. He asked whether we meant that which would aid group survival and enable groups to attain resources or whether we meant other outcomes, such as

subjective enjoyment of group membership. Most groups are formed for reasons and purposes, which means that they have functions. Culture itself likely originated because togetherness and coaction created benefits reflected in the biological outcomes of survival and reproduction (Baumeister 2005; Boyd & Richerson 1985; Mead 1934). We therefore consider optimal group outcomes those that enable a group to compete effectively with other groups and accomplish group objectives (as defined by the group).

Belzung, Billette de Villemeur, Grivin, & Iorio (Belzung et al.) suggested that our focus on system gain may carry implicit value judgments and that not all groups actually value system gain (and certainly not all individuals within the group). We focused our review on task groups, that is, groups formed to work together to accomplish some function. Not all collections of individuals or categories of people can be considered a group according to this definition. Religious groups or other types of groups that are not task oriented may not value group survival or system gain. An example of such a group is the Shakers, a religious group that promoted celibacy and experienced a stark reduction in population as a result of that practice. Even among task-oriented groups, the benefits of system gain may vary in importance. System gain should be most important when it can produce the greatest benefits, such as when there is competition among groups for scarce resources. System gain may be important in the context of intergroup competition because that competition may threaten a group's survival. Suddendorf (2013) argued that human ancestors competed against other hominids and prevailed, and this presumably occurred because of system gain (especially including warfare). When such competitive pressures are low and life is easy, there may be less need for system gain and hence less interest in cultivating it. **Nijstad & de Dreu** also added the helpful point that differentiation of individual selves is much more helpful with some kinds of tasks (especially those involving cognitive complexity and deliberate information processing) than with others.

R2. Differentiation of selves

The target article argued that differentiation of selves is a key feature that allows for optimal group outcomes. Several commenters expressed the need for clarification about what constitutes differentiated selves or argued that the concept includes conceptually dissimilar ideas that do not belong together. In this section, we aim to clarify the term *differentiation of selves* and to discuss mechanisms that can promote differentiation. Differentiation of selves occurs when group members contribute their distinct skills, knowledge, or opinions to a group task (whether performance-related, informational, or moral). People exist first as bodies, and in that sense they are inherently separate and different. Group systems present ways of organizing these disparate bodies into larger, multiperson units. The central issue for us is how much groups retain and capitalize on differences among selves. Groups may even increase differences among selves, such as when division of labor creates specialized expertise. Alternatively, groups may treat members as essentially similar, interchangeable parts (e.g., cannon fodder). The central

argument of the target article is that groups benefit by using systems based on differences among members rather than training members to be more or less interchangeable.

Kruger, Vigil, & Stith (**Kruger et al.**) noted that there are several potential interpretations of the term *differentiation of selves*. To be clear, differentiation of selves does not refer to surface characteristics, such as whether a group member is male or female. Differentiation of selves also does not refer to perceptions of identities, such as the extent to which a person views him or herself as a prototypical group member. Instead, differentiation of selves refers primarily to contributing a distinct skill, special knowledge, or key opinion to the group. Differentiation of selves could be construed as an umbrella term for different types of role differentiation. That is, differentiation of selves involves taking on a unique role in the group by contributing skills or knowledge that are different from the contributions made by other group members. In group performance or moral tasks, role differentiation promotes personal responsibility for contributing to group outcomes and thereby promotes effort. In informational tasks, role differentiation can mean playing devil's advocate, arguing for a non-conventional viewpoint, or more simply contributing one's opinion without undue influence or pressure from others. Role differentiation in informational tasks promotes independent thought and thus frees the individual from pressure to conform.

Several commenters mentioned that our definition of *differentiation of selves* as stated in the target article seemed to involve two conceptually distinct ideas. **Dar-Nimrod & Gonsalkorale** noted that we discuss differentiation of selves as resulting from both identifiability (e.g., being publicly identified) and specialization through role differentiation. **Talaifar & Swann** similarly pointed out that we defined the term *differentiation of selves* both as personal regulation, a result of being individually identified and responsible, and social regulation, a result of role differentiation. **Levine** also differentiated two constructs within our concept of differentiation of selves. Subjective differentiation, as described by Levine, occurs when people feel pressure to behave in accordance with group goals; and objective differentiation involves contributing differing skills, knowledge, and opinions.

Although we appreciate the difference between public and private aspects of self, we sought in our analysis to straddle the two for an important reason. Our investigation began with an attempt to understand the roots of human selfhood. Differentiation is not so much a need originating from inside a person but rather in the social system. People become different not because of some mysterious instinct for uniqueness but rather because differentiated selves make groups function better and so people evolved and learned the capacity to perform differentiated roles in these groups.

The issue of sharpening the definition of differentiation also was raised by **Mojzisch, Schultze, Hüffmeier, & Schulz-Hardt** (**Mojzisch et al.**). They suggested that the concept of differentiation of selves as we described it could refer to three different constructs, including (1) distinct roles, knowledge, or expertise, (2) metaknowledge about other differentiated identities, and (3) perceiving the self as autonomous and independent. Our intended meaning of the construct *differentiation of selves* fits most closely with what **Levine** called *objective differentiation*

and the first definition of *differentiation of selves* provided by Mojzisch et al. Mojzisch et al.'s latter two constructs are also quite real, we think, but they are there to facilitate the first.

In reviewing our target article, we can understand the source of confusion. In the fifth paragraph of the introductory section, we wrote: "By *submerged in the group*, we mean any of the following: People are held neither accountable nor responsible, they are not in competition or playing a distinct role, and they are not publicly identified or rewarded." This statement equates the definition of *differentiation of selves* with the mechanisms that can be used to promote or discourage differentiation of selves. Here, we differentiate the definition of the concept of differentiation of selves (contributing a distinct skill, distinct knowledge, or distinct opinion to the group) from the mechanisms that promote or undermine differentiation of selves. Our review focused on the benefits of differentiation of selves in three domains: group performance, group decision processes, and moral group behavior. The mechanisms that can affect differentiation of selves include public identifiability, competition, reward, and accountability. None of these features universally increases differentiation of selves. Instead, the effect of each mechanism on differentiation of selves depends on the task domain (e.g., group performance, group decision processes, moral group behavior).

In the domains of group performance and moral behavior, public identifiability, competition, reward, and accountability motivate group members to exert effort on behalf of the group and to successfully execute their role in the group. In other words, these mechanisms promote differentiation of selves in group performance tasks and moral behavior by serving as a form of group control. The tools of group control may backfire in informational tasks. As **Budescu & Maciejovsky** indicated, competition can undermine willingness to share information, which could hurt group performance on informational tasks. In a range of group informational processes, public identifiability, competition, reward, and accountability may undermine differentiation of selves by providing incentives for conforming to the dominant opinion and keeping unshared information private. Thus, differentiation of selves is not the same thing as public identifiability, competition, reward, or accountability. These factors are mechanisms that can encourage or stifle differentiation of selves in different contexts.

The context-dependent nature of the mechanisms that can promote or hinder differentiation of selves is evident when considering the example of accountability. Whether accountability promotes differentiation of selves is in part dependent on to whom one is accountable. In general, accountability promotes careful thought and action because, by definition, people who are held accountable must justify their feelings, beliefs, or actions to others (Lerner & Tetlock 2003). Nonetheless, accountability may produce conformity rather than differentiation of selves if group members are accountable to an audience that prefers a certain conclusion, outcome, or course of action (Tetlock et al. 1989). **Haslam & Ellemers** asserted that accountability produces moral behavior only when the norms and goals of the group support moral behavior. This point raises a broader question about the definition of moral behavior. Originally, perhaps, moral behavior consisted of

behavior that benefited the group and enabled it to survive and flourish (starting, presumably, with cooperation and reciprocity). This utilitarian definition of morality would condone behaviors, such as intergroup violence, that benefit one group at the expense of another. The later introduction of notions of higher, more abstract levels of moral reasoning would allow people to raise moral objections to their group's perceived interests as a whole. In the context of intragroup relations, one interpretation is that accountability increases moral behavior because it reduces selfish behavior and leads people to be more likely to act in accordance with group goals. But yes, if one classifies the group's welfare or tactics as immoral, then increasing group control of individuals, such as by accountability, will push to increase immoral behavior.

We hope this response is useful in clarifying the distinction between the concept of differentiation of selves and the mechanisms that may facilitate or hinder the process. When considering other mechanisms that may affect differentiation of selves, it is useful to consider why these mechanisms have their effect. **Faber, Savulescu, & Van Lange** (**Faber et al.**) argued that reputational concerns may underlie many of the mechanisms that we suggested affect differentiation of selves. Similarity, **Levine** argued that almost all of the factors that influence differentiation of selves can be tied together because they all evoke evaluation apprehension. We agree that reputational concerns or evaluation apprehension are likely responsible for the effect of public identification, competition, reward, and accountability on differentiation of selves. Indeed, these comments underscore our assumption that the inner mechanisms of self were developed to enable groups to function effectively and efficiently. We reiterate, however, that reputational concerns and evaluation apprehension are useful primarily for promoting effort and good behavior in group performance and moral tasks. Reputational concerns and evaluation apprehension can actually be counterproductive in informational tasks, insofar as they create pressure to conform to majority views and thereby suppress the gathering and exchange of information. But even with informational tasks, reputational concerns can help, especially when people gain status in the group by contributing new insights or information. Thus, Levine's and Faber et al.'s point is mainly correct, with the caveat that sometimes reputational concerns and evaluation apprehension can be counterproductive – and mainly when they decrease differentiation of selves.

Healey raised another aspect of the problem of differentiating selves. His contention was that each person may contain multiple selves, or different versions of it, specifically conscious/explicit and implicit structures. In our view, the notion that each person has different selves violates the definition and purpose of selfhood (see Baumeister 2011), so it is best to think of the conscious and unconscious aspects as different parts of the same self (see also commentary by **Forsyth**). Terminology aside, Healey's point is instructive. Our target article was in fact motivated by the broad question of how the human self came into being. A solitary person would not need much of a self because things such as ownership, moral reputation, social rank, and even name and address would lose all value, and things like self-esteem and interpersonal appeal (including mate value and job qualifications)

would also be irrelevant, if not impossible. The point is that selfhood emerged not out of the needs of the solitary psyche but as something useful to make group systems function better. The different parts of mind and brain thus gradually coalesce to work together to operate an identity in the social system. Healey's comment reminds us that this process is likely incomplete. Making a commitment, such as a marriage or a mortgage, implicates the full self as a unity, even though one may have had inner conflict and misgivings at the time. Inner conflict and disunity can even come back to haunt the person and undercut role performance.

R3. Identification and differentiation of selves

In the target article, we proposed that group formation may occur in two complementary steps. People group together because groups provide benefits to members that ultimately help them survive and reproduce. These benefits can include sharing of resources and information and competitive advantages over other groups. When groups form it is important that individual group members adopt a shared identity and sense of belonging with other group members. As pointed out by **Haslam & Ellemers** and by **Reicher, Spears, Postmes, & Kende (Reicher et al.)**, a major function of social identity is to promote adherence to group norms (which can even include the norm of being nonconformist, a point raised by **Hornsey & Jetten**). Promoting adherence to group norms is useful for coordinating activity and developing shared group goals that can act as a guide for individual behavior. The second step, according to our theory, is differentiation of selves. This is accomplished primarily through role differentiation, such as when group members contribute unique skills, knowledge, or opinions to group tasks. We note that these two steps are not necessarily inevitable or governed by a concrete rule. Instead, the steps are meant to have heuristic value and may apply to many but certainly not all groups.

If differentiation of selves involves people contributing distinct skills and expertise, does this mean that differentiation is incompatible with group identification? The commentaries provided a range of interpretations concerning the relationship between step one and step two of our model. **Haslam & Ellemers** and **Hornsey & Jetten**, for example, interpreted the target article as arguing that group identification and differentiation of selves are mutually exclusive. We are sorry for the misunderstanding: Again, the steps are intended as complementary, not contradictory.

As another revealing instance, **Nijstad & de Dreu** characterized our argument as asserting that "members need to differentiate themselves from the group." Differentiating the self from the group would indeed make the differentiation step the opposite of the first (group identity) step. But that is not what we meant. Instead, we would say that what makes a group effective is that members differentiate themselves *within* the group – not *from* it.

We aim to clarify the relationship between group identification and differentiation of selves in this section. The root of the various interpretations of our point can perhaps be tied back to our use of the phrase "submersion of the self in the group." We intended to use this phrase to

indicate that individual selves within groups are not differentiated (e.g., in different roles). A lack of differentiation of selves does not imply anything about group members' social identification with a group. We view social identity and differentiation of selves as orthogonal concepts. Group members can identify strongly with their group and yet show a differentiation of selves, such as when a person adopts a group's goals and yet uses individual agency, thought, and skill to help accomplish those goals. That is what we meant when we wrote that groups flourish when members differentiate themselves within the group rather than from it.

Hodges & Packer indicated that people who lack a social identification with the group may be most likely to benefit from external mechanisms that can promote differentiation of selves, such as accountability and incentives. This excellent point has several implications. The first is that not all group members in large organizations have developed a sense of shared identity with the group, and identification with the group is more likely a continuum than a dichotomy. With group performance tasks, those people who lack strong identification with the group may be more likely to exert effort on its behalf when they are individually identified and can be held accountable for their behavior. (To be sure, the group must control some rewards that the person cares about, or else accountability lacks motivational force.) For people who do identify with the group, differentiation of selves may promote excellent performance because differentiation of selves made possible through role differentiation would enable people who really care about the group to receive credit for their effort. **Blanton**'s comment elucidated this point very well. Meanwhile, people who care less about the group would be unable to hide their lack of effort within the crowd.

Differentiation of selves is likely most beneficial when a person is also socially identified with the group, as several commentators pointed out (**Budescu & Maciejovsky**; **Haslam & Ellemers**; **Healey**; **Hornsey & Jetten**; **Nijstad & De Dreu**). This insight improves the analysis of the two steps as complementary. In performance tasks, for example, rewards, competition, and accountability are unlikely to promote effort if group members care little about maintaining their membership in the group, **Faber et al.** noted. The idea that identification is needed to reap the benefit of differentiation is consistent with our heuristic model of two complementary steps. Group members who identify with their group will likely be motivated to behave in a manner that benefits the group. Differentiation of selves allows groups to achieve maximum benefits through roles, development of unique skills, and willingness to share privileged information. Consistent with these comments, we predicted that the best outcomes occur both when group members achieve a sense of belonging and identity in the group and then go a step beyond that by differentiating themselves within the group.

Nijstad & De Dreu argued that the contribution of differentiation of selves may have been overestimated while the contribution of identification underestimated. In their analysis, they suggested that many problematic group behaviors can be tied back to individuals acting in accordance with their own self-interest rather than in line with the interests of the group. In particular, Nijstad & De Dreu raised the issue of anonymity (one factor we proposed

has an effect of differentiation of selves) allowing people to act according to their own self-interest. In the domain of group performance, anonymity could enable group members to act out of self-interest by slacking off on effortful tasks. In the domain of informational tasks, anonymity again may allow a person to act out of self-interest, which could result in a reduction in conformity. One of the main points of Nijstad & De Dreu's commentary is that differentiation of selves can be harmful to group performance if this differentiation leads people to act out of self-interest. Possibly this again suggests the misunderstanding we noted earlier: They thought we were talking about differentiating the self from the group, whereas we focused on differentiating the self within the group. Still, the broader point involves the value of combining both steps, or the need for identifying with a group before cultivating role differentiation. Group identification is needed to reap the benefits of differentiation because it helps to align self-interest to the interests of the group and to avoid negative outcomes mentioned in their commentary, such as deception and power struggles. This insight also reinforces the order of our model's two steps. If group identification is not in place before people act in accordance with differentiated selves, then problematic outcomes driven by self-interest could well occur.

Several commentaries (**Belzung et al.; Forsyth; Healey; Hodges & Packer**) pointed out that the two steps may be more continuous and fluid than we depicted. Forsyth noted that previous models of group formation, such as Tuckman (1965), have identified four stages of group development. Forsyth's own work shows that groups cycle through different levels of cohesion, productivity, and conflict (Forsyth 2014). Healey raised the issue of whether social identity may need to be reinforced in an ongoing manner. In general, if something about the group (such as being large and loose) leads to decreased social identity, then it may be necessary, as Healey suggested, to reinforce group identity. We recognize that groups are not static and that groups may shift their focus at times, from promoting differentiation of selves to social identity, as goals and members change. These ideas imply opportunities for future empirical work.

Given that we identified the two complementary steps as important to group formation, it is worthwhile to consider factors that may lead groups to move on from Step 1 to Step 2 of the model. **Cabeza de Baca, Garcia, Woodley of Menie, & Figueredo** (**Cabeza de Baca et al.**) offered an ecological analysis of factors that may lead to differentiation of selves within groups. They used the Strategic Differentiation-Integration Effort hypothesis (SD-IE) to argue that differentiated roles within groups may be driven in part by pressure due to environmental or ecological conditions. In particular, their work has focused on the question of why some groups are highly differentiated and specialized while others remain undifferentiated and unspecialized. SD-IE argues that high population density in combination with low resource availability should promote "niche-splitting," which means specialization or role differentiation. Niche-splitting reduces competition for scarce resources by increasing labor productivity and the ability to use resources efficiently and effectively. SD-IE offers support for the prediction that differentiation of selves is particularly relevant to the functioning of large groups and suggests that this differentiation

is useful for promoting system gain due to the benefits it confers in making use of scarce resources.

R4. Theoretical connections and extensions

The commentaries offered several opportunities to connect our work to that of other theorists and to consider potential extensions. **Blanton** provided a particularly useful connection between the target article and his Deviance Regulation Theory (Blanton & Christie, 2003). Deviance Regulation Theory proposes that groups have two main goals. The first goal is increasing social order, which involves group members adhering to certain conduct codes. The second goal is social complexity, which is the idea that groups benefit from diversity of thought and order. These two group goals approximately mirror the two complementary steps we proposed in the target article. Deviance Regulation Theory centers on how groups employ rewards and punishments to enforce behavior. Instead of focusing on differentiation of selves in terms of performance, knowledge, or opinions, Deviance Regulation Theory defines deviation as differentiation from descriptive and injunctive social norms. According to Deviance Regulation Theory, groups can promote social order by punishing members who deviate from the social norm and can promote social complexity by rewarding group members who excel and differ from the group in a desirable way. As Blanton noted, Deviance Regulation Theory offers a framework for predicting contingencies or mechanisms that might best serve the function of differentiating individual selves. Punishment may promote conformity to group norms, and reward may be especially useful for promoting differentiation within groups.

Possibly related to the regulation of deviance is the encouragement of dissent. **Hodges & Packer** made the important point that identifying with the group can increase trust, thereby making members feel more comfortable and willing to express dissenting views. Actually, the term they used was "solidarity," which captures not just the member's individual identification with the group but also the confident sense of being accepted by it. Regardless, the point is that the person who feels strongly included in the group can express dissent without fearing being ejected from the group. Further research may profitably test and build on this insight.

Several commentaries offered thoughtful ideas for expanding our theory to other aspects of group functioning. **Zlatev, Halevy, & Tiedens** (**Zlatev et al.**) asserted that rank differentiation may be needed in addition to role differentiation. Indeed, they elaborated this by pointing out that social rank or status can be used as a type of reward to incentivize cooperation and presumably other behaviors that benefit the group (such as when high-performing employees receive promotions). This is a great point that we had overlooked (hence the value of exchanges such as *BBS* provides!) Rank differentiation is needed in order to direct group activities and to make use of mechanisms that promote differentiation of selves (Halevy et al. 2011; 2012b; Simpson et al. 2012).

With group performance tasks, rank differentiation is needed to know who is responsible for making decisions, enforcing punishments, or delivering incentives (all of which rely on differentiation of selves). In informational tasks, group leaders or enforcers of some kind are needed to assign people to play the role of devil's advocate or to ensure that perspectives can be expressed without outside influence. In terms of tasks in the moral domain, rank differentiation may be needed to help establish group goals and norms, not least by allowing leaders to emerge. Rank differentiation is therefore a special form of role differentiation that could foster further differentiation of selves and help the group capitalize on the advantages of differentiation. Even in the absence of explicit rank differentiation, a form of rank differentiation may nonetheless be possible. As **Hogg** specified, prototypical group members have a greater influence over the group and often lead more effectively. Thus, prototypicality may be a key determinant of intragroup differentiation in the absence of an explicit hierarchy.

In addition to rank differentiation, **Forsyth** argued, subgroups may help coordinate group action. As **Haslam & Ellemers** pointed out, we did not devote space in the target article to discussing subgroups, and so again we appreciate the insightful contributions emerging from this exchange of views. We will attempt to address this issue briefly here, but further theoretical and empirical work would be most welcome.

The main benefit of subgroups is that they help coordinate complex action or large-scale operations (Kozlowski & Bell 2013). In a sense, subgroups may create an additional level of differentiation by providing members of that subgroup a distinct job, problem, or task. We conceptualize subgroups as functioning much in the same way as larger, umbrella groups in terms of the benefits of social identification and role differentiation – but also functioning within the larger group like differentiated individuals, in that they can focus on specialized tasks and improve group outcomes. Extending our theory, we predict that identification with the subgroup would confer basic benefits not only to the subgroup, but also to the overall group (Hornsey & Hogg 2000). On a football team, for example, identifying with the defense will help the defense but also help the whole team. Identifying both with the subgroup and overall group should reduce conflict between subgroups insofar as those groups view themselves serving complementary roles aimed at attaining a superordinate goal, rather than as competing groups. Beyond the benefits identification offers, our theory predicts that a subgroup in which individual selves were differentiated would perform better than a subgroup in which individual selves were not differentiated, such as a subgroup that assigned each member the same role rather than differentiating roles. Meanwhile, large groups may gain benefits by having differentiated, specialized subgroups that perform distinct tasks, contribute a particular kind of information, are accountable, and so forth.

R5. Bridges and opportunities

Several commentaries applied aspects of our theory to other areas or suggested outstanding empirical questions in manners that we had not anticipated but were quite thought-provoking. In this section, we discuss these bridges and opportunities.

One point made by **Kruger et al.** and by **McDermott** is that it is useful to consider just how specialized roles should be to achieve maximal group functioning. Kruger et al., for example, argued that division of labor may require some

redundancy in order to be effective. This is a great comment and suggests that differentiation can be overdone, to the point that it is counterproductive. Thus, it can be useful to have more than one person who knows how to complete a particular aspect of a task. If only one person knows how to perform the task, then the group cannot move forward if that person becomes unavailable. Hence, it is beneficial to have some redundancy of skills when using division of labor. Differentiation of selves does not necessarily mean that each group member is assigned to a completely nonredundant role. In many groups, it is necessary to have more than one person perform the same role. When roles are somewhat overlapping, then additional mechanisms are needed to bring out fully differentiated selves (e.g., accountability, public identifiability, reward). McDermott also mentioned that nonredundancy in roles can be highly problematic in high-functioning groups such as the military if a person in an extremely specialized role is killed during warfare. Future empirical work could profitably explore the optimal level of differentiation within a group. At which degree is a group too differentiated to function optimally?

Brown noted that many findings reported in our paper involved so-called WEIRD samples (Henrich et al. 2010a; the acronym stands for Western, educated, industrialized, rich, and democratic) and could be considered Western-centric. He argued, for example, that depersonalization actually may lead to many positive group outcomes, perhaps especially in less WEIRD samples (such as for groups in collectivistic cultures). We are intrigued by this possibility and welcome methodologically strong research showing how groups can function better without differentiation of selves than with differentiation. This research would be useful in illuminating boundary conditions and might contain lessons that could be incorporated into our theory.

Another question that could be used to establish boundary conditions: Under what circumstances might a group not benefit from differentiation of selves? Perhaps whether differentiation of selves benefits groups depends in part on the goals of the group, such as discussed by **Talaifar & Swann**. In particular, they argued that differentiation may not be needed to achieve some group goals, such as in cases of identity fusion, in which people are strongly identified with the group and on that basis are willing to make extreme sacrifices for the group. People who are strongly identified with the group may be willing to make extreme sacrifices, even if there is no role differentiation. This is compatible with **McDermott**'s suggestion that the military may provide an exception to the idea that differentiation helps group functioning. McDermott argues that military groups often need people to be somewhat interchangeable (this echoes the redundancy point, above; the potential danger of impairing group function because a specialist is killed is obviously greater in combat units than in most other groups). We see the logic behind that statement and acknowledge that historically, military groups with more soldiers were generally more successful in battles (e.g., Morris 1965). Nonetheless, it is useful to note that military units have evolved to be more and more differentiated and specialized. This process is presumably driven by pressure for the group to be as effective as possible. Factors that promote group identification and cohesiveness, such as uniforms, certainly are beneficial, but from our perspective there is a case to be made for the usefulness of differentiation, even in military groups, **Zlatev et al.**'s point about rank differentiation is obviously highly applicable to military groups; it is doubtful that a fully egalitarian army (i.e., one without ranks or commanders) would function effectively in battle.

Several commenters (**Kruger et al.**; **Levine**; **Mojzisch et al.**) thought that the review would have benefited from organizing the literature review around an existing task typology (e.g., McGrath 1984; Steiner 1972). This could certainly be done. Mojzisch et al., for example, suggested that the demands of a task may determine whether differentiation is needed. As an example, they noted that in a group of mountain climbers tethered together, the skill of the least-skilled climber determines the group's success. That statement is undoubtedly true, but it also may be true that differentiating selves within the group can improve the outcome relative to not differentiating selves. If the least-skilled climber feels responsible and accountable to the group as an individual, he or she may exert extra effort to climb quickly and accurately, which is consistent with evidence we cited in our review about the least-skilled swimmer in a team relay performing better when in a group but individually identified (Osborn et al. 2012).

Levine offered an alternative organization of our literature review around norms. As stated in his commentary, one norm could be "work hard, cooperate with others," which would encompass the performance and moral domains, and the other norm could be "express opinions regardless of what others say," which would cover the informational domain. We organized the literature around three broad categories reflecting different group outcomes. Those categories include: (1) performance task outcomes (effortful production of some end product), (2) informational process outcomes (group decision-making, judgement, etc.), and (3) moral control of group behaviors. With these kinds of papers, it is often a challenge to create the best organization for the literature review. We made the decision to organize the review around task outcomes (rather than task type or norm) because it aligns with our primary interest in how differentiation of selves affects various types of outcomes.

Brennan & Enns mentioned the need to distinguish between statistical effects (e.g., statistical facilitation) and social effects. Their commentary described the wise crowds phenomenon as a statistical effect rather than a social phenomenon. That is right, but groups can benefit by organizing their social interactions to capitalize on the statistical effect. As indicated in the example of the wisdom of crowds effect, social groups can improve their decision making by making use of statistical facilitation. Conversely, social interaction does not invariably improve outcomes, such as when it leads to biased decisions.

Several other commentaries noted questions for future empirical investigation. **McDermott**, for example, asked whether people may self-select into groups that include a certain amount of differentiation. Perhaps people with few unique skills may self-select into a relatively undifferentiated group or into a group with redundancy in roles. **Kruger et al.** suggested that the mechanisms that affect differentiation of selves may depend on individual differences. Extroverts, for example, may respond more to reward contingencies designed to promote differentiation of selves.

Sezer & Norton discussed the target article in terms of its implications for vicarious processes. Vicarious processes,

such as vicarious contagion, occur when a group member acquires or catches attitudes and preferences from another group member. These processes create group members that are increasingly similar over time. As Sezer & Norton highlighted, these processes can bring about negative consequences, especially when the attitudes or emotions being transferred among group members are undesirable. Differentiation of selves within groups may help decrease some of the potentially harmful consequences of vicarious contagion. Although their commentary considered vicarious contagion of negative behavior only, we assume that it also applies to behaviors, attitudes, and preferences that would benefit the group.

Several commentaries discussed applications of the target article to other lines of research. **Douven**, for example, commented on how agent-based simulation (a type of computational modeling) could be used to test certain aspects of our theory. **Barnier, Harris, & Sutton (Barnier et al.)**, like us, are interested in the question of when groups are more or less than the sum of their parts. Based on the collaborative recall literature from cognitive psychology and the distributed cognition literature from philosophy, their work suggests that knowledge must be integrated and differentiated to achieve optimal group outcomes. **Jacobson** commented on our assertion that background diversity is not always helpful for forming shared group identity by noting that it would be unethical to select for background homogeneity in hiring decisions. In contexts that value diversity, they are right, though presumably Jacobson was not asserting an ethical imperative to include men on the women's track team. The research we reviewed is descriptive rather than prescriptive. **Ben-Ze'ev & Krebs** applied our theory to when partners decide to dissolve romantic relationships, noting that partners who take on a unique role in the relationship may be more likely to stay than partners who do not. **Spiegel** applied our theory to resuscitation teams responding to emergency, finding support for our theory in a team situation involving stress and time pressure.

R6. Conclusion

Our theory aimed to address one of the perennial questions in social psychology: What factors lead to effective group functioning? We concluded that one major moderator of group outcomes is the differentiation of individual selves. Indeed, we suggest that selfhood may have evolved to facilitate adopting differing roles in groups. We are optimistic that our theory will continue to be refined in a way that contributes to integrating the literature on selfhood and groups and generates novel empirical work. The number of thought-provoking responses to our commentary has already benefitted those endeavors, and we are grateful for the insights of our esteemed colleagues.

References

[The letters "a" and "r" before author's initials stand for target article and response references, respectively]

Abrams, D. & Hogg, M. A. (1988) Comments on the motivational status of self-esteem in social identity and intergroup discrimination. *European Journal of Social Psychology* 18:317–34. [MAH]

Abrams, D. & Hogg, M. A. (1990) Social identification, self-categorization and social influence. *European Review of Social Psychology* 1:195–228. [MAH]

Abrams, D. & Hogg, M. A. (2010) Social identity and self-categorization. In: *The SAGE handbook of prejudice, stereotyping and discrimination*, ed. J. F. Dovidio, M. Hewstone, P. Glick & V. M. Esses, pp. 179–93. SAGE. [MAH]

Abrams, D., Randsley de Moura, G., Marques, J. M. & Hutchison, P. (2008) Innovation credit: When can leaders oppose their group's norms? *Journal of Personality and Social Psychology* 95:662–78. doi: 10.1037/0022-3514.95.3.662. [MAH]

Abrams, D., Wetherell, M., Cochrane, S., Hogg, M. A. & Turner, J. C. (1990) Knowing what to think by knowing who you are: Self categorization and the nature of norm formation, conformity and group polarization. *British Journal of Social Psychology* 29:97–119. [aRFB]

Ackerman, J. M., Goldstein, N. J., Shapiro, J. R. & Bargh, J. A. (2009) You wear me out: The vicarious depletion of self-control. *Psychological Science* 20(3):326–32. [OS]

Alexander, R. D. (1974) The evolution of social behavior. *Annual Review of Ecology and Systematics* 5:325–83. [TCdB]

Allport, F. H. (1924) *Social psychology*. Houghton Mifflin. [aRFB, DRF]

Allport, F. H. (1962) A structuronomic conception of behavior: Individual and collective. I. Structural theory and the master problem of social psychology. *Journal of Abnormal and Social Psychology* 64:3–30. doi: 10.1037/h0043563. [NSF, DRF]

American Heart Association (2011) *Advanced Cardiovascular Life Support (ACLS) DVD Megacode and team resuscitation*. AHA. [RS]

Ancona, D. G. & Caldwell, D. F. (1992) Demography and design: Predictors of new product team performance. *Organization Science* 3:321–41. [MPH]

Anderson, C. & Brown, C. E. (2010) The functions and dysfunctions of hierarchy. *Research in Organizational Behavior* 30:55–89. doi: 10.1016/j.riob.2010.08.002. [JJZ]

Anderson, C., Hildreth, J. A. D. & Howland, L. (2015) Is the desire for status a fundamental human motive? A review of the empirical literature. *Psychological Bulletin* 141(3):574–601. doi: 10.1037/a0038781. [JJZ]

Anicich, E. M., Swaab, R. I. & Galinsky, A. D. (2015) Hierarchical cultural values predict success and mortality in high-stakes teams. *Proceedings of the National Academy of Sciences* 112(5):1338–43. doi: 10.1073/pnas.1408800112. [JJZ]

Ariely, D., Bracha, A. & Meier, S. (2009) Doing good or doing well? Image motivation and monetary incentives in behaving prosocially. *The American Economic Review* 99:544–55. doi: : 10.1257/aer.99.1.544. [NSF]

Armstrong, E. L., Fernandes, H. B. F. & Woodley, M. A. (2014) SD-IE and other differentiation effects in Italy and Spain. *Personality and Individual Differences* 68:189–94. [TCdB]

Arrow, K. J. (1951/1963) *Social choice and individual values*. Wiley. [CB]

Arrow, K. J. (1962) The economic implications of learning by doing. *The Review of Economic Studies* 29(3):155–73. [EK]

Asch, S. (1952) *Social psychology*. Prentice-Hall. [aRFB]

Asch, S. E. (1956) Studies of independence and conformity: I. A minority of one against a unanimous majority. *Psychological Monographs* 70(9) (Whole No. 416). [BHH]

Babbage, C. (1832) On the economy of machinery and manufactures. *Philosophical Magazine Series* 3:208–13. doi: 10.1080/14786443208647876. [aRFB]

Bahrami, B., Olsen, K., Latham, P. E., Roepstorff, A., Rees, G. & Frith, C. D. (2010) Optimally interacting minds. *Science* 329:1081–85. [AAB]

Bales, R. F. (1951) *Interaction process analysis: A method for the study of small groups*. Addison-Wesley. [MPH]

Baray, G., Postmes, T. & Jetten, J. (2009) When "I" equals "We": Exploring the relation between social and personal identity of extreme right-wing political party members. *British Journal of Social Psychology* 48:625–47. [MJH]

Barkow, J. H. (1975) Prestige and culture: A biosocial interpretation. *Current Anthropology* 16(4):553–72. doi: 10.1086/201619. [JJZ]

Barnard, C. I. (1938) *The functions of the executive*. Harvard University Press. [MPH]

Barnier, A. J. (2010) Memories, memory studies, and my iPhone. *Memory Studies* 3(4):293–97. [AJB]

Barnier, A. J., Priddis, A. C., Broekhuijse, J., Harris, C. B., Keil, P. K., Cox, R., Congleton, A. R. & Addis, D. R. (2014) Reaping what they sow: The benefits of remembering together in intimate couples. *Journal of Applied Research in Memory and Cognition* 3(4), 261–65. [AJB]

Barnier, A. J., Sutton, J., Harris, C. B. & Wilson, R. A. (2008) A conceptual and empirical framework for the social distribution of cognition: The case of memory [Special Issue]. *Cognitive Systems Research: Perspectives on Social Cognition* 9(1):33–51. [AJB]

Basu, S., Dickhaut, J., Hecht, G., Towry, K. & Waymire, G. (2009) Recordkeeping alters economic history by promoting reciprocity. *PNAS Proceedings of the National Academy of Sciences of the United States of America* 106:1009–14. doi: 10.1073/pnas.0811967106. [aRFB]

Batson, C. D., Kobrynowicz, D., Dinnerstein, J. L., Kampf, H. C. & Wilson, A. D. (1997) In a very different voice: Unmasking moral hypocrisy. *Journal of*

Personality and Social Psychology 72:1335–48. doi: 10.1037/0022-3514.72.6.1335. [NSF]

Baumeister, R. F. (1982) A self-presentational view of social phenomena. *Psychological Bulletin* 91:3–26. doi: 10.1037/0033-2909.91.1.3. [NSF]

Baumeister, R. F. (2005) *The cultural animal: Human nature, meaning, and social life.* Oxford University Press. [rSEA]

Baumeister, R. F. (2011) The unity of self at the interface of the animal body and the cultural system. *Psychological Studies* 56:5–11. doi: 10.1007/s12646-011-0062-5. [rSEA]

Beaman, A. L., Klentz, B., Diener, E. & Svanum, S. (1979) Self-awareness and transgressions in children: Two field studies. *Journal of Personality and Social Psychology* 37:1835–46. doi: 10.1037/0022-3514.37.10.1835. [aRFB]

Beath, A., Christia, F. & Enikolopov, R. (2012) Direct democracy and resource allocation: Experimental evidence from Afghanistan (June 1, 2012) MIT Political Science Department Research Paper No. 2011–16. doi: 10.2139/ssrn.1935055. [aRFB]

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* 48:838–44. [BAN]

Bechtoldt, M. N., De Dreu, C. K. W., Nijstad, B. A. & Choi, H. (2010) Motivated information processing, social tuning, and group creativity. *Journal of Personality and Social Psychology* 99:622–37. doi: 10.1037/a0019386. [aRFB]

Belsky, J., Steinberg, L. & Draper, P. (1991) Childhood experience, interpersonal development, and reproductive strategy: An evolutionary theory of socialization. *Child Development* 62:647–70. [TCdB]

Benkard, C. L. (2000) Learning and forgetting: The dynamics of commercial aircraft production. *American Economic Review* 90(4):1034–54. [EK]

Ben-Ze'ev, A. (2011) The nature and morality of romantic compromises. In: *Morality and the emotions*, ed. C. Bagnoli, pp. 95–114. Oxford University Press. [AB-Z]

Ben-Ze'ev, A. & Goussinsky, R. (2008) *In the name of love: Romantic ideology and its victims.* Oxford University Press. [AB-Z]

Blanton, H., & Christie, C. (2003) Deviance regulation: A theory of action and identity. *Review of General Psychology* 7:115–49. doi: 10.1037/1089-2680.7.2.115. [HB, rSEA]

Blanton, H. & Hall, D. (2009) Punishing difference and rewarding diversity: A deviance regulation analysis of social structure. In: *The psychology of self regulation (Sydney symposium in social psychology)*, ed. J. Forgas, R. Baumeister & D. Tice, pp. 273–88. Psychology Press. [HB]

Bloom, M. (1999) The performance effects of pay dispersions on individuals and organizations. *Academy of Management Journal* 42:25–40. [SAH]

Böckler, A., Knoblich, G. & Sebanz, N. (2012) Effects of co-actor's focus of attention on task performance. *Journal of Experimental Psychology: Human Perception and Performance* 38(6):1404–15. [AAB]

Boehm, C. (1999) *Hierarchy in the forest: The evolution of egalitarian behavior.* Harvard University Press. [RMcD]

Bond, C. F. (1982) Social facilitation: A self-presentational view. *Journal of Personality and Social Psychology* 42:1042–50. doi: 10.1037/0022-3514.42.6.1042. [aRFB]

Bond, C. F. & Titus, L. J. (1983) Social facilitation: A meta-analysis of 241 studies. *Psychological Bulletin* 94:265–92. doi: 10.1037/0033-2909.94.2.265. [aRFB]

Bond, R. & Smith, P. B. (1996) Culture and conformity: A meta-analysis of studies using Asch's (1952b, 1956) line judgment task. *Psychological Bulletin* 119:111–37. doi: 10.1037/0033-2909.119.1.111. [aRFB, BHH]

Bowles, S. (2009) Did warfare among ancestral hunter-gatherers affect the evolution of human social behaviors? *Science* 324(5932):1293–98. [RMcD]

Boyd, R. & Richerson, P. J. (1985) *Culture and the evolutionary process.* University of Chicago Press. [rSEA]

Boyd, R., Richerson, P. J. & Henrich, J. (2011) The cultural niche: Why social learning is essential for human adaptation. *Proceedings of the National Academy of Sciences* 108:10918–25. [BHH]

Bratman, M. (1999) *Faces of intention.* Cambridge University Press. [AB-Z]

Bray, R. M. & Sugarman, R. (1980) Social facilitation among interacting groups: Evidence for the evaluation-apprehension hypothesis. *Personality and Social Psychology Bulletin* 6:137–42. doi: 10.1177/014616728061021. [aRFB]

Brennan, A. A., & Enns, J. T. (2015a) What's in a friendship? Partner visibility supports cognitive collaboration between friends. *PloS one* 10(11): e0143469. [AAB]

Brennan, A. A. & Enns, J. T. (2015b) When two heads are better than one: Inter-active versus independent benefits of collaborative cognition. *Psychonomic Bulletin & Review* 22:1076–82. [AAB]

Brennan, S. E., Chen, X., Dickinson, C. A., Neider, M. B. & Zelinsky, G. J. (2008) Coordinating cognition: The costs and benefits of shared gaze during collaborative search. *Cognition* 106:1465–77. [AAB]

Brewer, M. B. (1991) The social self: On being the same and different at the same time. *Personality and Social Psychology Bulletin* 17:475–82. doi: 10.1177/0146167291175001. [aRFB, HB]

Brewer, M. B. (2012) Optimal distinctiveness theory: Its history and development. In: *Handbook of theories of social psychology, vol. 2*, ed. P. A. M. Van Lange, A. W. Kruglanski & E. T. Higgins, pp. 81–98. Sage. [aRFB, DRF]

Brewer, M. B. & Chen, Y.-R. (2007) Where (who) are collectives in collectivism? Toward conceptual clarification of individualism and collectivism. *Psychological Review* 114:133–51. [DRF]

Brewer, M. B. & Kramer, R. M. (1986) Choice behavior in social dilemmas: Effects of social identity, group size, and decision framing. *Journal of Personality and Social Psychology* 50:543–49. doi: 10.1037/0022-3514.50.3.543. [aRFB]

Brickner, M. A., Harkins, S. G. & Ostrom, T. M. (1986) Effects of personal involvement: Thought-provoking implications for social loafing. *Journal of Personality and Social Psychology* 51:763–69. [BAN]

Brodbeck, F. C., Kerschreiter, R., Mojzisch, A., Frey, D. & Schulz-Hardt, S. (2002) The dissemination of critical, unshared information in decision-making groups: The effects of pre-discussion dissent. *European Journal of Social Psychology* 32:35–56. doi: 10.1002/ejsp.74. [aRFB]

Bromley, D. G. (2001) A tale of two theories: Brainwashing and conversion as competing political narratives. In: *Misunderstanding cults*, ed. B. Zablocki & T. Robbins, pp. 318–48. University of Toronto Press. [DRF]

Brown, R. (1988) *Group processes: Dynamics within and between groups.* Basil Blackwell. [SDR]

Brown, R. (2000) *Group processes: dynamics within and between groups, second edition.* Blackwell. [RB]

Brownstein, M. & Saul, J. (2015) Introduction. In: *Implicit bias and philosophy: Volume I*, ed. M. Brownstein & J. Saul, pp. 1–19. Oxford University Press. [AJJ]

Budescu, D. V. & Maciejovsky, B. (2005) The effect of monetary feedback and information spillover on cognitive errors: Evidence from competitive markets. *Management Science* 51:1829–43. [DB]

Bunderson, J. S. & Boumgarden, P. (2010) Structure and learning in self-managed teams: Why "bureaucratic" teams can be better learners. *Organization Science* 21(3):609–24. [DRF]

Burgess, D., Ryn, M. v., Dovidio, J. & Saha, S. (2007) Reducing racial bias among health care providers: Lessons from social-cognitive psychology. *Journal of General Internal Medicine* 22:682–87. [AJJ]

Cabeza de Baca, T. & Figueredo, A. J. (2014) The cognitive ecology of Mexico: Climatic and socio-cultural effects on life history strategy and general cognitive ability. *Intelligence* 47:63–71. doi: 10.1016/j.intell.2014.08.007. [TCdB]

Cabeza de Baca, T., Figueredo, A. J. & Ellis, B. J. (2012) An evolutionary analysis of variation in parental effort: Determinants and assessment. *Parenting: Science and Practice* 12:94–104. [TCdB]

Cable, D. M., Gino, F. & Staats, B. R. (2013) Breaking them in or eliciting their best? Reframing socialization around newcomers' authentic self-expression. *Administrative Science Quarterly* 58:1–36. doi: 10.1177/0001839213477098. [aRFB]

Cabrera, Á. & Cabrera, E. F. (2002) Knowledge-sharing dilemmas. *Organization Studies* 23:687–710. doi: 10.1177/0170840602235001. [aRFB]

Camacho, L. M. & Paulus, P. B. (1995) The role of social anxiousness in group brainstorming. *Journal of Personality and Social Psychology* 68:1071–80. doi: 10.1037/0022-3514.68.6.1071. [aRFB]

Cantor, N. & Mischel, W. (1979) Prototypes in person perception. In: *Advances in experimental social psychology, vol. 12*, ed. L. Berkowitz, pp. 3–52. Academic Press. [MAH]

Cantril, H. (1940) *The invasion from Mars*. Princeton University Press. [DRF]

Chatman, J. A., Boisnier, A. D., Spataro, S. E., Anderson, C. & Berdahl, J. L. (2008) Being distinctive versus being conspicuous: The effects of numeric status and sex-stereotyped tasks on individual performance in groups. *Organizational Behavior and Human Decision Processes* 107:141–60. doi: 10.1016/j.obhdp.2008.02.006. [aRFB]

Cohen, J. L. & Davis, J. H. (1973) Effects of audience status, evaluation, and time of action on performance with hidden-word problems. *Journal of Personality and Social Psychology* 27:74–85. doi: 10.1037/h0034447. [aRFB]

Corriveau, K. H. & Harris, P. L. (2010) Preschoolers (sometimes) defer to the majority in making simple perceptual judgments. *Developmental Psychology* 46:437–45. [BHH]

D'Innocenzo, L., Mathieu, J. E. & Kukenberger, M. R. (2014) A meta-analysis of different forms of shared leadership–team performance relations. *Journal of Management*. doi: 10.1177/0149206314525205. [ID-N]

Darley, J. M. & Latané, B. (1968) Bystander intervention in emergencies: Diffusion of responsibility. *Journal of Personality and Social Psychology* 8:377–83. doi: 10.1037/h0025589. [aRFB]

Davis, N. Z. (1973) The rites of violence: Religious riot in sixteenth century France. *Past and Present* 59:51–91. [SDR]

Dawes, R. M., Van de Kragt, A. J. C. & Orbell, J. (1988) Not me or thee but we: The importance of group identity in eliciting cooperation in dilemma situations. *Acta Psychologica* 68:83–97. doi: 10.1016/0001-6918(88)90047-9. [aRFB]

De Cremer, D. & Van Dijk, E. (2002) Reactions to group success and failure as a function of identification level: A test of the goal-transformation hypothesis in social dilemmas. *Journal of Experimental Social Psychology* 38:435–42. [aRFB]

De Cremer, D. & Van Dijk, E. (2009) Paying for sanctions in social dilemmas: The effects of endowment asymmetry and accountability. *Organizational*

Behavior and Human Decision Processes 109:45–55. doi: 10.1016/j.obhdp.2009.01.004.   [aRFB]

De Cremer, D. & van Vugt, M. (1999) Social identification effects in social dilemmas: A transformation of motives. *European Journal of Social Psychology* 29:871–93. doi: 10.1002/(SICI)1099-0992(199911)29:7.   [aRFB]

De Cremer, D., Hoogervorst, N. & Desmet, P. (2012) Procedural justice and sanctions in social dilemmas: The moderating effects of group feedback and identification. *Journal of Applied Social Psychology* 42:1675–93. doi: 10.1111/j.1559-1816.2012.00914.x.   [aRFB]

De Cremer, D., Snyder, M. & Dewitte, S. (2001) The less I trust, the less I contribute (or not)? The effects of trust, accountability and self-monitoring in social dilemmas. *European Journal of Social Psychology* 31:93–107. doi: 10.1002/ejsp.34.   [aRFB]

De Cremer, D., Van Knippenberg, D., Van Dijk, E. & Van Leeuwen, E. (2008) Cooperating if one's goals are collective-based: Social identification effects in social dilemmas as a function of goal transformation. *Journal of Applied Social Psychology* 38:1562–79. doi: 10.1111/j.1559-1816.2008.00359.x.   [aRFB]

De Dreu, C. K. W. (2007) Cooperative outcome interdependence, task reflexivity and team effectiveness: A motivated information processing approach. *Journal of Applied Psychology* 92:628–38.   [BAN]

De Dreu, C. K. W., Nijstad, B. A. & van Knippenberg, D. (2008) Motivated information processing in group judgment and decision making. *Personality and Social Psychology Review* 12(1):22–49. doi: 10.1177/1088868307304092.   [aRFB, BAN, ID-N, NSF]

De Dreu, C. K. W. & van Knippenberg, D. (2005) The possessive self as a barrier to conflict resolution: Effects of mere ownership, process accountability, and self-concept clarity on competitive cognitions and behavior. *Journal of Personality and Social Psychology* 89:345–57. doi: 10.1037/0022-3514.89.3.345.   [aRFB]

De Dreu, C. K. W. & Weingart, L. R. (2003) Task versus relationship conflict, team performance, and team member satisfaction: A meta-analysis. *Journal of Applied Psychology* 88(4):741–49.   [ID-N]

De Dreu, C. K. W. & West, M. A. (2001) Minority dissent and team innovation: The importance of participation in decision making. *Journal of Applied Psychology* 86:1191–1201.   [BAN]

De Kwaadsteniet, E. W. & van Dijk, E. (2010) Social status as a cue for tacit coordination. *Journal of Experimental Social Psychology* 46(3):515–24. doi: 10.1016/j.jesp.2010.01.005.   [JJZ]

de Kwaadsteniet, E. W., van Dijk, E., Wit, A., De Cremer, D. & de Rooij, M. (2007) Justifying decisions in social dilemmas: Justification pressures and tacit coordination under environmental uncertainty. *Personality and Social Psychology Bulletin* 33:1648–60. doi: 10.1177/0146167207307490.   [aRFB]

DeChurch, L. A. & Mesmer-Magnus, J. R. (2010) The cognitive underpinnings of effective teamwork: A meta-analysis. *Journal of Applied Psychology* 95:32. doi: 10.1037/a0017328.   [aRFB]

Deutsch, M. & Gerard, H. B. (1955) A study of normative and informational social influences upon individual judgment. *Journal of Abnormal and Social Psychology* 51:629–36. doi: 10.1037/h0046408.   [aRFB]

Diener, E. (1980) Deindividuation: The absence of self-awareness and self-regulation in group members. In: *The psychology of group influence*, ed. P. Paulus, pp. 209–42. Erlbaum.   [SDR]

Diener, E., Fraser, S. C., Beaman, A. L. & Kelem, R. T. (1976) Effects of deindividuation variables on stealing among Halloween trick-or-treaters. *Journal of Personality and Social Psychology* 33:178–83. doi: 10.1037/0022-3514.33.2.178.   [aRFB]

Douven, I. (2010) Simulating peer disagreements. *Studies in History and Philosophy of Science* 41:148–57.   [ID]

Douven, I & Riegler, A. (2010) Extending the Hegselmann-Krause model I. *Logic Journal of the IGPL (Interest Group in Pure and Applied Logic)* 18:323–35.   [ID]

Douven, I. & Wenmackers, S. (in press) Inference to the best explanation versus Bayes' rule in a social setting. *British Journal for the Philosophy of Science*. doi: 10.1093/bjps/axv025.   [ID]

Dovidio, J. F. (2006) *The social psychology of prosocial behavior*. Erlbaum.   [AJJ]

Dovidio, J. F. (2010) *The SAGE handbook of prejudice, stereotyping and discrimination*. SAGE.   [AJJ]

Duffy, M. K., Scott, K. L., Shaw, J. D., Tepper, B. J. & Aquino, K. (2012) A social context model of envy and social undermining. *Academy of Management Journal* 55:643–66.   [SAH]

Earley, P. C. (1989) Social loafing and collectivism: A comparison of the United States and the People's Republic of China. *Administrative Science Quarterly* 34:565–81.   [RB]

Earley, P. C. (1993) East meets West meets Mideast: Further explorations of collectivistic and individualistic work groups. *Academy of Management Journal* 36:319–48.   [RB]

Efferson, C., Lalive, R., Richerson, P. J., McElreath, R. & Lubell, M. (2008) Conformists and mavericks: The empirics of frequency-dependent cultural transmission. *Evolution of Human Behavior* 29:56–64.   [BHH]

Egan, P. M., Hirt, E. R. & Karpen, S. C. (2012) Taking a fresh perspective: Vicarious restoration as a means of recovering self-control. *Journal of Experimental Social Psychology* 48(2):457–65.   [OS]

Eggins, R. A., Haslam, S. A. & Reynolds, K. J. (2002) Social identity and negotiation: Subgroup representation and superordinate consensus. *Personality and Social Psychology Bulletin* 28:887–99.   [SAH]

Ellemers, N. (2012) The group self. *Science* 336:848–52.   [SAH]

Ellemers, N., De Gilder, D. & Haslam, S. A. (2004) Motivating individuals and groups at work: A social identity perspective on leadership and group performance. *Academy of Management Review* 29:459–78.   [SAH]

Ellemers, N., Pagliaro, S. & Barreto, M. (2013) Morality and behavioural regulation in groups: A social identity approach. *European Review of Social Psychology* 24:160–93.   [SAH]

Ellemers, N., Spears, R. & Doosje, B. (1997) Sticking together or falling apart: Ingroup identification as a psychological determinant of group commitment versus individual mobility. *Journal of Personality and Social Psychology* 72:617–26.   [SAH]

Ellemers, N., Wilke, H. & Van Knippenberg, A. (1993) Effects of the legitimacy of low group or individual status on individual and collective status-enhancement strategies. *Journal of Personality and Social Psychology* 64(5):766–78. doi: 10.1037/0022-3514.64.5.766.   [JJZ]

Ellis, B. J., Figueredo, A. J., Brumbach, B. H. & Schlomer, G. L. (2009) Mechanisms of environmental risk: The impact of harsh versus unpredictable environments on the evolution and development of life history strategies. *Human Nature* 20:204–68.   [TCdB]

Emerson, R. M. (1962) Power-dependence relations. *American Sociological Review* 27(1):31–41. doi: 10.2307/2089716.   [JJZ]

Epstein, S. (1994) Integration of the cognitive and the psychodynamic unconscious. *American Psychologist* 49:709–24.   [MPH]

Esser, J. K. (1998) Alive and well after 25 years: A review of groupthink research. *Organizational Behavior and Human Decision Processes* 73:116–41. doi: 10.1006/obhd.1998.2758.   [aRFB]

Faber, N. S., Häusser, J. A. & Kerr, N. L. (2015) Sleep deprivation impairs and caffeine enhances my performance, but not always our performance: How acting in a group can change the effects of impairments and enhancements. *Personality and Social Psychology Review*. Advance online publication. doi: 10.1177/1088868315609487.   [NSF]

Faulmüller, N., Mojzisch, A., Kerschreiter, R. & Schulz-Hardt, S. (2012) Do you want to convince me or to be understood? Preference-consistent information sharing and its motivational determinants. *Personality and Social Psychology Bulletin* 38:1684–96. doi: 10.1177/0146167212458707.   [NSF]

Fehr, E. & Gächter, S. (2002) Altruistic punishment in humans. *Nature* 415:137–40. doi: 10.1038/415137a.   [aRFB]

Feinberg, J. M. & Aiello, J. R. (2006) Social facilitation: A test of competing theories. *Journal of Applied Social Psychology* 36:1087–109. doi: 10.1111/j.0021-9029.2006.00032.x.   [aRFB]

Fernandes, H. B. F. & Woodley, M. A. (2013) Strategic differentiation and integration among the 50 states of the USA. *Personality and Individual Differences* 55:1000–1002.   [TCdB]

Festinger, L. (1950) Informal social communication. *Psychological Review* 57 (5):271–82.   [HB]

Festinger, L. (1954) A theory of social comparison processes. *Human Relations* 7(2):117–40.   [HB]

Field, J. M., Hazinski, M. F., Sayre, M. R., Chameides, L., Schexnayder, S. M., Hemphill, R. Samson, R. A., Kattwinkel, J., Berg, R. A., Bhanji, F., Cave, D. M., Jauch, E. C., Kudenchuk, P. J., Neumar, R. W., Peberdy, M. A., Perlman, J. M., Sinz, E., Travers, A. H., Berg, M. D., Billi, J. E., Eigel, B., Hickey, R. W., Kleinman, M. E., Link, M. S., Morrison, L. J., O'Connor, R. E., Shuster, M., Callaway, C. W., Cucchiara, B., Ferguson, J. D., Rea, T., D., & Vanden Hoek, T. L. (2010) 2010 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care science. Part 1: Executive summary. *Circulation* 122:S640–56   [RS]

Figueredo, A. J. & Jacobs, W. J. (2010) Aggression, risk-taking, and alternative life history strategies: The behavioral ecology of social deviance. In: *Bio-psychosocial perspectives on interpersonal violence*, ed. M. Frias-Armenta & V. Corral-Verdugo, pp. 3–28. Nova Science Publishers.   [TCdB]

Figueredo, A. J., Patch, E. A. & Gómez Ceballos, E. (2015) A life history approach to the dynamics of social selection. In: *Evolutionary perspectives on social psychology*, ed. V. Zeigler-Hill, L. Welling & T. K. Shackelford, pp. 364–72. Springer International Publishing.   [TCdB]

Figueredo, A. J., Vásquez, G., Brumbach, B. H., Schneider, S. M. R., Sefcek, J. A., Tal, I. R., Hill, D., Wenner, C. J. & Jacobs, W. J. (2006) Consilience and life history theory: From genes to brain to reproductive strategy. *Developmental Review* 26:243–75.   [TCdB]

Figueredo, A. J., Woodley, M. A., Brown, S. D. & Ross, K. C. (2013) Multiple successful test of the strategic differentiation-integration effort (SD-IE) hypothesis. *Journal of Social, Evolutionary, and Cultural Psychology* 7:361–83.   [TCdB]

References/Baumeister et al: Are groups more or less than the sum of their members?

Finkel, E. J., Campbell, W. K., Brunell, A. B., Dalton, A. N., Scarbeck, S. J. & Chartrand, T. L. (2006) High-maintenance interaction: Inefficient social coordination impairs self-regulation. *Journal of Personality and Social Psychology* 91(3):456–75. [OS]

Fiske, S. T. (2010) Interpersonal stratification: Status, power, and subordination. In: *Handbook of social psychology*, ed. S. T. Fiske, D. T. Gilbert & G. Lindzey, pp. 941–82. Wiley. doi: 10.1002/9780470561119.socpsy002026. [JJZ]

Flynn, F. J., Reagans, R. E., Amanatullah, E. T. & Ames, D. R. (2006) Helping one's way to the top: Self-monitors achieve status by helping others and knowing who helps whom. *Journal of Personality and Social Psychology* 91(6):1123–37. doi: 10.1037/0022-3514.91.6.1123. [JJZ]

Forsyth, D. R. (2014) *Group dynamics*. Wadsworth/Cengage. [DRF, rSEA]

Frankfurt, H. G. (2004) *The reasons for love*. Princeton University Press. [AB-Z]

Freud, S. (1922) *Group psychology and the analysis of the ego* (trans. J. Strachey). Hogarth Press and the Institute of Psycho-analysis. [DRF]

Friedman, L. M. (2002) *Law in America: A short history*. Random House. [aRFB]

Friesen, J. P., Kay, A. C., Eibach, R. P. & Galinsky, A. D. (2014) Seeking structure in social organization: Compensatory control and the psychological advantages of hierarchy. *Journal of Personality and Social Psychology* 106(4):590–609. doi: 10.1037/a0035620. [JJZ]

Fukuyama, F. (2011) *The origins of political order: From prehuman times to the French Revolution*. Farrar, Straus, and Giroux. [aRFB]

Gaertner, S. L. & Dovidio, J. F. (2000) *Reducing intergroup bias: The common ingroup identity model*. Psychology Press. [AJJ]

Gallotti, M. & Frith, C. D. (2013) Social cognition in the we-mode. *Trends in Cognitive Science* 17:160–65. [PES]

Galton, F. (1907) Vox populi. *Nature* 75:450–51. [AAB]

Galvin, B. M., Lange, D. & Ashforth, B. E. (2015) Narcissistic organizational identification: Seeing oneself as central to the organization's identity. *Academy of Management Review* 40:163–81. doi: 10.5465/amr.2013.0103. [MPH]

Gandevia, S. C. (2001) Spinal and supraspinal factors in human muscle fatigue. *Physiological Reviews* 81(4):1725–89. [EK]

Geen, R. G. & Gange, J. J. (1977) Drive theory of social facilitation: Twelve years of theory and research. *Psychological Bulletin* 84:1267–88. doi: 10.1037/0033-2909.84.6.1267. [aRFB]

Geertz, C. (1974) "From the native's point of view": On the nature of anthropological understanding. *Bulletin of the American Academy of Arts and Sciences* 28(1):26–45. [CB]

George, J. M. (1990) Personality, affect, and behavior in groups. *Journal of Applied Psychology* 75:107–16. [ID-N]

Gerber, A. S., Huber, G. A., Doherty, D. & Dowling, C. M. (2013) Is there a secret ballot? Ballot secrecy perceptions and their implications for voting behaviour. British *Journal of Political Science* 43:77–102. doi: 10.1017/S000712341200021X. [aRFB]

Gersick, C. J. G. & Hackman, J. R. (1990) Habitual routines in task-performing groups. *Organizational Behavior and Human Decision Processes* 47:65–97. [MPH]

Gigerenzer, G. (1998) Surrogates for theories. *Theory and Psychology* 8(2):195–204. [PES]

Gilbert, D. (2007) *Stumbling on happiness*. Vintage. [AB-Z]

Gilbert, M. (1989) *On social facts*. Princeton University Press. [AB-Z]

Giner, S. (1976) *Mass society*. Martin Robertson. [SDR]

Gino, F. & Galinsky, A. D. (2012) Vicarious dishonesty: When psychological closeness creates distance from one's moral compass. *Organizational Behavior and Human Decision Processes* 119(1):15–26. [OS]

Gockel, C., Kerr, N. L., Seok, D.-H. & Harris, D. W. (2008) Indispensability and group identification as sources of task motivation. *Journal of Experimental Social Psychology* 44:1316–21. [AM]

Goldman, L., & Hogg, M. A. (2016) Going to extremes for one's group: The role of prototypicality and group acceptance. *Journal of Applied Social Psychology* 46:544–53. doi: 10.1111/jasp.12382. [MAH]

Goldstein, N. J. & Cialdini, R. B. (2007) The spyglass self: A model of vicarious self-perception. *Journal of Personality and Social Psychology* 92(3):402–17. [OS]

Goldstein, N. J., Cialdini, R. B. & Griskevicius, V. (2008) A room with a viewpoint: Using social norms to motivate environmental conservation in hotels. *Journal of Consumer Research* 35:472–82. doi: 10.1086/586910. [aRFB]

Goldstein, N. J. & Hays, N. A. (2011) Illusory power transference: The vicarious experience of power. *Administrative Science Quarterly* 56(4):593–21. [OS]

Gómez, Á, Brooks, M. L., Buhrmester, M. D., Vázquez, A., Jeen, J. & Swann, W. B., Jr. (2011) On the nature of identity fusion: Insights into the construct and a new measure. *Journal of Personality and Social Psychology* 100:918–33. [ST]

Goncalo, J. A. & Staw, B. M. (2006) Individualism-collectivism and group creativity. *Organizational Behavior and Human Decision Processes* 100:96–109. [BAN]

González, R. & Brown, R. J. (2003) Generalization of positive attitude as a function of subgroup and superordinate group identifications in intergroup contact. *European Journal of Social Psychology* 33:195–14. [SAH]

Good, K. J. (1973) Social facilitation: Effects of performance anticipation, evaluation, and response competition on free associations. *Journal of Personality and Social Psychology* 28:270–75. doi: 10.1037/h0035790. [aRFB]

Gowdy, J. & Krall, L. (2016) The economic origins of ultrasociality. *Behavioral and Brain Sciences* 39:e92. doi: 10.1017/S0140525X1500059X. [PES]

Green, M. C., Visser, P. S. & Tetlock, P. E. (2000) Coping with accountability cross-pressures: Low-effort evasive tactics and high-effort quests for complex compromises. *Personality and Social Psychology Bulletin* 26:1380–91. doi: 10.1177/0146167200263006. [aRFB]

Greene, R. G. (1979) Effects of being observed on learning following success and failure experiments. *Motivation and Emotion* 3:355–71. doi: 10.1007/BF00994050. [aRFB]

Gruenfeld, D. H., Mannix, E. A., Williams, K. Y. & Neale, M. A. (1996) Group composition and decision making: How member familiarity and information distribution affect process and performance. *Organizational Behavior and Human Decision Processes* 67:1–15. doi: 10.1006/obhd.1996.0061. [NSF]

Gruenfeld, D. H. & Tiedens, L. Z. (2010) Organizational preferences and their consequences. In: *Handbook of social psychology*, ed. S. T. Fiske, D. T. Gilbert & G. Lindzey, pp. 1252–87. Wiley. doi: 10.1002/9780470561119.socpsy002033. [JJZ]

Guerin, B. (1986) Mere presence effects in humans: A review. *Journal of Experimental Social Psychology* 22:38–77. doi: 10.1016/0022-1031(86)90040-5. [aRFB]

Gunia, B. C., Sivanathan, N. & Galinsky, A. D. (2009) Vicarious entrapment: Your sunk costs, my escalation of commitment. *Journal of Experimental Social Psychology* 45(6):1238–44. [OS]

Hackman, J. R. & Morris, C. G. (1975) Group tasks, group interaction process, and group performance effectiveness: A review and proposed integration. In: *Advances in experimental social psychology, vol. 8*, ed. L. Berkowitz, pp. 45–99. Academic press. [ID-N]

Halevy, N., Chou, E. Y., Cohen, T. R. & Livingston, R. W. (2012a) Status conferral in intergroup social dilemmas: Behavioral antecedents and consequences of prestige and dominance. *Journal of Personality and Social Psychology* 102(2):351–66. doi: 10.1037/a0025515. [JJZ]

Halevy, N., Chou, E. Y. & Galinsky, A. D. (2011) A functional model of hierarchy: Why, how, and when vertical differentiation enhances group performance. *Organizational Psychology Review* 1(1):32–52. doi: 10.1177/2041386610380991. [JJZ, rSEA]

Halevy, N., Chou, E. Y., Galinsky, A. D. & Murnighan, J. K. (2012b) When hierarchy wins: Evidence from the National Basketball Association. *Social Psychological and Personality Science* 3(4):398–406. doi: 10.1177/1948550611424225. [JJZ, rSEA]

Hardin, G. (1968) The tragedy of the commons. *Science* 162:1243–48. doi: 10.1080/19390450903037302. [aRFB]

Harding, S. G. (2004) *The feminist standpoint theory reader: Intellectual and political controversies*. Routledge. [AJJ]

Hardy, C. L. & Van Vugt, M. (2006) Nice guys finish first: The competitive altruism hypothesis. *Personality and Social Psychology Bulletin* 32(10):1402–13. doi: 10.1177/0146167206291006. [JJZ]

Harkins, S. G. (1987) Social loafing and social facilitation. *Journal of Experimental Social Psychology* 23(1):1–18. [ID-N, DRF]

Harris, C. B., Barnier, A. J., Sutton, J. & Keil, P. G. (2014a) Couples as socially distributed cognitive systems: Remembering in everyday social and material contexts. *Memory Studies* 7(3):285–97. [AJB]

Harris, C. B., Keil, P. G., Sutton, J., Barnier, A. & McIlwain, D. (2011) We remember, we forget: Collaborative remembering in older couples. *Discourse Processes* 48:267–303. [AJB]

Harris, C. B., Paterson, H. M. & Kemp, R. I. (2008) Collaborative recall and collective memory: What happens when we remember together? [Special Issue]. *Memory: Collective Memory: Theoretical and Empirical Approaches* 16:213–30. [AJB]

Harris, C. B., Rasmussen, A. S. & Berntsen, D. (2014b) The functions of autobiographical memory: An integrative approach. *Memory* 22:559–81. [AJB]

Harrison, D. A., Price, K. H. & Bell, M. P. (1998) Beyond relational demography: Time and the effects of surface and deep-level diversity on work group cohesion. *Academy of Management Journal* 41:96–107. [AM]

Haslam, S. A. (2004) *Psychology in organizations: The social identity approach, second edition*. Sage. [SAH]

Haslam, S. A. & Ellemers, N. (2005) Social identity in industrial and organizational psychology: Concepts, controversies and contributions. In: *International review of industrial and organizational psychology, vol. 20*, ed. G. P. Hodgkinson & J. K. Ford, pp. 39–118. Wiley. [SAH]

Haslam, S. A. & Ellemers, N. (2011) Identity processes in organizations. In: *Handbook of identity theory and research, vol. 2*, ed. V. Vignoles, S. Schwartz & K. Luyckx, pp. 715–44). Springer. [SAH]

Haslam, S. A. Eggins, R. A. & Reynolds, K. J. (2003) The ASPIRe model: Actualizing Social and Personal Identity Resources to enhance organizational outcomes. *Journal of Occupational and Organizational Psychology* 76:83–113. [SAH]

Haslam, S. A., Oakes, P. J., McGarty, C., Turner, J. C. & Onorato, S. (1995) Contextual changes in the prototypicality of extreme and moderate outgroup members. *European Journal of Social Psychology* 25:509–30. [MAH]

Haslam, S. A., Reicher, S. D. & Platow, M. J. (2011) *The new psychology of leadership: Identity, influence and power*. Psychology Press. [SAH]

Hawking, D. N. & Booth, A. (2005) Unhappily ever after: Effects of long-term, low-quality marriages on well-being. *Social Forces* 84:451–71. [AB-Z]

Hazelwood, D. L. & Brigham, J. C. (1998) The effects of juror anonymity on jury verdicts. *Law and Human Behavior* 22:695–713. doi: 10.1023/A:1025711024462. [aRFB]

Healey, M. P., Vuori, T. & Hodgkinson, G. P. (2015) When teams agree while disagreeing: Reflexion and reflection in shared cognition. *Academy of Management Review* 40:399–22. doi: 10.5465/amr.2013.0154. [MPH]

Heath, C. & Staudenmayer, N. (2000) Coordination neglect: How lay theories of organizing complicate coordination in organizations. *Research in Organizational Behavior* 22:153–93. doi: 10.1016/S0191-3085(00)22005-4. [JJZ]

Heatherton, T. F. & Vohs, K. D. (1998) Why is it so difficult to inhibit behavior? *Psychological Inquiry* 9:212–16. [OS]

Hegselmann, R. & Krause, U. (2002) Opinion dynamics and bounded confidence: Models, analysis, and simulations. *Journal of Artificial Societies and Social Simulation* 5. Available at: http://jasss.soc.surrey.ac.uk/5/3/2.html. [ID]

Hegselmann, R. & Krause, U. (2005) Opinion dynamics driven by various ways of averaging. *Computational Economics* 25:381–405. [ID]

Hegselmann, R. & Krause, U. (2006) Truth and cognitive division of labor: First steps towards a computer aided social epistemology. *Journal of Artificial Societies and Social Simulation* 9. Available at: http://jasss.soc.surrey.ac.uk/9/3/10.html. [ID]

Hegselmann, R. & Krause, U. (2009) Deliberative exchange, truth, and cognitive division of labour: A low-resolution modeling approach. *Episteme* 6:130–44. [ID]

Henchy, T. & Glass, D. C. (1968) Evaluation apprehension and the social facilitation of dominant and subordinate responses. *Journal of Personality and Social Psychology* 10:446–54. doi: 10.1037/h0026814. [aRFB]

Henrich, J., Heine, S. J. & Norenzayan, A. (2010a) Most people are not WEIRD. *Nature* 466:29–29. [rSEA]

Henrich, J., Heine, S. J. & Norenzayan, A. (2010b) The weirdest people in the world? *Behavioral and Brain Sciences* 33:61–135. doi: 10.1017/S0140525X0999152X. [RB]

Herzog, S. M. & Hertwig, R. (2009) The wisdom of many in one mind: Improving individual judgments with dialectical bootstrapping. *Psychological Science* 20(2):231–37. [AAB]

Heyes, C. (2013) What can imitation do for cooperation? In: *Cooperation and its evolution*, ed. K. Sterelny, R. Joyce, B. Calcott & B. Fraser, pp. 313–32. MIT Press. [BHH]

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

Hirst, W. & Echterhoff, G. (2012) Remembering in conversations: The social sharing and reshaping of memories. *Annual Review of Psychology* 63:55–79. [AJB]

Hodges, B. H. (2009) Ecological pragmatics: Values, dialogical arrays, complexity, and caring. *Pragmatics and Cognition* 17:628–52. [BHH]

Hodges, B. H. (2014) Rethinking conformity and imitation: Divergence, convergence, and social understanding. *Frontiers in Psychology: Cognitive Science* 5:726. [BHH]

Hodges, B. H. (in press) Conformity and divergence in interactions, groups and culture. In: *The Oxford handbook of social influence*, ed. S. Harkins, K. Williams & J. Burger. Oxford University Press. Advance online publication: doi: 10.1093/oxfordhb/9780199859870.013.3. [BHH]

Hodges, B. H. & Geyer, A. (2006) A nonconformist account of the Asch experiments: Values, pragmatics, and moral dilemmas. *Personality and Social Psychology Review* 10:2–19. [BHH]

Hodges, B. H., Meagher, B. R., Norton, D. J., McBain, R. & Sroubek, A. (2014) Speaking from ignorance: Not agreeing with others we believe are correct. *Journal of Personality and Social Psychology* 106:218–34. [BHH]

Hoenigman, R., Bradley, E. & Lim, A. (2011) Cooperation in bike racing – when to work together and when to go it alone. *Complexity* 17(2):39–44. http://doi.org/10.1002/cplx.20372 [EK]

Hogg, M. A. (2005a) All animals are equal but some animals are more equal than others: Social identity and marginal membership. In: *The social outcast: Ostracism, social exclusion, rejection, and bullying*, ed. K. D. Williams, J. P. Forgas & W. von Hippel, pp. 243–61. Psychology Press. [MAH]

Hogg, M. A. (2005b) The social identity perspective. In: *The handbook of group research and practice*, ed. S. Wheelan, pp. 133–57. Sage. [DRF]

Hogg, M. A. (2006) Social identity theory. In: *Contemporary social psychological theories*, ed. P. J. Burke, pp. 111–36. Stanford University Press. [MAH]

Hogg, M. A. (2007) Uncertainty-identity theory. In: *Advances in experimental social psychology, vol. 39*, ed. M. P. Zanna, pp. 69–126. Academic Press. [MAH]

Hogg, M. A. (2012) Uncertainty-identity theory. In: *Handbook of theories of social psychology, vol. 2*, ed. P. A. M. Van Lange, A. W. Kruglanski & E. T. Higgins, pp. 62–80. Sage. [MAH]

Hogg, M. A. (2014) From uncertainty to extremism: Social categorization and identity processes. *Current Directions in Psychological Science* 23:338–42. doi: 10.1177/0963721414540168. [MAH]

Hogg, M. A. (2015) Constructive leadership across groups: How leaders can combat prejudice and conflict between subgroups. *Advances in Group Processes* 32:177–207. [MAH]

Hogg, M. A. & Van Knippenberg, D. (2003) Social identity and leadership processes in groups. In: *Advances in experimental social psychology, vol. 35*, ed. M. P. Zanna, pp. 1–52. Academic Press. [MAH]

Hogg, M. A. & Wagoner, J. A. (2017) Normative exclusion and attraction to extreme groups: Resolving identity-uncertainty. In: *Ostracism, social exclusion and rejection*, ed. K. D. Williams & S. A. Nida, pp. 207–23. Routledge. [MAH]

Hogg, M. A., Abrams, D., Otten, S. & Hinkle, S. (2004) The social identity perspective intergroup relations, self-conception, and small groups. *Small Group Research* 35:246–76. doi: 10.1177/1046496404263424. [aRFB]

Hogg, M. A., Terry, D. J. & White, K. M. (1995) A tale of two theories: A critical comparison of identity theory with social identity theory. *Social Psychology Quarterly* 58(4):255–69. [DRF]

Hogg, M. A., Van Knippenberg, D. & Rast, D. E., III. (2012) The social identity theory of leadership: Theoretical origins, research findings, and conceptual developments. *European Review of Social Psychology* 23:258–304. [MAH]

Hollander, E. (1958) Conformity, status, and idiosyncrasy credit. *Psychological Review* 65:117–27. doi: 10.1037/h0042501. [NSF]

Holroyd, J. (2012) Responsibility for implicit bias. *Journal of Social Philosophy* 43 (3):274–306. [AJJ]

Horan, R. D., Bulte, E. & Shogren, J. F. (2005) How trade saved humanity from biological exclusion: An economic theory of Neanderthal extinction. *Journal of Economic Behavior and Organization* 58:1–29. doi: 10.1016/j.jebo.2004.03.009. [aRFB]

Hornsey, M. J. & Hogg, M. A. (2000) Assimilation and diversity: An integrative model of subgroup relations. *Personality and Social Psychology Review* 4:143–56. [rSEA]

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* 8:248–64. [MJH]

Hornsey, M. J., Jetten, J., McAuliffe, B. J. & Hogg, M. A. (2006) The impact of individualist and collectivist group norms on evaluations of dissenting group members. *Journal of Experimental Social Psychology* 42:57–68. [MJH]

Hubbard, G. & Kane, T. (2013) *Balance: The economics of great powers from ancient Rome to modern America*. Simon & Schuster. [aRFB]

Hüffmeier, J. & Hertel, G. (2011) When the whole is more than the sum of its parts: Group motivation gains in the wild. *Journal of Experimental Social Psychology* 47:455–59. doi: 10.1016/j.jesp.2010.12.004. [aRFB]

Hülsheger, U. R., Anderson, N. & Salgado, J. F. (2009) Team-level predictors of innovation at work: A comprehensive meta-analysis spanning three decades of research. *Journal of Applied Psychology* 94:1128. doi: 10.1037/a0015978. [aRFB]

Ingham, A. G., Levinger, G., Graves, J. & Peckham, V. (1974) The Ringelmann effect: Studies of group size and group performance. *Journal of Experimental Social Psychology* 10:371–84. [BAN]

Ioannidis, J. P. A. (2005) Why most published research is false. *PLOS Medicine* 2(8): e124. [PES]

Ioannidis, J. P. A. (2014) How to make more published research true. *PLOS Medicine* 11(10): e1001747. [PES]

Jackson, S. E. & Schuler, R. S. (1985) A meta-analysis and conceptual critique of research on role ambiguity and role conflict in work settings. *Organizational Behavior and Human Decision Processes* 36:16–78. [MPH]

Janis, I. L. (1972) *Victims of groupthink: A psychological study of foreign policy decisions and fiascoes*. Houghton Mifflin. [aRFB]

Janis, I. L. & Mann, L. (1977) *Decision making: A psychological analysis of conflict, choice, and commitment*. Free Press. [ID-N]

Janssen, O. & Huang, X. (2008) Us and me: Team identification and individual differentiation as complementary drivers of team members' citizenship and creative behaviors. *Journal of Management* 34:69–88. doi: 10.1177/0149206307309263. [aRFB]

Jaynes, J. (1976) *The origin of consciousness in the breakdown of the bicameral mind*. Houghton Mifflin Harcourt. [CB]

Jehn, K. (1994) Enhancing effectiveness: An investigation of advantages and disadvantages of value-based intragroup conflict. *International Journal of Conflict Management* 5:223–38. [AM]

Jehn, K. (1995) A multimethod examination of the benefits and detriments of intragroup conflict. *Administrative Science Quarterly* 40:256–82. [AM]

Jetten, J. & Hornsey, M. J. (2014) Deviance and dissent in groups. *Annual Review of Psychology* 65:461–85. [MJH]

Jetten, J., Hogg, M. A. & Mullin, B.-A. (2000) In-group variability and motivation to reduce subjective uncertainty. *Group Dynamics: Theory, Research, and Practice* 4(2):184–98. Available at: http://doi.org/10.1037/1089-2699.4.2.184. [EK]

Jetten, J., McAuliffe, B. J., Hornsey, M. J. & Hogg, M. A. (2006) Differentiation between and within groups: The influence of individualist and collectivist group norms. *European Journal of Social Psychology* 36:825–43.   [MJH]

Jetten, J., Postmes, T. & McAuliffe, B. J. (2002) "We're all individuals": Group norms of individualism and collectivism, levels of identification, and identity threat. *European Journal of Social Psychology* 32:189–207.   [MJH]

Jones, J. M., Dovidio, J. F. & Vietze, D. L. (2014) *The psychology of diversity beyond prejudice and racism.* Wiley-Blackwell.   [AJJ]

Kahn, R. L., Wolfe, D. M., Quinn, R. P., Snoek, J. D. & Rosenthal, R. A. (1964) *Organizational stress: Studies in role conflict and ambiguity.* Wiley.   [MPH]

Kang, Y., Gray, J. R. & Dovidio, J. F. (2014) The nondiscriminating heart: Loving-kindness meditation training decreases implicit intergroup bias. *Journal of Experimental Psychology: General* 143(3):1306–13.   [AJJ]

Kaplan, H., Hill, K., Hurtado, A. M. & Lancaster, J. (2001) The embodied capital theory of human evolution. In: *Reproductive ecology and human evolution*, ed. P. T. Ellison, pp. 293–317. Aldine de Gruyter.   [TCdB]

Kaplan, H. S. & Gangestad, S. W. (2005) Life history theory and evolutionary psychology. In: *Handbook of evolutionary psychology*, ed. D. M. Buss, pp. 68–95. Wiley.   [TCdB]

Karau, S. J. & Williams, K. D. (1993) Social loafing: A meta-analytic review and theoretical integration. *Journal of Personality and Social Psychology* 65(4):681–706.   [aRFB, RB, ID-N, BAN]

Karau, S. J. & Williams, K. D. (1995) Social loafing: Research findings, implications, and future directions. *Current Directions in Psychological Science* 4:134–40. doi: 10.1111/1467-8721.ep10772570.   [aRFB]

Kerr, N. L. & Bruun, S. E. (1983) Dispensability of member effort and group motivation losses: Free-rider effects. *Journal of Personality and Social Psychology* 44:78–94. doi: 10.1037/0022-3514.44.1.78.   [aRFB, BAN]

Kerr, N. L., Messé, L. M., Park, E. S. & Sambolec, E. (2005) Identifiability, performance feedback and the Köhler effect. *Group Processes and Intergroup Relations* 8:375–90. doi: 10.1177/1368430205056466.   [NSF]

Kirkman, B. L. & Shapiro, D. L. (2001) The impact of cultural values on job satisfaction and organizational commitment in self-managing work teams: The mediating role of employee resistance. *Academy of Management Journal* 44:557–69. doi: 10.2307/3069370.   [aRFB]

Kitano, H. (2004) Biological robustness. *Nature Reviews Genetics* 5(11):826–37. Available at: http://doi.org/10.1038/nrg1471.   [EK]

Klein, O., Spears, R. & Reicher, S. (2007) Social identity performance: Extending the strategic side of SIDE. *Personality and Social Psychology Review* 11:28–45.   [SDR]

Köhler, O. (1926) Kraftleistungen bei Einzel- und Gruppenarbeit [Physical performance in individual and group work]. *Industrielle Psychotechnik* 3:274–82.   [aRFB]

Koriat, A. (2012) When are two heads better than one and why? *Science* 336:360.   [AAB]

Kouchaki, M. (2011) Vicarious moral licensing: The influence of others' past moral actions on moral behavior. *Journal of Personality and Social Psychology* 101(4):702–15.   [OS]

Kozlowski, S. W. J. & Bell, B. S. (2013) Work groups and teams in organizations: Review update. In *Handbook of psychology: Vol. 12. Industrial and organizational psychology, second edition*, ed. N. Schmitt & S. Highhouse, pp. 412–69. Wiley.   [DRF, rSEA]

Krach, S., Cohrs, J. C., de Echeverria Loebell, N. C., Kircher, T., Sommer, J., Jansen, A. & Paulus, F. M. (2011) Your flaws are my pain: Linking empathy to vicarious embarrassment. *PLoS One* 6(4):e18675.   [OS]

Kramer, R. M. & Brewer, M. B. (1984) Effects of group identity on resource use in a simulated commons dilemma. *Journal of Personality and Social Psychology* 46:1044–57. doi: 10.1037/0022-3514.46.5.1044.   [aRFB]

Kravitz, D. A. & Martin, B. (1986) Ringelmann rediscovered: The original article. *Journal of Personality and Social Psychology* 50:936–41. doi: 10.1037/0022-3514.50.5.936.   [aRFB, EK]

Krebs, A. (2014) Between I and Thou – On the dialogical nature of love. In: *Love and its objects*, ed. C. Maurer, T. Milligan & K. Pacovská, pp. 7–24. Palgrave Macmillan.   [AB-Z]

Krebs, A. (2015) *Zwischen Ich und Du. Eine dialogische Philosophie der Liebe.* Suhrkamp.   [AB-Z]

Lamm, H. & Trommsdorff, G. (1973) Group versus individual performance on tasks requiring ideational proficiency (brainstorming): A review. *European Journal of Social Psychology* 3:361–88. doi: 10.1002/ejsp.2420030402.   [aRFB]

Lancaster, J. B. & Kaplan, H. S. (2009) The endocrinology of the human adaptive complex. In: *Endocrinology of social relationships*, ed. P. T. Ellison & P. G. Gray , pp. 95–119. Harvard University Press.   [TCdB]

Landau, M. (1969) Redundancy, rationality, and the problem of duplication and overlap. *Public Administration Review* 29(4):346–58. Available at: http://doi.org/10.2307/973247.   [EK]

Larson, J. R., Jr. (2010) *In search of synergy in small group performance.* Psychology Press.   [DRF, AM]

Latané, B. & Nida, S. (1981) Ten years of research on group size and helping. *Psychological Bulletin* 89:308–24. doi: 10.1037/0033-2909.89.2.308.   [aRFB]

Latané, B., Williams, K. & Harkins, S. (1979) Many hands make light the work: The causes and consequences of social loafing. *Journal of Personality and Social Psychology* 37:822–32. doi: 10.1037/0022-3514.37.6.822.   [aRFB, BAN]

Lawrence, P. R. & Lorsch, J. W. (1967) *Organization and environment: Managing differentiation and integration.* Harvard Business School Press.   [JJZ]

Le Bon, G. (1896/1960) *The crowd: A study of the popular mind [La psychologie des foules].* Viking Press. (Original work published in 1896.)   [aRFB, DRF, SDR]

Leary, M. R. & Forsyth, D. R. (1987) Attributions of responsibility for collective endeavors. In: *Group processes*, ed. C. Hendrick, pp. 167–88. Sage.   [aRFB]

LePine, J. A., Hollenbeck, J. R., Ilgen, D. R. & Hedlund, J. (1997) Effects of individual differences on the performance of hierarchical decision-making teams: Much more than *g. Journal of Applied Psychology* 82:803–11.   [ID-N]

Lerner, J. S. & Tetlock, P. E. (1999) Accounting for the effects of accountability. *Psychological Bulletin* 125:255–75. doi: 10.1037/0033-2909.125.2.255.   [aRFB]

Lerner, J. S. & Tetlock, P. E. (2003) Bridging individual, interpersonal, and institutional approaches to judgment and decision making: The impact of accountability on cognitive bias. In: *Emerging perspectives on judgment and decision research*, ed. J. S. Lerner & P. E. Tetlock, pp. 431–57. Cambridge University Press.   [aRFB, rSEA]

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.   [aRFB, PES]

Lewandowsky, S., Griffiths, T. L. & Kalish, M. L. (2009) The wisdom of individuals: Exploring people's knowledge about everyday events using iterated learning. *Cognitive Science* 33(6):969–98.   [AAB]

Lewin, K. (1952) Group decision and social change. In: *Readings in Social Psychology*, Revised edition, ed. G. E. Swanson, T. N. Newcomb & E. L. Hartley, pp. 459–73. Holt, Rinehart, & Winston.   [aRFB]

Lickel, B., Schmader, T., Curtis, M., Scarnier, M. & Ames, D. R. (2005) Vicarious shame and guilt. *Group Processes and Intergroup Relations* 8(2):145–57.   [OS]

Lieberman, M. D. (2007) Social cognitive neuroscience: A review of core processes. *Annual Review of Psychology* 58:259–89.   [MPH]

Linton, R. (1945) *The cultural background of personality.* Appleton-Century.   [NSF]

Lorge, I. & Solomon, H. (1955) Two models of group behavior in the solution of eureka-type problems. *Psychometrika* 20(2):139–48.   [AAB]

Lorinkova, N. M., Pearsall, M. J. & Sims, H. P. (2013) Examining the differential longitudinal performance of directive versus empowering leadership in teams. *Academy of Management Journal* 56:573–96. doi: 10.5465/amj.2011.0132.   [aRFB, RS]

Lu, L., Yuan, Y. C. & McLeod, P. L. (2012) Twenty-five years of hidden profiles in group decision making: A meta-analysis. *Personality and Social Psychology Review* 16:54–75. doi: 10.1177/1088868311417243.   [aRFB]

Lynn, M. & Oldenquist, A. (1986) Egoistic and nonegoistic motives in social dilemmas. *American Psychologist* 41:529–34. doi: 10.1037/0003-066X.41.5.529.   [aRFB]

MacCoun, R. J., Kier, E. & Belkin, A. (2006) Does social cohesion determine motivation in combat? An old question with an old answer. *Armed Forces and Society* 32(4):646–54.   [RMcD]

Maciejovsky, B. & Budescu, D. V. (2007) Collective induction without cooperation: Learning and knowledge transfer in cooperative groups and competitive auctions. *Journal of Personality and Social Psychology* 92:854–70.   [DB]

Maciejovsky, B. & Budescu, D. V. (2013) Markets as a structural solution to knowledge-sharing dilemmas. *Organizational Behavior and Human Decision Processes* 120:154–67.   [DB]

Maciejovsky, B., Sutter, M., Budescu, D. V. & Bernau, P. (2013) Teams make you smarter: Learning and knowledge transfer in auctions and markets by teams and individuals. *Management Science* 59:1255–70.   [DB]

Madirolas, G. & de Polavieja, G. G. (2014) Wisdom of the confident: Using social interactions to eliminate the bias in wisdom of the crowds. *Proceedings of the Collective Intelligence Conference* at Massachusetts Institute of Technology, June 10–12, 2014, Cambridge, MA.   [aRFB]

Magee, J. C. & Galinsky, A. D. (2008) Social hierarchy: The self-reinforcing nature of power and status. *The Academy of Management Annals* 2(1):351–98. doi: 10.1080/19416520802211628.   [JJZ]

Mann, L., Newton, J. W. & Innes, J. M. (1982) A test between deindividuation and emergent norm theories of crowd aggression. *Journal of Personality and Social Psychology* 42:260–72. doi: 10.1037/0022-3514.42.2.260.   [aRFB]

Mannix, E. & Neale, M. A. (2005) What differences make a difference? The promise and reality of diverse teams in organizations. *Psychological Science in the Public Interest* 6:31–55. doi: 10.1111/j.1529-1006.2005.00022.x.   [aRFB]

March, J. G. & Simon, H. A. (1958) *Organizations.* Wiley.   [JJZ]

Markus, H. R. & Kitayama, S. (1991) Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review* 98:224–83.   [RB]

Marques, J. M. & Páez, D. (1994) The "black sheep effect": Social categorisation, rejection of ingroup deviates and perception of group variability. *European Review of Social Psychology* 5:37–68.   [MAH]

Marques, J. M., Abrams, D., Páez, D. & Hogg, M. A. (2001) Social categorization, social identification, and rejection of deviant group members. In: *Blackwell handbook of social psychology: Group processes*, ed. M. A. Hogg & R. S. Tindale, pp. 400–24. Blackwell. [MAH]

Martens, R. & Landers, D. M. (1972) Evaluation potential as a determinant of coaction effects. *Journal of Experimental Social Psychology* 8:347–59. doi: 10.1016/0022-1031(72)90024-8. [aRFB]

Masumoto, J. & Inui, N. (2013) Two heads are better than one: Both complementary and synchronous strategies facilitate joint action. *Journal of Neurophysiology* 109(5):1307–14. Available at: http://doi.org/10.1152/jn.00776.2012. [EK]

Matsuda, N. (1985) Strong, quasi-, and weak conformity among Japanese in the modified Asch procedure. *Journal of Cross-Cultural Psychology* 16:83–97. [BHH]

McAuliffe, B. J., Jetten, J., Hornsey, M. J. & Hogg, M. A. (2003) Individualist and collectivist norms: When it's OK to go your own way. *European Journal of Social Psychology* 33:57–70. [MJH]

McCoy, S. K. & Major, B. (2007) Priming meritocracy and the psychological justification of inequality. *Journal of Experimental Social Psychology* 43(3):341–51. doi: 10.1016/j.jesp.2006.04.009. [JJZ]

McDonald, M. M., Navarrete, C. D. & Van Vugt, M. (2012) Evolution and the psychology of intergroup conflict: The male warrior hypothesis. *Philosophical Transactions of the Royal Society B: Biological Sciences* 367(1589):670–79. [RMcD]

McElreath, R. & Smaldino, P. E. (2015) Replication, communication, and the population dynamics of scientific discovery. *PLoS ONE* 10(8): e0136088. doi:10.1371/journal.pone.0136088. [PES]

McGrath, J. E. (1984) *Groups: Interaction and performance*. Prentice Hall. [MPH, JML, BAN, rSEA]

McGrath, J. E. (1991) Time, interaction, and performance (TIP): A theory of groups. *Small Group Research* 22(2):147–74. [MPH]

McGuire, W. J. (2013) An additional future for psychological science. *Perspectives on Psychological Science* 8(4):414–23. [ID-N]

McKelvey, W. & Kerr, N. H. (1988) Differences in conformity among friends and strangers. *Psychological Reports* 62:759–62. [BHH]

McNeill, W. H. (1982) *The pursuit of power*. University of Chicago Press. [aRFB]

McPhail, C. (1991) *The myth of the madding crowd*. Aldine de Gruyter. [DRF, SDR]

Mead, G. H. (1934) *Mind, self, & society*. University of Chicago Press. [rSEA]

Mead, G. H. (1934) *Mind, self and society: From the standpoint of a social behaviorist*. University of Chicago Press. [aRFB]

Messick, D. M. & Brewer, M. B. (1983) Solving social dilemmas: A review. In: *Review of personality and social psychology, vol. 4*, ed. L. Wheeler & P. Shaver, pp. 11–44. Sage. [aRFB]

Metzinger, T. (2009) *The ego tunnel: The science of the mind and the myth of the self*. Basic Books. [aRFB]

Miller, J. (1982) Divided attention: Evidence for coactivation with redundant signals. *Cognitive Psychology* 14:247–79. [AAB]

Moffett, M. W. (2013) Human identity and the evolution of societies. *Human Nature* 24:219–67. doi: 10.1007/s12110-013-9170-3. [aRFB]

Mojzisch, A., Kerschreiter, R., Faulmüller, N., Vogelgesang, F. & Schulz-Hardt, S. (2014) The consistency principle in interpersonal communication: Consequences of preference confirmation and disconfirmation in collective decision-making. *Journal of Personality and Social Psychology* 106:961–77. doi: 10.1037/a0036338. [NSF]

Monin, B., Norton, M. I., Cooper, J. & Hogg, M. A. (2004) Reacting to an assumed situation vs. conforming to an assumed reaction: The role of perceived speaker attitude in vicarious dissonance. *Group Processes and Intergroup Relations* 7(3):207–20. [OS]

Moorman, R. H. & Blakely, G. L. (1995) Individualism-collectivism as an individual difference predictor of organizational citizenship behavior. *Journal of Organizational Behavior* 16:127–42. doi: 10.1002/job.4030160204. [aRFB]

Morris, D. R. (1965) *The washing of the spears: The rise and fall of the Zulu nation*. Simon & Schuster. [aRFB, rSEA]

Mueller, J. S. (2012) Why individuals in larger teams perform worse. *Organizational Behavior and Human Decision Processes* 117:111–24. doi: 10.1016/j.obhdp.2011.08.004. [aRFB]

Mulder, M. B., Bowles, S., Hertz, T., Bell, A., Beise, J., Clark, G., Fazzio, I., Gurven, M., Hill, K., Hooper, P. L., Irons, W., Kaplan, H., Leonetti, D., Low, B., Marlowe, F., McElreath, R., Naidu, S., Nolin, D., Piraino, P., Quinlan, R., Schniter, E., Sear, R., Shenk, M., Smith, E. A., von Rueden, C. & Wiessner, P. (2009) Intergenerational wealth transmission and the dynamics of inequality in small-scale societies. *Science* 326(5953):682–88. [DRF]

Mullen, B. (1986) Atrocity as a function of lynch mob composition: A self-attention perspective. *Personality and Social Psychology Bulletin* 12:187–97. doi: 10.1177/0146167286122005. [aRFB]

Mullen, B. & Copper, C. (1994) The relation between group cohesiveness and performance: An integration. *Psychological Bulletin* 115:210–27. doi: 10.1037/0033-2909.115.2.210. [aRFB]

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

Nadler, A., Goldberg, M. & Jaffe, Y. (1982) Effect of self-differentiation and anonymity in group on deindividuation. *Journal of Personality and Social Psychology* 42:1127–36. doi: 10.1037/0022-3514.42.6.1127. [aRFB]

Nemeth, C. J. (1986) Differential contributions of majority and minority influence. *Psychological Review* 93:23–32. doi: 10.1037/0033-295X.93.1.23. [aRFB]

Nemeth, C. J., Personnaz, B., Personnaz, M. & Goncalo, J. A. (2004) The liberating role of conflict in group creativity: A study in two countries. *European Journal of Social Psychology* 34:365–74. doi: 10.1002/ejsp.210. [aRFB]

Nijstad, B. A., Berger-Selman, F. & De Dreu, C. K. W. (2014) Innovation in top management teams: Minority dissent, transformational leadership, and radical innovations. *European Journal of Work and Organizational Psychology* 23:310–22. [BAN]

Nijstad, B. A. & De Dreu, C. K. W (2012) Motivated information processing in organizational teams: Progress, puzzles, and prospects. *Research in Organizational Behavior* 32:87–111. [BAN]

Nolan, J. P., Soar, J., Zideman, D. A., Biarent, D., Bossaert, L. L., Deakin, C., Kosterg, R. W., Wyllieh, J. & Böttigeri, B. on behalf of the ERC Guidelines Writing Group. (2010) European resuscitation council guidelines for resuscitation 2010. Section 1: Executive summary. *Resuscitation* 81:1219–76. [RS]

Norton, M. I., Monin, B., Cooper, J. & Hogg, M. A. (2003) Vicarious dissonance: Attitude change from the inconsistency of others. *Journal of Personality and Social Psychology* 85(1):47–62. [OS]

Nowak, M. A. & Sigmund, K. (2005) Evolution of indirect reciprocity. *Nature* 437:1291–98. doi: 10.1038/nature04131. [NSF]

Olds, T. (1998) The mathematics of breaking away and chasing in cycling. *European Journal of Applied Physiology and Occupational Physiology* 77(6):492–97. Available at: http://doi.org/10.1007/s004210050365. [EK]

Olken, B. (2010) Direct democracy and local public goods: Evidence from a field experiment in Indonesia. *American Political Science Review* 104:243–67. doi: 10.1017/S0003055410000079. [aRFB]

Orbell, J. M. & Dawes, R. M. (1981) Social dilemmas. In: *Progress in applied social psychology, vol. 1*, ed. G. Stephenson & J. H. Davis, pp. 37–66. Wiley. [aRFB]

Osborn, A. F. (1953) *Applied imagination*. Scribner's. [aRFB]

Osborn, K. A., Irwin, B. C., Skogsberg, N. J. & Feltz, D. L. (2012) The Köhler effect: Motivation gains and losses in real sports groups. *Sport, Exercise, and Performance Psychology* 1:242–53. doi: 10.1037/a0026887. [aRFB, rSEA]

Packer, D. J. (2008) On being both with us and against us: A normative conflict model of dissent in social groups. *Personality and Social Psychology Review* 12:50–72. [BHH]

Packer, D. J. (2009) Avoiding groupthink: Whereas weakly identified members remain silent, strongly identified members dissent about collective problems. *Psychological Science* 20:546–48. [BHH, MJH]

Packer, D. J & Chasteen, A. L. (2010) Loyal deviance: Testing the normative conflict model of dissent in social groups. *Personality and Social Psychology Bulletin* 36:5–18. [BHH]

Packer, D. J., Fujita, K. & Chasteen, A. L. (2014) The motivational dynamics of dissent decisions: A goal conflict approach. *Social Psychological and Personality Science* 5:27–34. [BHH]

Packer, D. J. & Miners, C. T. H. (2014) Tough love: The normative conflict model of dissent. *Social and Personality Psychology Compass* 8:354–73. [BHH]

Page, S. E. (2007) *The difference: How the power of diversity creates better groups, firms, schools, and societies*. Princeton University Press. [PES]

Pareto, V. (1913) Il massimo di utilità per una collettività in sociologia. *Giornale degli economisti e rivista di statistica* 46(4):337–41. [CB]

Pareto, V. (1916) *Trattato di sociologia generale*. G. Barbèra. [CB]

Pashler, H. & Harris, C. R. (2012) Is the replicability crisis overblown? Three arguments examined. *Perspectives in Psychological Science* 7:531–36. [PES]

Penner, L. A., Dovidio, J. F., Piliavin, J. A. & Schroeder, D. A. (2005) Prosocial behavior: Multilevel perspectives. *Annual Review of Psychology* 56:365–92. doi: 10.1146/annurev.psych.56.091103.070141. [aRFB]

Peters, K. O., Haslam, S. A., Ryan, M. K. & Fonseca, M. (2012) Working with subgroup identities to build organizational identification and support for organizational strategy: A test of the ASPIRe model. *Group and Organization Management* 38:128–44. [SAH]

Petty, R. E., Harkins, S. G. & Williams, K. D. (1980) The effects of group diffusion of cognitive effort on attitudes: An information-processing view. *Journal of Personality and Social Psychology*, 38:81–92. doi: 10.1037/0022-3514.38.1.81. [aRFB]

Pondy, L. R. (1967) Organizational conflict: Concepts and models. *Administrative Science Quarterly* 12(2):296–20. [ID-N]

Popper, K. (1963) *Conjectures and refutations*. Routledge. [PES]

Postmes, T. & Branscombe, N. R., eds. (2012) *Rediscovering social identity: Core sources*. Psychology Press. [SAH]

Postmes, T. & Spears, R. (1998) Deindividuation and antinormative behavior: A meta-analysis. *Psychological Bulletin* 123:238–59. doi: 10.1037/0033-2909.123.3.238. [aRFB, DRF, SDR]

Postmes, T., Spears, R. & Cihangir, S. (2001) Quality of decision making and group norms. *Journal of Personality and Social Psychology* 80:918–30. [MJH]

Prentice-Dunn, S. & Rogers, R. W. (1982) Effects of public and private self-awareness on deindividuation and aggression. *Journal of Personality and Social Psychology* 43:503. doi: 10.1037/0022-3514.43.3.503. [aRFB]

Prentice-Dunn, S. & Rogers, R. W. (1989) Deindividuation and the self-regulation of behavior. In: *The psychology of group influence, second edition*, ed. P. Paulus, pp. 87–109. Erlbaum. [SDR]

Rajecki, D. W., Ickes, W., Corcoran, C. & Lenerz, K. (1977) Social facilitation of human performance: Mere presence effects. *The Journal of Social Psychology* 102:297–310. doi: 10.1080/00224545.1977.9713277. [aRFB]

Rapoport, A., Bornstein, G. & Erev, I. (1989) Intergroup competition for public goods: Effects of unequal resources and relative group size. *Journal of Personality and Social Psychology* 56:748–56. doi: 10.1037/0022-3514.56.5.748. [aRFB]

Ratcliffe, S. (2011) *Concise Oxford Dictionary of Quotations*. Oxford University Press. [AJJ]

Reicher, S. D. (2001) The psychology of crowd dynamics. In: *Blackwell handbook of social psychology: Group processes*, ed. M. A. Hogg & R. S. Tindale, pp. 182–208. Blackwell. [SDR]

Reicher, S. D., Haslam, S. A. & Smith, J. R. (2012) Working towards the experimenter: Reconceptualizing obedience within the Milgram paradigm as identification-based followership. *Perspectives on Psychological Science* 7:315–24. [SAH]

Reicher, S. D., Spears, R. & Postmes, T. (1995) A social identity model of deindividuation phenomena. *European Review of Social Psychology* 6:161–98. [MAH, SDR]

Reicher, S. D. & Stott, C. (2011) *Mad mobs and Englishmen? Myths and realities of the 2011 riots.* Constable and Robinson. [SDR]

Riegler, A. & Douven, I. (2009) Extending the Hegselmann–Krause model III: From single beliefs to complex belief states. *Episteme* 6:145–63. [ID]

Ringelmann, M. (1913a) Recherches sur les moteurs animés: Travail de l'homme. *Annales de l'Insitut National Agronomique* 12:1–40. [BAN]

Ringelmann, M. (1913b) Research on animate sources of power: The work of man. *Annales de l'Institut National Agronomique*, 2e serie-tome XII:1–40. [aRFB, AAB]

Rink, F. & Ellemers, N. (2007) Diversity as a basis for shared organizational identity: The norm congruity principle. *British Journal of Management* 18(s1):S17–27. [SAH]

Rizzo, J. R., House, R. J. & Lirtzman, S. I. (1970) Role conflict and ambiguity in complex organizations. *Administrative Science Quarterly* 15:150–62. [MPH]

Roberts, K. H. (1990) Some characteristics of one type of high reliability organization. *Organization Science* 1(2):160–76. [EK]

Robbins, T. (2003) *Jitterbug perfume*. Bantam. [AB-Z]

Rogers, R. W. & Ketchen, C. M. (1979) Effects of anonymity and arousal on aggression. *Journal of Psychology: Interdisciplinary and Applied* 102:13–19. doi: 10.1080/00223980.1979.9915089. [aRFB]

Ronay, R., Greenaway, K., Anicich, E. M. & Galinsky, A. D. (2012) The path to glory is paved with hierarchy: When hierarchical differentiation increases group effectiveness. *Psychological Science* 23(6):669–77. doi: 10.1177/0956797611433876. [JJZ]

Samson, D., Apperly, I. A., Braithwaite, J. J., Andrews, B. J. & Scott, S. E. B. (2010) Seeing it their way: Evidence for rapid and involuntary computation of what other people see. *Journal of Experimental Psychology: Human Perception and Performance* 36(5):1255–66. [AAB]

Satow, K. (1975) Social approval and helping. *Journal of Experimental Social Psychology* 11:501–509. doi: 10.1016/0022-1031(75)90001-3. [aRFB]

Sayre, M. R., O'Connor, R. E., Atkins, D. L., Billi, J. E., Callaway, C. W., Shuster, M., Eigel, B., Montgomery, W. H., Hickey, R. W., Jacobs, I., Nadkarni, V. M., Morley, P. T., Semenko, T. I. & Hazinski, M. F. (2010) 2010 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular care science. Part 2: Evidence evaluation and management of potential or perceived conflicts of interest. *Circulation* 122:S657–64. [RS]

Schachter, S. (1951) Deviation, rejection, and communication. *The Journal of Abnormal and Social Psychology* 46:190–207. doi: 10.1037/h0062326. [aRFB, HB]

Schachter, S. (1954) Interpretative and methodological problems of replicated research. *Journal of Social Issues* 10:52–60. doi: 10.1111/j.1540-4560.1954.tb01654.x. [aRFB]

Schmidt, P. (2015) Campaigns against microaggressions prompt big concerns about free speech. *Chronicle of Higher Education* 61(41):A8. Available at: http://chronicle.com/article/Campaigns-Against/231459/. [AJJ]

Schnarch, D. (1997) *Passionate marriage: Love, sex, and intimacy in emotionally committed relationships*. Norton. [AB-Z]

Scholten, L., van Knippenberg, D., Nijstad, B. A. & de Dreu, C. K. W. (2007) Motivated information processing and group decision-making: Effects of process accountability on information processing and decision quality. *Journal of Experimental Social Psychology* 43:539–52. doi: 10.1016/j.jesp.2006.05.010. [aRFB]

Schopler, J., Insko, C. A., Drigotas, S. M. & Wieselquist, J. (1995) The role of identifiability in the reduction of interindividual–intergroup discontinuity. *Journal of Experimental Social Psychology* 31:553–74. doi: 10.1006/jesp.1995.1025. [aRFB]

Schulz-Hardt, S., Brodbeck, F. C., Mojzisch, A., Kerschreiter, R. & Frey, D. (2006) Group decision making in hidden profile situations: Dissent as a facilitator for decision quality. *Journal of Personality and Social Psychology* 91:1080–93. doi: 10.1037/0022-3514.91.6.1080. [aRFB, AM]

Schwartz, S. H. & Gottlieb, A. (1976) Bystander reactions to a violent theft: Crime in Jerusalem. *Journal of Personality and Social Psychology* 34:1188–99. doi: 10.1037/0022-3514.34.6.1188. [aRFB]

Schwartz, S. H. & Gottlieb, A. (1980) Bystander anonymity and reactions to emergencies. *Journal of Personality and Social Psychology* 39:418–30. doi: 10.1037/0022-3514.39.3.418. [aRFB]

Scott, M. B. & Lyman, S. M. (1968) Paranoia, homosexuality and game theory. *Journal of Health and Social Behavior* 9:179–87. doi: 10.2307/2948402. [aRFB]

Searle, J. (1990) Collective intentions and actions. In: *Intentions in communication*, ed. P. Cohen, J. Morgan & M. E. Pollack, pp. 401–15. MIT Press. [AB-Z]

Sedikides, C., Gaertner, L., Luke, M. A., O'Mara, E. M. & Gebauer, J. E. (2013) A three-tier hierarchy of self-potency: Individual self, relational self, collective self. *Advances in Experimental Social Psychology* 48(1):235–95. [DRF]

Semin, G. R. & Manstead, A. S. R. (1983) *The accountability of conduct: A social psychological analysis*. Academic Press. [aRFB]

Shaw, J. D., Gupta, N. & Delery, J. E. (2002) Pay dispersion and workforce performance: Moderating effects of incentives and interdependence. *Strategic Management Journal* 23(6):491–512. doi: 10.1002/smj.235. [JJZ]

Sherif, M. (1936) *The psychology of social norms*. Harper. [aRFB]

Simmons, J. P., Nelson, L. D., Galak, J. & Frederick, S. (2011) Intuitive biases in choice versus estimation: Implications for the wisdom of crowds. *Journal of Consumer Research* 38:1–15. doi: 10.1086/658070. [aRFB]

Simpson, B., Willer, R. & Ridgeway, C. L. (2012) Status hierarchies and the organization of collective action. *Sociological Theory* 30(3):149–66. doi: 10.1177/0735275112457912. [JJZ, rSEA]

Smaldino, P. E. (2014a) Group-level traits emerge. *Behavioral and Brain Sciences* 37(3):281–95. [ID-N]

Smaldino, P. E. (2014b) The cultural evolution of emergent group-level traits. *Behavioral and Brain Sciences* 37:243–95. [PES]

Smaldino, P. E. (in press) The evolution of the social self: Multidimensionality of social identity solves the coordination problems of a society. In: *Beyond the meme: Dynamical structures in cultural evolution*, ed. A. C. Love & W. C. Wimsatt. University of Minnesota Press. Chapter available at: http://smaldino.com/wp-content/uploads/2015/06/Smaldino_SocialIdentityAndComplexity-Societies_2015.pdf. [PES]

Smith, A. (1776/1991) *The wealth of nations*. Knopf. (Original work published in 1776.) [aRFB]

Smith, B. N., Kerr, N. A., Markus, M. J. & Stasson, M. F. (2001) Individual differences in social loafing: Need for cognition as a motivator in collective performance. *Group Dynamics: Theory, Research, and Practice* 5:150–58. [BAN]

Smith, P. B., Bond, M. H. & Kagitcibasi, C. (2006) *Understanding social psychology across cultures*. Sage. [BHH]

Snyder, C. R. & Fromkin, H. L. (1980) *Uniqueness: The human pursuit of difference*. Plenum. [HB]

Soll, J. B. (1999) Intuitive theories of information: Beliefs about the value of redundancy. *Cognitive Psychology* 38:317–46. [AAB]

Spears, R. (2010) Group rationale, collective sense: Beyond intergroup bias. Invited position paper. *British Journal of Social Psychology* 49:1–20. [SDR]

Spears, R. & Lea, M. (1994) Panacea or panopticon? The hidden power in computer-mediated communication. *Communication Research* 21:427–59. [SDR]

Spencer-Rodgers, J., Hamilton, D. L. & Sherman, S. J. (2007) The central role of entitativity in stereotypes of social categories and task groups. *Journal of Personality and Social Psychology* 92:369. doi: 10.1037/0022-3514.92.3.369. [aRFB]

Staats, B. R. & Gino, F. (2012) Specialization and variety in repetitive tasks: Evidence from a Japanese bank. *Management Science* 58:1141–59. doi: 10.1287/mnsc.1110.1482. [aRFB]

Stanovich, K. E. & West, R. F. (2000) Advancing the rationality debate. *Behavioral and Brain Sciences* 23:701–26. [MPH]

Stasser, G. (1999) The uncertain role of unshared information in collective choice. In: *Shared cognition in organizations: The management of knowledge*, ed. J. M. Levine, L. L. Thompson & D. M. Messick, pp. 49–69. Erlbaum. [aRFB]

Stasser, G., Stewart, D. D. & Wittenbaum, G. M. (1995) Expert roles and information exchange during discussion: The importance of knowing who knows what. *Journal of Experimental Social Psychology* 31:244–65. doi: 10.1006/jesp.1995.1012. [aRFB, ID-N]

Stasser, G. & Titus, W. (1985) Pooling of unshared information in group decision making: Biased information sampling during discussion. *Journal of Personality and Social Psychology* 48:1467–78. doi: 10.1037/0022-3514.48.6.1467. [aRFB, DB]

Stasser, G. & Titus, W. (1987) Effects of information load and percentage of shared information on the dissemination of unshared information during group discussion. *Journal of Personality and Social Psychology* 53:81–93. doi: 10.1037/0022-3514.53.1.81. [aRFB]

Stearns, S. C., Allal, N. & Mace, R. (2008) Life history theory and human development. In: *Foundations of evolutionary psychology*, ed. C. Crawford & D. Krebs, pp. 47–69. Erlbaum. [TCdB]

Steiner, I. D. (1972) *Group process and productivity*. Academic Press. [JML, AM, BAN, rSEA]

Stets, J. E. & Burke, P. J. (2000) Identity theory and social identity theory. *Social Psychology Quarterly* 63:224–37. [DRF]

Stroebe, W. & Frey, B. S. (1982) Self-interest and collective action: The economics and psychology of public goods. *British Journal of Social Psychology* 21:121–37. doi: 10.1111/j.2044-8309.1982.tb00521.x. [aRFB]

Suddendorf, T. (2013) *The gap: The science of what separates us from other animals*. Basic Books/Perseus. [rSEA]

Surowiecki, J. (2004) *The wisdom of crowds: Why the many are smarter than the few and how collective wisdom shapes business, economies, societies, and nations*. Anchor. [aRFB, AAB]

Sutton, J., Harris, C., Keil, P. & Barnier, A. (2010) The psychology of memory, extended cognition, and socially distributed remembering. *Phenomenology and the Cognitive Sciences* 9(4):521–60. [AJB]

Swann, W. B. & Buhrmester, M. D. (2012) Self as functional fiction. *Social Cognition* 30:415–30. doi: 10.1521/soco.2012.30.4.415. [aRFB]

Swann, W. B., Jr., Buhrmester, M., Gómez, Á., Jetten, J., Bastian, B., Vázquez, A., Ariyanto, A., Besta, T. Christ, O., Cui, L., Finchilescu, G., González, R., Goto, N., Hornsey, M., Sharma, S., Susianto, H. & Zhang, A. (2014) What makes a group worth dying for? Identity fusion fosters perception of familial ties, promoting self-sacrifice. *Journal of Personality and Social Psychology* 106:912–26. [ST]

Swann, W. B., Jr., Gómez, Á., Huici, C., Morales, J. F. & Hixon, J. G. (2010) Identity fusion and self-sacrifice: Arousal as a catalyst of pro-group fighting, dying, and helping behavior. *Journal of Personality and Social Psychology* 99(5):824–41. [DRF]

Swann, W. B., Jr., Gómez, A., Seyle, C. D., Morales, J. F. & Huici, C. (2009) Identity fusion: The interplay of personal and social identities in extreme group behavior. *Journal of Personality and Social Psychology* 96:995–1011. [ST]

Swann, W. B., Jr., Jetten, J., Gómez, Á., Whitehouse, H. & Bastian, B. (2012) When group membership gets personal: A theory of identity fusion. *Psychological Review* 119:441–56. doi: 10.1037/a0028589. [MJH]

Szymanski, K., Garczynski, J. & Harkins, S. (2000) The contribution of the potential for evaluation to coaction effects. *Group Processes and Intergroup Relations* 3:269–83. doi: 10.1177/1368430200033003. [aRFB]

Tajfel, H. & Turner, J. C. (1979) An integrative theory of intergroup conflict. In: *The social psychology of intergroup relations*, ed. W. G. Austin & S. Worchel, pp. 33–47. Brooks/Cole. [RB, SAH]

Tajfel, H. & Turner, J. C. (1986) The social identity theory of intergroup behavior. In: *Psychology of intergroup relations*, ed. S. Worchel & W. G. Austin, pp. 7–24. Nelson Hall. [RB]

Takano, Y. & Sogon, S. (2008) Are Japanese more collectivistic than Americans? Examining conformity in in-groups and the reference-group effect. *Journal of Cross-Cultural Psychology* 39:237–50. [BHH]

Tata, J., Anthony, T., Lin, H., Newman, B., Tang, S., Millson, M. & Sivakumar, K. (1996) Proportionate group size and rejection of the deviate: Meta-analytic integration. *Journal of Social Behavior and Personality* 11:739–52. [aRFB]

Tetlock, P. E. (1983) Accountability and the perseverance of first impressions. *Social Psychology Quarterly* 46:285–92. doi: 10.2307/3033716. [aRFB]

Tetlock, P. E. (1992) The impact of accountability on judgment and choice: Toward a social contingency model. In: *Advances in experimental social psychology, vol. 25*, ed. M. P. Zanna, pp. 331–76. Academic Press. [aRFB]

Tetlock, P. E., Skitka, L. & Boettger, R. (1989) Social and cognitive strategies for coping with accountability: Conformity, complexity, and bolstering. *Journal of Personality and Social Psychology* 57:632–40. doi: 10.1037/0022-3514.57.4.632. [aRFB, rSEA]

Thaler, R. H. & Sunstein, C. R. (2008) *Nudge: Improving decisions about health, wealth, and happiness*. Yale University Press. [NSF]

Theiner, G., Allen, C. & Goldstone, R. L. (2010) Recognizing group cognition. *Cognitive Systems Research* 11:378–95. [PES]

Thibaut, J. W. & Kelley, H. H. (1959) *The social psychology of groups*. John Wiley. [MPH]

Thompson, E. P. (1971) The moral economy of the English crowd in the eighteenth century. *Past and Present* 50:76–136. [SDR]

Tiedens, L. Z. & Fragale, A. R. (2003) Power moves: Complementarity in dominant and submissive nonverbal behavior. *Journal of Personality and Social Psychology* 84(3):558–68. doi: 10.1037/0022-3514.84.3.558. [JJZ]

Tiedens, L. Z., Unzueta, M. M. & Young, M. J. (2007) An unconscious desire for hierarchy? The motivated perception of dominance complementarity in task partners. *Journal of Personality and Social Psychology* 93(3):402–14. doi: 10.1037/0022-3514.93.3.402. [JJZ]

Tomasello, M. (2009) *Why we cooperate*. MIT Press. [BHH]

Tomasello, M. (2014) The ultra-social animal. *European Journal of Social Psychology* 44:187–94. [BHH]

Triandis, H. C. (1989) The self and social behavior in differing cultural contexts. *Psychological Review* 96:506–20. [RB]

Triplett, N. (1898) The dynamogenic factors in pacemaking and competition. *The American Journal of Psychology* 9:507–33. doi: 10.2307/1412188. [aRFB]

Tuckman, B. (1965) Developmental sequence in small groups. *Psychological Bulletin* 63:384–99. doi: 10.1037/h0022100. [aRFB, DRF, rSEA]

Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D. & Wetherell, M. S. (1987) *Rediscovering the social group: A self-categorization theory*. Blackwell. [RB, SAH, MAH]

Turner, J. & Tajfel, H. (1982) *Social identity and intergroup relations*. Cambridge University Press. [aRFB, OS]

Turner, R. H. & Killian, L. M. (1957) *Collective behavior*. Prentice–Hall. [SDR]

Twenge, J. M. & Campbell, W. K. (2003) "Isn't it fun to get the respect that we're going to deserve?" Narcissism, social rejection, and aggression. *Personality and Social Psychology Bulletin* 29:261–72. doi: 10.1177/0146167202239051. [aRFB]

Tylén, K., Weed, E., Wallentin, M., Roepstorff, A. & Frith, C. D. (2010) Language as a tool for interacting minds. *Mind and Language* 25(1):3–29. [AAB]

Tyler, T. R. (2006) Psychological perspectives on legitimacy and legitimation. *Annual Review of Psychology* 57(1):375–400. doi: 10.1146/annurev.psych.57.102904.190038. [JJZ]

Tyler, T. R. & Degoey, P. (1995) Collective restraint in social dilemmas: Procedural justice and social identification effects on support for authorities. *Journal of Personality and Social Psychology* 69:482–97. doi: 10.1037/0022-3514.69.3.482. [aRFB]

Ulrich, R., Miller, J. & Schröter, H. (2007) Testing the race model inequality: An algorithm and computer programs. *Behavior Research Methods* 39(2):291–302. [AAB]

Ungson, N. D. & Packer, D. J. (in progress) The complexity of loyalty conceptions, and their relation to whistleblowing. [BHH]

Van de Kragt, A., Orbell, J. & Dawes, R., Braver, S. & Wilson, L. (1986) Doing well and doing good as ways of resolving social dilemmas. In: *Experimental social dilemmas*, ed. H. Wilke, D. Messick & C. Rutte, pp. 177–203. Verlag Peter Lang. [aRFB]

Van Ginneken, J. (1992) *Crowds, psychology and politics, 1871–1899*. Cambridge University Press. [SDR]

Van Lange, P. A. M. (2013) What we should expect from theories in social psychology: Truth, abstraction, progress, and applicability as standards (TAPAS). *Personality and Social Psychology Review* 17:40–55. doi: 10.1177/1088868312453088. [NSF]

Van Lange, P. A. M., Joireman, J., Parks, C. D. & Van Dijk, E. (2013) The psychology of social dilemmas: A review. *Organizational Behavior and Human Decision Processes* 120:125–41. doi: 10.1016/j.obhdp.2012.11.003. [NSF]

Van Lange, P. A. M., Liebrand, W. B. G., Messick, D. M. & Wilke, H. A. M. (1992) Introduction and literature review. In: *Social dilemmas: Theoretical issues and research findings*, ed. W. B. G. Liebrand, D. M. Messick & H. A. M. Wilke, pp. 3–28. Pergamon Press. [aRFB]

Van Vugt, M. & De Cremer, D. (1999) Leadership in social dilemmas: The effects of group identification on collective actions to provide public goods. *Journal of Personality and Social Psychology* 76:587. doi: 10.1037/0022-3514.76.4.587. [aRFB]

Van Vugt, M. & Hart, C. M. (2004) Social identity as social glue: The origins of group loyalty. *Journal of Personality and Social Psychology* 86:585. doi: 10.1037/0022-3514.86.4.585. [aRFB]

Van Vugt, M., Hogan, R. & Kaiser, R. B. (2008) Leadership, followership, and evolution: Some lessons from the past. *American Psychologist* 63(3):182–96. doi: 10.1037/0003-066X.63.3.182. [JJZ]

VanTuinen, M. & McNeel, S. P. (1975) A test of the social facilitation theories of Cottrell and Zajonc in a coaction situation. *Personality and Social Psychology Bulletin* 1:604–607. doi: 10.1177/014616727500100412. [aRFB]

Vigil, J. M. (2009) A socio-relational framework of sex differences in the expression of emotion. *Behavioral and Brain Sciences* 32(5):375–90; discussion 391–428. Available at: http://doi.org/10.1017/S0140525X09991075. [EK]

Waite, L. J. (1995) Does marriage matter? *Demography* 32:483–507. [AB-Z]

Waite, L. J. (2000) Trends in men's and women's well-being in marriage. In: *The ties that bind: Perspectives on marriage and cohabitation*, ed. L. Waite, C. Bachrach, M. Hindin, E. Thomson & A. Thornton, pp. 368–92. Aldine de Gruyter. [AB-Z]

Wason, P. C. (1968) Reasoning about a rule. *Quarterly Journal of Experimental Psychology* 20:273–81. [DB]

Watson, R. I. (1973) Investigation into deindividuation using a cross-cultural survey technique. *Journal of Personality and Social Psychology* 25:342–45. doi: 10.1037/h0034218.   [aRFB]

Wegner, D. M. (1986) Transactive memory: A contemporary analysis of the group mind. In: *Theories of group behavior*, ed. B. Mullen & G. R. Goethals, pp. 185–208. Springer-Verlag.   [aRFB]

Wegner, D. M. (1987) Transactive memory: A contemporary analysis of the group mind. In *Theories of group behavior*, ed. B. Mullen & G. R. Goethals, pp. 185–208. Springer-Verlag.   [AJB]

Weick, K. E. & Roberts, K. H. (1993) Collective mind in organizations: Heedful interrelating on flight decks. *Administrative science quarterly* 38(3):357–81.   [CB]

Weisberg, M. (2007) Who is a modeler? *British Journal for the Philosophy of Science* 58(2):207–33.   [PES]

Weldon, E. & Gargano, G. M. (1988) Cognitive loafing: The effects of accountability and shared responsibility on cognitive effort. *Personality and Social Psychology Bulletin* 14:159–71. doi: 10.1177/0146167288141016.   [aRFB]

Weldon, E. & Mustari, E. L. (1988) Felt dispensability in groups of coactors: The effects of shared responsibility and explicit anonymity on cognitive effort. *Organizational Behavior and Human Decision Processes* 41:330–51. doi: 10.1016/0749-5978(88)90033-7.   [aRFB]

Weldon, M. S. & Bellinger, K. D. (1997) Collective memory: Collaborative and individual processes in remembering. *Journal of Experimental Psychology: Learning, Memory, and Cognition* 23(5):1160–75.   [AAB]

Wenmackers, S., Vanpoucke, D. & Douven, I. (2012) Probability of inconsistencies in theory revision. *European Physical Journal B* 85:1–15.   [ID]

Wenmackers, S., Vanpoucke, D. & Douven, I. (2014) Rationality: A social-epistemology perspective. *Frontiers in Psychology* 5:581. doi: 10.3389/fpsyg.2014.00581.   [ID]

Wesselmann, E. D., Bagg, D. & Williams, K. D. (2009) "I feel your pain": The effects of observing ostracism on the ostracism detection system. *Journal of Experimental Social Psychology* 45(6):1308–11.   [OS]

West, A. (1999) The flute factory: An empirical measurement of the effect of division of labor on productivity and production. *American Economist* 43:82–87. 10.1177/056943459904300109.   [aRFB, AAB]

West, M. A. & Anderson, N. (1996) Innovation in top management teams. *Journal of Applied Psychology* 81:680–93.   [ID-N]

White, S. E., Dittrich, J. E. & Lang, J. R. (1980) The effects of group decision-making process and problem-situation complexity on implementation attempts. *Administrative Science Quarterly* 25:428–40.   [AM]

Whitehouse, H., McQuinn, B., Buhrmester, M. & Swann, W. B., Jr. (2014) Brothers in Arms: Libyan revolutionaries bond like family. *Proceedings of the National Academy of Sciences* 111:17783–85.   [ST]

Wildschut, T., Pinter, B., Vevea, J. L., Insko, C. A. & Schopler, J. (2003) Beyond the group mind: A quantitative review of the interindividual-intergroup discontinuity effect. *Psychological Bulletin* 129:698–722. doi: 10.1037/0033-2909. 129.5.698.   [aRFB]

Willer, R. (2009) Groups reward individual sacrifice: The status solution to the collective action problem. *American Sociological Review* 74(1):23–43. doi: 10.1177/000312240907400102.   [JJZ]

Williams, K., Harkins, S. G. & Latané, B. (1981) Identifiability as a deterrent to social loafing: Two cheering experiments. *Journal of Personality and Social Psychology* 40:303–11. doi: 10.1037/0022-3514.40.2.303.   [aRFB, BAN]

Wittenbaum, G. M., Hollingshead, A. B. & Botero, I. C. (2004) From cooperative to motivated information sharing in groups: Moving beyond the hidden profile paradigm. *Communication Monographs* 71:286–310. doi: 10.1080/0363452042000299894.   [NSF]

Wittenbaum, G. M. & Park, E. S. (2001) The collective preference for shared information. *Current Directions in Psychological Science* 10:70–73. doi: 10.1111/1467-8721.00118.   [aRFB]

Wittenbaum, G. M. & Stasser, G. (1996) Management of information in small groups. In: *What's social about social cognition?: Research on socially shared cognition in small groups*, ed. J. L. Nye & A. M. Brower, pp. 3–28. Sage.   [aRFB]

Wittgenstein, L. (1953) *Philosophical investigations*. Blackwell.   [MAH]

Woodley, M. A. (2011) The cognitive differentiation-integration effort hypothesis: A synthesis between the fitness indicator and life history models of human intelligence. *Review of General Psychology* 15:228–45.   [TCdB]

Woodley, M. A. & Fernandes, H. B. F. (2014) Strategic and cognitive differentiation-integration effort in a study of 76 countries. *Personality and Individual Differences* 57:3–7.   [TCdB]

Woodley, M. A., Fernandes, H. B. F. & Madison, G. (2014) Strategic differentiation-integration effort amongst the 47 prefectures of Japan. *Personality and Individual Differences* 63:64–68.   [TCdB]

Woodley, M. A., Figueredo, A. J., Brown, S. D. & Ross, K. C. (2013) Four successful tests of the cognitive differentiation-integration effort hypothesis. *Intelligence* 41:832–42.   [TCdB]

Worchel, S., Rothberger, H., Day, E. A., Hart, D. & Butemeyer, J. (1998) Social identity and individual productivity within groups. *British Journal of Social Psychology* 37:389–413.   [RB, AM]

Wrangham, R. W. & Peterson, D. (1996) *Demonic males: Apes and the origins of human violence*. Houghton Mifflin Harcourt.   [RMcD]

Zaccaro, S. J. (1984) Social loafing: The role of task attractiveness. *Personality and Social Psychology Bulletin* 10:99–106.   [BAN]

Zajonc, R. B. (1965) Social facilitation. *Science* 149:269–74. doi: 10.1126/science.149.3681.269.   [aRFB]

Zajonc, R. B., Heingartner, A. & Herman, E. M. (1969) Social enhancement and impairment of performance in the cockroach. *Journal of Personality and Social Psychology* 13:83–92.   [DRF]

Zdaniuk, B. & Levine, J. M. (2001) Group loyalty: Impact of members' identification and contributions. *Journal of Experimental Social Psychology* 37:502–509. doi: 10.1006/jesp.2000.1474.   [aRFB]

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

Zitek, E. M. & Tiedens, L. Z. (2012) The fluency of social hierarchy: The ease with which hierarchical relationships are seen, remembered, learned, and liked. *Journal of Personality and Social Psychology* 102(1):98–115. doi: 10.1037/a0025345.   [JJZ]