

## A Conceptual Review of Decision Making in Social Dilemmas: Applying a Logic of Appropriateness

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*Despite decades of experimental social dilemma research, “theoretical integration has proven elusive” (Smithson & Foddy, 1999, p. 14). To advance a theory of decision making in social dilemmas, this article provides a conceptual review of the literature that applies a “logic of appropriateness” (March, 1994) framework. The appropriateness framework suggests that people making decisions ask themselves (explicitly or implicitly), “What does a person like me do in a situation like this?” This question identifies 3 significant factors: recognition and classification of the kind of situation encountered, the identity of the individual making the decision, and the application of rules or heuristics in guiding behavioral choice. In contrast with dominant rational choice models, the appropriateness framework proposed accommodates the inherently social nature of social dilemmas, and the role of rule and heuristic based processing. Implications for the interpretation of past findings and the direction of future research are discussed.*

Social dilemmas are situations defined by two characteristics: (a) at any given decision point, individuals receive higher payoffs for making selfish choices than they do for making cooperative choices regardless of the choices made by those with whom they interact and (b) everyone involved receives lower payoffs if everyone makes selfish choices than if everyone makes cooperative choices (Dawes, 1980; D. Messick & Brewer, 1983). They are situations “in which individual rationality leads to collective irrationality. That is, individually reasonable behavior leads to a situation in which everyone is worse off than they might have been otherwise” (Kollock, 1998, p. 183).

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Social dilemmas are everywhere. It is difficult to imagine a sphere of social life that is not dogged by one kind of social dilemma or another. When the city you live in asks its citizens to conserve water during a long dry summer, they are identifying a “common resource dilemma” (or “commons dilemma”). You get more of what you want (water), by ignoring the conservation request, regardless of what your neighbors do. If everyone ignores the conservation request the water supply may be exhausted, thereby denying everyone access to the resource. Compared with everyone acting selfishly, everyone is better off if everyone complies with the conservation request.

When the local hospital tries to raise funds for a new oncology center, a public goods dilemma arises for individuals. Those who choose not to contribute will likely still get access to the oncology center in the future if they need it—so they maximize their personal payoffs by not contributing. If nobody contributes, there will be no oncology center for anyone. Compared to the consequences of nobody contributing, everyone is better off if everyone makes a contribution.

Encounter a situation that requires social coordination and you usually don’t have to dig too deeply before hitting a social dilemma of some kind. Social psychologists, anthropologists, economists, sociologists,

and political scientists alike have demonstrated great interest in understanding when people make cooperative choices rather than selfish choices, why people make the choices they do, and the kinds of interventions that are effective in eliciting more socially advantageous behavior. Experimental social psychologists, economists, and sociologists have been particularly active in this enterprise, and their efforts have been well documented in a number of comprehensive empirical reviews (e.g., Agrawal, 2002; Dawes, 1980; Kollock, 1998; Komorita & Parks, 1996; Kopelman, Weber, & Messick, 2002; Ledyard, 1995; D. Messick & Brewer, 1983; P. Van Lange, Liebrand, Messick, & Wilke, 1992). Despite a large and growing body of empirical studies, “theoretical integration has proven elusive” (Smithson & Foddy, 1999, p. 14). This article offers a step in the development of a theoretical framework for understanding decision processes in social dilemmas.

What we offer here is a review of the experimental literature in light of a conceptual framework built on the foundation of March’s “logic of appropriateness” (March, 1994). We believe the appropriateness framework offers a useful way of understanding social dilemma decisions that directs attention to critical mechanisms common to most dilemmas, and that identifies predictable sources of variation that can account for the heterogeneous findings evident even across similar situations. Before considering what an appropriateness framework has to offer, we should outline the basic features of the prevailing alternative theoretical approach to decision making in social dilemmas.

### **Expected Utility/Rational Choice Models**

The dominant theoretical framework applied to decision making in social dilemmas, and dilemma-like situations, has been the expected utility, or “rational choice” model (cf. Ledyard, 1995; Luce & Raiffa, 1957; Pruitt & Kimmel, 1977). Expected utility (EU) and rational choice models presume vigilant, calculating decision makers who assess choice environments with care, determine the probable utility (i.e., payoff) associated with each possible choice, and then choose to maximize their EU. Rational choice models can offer social scientists helpful analytic frameworks (cf. Murnighan, 1994; Murnighan & Ross, 1999), and they have the advantages of being parsimonious and highly precise in their predictions—two admirable qualities in any theory.

There are several characteristics of EU models that are worthy of note because they characterize the kinds of situations in which such models are most likely to be effective in predicting behavior, and because in so doing they specify circumstances in which they are less likely to be effective. First is the presumption of a rela-

tively conscious and deliberate decision-making process. Second is the presumption that choice is preceded by evaluation and judgment (and not the other way around). Third is the relatively narrow (economic) definition of utility that generally characterizes applications of EU models. Fourth is the relatively “unsocialized” nature of the models; they tend to downplay social influence processes (when they are addressed at all), and when such processes are accounted for the models again presume hyper-rational others.

By noting these conditions, we intend to make it clear that we are not arguing for discarding rational choice theories or models. Indeed, they can be very helpful analytic frames. However, we contend that all four of these characteristics limit the explanatory power of rational choice models when applied to most social dilemmas. We return to these after summarizing the key features of the appropriateness framework.

### **The Appropriateness Framework**

March (1994) argued that decisions are shaped by situational recognition, one’s identity, and the application of rules. Decisions result from people answering for themselves the question, “What does a person like me (identity) do (rules) in a situation like this (recognition)?” (cf. March, 1994; D. M. Messick, 1999). This logic of appropriateness contrasts with the dominant “logic of consequence,” or EU models. The logic of consequence sees decisions as “based on an evaluation of alternatives in terms of their consequences for preferences” (March, 1994, p. 57). D. M. Messick (1999) suggested that the logic of appropriateness may have greater explanatory power in social dilemmas than such expected utility models.

### **Recognition**

To act, people must answer for themselves the question, “what kind of situation is this?” (D. M. Messick, 1999, p. 13). Answering this question defines the situation. The appropriateness framework presented here suggests that answering this question hinges on recognition—on matching features of the situation encountered to features of other situations that are already (at least partly) understood. Recognition, therefore, is an act of categorization according to event prototypes—“coherent and inter-related sets of characteristics concerning the sort of person who typically features in the event, the typical explanation for the event and so on” (Laljee, Lamb, & Abelson, 1992, p. 153). The more typical a new setting or experience is of an existing event prototype, the more likely it is to lead the perceiver to a confident conclusion regarding the nature of the situation. Impediments to easy and rapid

categorization—for example, unexpected actors, strange behaviors, uncertainty, attributional ambiguity, or novel contextual information—will make the process of recognition more difficult and costly in terms of cognitive and attentional resources.

Given the social nature of our world, we want to elaborate somewhat further and suggest that bound to the question of the kind of situation “this” is, is another question: “How do other people understand this kind of situation?” In other words, what is the normative context of this situation, and what would others expect me to do in a situation like this one? This is an important addition because, despite their universal influence, norms have received little attention in the dilemmas literature. We return to a more involved consideration of norms when we discuss rules for action. It is, nonetheless, important to note that others’ evident assumptions about a situation can be involved in activating a particular event prototype (e.g., others are running away; people do that when they are afraid, therefore this is a situation in which fear is appropriate). One of the powerful features of the event prototype concept is that explanations for a situation are integral parts of a prototype and, therefore, allow that understanding a situation within a social context—including its taken-for-granted antecedents and causal attributions—can occur on the level of recognition.

### Identity

Identity is a complex, multifaceted factor in the appropriateness framework. People differ in many systematic ways, and we want to define identity in broad terms. Often social scientists associate identity only with personality factors, and clearly, people do differ along personality dimensions such as self-monitoring (Snyder & Gangestad, 1986), or locus of control (Lefcourt, 1982). However, they also differ in other ways such as their social value orientations (D. M. Messick & McClintock, 1968), and the nature of their personal histories, and personal experiences. Personal histories are significant because they influence the ease with which people facing a new situation find analogues and event prototypes in memory (recognition) that can direct their initial behavioral choices (Bettenhausen & Murnighan, 1985, 1991; Forgas, 1982). Identity also encompasses social identity (Brewer, 1991; D. M. Taylor & Modhaddam, 1994; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) and cultural influences (Moghaddam, Taylor, & Wright, 1993). Identity is, therefore, for our purposes, an umbrella concept that includes all the idiosyncratic factors that individuals bring with them into a social situation. Individual differences of these sorts have already been demonstrated to have an impact on behavior in social dilemmas. For example, Kelley and Thibaut (1978) pointed out that the payoff matrix individuals react to

in a dilemma experiment can be different from the objective matrix presented by experimenters. Furthermore, the nature of individuals’ experiences with similar tasks has been found to quickly shape their understandings of what is normative for a new situation and the kinds of choices they make (Bettenhausen & Murnighan, 1985, 1991).

However, consistent with the Gestalt nature of event prototypes, we want to make special mention of how role prototypes (e.g., Buddhist, parent, Democrat, teacher)—normative constellations of qualities, status, behaviors, and values—may act as pivotal identity factors in social dilemmas. When March (1994) referred to identity’s impact on decision making, it is to such socially defined role prototypes that he referred. To our knowledge, there is no experimental work in the social dilemmas literature that takes such complex roles seriously as determinants of choice behavior. Such roles have sometimes been used as features of the context in dilemma experiments—for example, the role of another party in the dilemma (e.g., the identity of a leader/allocator of rewards and punishments as in Wit & Wilke, 1988)—however they often have not been taken into account as features of the decision maker that might predict choice.

Our use of the term *identity*, then, is intended to allow for consideration of socially defined roles and the various idiosyncratic qualities, traits, and personal characteristics that are resident within individuals.

### Rules

Rules offer boundedly rational (Simon, 1955) people a way to cope with the potentially overwhelming flow of stimuli to which they are constantly exposed. Rules simplify behavioral choices by narrowing options. Within the category of rules we include not only explicit and codified guidelines for behavior (e.g., codes of ethics or laws) but also the less visible and explicit influence of social heuristics (e.g., “women and children first;” Allison & Messick, 1990) and habitual rituals (e.g., the equal division of resources; D. M. Messick & Allison, 1993). Gigerenzer and Todd (1999) presented a significant body of evidence that suggests the use of “fast and frugal” heuristics can be adaptive, and that, compared with more complex algorithms, such heuristics perform especially well when people generalize to new data. The very simplicity of such heuristics, they argued, leads to robustness. The appropriateness framework is particularly distinct from rational choice models in its emphasis on decision making as a rule-driven exercise. Indeed, within the appropriateness framework, utility maximization (especially in narrow economic terms) is only one of many possible decision rules that may apply.

Within the growing social cognition literature, distinctions are often drawn between *heuristics* and *rules*

(cf. Chaiken & Trope, 1999; Smith & DeCoster, 1999). Heuristic processing is characterized as a “fast, associative information-processing mode based on low-effort systematic reasoning” (Chaiken & Trope, 1999, p. ix). Rule-based processing, on the other hand, is often characterized as deliberate, and demanding a higher level of effort. This dichotomous characterization of two approaches to processing information is common and has given rise to a broad collection of “dual-process” theories. What we propose here shares key features with dual-process theories; in particular, we embrace the notion that some circumstances elicit little conscious deliberation, whereas others elicit careful and effortful deliberation. (We speak to this distinction further under the heading Shallow Processing.) However, our use of the term *rules* has more to do with the content of the rule than the nature of cognitive processing. For example, “age before beauty” is a rule, as we use the term, however its activation and application can be either relatively automatic, or the consequence of careful thought. In this article we generally refer to the dual levels of processing in terms of automaticity versus deliberation, shallow versus. deep, conscious versus. unconscious, and so forth. Regardless of the level of processing activated or required, rules are a categorizing cognitive shorthand that flow naturally from clear definitions of situations based on event prototypes.

Part of what makes the appropriateness framework more “social” than rational choice models is the assumption that the rules applied to choices will often be a consequence of perceived social norms. In a recent review of the norms literature, Cialdini and his colleagues defined social norms as “understood rules for accepted and expected behavior” (Cialdini, Bator, & Guadagno, 1999, p. 196). They further characterized norms as “rules for behavior” and “guidelines for socially appropriate behavior” (p. 195). When people focus their attention on social norms, such norms have been found to be highly predictive of behavioral choice (e.g., Cialdini, Kallgren, & Reno, 1991; Kallgren, Reno, & Cialdini, 2000). Furthermore, long-standing psychological theories assume that, when people are uncertain about appropriate behavior in a social context, they will look to others for clues (e.g., Festinger, 1954).

### Contrasting an Appropriateness Framework With Expected Utility/Rational Choice Models

We propose that expected utility and rational choice models are most likely to do a good job of predicting decision makers’ choices under three conditions: (a) when the choice environment is less, rather than more, social; (b) when the situation or context makes the economic structure of a decision task particularly salient;

and (c) when the context calls for a deliberate, calculating approach to decision making.

Social psychologists have taken ample advantage of the undersocialized nature of rational choice models by chronicling a myriad of circumstances under which such models fail to account for empirical findings. Generally these findings are of more cooperative behavior than rational choice models would predict. As we detail at length in our review, self-interested, economically rational choices are most likely to occur when social features of the context are downplayed or not present (e.g., when communication is not permitted, social distance is great, interactions are “one shot,” etc.). Furthermore, when people have reason to have a singular focus on economic payoffs either because of their own financial situations or because the amount of money involved is overwhelming, we would expect careful cost-benefit analyses and higher incidence of self-interested behavior.

The greatest single shortcoming of EU models when applied to social dilemmas is that they are insufficiently social to account for the heterodox factors and interactions that drive real, observed behavior. To accommodate the stylized facts of real behavior, rational choice theorists are forced to create new “utility functions” for each deviation from rationality.

The appropriateness framework, in contrast, is explicitly social and designed to accommodate behavior that occurs outside the conditions most favorable to rational choice models. We would expect, therefore, that when the social dimensions of a dilemma are apparent and/or salient, and especially when social features are combined with strong norms or evident event prototypes, the appropriateness framework will offer a more satisfactory account of choice data.

### How an Appropriateness Framework Applies to Social Dilemmas

Figure 1 offers a schematic representation of how an appropriateness framework might depict decision making in social dilemmas. The decision maker views the situation through a lens constituted by the interaction between identity and situational cues. The situation might offer a number of objective cues—who is in-

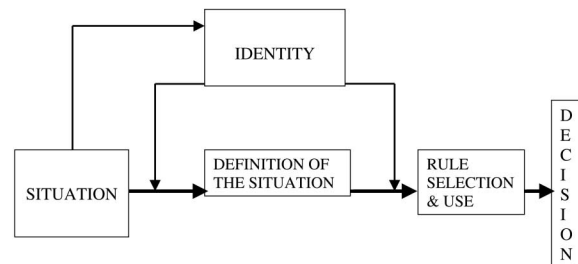


Figure 1. A schematic representation of the appropriateness framework.

volved, how situational characteristics are configured, where the event is taking place, how it has been labeled by a person in authority (e.g., an experimenter), and so forth. Personal history with similar situations (e.g., “this looks just like the game I played in an experiment last week”), personality traits, and values (e.g., a preference for cooperative behavior) may all affect how the situation is understood (e.g., as a cooperative task or a competitive task). Furthermore, the idiosyncratic motivations of decision makers may affect the situational cues to which they attend, thereby disposing them to situational construals that are favorable to some goal or other that is salient at the moment (e.g., Holmes, 1991; Kruglanski, 1996; Kunda, 1990; Weber, Malhotra, & Murnighan, 2001). For example, an undergraduate with macaroni and cheese in her cupboard and only lint in her wallet may be inclined to attend to characteristics of an experiment that pertain to monetary payoffs. The figure also suggests that situational cues can influence the aspects of an individual’s identity (e.g., starving student vs. social activist) that affect situational construal and the accessibility of particular event prototypes. This complex interaction between identity and objective situational factors yields an initial definition of the situation.

The definition of the situation is the heart of the appropriateness framework. Is this a cooperative situation or a competitive situation? Is this a group task or an individual task? Is this a game or a problem to be solved? Is this a one-shot dilemma or an iterated dilemma? Is this a dilemma that demands an anonymous or a public choice? The definition of the situation should answer at least some of these questions. The definition of the situation informs the person about the norms, expectations, rules, learned behaviors, skills, and possible strategies that are relevant. It should be, therefore, the proximal mediator of behavioral choice. Some situational categorizations will yield a constrained list of possible behaviors, while others may be more ambiguous and consequently elicit a broad array of possible behaviors (cf. Forgas, 1982).

The definition of the situation suggests a choice set. Choosing among the options, we contend, is a rule-directed exercise. However, many rules can be applied to the same choice. Imagine approaching a queue waiting to purchase tickets for a concert. You see the queue and understand the rules about waiting in lines. One rule is that you could “jump” the line if you have a friend closer to the head of the line. You may scrutinize the queue for friends. Failing to see anyone, you know that the appropriate action is to take your place and wait. Others are expected to do the same thing. It is the fair thing to do. If someone jumps the line, others have the right to scold or reject the person. The ethics of the line are presumably understood by all. If you are in a great hurry (say the line is to check in for a flight in an airport and you are perilously close to missing your flight) you

may ask permission of others to jump the line, and they may accommodate you. However, there is shared knowledge that it is wrong to race to the head of the line and to try to butt in.

Figure 1 introduces the impact of identity again between situational definition and rule selection because identity factors such as personal histories and value preferences are likely to inform the rule-selection process. A Quaker social activist is less likely than a professional boxing promoter, for example, to select “winners keepers losers weepers” as their guiding rule—even though they may note or concede that it is part of the choice set. Identity factors, therefore, help to sort through possible rules to apply to select the one or two that will drive behavioral choice.

### Shallow Processing and Rules

Many social psychologists have suggested that human behavior in social settings is often more likely to be driven by rules of thumb, heuristics, and habit than by deliberate utility-maximization (e.g., Bargh & Chartrand, 1999). Consistent with this argument, a growing body of evidence suggests that theories of human behavior that paint action and choice as considered, rational, deliberate, and strategic overemphasize conscious processes and capacities (e.g., Bargh & Chartrand, 1999; Gigerenzer & Todd, 1999; Gollwitzer, 1999). Indeed, there is a long history of social psychologists acknowledging low-energy, automatic processing as a regular determinant of behavior and behavioral choice (cf. S. E. Taylor, 1998).

Bargh and Chartrand (1999) have characterized the “lion’s share” of human action as nonconscious and automatic. Similarly, Gigerenzer and Todd (1999) provided evidence for the utility of using “fast and frugal heuristics” that do most of the heavy lifting accomplished by much more sophisticated decision-making algorithms. This is an important factor to consider when applying the appropriateness framework to social dilemmas. It suggests that the question “what does a person like me do in a situation like this?” is only consciously articulated in circumstances that evoke attentional and cognitive resources.

If, for example, you are a person who leaves your lights on all the time and runs your dishwasher daily, you may continue to do so even during an energy crisis without giving your behavior a second thought. This is selfish behavior in a common resource dilemma. You are more likely to articulate the question or one similar to it if something happens to intervene in the schematic represented in Figure 1, thereby making the step problematic rather than habitual or automatic. This could happen in a number of different ways, and the appropriateness framework helps define them. Something could prime your understanding of yourself as an environmentally conscious person (first identity step). You could experi-

ence rolling blackouts in your community (situational cues). A pamphlet on strategies for reducing power consumption could be delivered to your door (increasing the array of plausible, “appropriate” behaviors and rules to choose from). Your socially conscious teenage daughter could arrive home from school and brand you a selfish wastrel who thinks of nothing but your own creature comforts while ignoring the plight of others and the good of the community (introducing an identity crisis that may constrain rule selection).

We believe the step in the appropriateness framework that is most likely to involve shallow processing on average is the rule-selection step. This intuition is built on the logic of pattern-matching theories in social psychology (e.g., Forgas, 1982; Lalljee et al., 1992). We would expect most clearly categorized patterns to elicit a single “best” (or at least “most accessible”) rule—thereby minimizing the attention demanded by the rule-selection process. This kind of process is also conceptually consistent with the work of cognitive psychologists on behavioral scripts (e.g., Abelson, 1981), and social psychologists working in the area of mindful versus mindless processing (cf. Langer, 1989). However, there are at least three circumstances under which we think rule selection rises to a level of conscious deliberation.

First, conscious processing of rule selection might be necessary when two or more values within an individual are in conflict and both are salient. In times of resource shortage, for example, an individual may be attuned to the need to conserve the resource for the community and the competing desire to ensure one’s family members are well cared for. In parts of the world where food or potable water can be scarce, one can imagine such intrapersonal value conflicts.

Second, rule selection may not be automatic when people know there are clear social expectations in a given situation, however they do not know what they are. Such situations are likely in cross-cultural contexts or when boundaries of social class are spanned. For example, if you find yourself unexpectedly meeting the Queen or some other head of state, you may well know that there are clear rules and protocols that apply but be uncertain as to what they are.

Finally, if the definition of the situation is vague, ambiguous, or unpleasant, we would expect the rule-selection process to be a deliberate one. In such circumstances, actors may move on to considering the rules that might apply to a number of possible definitions of the situation in the hopes that considering the situation by rule interaction will make the appropriate (or at least comfortable) choice clearer. Research in the area of bystander behavior offers a good example of this. When people in experiments were alone and encountered situational stimuli that suggested their assistance might be needed by another, a high proportion offered assistance, whereas those in the experiments with

other participants were significantly less likely to help (cf. Latane & Darley, 1970). When participants were alone, the primary stimulus was another’s apparent need for help. When participants were in groups, the situation added the apparent concern, action, or inaction of others to the mix of stimuli, which, in turn, complicated the processing of what constituted “appropriate” behavior; the situation was more ambiguous.

As noted earlier, by assuming relatively shallow processing under some conditions and more deliberate processing under others, the appropriateness framework presented here is consistent with a growing body of dual-process theories in social psychology (cf. Smith & DeCoster, 1999). We assume that decision making within the appropriateness framework has dual-process characteristics.

### **Reviewing the Experimental Literature in Light of an Appropriateness Framework**

In our selective review of the experimental commons dilemma literature (Kopelman et al., 2002), we offered a classification of recent findings. Kopelman et al. first identified nine classes of independent variables that covered the majority of the experimental literature—social motives, gender, payoff structure, uncertainty, power and status, group size, communication, causes, and frames. We further categorized each class of independent variables as being either an individual difference variable or a situational factor. Situational factors were subdivided into task structure and perceptual factors. And finally, task structure was subdivided into independent variables related to the decision structure or the social structure of the dilemma. In this article, we use a modification of this classification framework (Figure 2) to guide our review. The primary alterations are the inclusion of personal history and personality under the identity (individual differences) category, the inclusion of “protocol of play” and “response options” under the decision structure category, and the inclusion of “group dynamics” under the social structure category.<sup>1</sup>

In each section we first review the literature and then address how the appropriateness framework might apply.

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<sup>1</sup>One category we have not included under the heading of identity is culture. We acknowledge that this is an important identity-based consideration and that some new work is being done in the area (e.g., Kopelman, 2003; Wade-Benzoni et al., 2002), however we do not review it here because of a relative dearth of empirical research examining this variable in social dilemma settings. However, we hope researchers will take a greater interest in such research in the future. (For a preliminary consideration of possible cultural dynamics in social dilemmas, see Brett & Kopelman, 2004.)

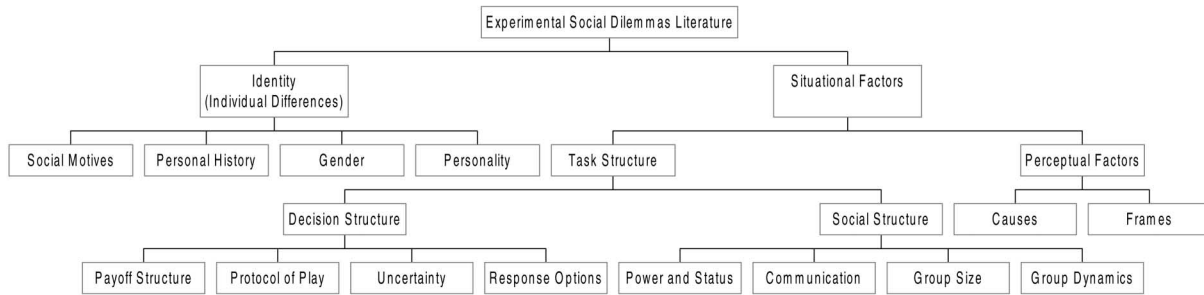


Figure 2. Classification of the social dilemma literature.

### Identity (Individual Differences)

Ordinary personology is inclined to attribute behavior to the enduring characteristics of others (Gilbert, 1998)—be they personality traits, knowledge, skills, or motives. Indeed, there is a history of researchers and theorists explaining social dilemma outcomes in terms of the interaction between parties with cooperative versus competitive dispositions (e.g., Kelley & Stahelski, 1970). Whereas the field of social psychology has placed empirically justified emphasis on the relative importance of situational factors over idiosyncratic personal factors (e.g., Ross & Nisbett, 1991), there is a growing appreciation of how individual differences can shape situational construal, and therefore behavior in social dilemmas (e.g., Kurzban & Houser, 2001; Liebrand, Jansen, Rijken, & Suhre, 1986). In the appropriateness framework, individual differences are identity factors that influence decision making.

### Social Motives

Social motives are sometimes referred to as social value orientations or social values. They are people’s relatively stable preferences with respect to their own and others’ outcomes in social dilemmas. Four motives have received greatest attention in the social dilemma literature (McClintock, 1972): individualism, competition, cooperation, and altruism. Individualism is the motivation to maximize one’s own outcomes. Competition is the motivation to maximize one’s outcomes relative to the outcomes of others. Cooperation is the motivation to maximize joint outcomes. And finally, altruism is defined as the motivation to maximize the outcomes of others. Those with individualistic and competitive motives are referred to as being “proself,” whereas those with cooperative and altruistic motives are referred to as being prosocial.

It is not surprising that those with prosocial motives have been found to be more cooperative in social dilemmas, whereas those with proself motives have been found to behave in a more selfish, competitive fashion.

In common resource dilemmas, for example, when there are conditions of scarcity those with proself motives harvest more of a shared resource for themselves than do those with prosocial motives (e.g., Kramer, McClintock, & Messick, 1986; Roch & Samuelson, 1997). Similarly, prosocial individuals are more inclined to commute using public transportation and express concern regarding their impact on the environment than are proself individuals (Van Vugt, Meertens, & Van Lange, 1995; Van Vugt, Van Lange, & Meertens, 1996).

As the appropriateness framework suggests, people’s social motives (identity factor) can play a role in construing what is appropriate in a given social context. For example, researchers have found that although dependence on another party is predictive of a willingness to make sacrifices in relation to that party, it is more predictive of sacrifices by proself individuals than it is of sacrifices by prosocial individuals (Van Lange, Agnew, Harinck, & Steemers, 1997). Prosocial individuals seem more inclined to make such sacrifices regardless of dependence and relational commitments. In other words, prosocial individuals are less likely to qualify their willingness to behave in other-regarding ways according to their investment or interest in a particular relationship. Similarly, Samuelson (1993) reported that competitive (proself) individuals tend to reject the appointment of superordinate authorities to help manage common resources regardless of the state of the resource, whereas cooperative (prosocial) individuals are willing to appoint such authorities in cases of extreme overuse.

A striking example of how social motives influence the definition of dilemma situations is the “might versus morality” effect. Liebrand and his colleagues (Liebrand et al., 1986) studied how individuals with different social motives interpreted cooperative and competitive behavior. People with prosocial motives tended to define behaviors in moral terms (right or wrong), whereas those with proself motives defined behaviors in terms of “might,” or “what works.” Prosocial individuals define rational action from the

perspective of the collective, that is, whatever is in the interest of the group constitutes rational action. Proself individuals, on the other hand, define rational action more egocentrically, that is, if it improves personal outcomes it constitutes rational action.

Liebrand et al.'s (1986) initial finding provoked a wave of further investigation. Prosocial individuals are more likely to attribute cooperative behavior to intelligence, whereas proself individuals are more likely to attribute such behavior to a lack of intelligence (Van Lange, Liebrand, & Kuhlman, 1990). Furthermore, prosocial individuals were found to expect more cooperation from honest others than dishonest others, whereas proself individuals made less qualified predictions based on this characteristic (Van Lange & Kuhlman, 1994). Meanwhile, proself individuals anticipated greater cooperation from unintelligent others than from intelligent others, and prosocial individuals did not distinguish their predictions based on others' intelligence.

The original might versus morality study (Liebrand et al., 1986) offered a strong endorsement of the need to consider identity factors such as social motives. Similar to Kelley and Stahelski (1970), they found that the behavior of cooperatively motivated individuals was behaviorally assimilated by those who behaved competitively. The desire to avoid being taken advantage of overwhelmed prosocial motives. This demonstrates how important it can be to take account of identity dynamics; if researchers were to focus exclusively on ultimate outcomes, they might miss important identity factors affecting how those outcomes come about—and how different parties might experience them.

### Personality

There is some evidence to suggest that prosocial behavior may be partly explained by individuals' tendencies to self-monitor. Strong cooperators, for example, have been found to score highly on measures of self-monitoring (Kurzban & Houser, *in press*). Furthermore, a number of studies have found that high self-monitors cooperate more in social dilemmas than low self-monitors (Boone, De Brabander, & van Witteloostuijn, 1999; Danheiser & Graziano, 1982; De Cremer, Snyder, & Dewitte, 2001). The presence of other people and the nature of experimental interactions among participants seem to affect high self-monitors' choices. The prospect of future interaction, for example, tends to increase how much high self-monitors choose to cooperate while leaving the choices of low self-monitors largely unaffected (e.g., Boone et al., 1999; De Cremer et al., 2001). We are not aware of any studies that seek to identify how much overlap there is between distributions of self-monitoring and social motives. Such research might help us better understand the distinctive populations encountered in the study of

social dilemmas and perhaps illuminate the contribution that relevant personality factors such as self-monitoring might contribute to understanding social dilemma dynamics.

### Gender

People seem to be naturally curious about the impact of gender on decision making. Folk theories abound, usually predicting that women are uniformly and predictably more cooperative than men. There have been a number of studies examining the relationship between gender and behavioral choice in social dilemmas. However, the observed effects have not been strong, and at times they have appeared contradictory—suggesting a complex relationship between gender and behavioral choice.

More women than men exhibit prosocial motives, whereas more men than women exhibit proself motives (Van Lange, De Bruin, Otten, & Joireman, 1997). In a related field, a meta-analysis of gender and competitiveness in negotiations revealed a tendency for women to be more cooperative than men (Walters, Stuhlmacher, & Meyer, 1998). However, this latter finding was qualified in important ways. The difference between the genders was reduced by constraints on the negotiations (e.g., limiting communication between parties), and women actually exhibited more competitive behaviors when facing a counterpart using a tit-for-tat strategy.

A number of studies have documented qualifications of the oversimplified assumption that women are more cooperative than men. For example, initially significant differences in the amount men and women contribute to the public good have been found to diminish over repeated rounds (Cadsby & Maynes, 1998). Stockard and her colleagues (Stockard, Van de Kragt, & Dodge, 1988) found that gender differences were overwhelmed by other situational factors when it came to predicting behavior, but that women were nonetheless more inclined than men to explain their behavior in cooperative, altruistic, and harmonious terms. In one study of single sex, four-person groups, male groups were found to make contributions to public goods at higher rates than female groups (Brown Kruse & Hummels, 1993), whereas another study found that all-female groups were more cooperative than all-male groups or mixed-gender groups (Nowell & Tinkler, 1994).

Using a prisoner's dilemma paradigm, Orbell, Dawes, and Schwartz-Shea (1994) discovered a pattern of results that provides evidence of people's general, naïve assumptions about the gender effect, and the complexity of determining gender's real impact. First, women as a group were trusted to cooperate more than men as a group. Yet when given the option of playing or not playing with particular others, this group-level

assessment of the genders' respective trustworthiness was not reflected in individuals' judgments of the likelihood that particular men or women would cooperate. And finally, perhaps ironically, there were no differences in cooperation rates between the men and women in their study.

If there is indeed a gender effect, it would seem to be rather weak in most social dilemma settings, and a good deal less predictive of behavior than other identity factors such as social motives and personal histories and experiences. Perhaps the most important thing to note about gender is that although it may not predict behavior in clear and consistent ways across situations, there is a dominant assumption about how it can be expected to affect behavior, and in certain contexts that may affect others' choices.

### Personal History

Although social learning has been offered as an explanation for various dilemma behaviors (e.g., Ledyard, 1995), relatively little attention has been focused on individuals' idiosyncratic personal histories and experiences as possible determinants of behavior in social dilemmas. Nonetheless, personal history and experiences are clearly among the identity factors that influence how dilemma situations are perceived and understood.

Silverstein and his colleagues (Silverstein, Cross, Brown, & Rachlin, 1998) ran a pair of prisoner's dilemma experiments in which experimenters "trained" participants in an initial phase. The training first involved uniform instruction regarding payoffs and procedures across conditions. Then, based on random assignment, the experimenter ran participants through practice rounds in which the experimenter played one of four strategies (always defect, always cooperate, random, and tit-for-tat). With the differential training experiences behind them, participants then played a real iterated prisoner's dilemma with other participants who had been trained using a tit-for-tat strategy. Although the influence of the experimenter's strategy during training had only a small effect, it is worth noting. Those who had encountered a tit-for-tat strategy in training cooperated slightly more during the real dilemma than those who had encountered the other strategies. Furthermore, when the tit-for-tat participants began playing the real dilemma, they started out cooperating more than their non-tit-for-tat counterparts. Although other structural factors ultimately overwhelmed the training/prior experience effect, this study nonetheless points to how personal history can shape the initial understanding of appropriate behavior in a new situation.

The effect of personal histories and experience in social dilemmas was more compellingly demonstrated in a study of the effects of intragroup challenges to es-

tablished operating norms (Bettenhausen & Murnighan, 1991). In this study, groups of participants played a disguised iterated prisoner's dilemma called The Truffle Purchasing Exercise:

Participants played the role of corporate purchasing agents seeking a limited supply of exclusive French truffles that were sold periodically during a short, unpredictable growing season. Only two firms bid for each supply. While each company needed the truffles, their products were different: the companies competed only for the critical truffle supply, not for retail sales. Each offered the single supplier a high or low price in each market period. If both bid high, they split the supply evenly and each made a small profit. If both bid low, they again split the supply but made a larger profit. The largest possible profit went to high bidders when the others bid low; these low bidders earned the lowest possible profit. (Bettenhausen & Murnighan, 1991, pp. 27–28)

Over two separate sessions, the researchers used confederates to help establish, with uniform success, either cooperative or competitive norms. In the third session, new two-person groups were formed without confederates. These groups were either homogeneous (both with cooperative experiences or both with competitive experience) or heterogeneous (one member with cooperative experience and the other with competitive experience). Pairs in which both participants had cooperative experiences behaved more cooperatively than those with heterogeneous experiences, or those in which both participants had competitive experiences. In heterogeneous pairings, a cooperative norm emerged more often than a competitive norm. Analyses indicated that prior experience shaped not only the nature of subsequent behavior but also the nature of expectations about how other parties would behave. The results of this study exemplify the potential of personal histories and experiences to shape understandings of a situation and consequent behavior; prior experience created "separate, opposite norms in groups facing the same task" (Bettenhausen & Murnighan, 1991, p. 33).

### Identity and the Definition of the Situation

The appropriateness framework suggests that identity factors play a pivotal role in how the situation is defined. The results presented here suggest that this is particularly true when individuals first encounter a new social dilemma. Individuals' social motives, personality dispositions, and experiences with similar situations all shape the cues to which they attend, and how they come to understand the situations they face (Kelley & Thibaut, 1978). Rational choice models tend to account for such differences in terms of differential levels of understanding (e.g., cooperative people

would behave more competitively if they really understood the true nature of the task), or alternatively in terms of differing utility functions. Short of characterizing prosocial people as stupid, it is difficult to account for sustained levels of cooperation by prosocial individuals over time in terms of understanding. Somewhat more plausible is the notion that cooperative people value actions and outcomes differently (utility function) than competitive people.

### Situational Factors

The appropriateness framework emphasizes the interaction between identity and situational cues in the definition of a situation and what, therefore, constitutes the set of possible appropriate actions. The Bettenhausen and Murnighan truffle study (1991) offers evidence of this interaction and a transition to the consideration of situational factors. Participants faced a fourth round during which groups were exposed to changes in the payoff structure of the exercise that either represented a strong challenge, a moderate challenge, or no challenge to the groups' prevailing norms (i.e., a group with cooperative norms might face a competitive challenge, and vice versa). Whereas the researchers found that cooperative interpersonal challenges were more persuasive than appeals to competition in norm formation, strong competitive structural challenges yielded the greatest effects in changing established norms. They concluded that the best account for their data was a joint-effects model with roughly equal effects of experience and task structure.

### Task Structure

The categorical framework applied here (Figure 2) identifies task structure as a subcategory of situational factors that is, itself, further subdivided into decision structure and social structure. The decision structure of a social dilemma relates to the payoffs associated with the situation, the number and nature of the choices to be made, and the level of certainty or uncertainty that applies. Decision structure is about the task itself. The social structure, on the other hand, pertains to the social context of the task. There are far too many conceivable social structure factors to enumerate completely. Instead, we focus on four that have been the subject of considerable experimental investigation to date: power and status, communication, group size, and group dynamics. The appropriateness framework views task structure factors as situational cues that are used by individuals to define the nature of the social dilemma or situation that they face.

### Decision Structure

**Payoff structure.** There is a long history of research regarding the effects of adjustments in the material payoff structure of a social dilemma (see Van Lange, Liebrand, Messick, & Wilke, 1992, pp. 14–15 for a concise review). Not surprisingly, increasing relative incentives for cooperation generally increases cooperation, whereas increasing relative incentives for competition generally increases competition (e.g., Bell, Petersen, & Hautaluoma, 1989). This is in keeping with rational choice models and popular and psychological understandings of human behavior. That which is rewarded is more likely to be done; that which is punished is less likely to be done. Rewards and punishments, however, need not be material in nature, and this is at least somewhat at odds with the general spirit of the EU paradigm. For example, in an attempt to understand behavior that seems contrary to game theoretic predictions, Andreoni (1990/1995) suggested that some people experience a “warm glow” when they cooperate, and that this warm glow has an incentive effect. For this review, we focus primarily on nonmaterial/nonmonetary payoffs and some of the interactions that occur with structural features of a social dilemma.

Using a public goods dilemma, Gächter and Fehr (1999) tested whether social rewards alone could overcome free-rider problems. Pretesting revealed that, as predicted, their participants expected to receive approval from others in proportion to the amount of their endowments that they contributed to the public good. In the study proper, participants were assigned to one of four conditions: (a) an anonymous condition, (b) a social exchange condition in which participants knew they would interact after the experimental exercise began, (c) a group identity condition in which participants interacted before the exercise but knew they would not encounter one another after the game, and (d) a condition in which participants met before the game and met after the exercise. Neither the social exchange nor the group identity conditions had cooperation levels greater than the control group (anonymous condition). However, those who interacted before and after the exercise (Condition 4) did have significantly higher levels of contribution than the control group. “If the social distance between subjects is somewhat reduced by allowing the creation of a group identity and of forming weak social ties, approval incentives give rise to a large and significant reduction in free-riding” (pp. 361–362).

Yamagishi's (1988) study of sanctioning systems in a public goods dilemma faced by American and Japanese participants offers a revealing set of results from a logic of appropriateness perspective. When there was no sanctioning system in a public goods experiment, American participants cooperated more than their Japanese counterparts. This finding runs counter to com-

monplace intuitions that collectivist cultures are made up of individuals who are more motivated to cooperate than those from individualistic cultures. Yamagishi, borrowing from Taylor (1976), suggested that the presence of a strong sanctioning system can undermine the basis for voluntary cooperation. He argued that the reality of pervasive, intensive mutual monitoring and clear social sanctions in Japan make the Japanese trust the sanctioning system, rather than the individuals with whom they interact. This point was bolstered by questionnaire data that revealed a higher level of interpersonal trust among American participants than among Japanese participants.

Sometimes the nature of the payoffs themselves can invoke differential responses. Pillutla and Chen (1999) found that their participants behaved more competitively when making contribution decisions related to an economic public good (i.e., a joint investment field) and more cooperatively when making contribution decisions related to a noneconomic public good (i.e., a social event). They explain their results in terms of the implicit norms that each context invokes.

How does an appropriateness framework account for these payoff results? First, different decision structures appear to invoke different situational definitions. In the case of Gächter and Fehr (1999), for example, the procedure of participants meeting before and after the task seemed to invoke a definition of the situation as a group task rather than an individual task and lead to the selection of different, more cooperative, behavioral rules. Their results, however, also support the role of identity in situational definition; even in the condition in which participants met before and after the task, a minority of participants behaved competitively and exploited the endgame.

Yamagishi's (1988) study also supports the significant role of identity's interaction with situational cues to define the situation. In this study, the behavior of Japanese participants might be well described by a rational choice model; however, the contrasting findings between Japanese and American participants are intractable using a rational choice framework. The appropriateness framework, however, can potentially account for the observed interaction. An appropriateness account would suggest that Japanese participants bring to the situation long histories of relying on sanctioning systems to create a sense of security in cooperation (identity) that interact with the lack of such a sanctioning system (situational cue) to define the situation as a risky one. Seeing the situation as risky, they invoke a defensive heuristic that, in a public goods dilemma, is to hold onto their endowments.

**Uncertainty.** The last 10 years have seen a wave of research into the major and subtle effects of uncertainty on behavior in social dilemmas. This research has been conducted not only in psychology but across the

social sciences (e.g., Agrawal, 2002). Even such long-standing conclusions as the basic efficacy of tit for tat have been shown to be compromised or qualified by the presence of uncertainty (e.g., Bendor, Kramer, & Stout, 1991; Kramer, Wei, & Bendor, 2001).

In commons dilemmas, uncertainty about the size of a resource has been found to increase (a) harvesting by individuals, (b) how much others are expected to harvest, (c) estimates of the size of the common resource pool, and (d) variability in the amount people harvest (e.g., Budescu, Rapoport, & Suleiman, 1990; Budescu, Suleiman, & Rapoport, 1995; Gustafsson, Biel, & Gaerling, 1999). Similarly, when there is uncertainty about the rate at which a common resource regenerates, harvesting rates go up (Hine & Gifford, 1996).

There have been several hypotheses as to why resource uncertainty results in lower levels of cooperation. A substantial program of research by Gustafsson, Biel, and Gaerling concludes that the most tenable explanation offered to date is a tendency of individuals to simply be optimistic about the size of resources that are of value to them (see Gaerling, Gustafsson, & Biel, 1999 for an excellent summary).

However, research by Roch and Samuelson (1997) points to the role of identity interactions with situational cues. They found that social motives moderated the effect of uncertainty on harvesting behavior. Specifically, they found that, under conditions of high uncertainty, cooperators harvested less than noncooperators and held their harvests constant, whereas noncooperators increased their harvests from a common resource. The researchers posited that the effect of social motives was a consequence of "influencing the scanning and processing of goal-relevant [situational] cues in [the] decision environment" (p. 221).

Van Dijk and his colleagues found that the general view of uncertainty leading to competitive behavior was in need of additional important qualification (van Dijk, Wilke, Wilke, & Metman, 1999). This understanding was based primarily on research regarding behavior in symmetric common resource dilemmas. Drawing data from two experiments, the researchers concluded that the effects of uncertainty depend on the kind of dilemma (in this case common resource vs. public goods), the nature of asymmetries, and the kind of uncertainty encountered. In general, people used certain rather than uncertain information to select their coordination rule (i.e., equal division, equal proportions, or equal division of outcomes). Consequently, the authors advise "that in order to predict how uncertainty may affect choice behavior, one should first analyze what information group members use under conditions of environmental certainty" (p. 130).

In related work, Wit and Wilke (1998) found that environmental uncertainty (varying the size of the

range from which the provision point for a step-level public good would be selected) led to decreased cooperation under circumstances of high social uncertainty (the range of most frequently occurring contributions by earlier participants) but not under circumstances of low social uncertainty (narrower range). This latter study highlights how normative social contexts (i.e., highly variable or highly constrained histories of choice by others) can influence decisions in social dilemmas. When people's previous choices were narrowly defined, the tendency of environmental uncertainty to lead to self-interested behavior was moderated. This is one example of the kind of finding for which the appropriateness framework offers a more compelling account than a traditional rational choice or EU model.

In light of the appropriateness framework, these collected findings raise a pair of additional interesting empirical questions. First, does uncertainty, on its own, invoke a more conscious and deliberate selection of rules, or do people simply apply an optimistic estimate heuristic when the resource is a valued one? Research by Hsee (1995) suggests that, in general, self-interest may dominate in circumstances of uncertainty with respect to task-relevant criteria. Furthermore, Gaerling et al. (1999) noted that it is not possible to infer from their program of research the degree of intentionality in the "outcome-desirability bias." Second, in light of Roch and Samuelson (1997), is it possible that those with competitive social motives apply such a rule automatically under conditions of uncertainty, whereas those with cooperative social motives respond to uncertainty by becoming deliberate in their processing? Studies involving response-time may help to tease this puzzle apart in the future.

**Protocols of play.** Another interesting experimental finding that has attracted research attention has to do with the temporal order in which people harvest from a common resource pool. Budescu, Au, and Chen (1997) called this aspect of the decision problem the "protocol of play." One protocol—the standard one in many early studies—is the *simultaneous protocol*. In the simultaneous protocol, all players make their harvest decisions simultaneously with no knowledge of the requests of the other players. What the players know is the pool size, possibly with some uncertainty, and the number of people with whom the pool will be shared. A second protocol of play is that the players are assigned (in some way) sequential positions—first, second, and so forth—and they make their decisions sequentially, knowing what position they occupy and also knowing what the size of the remaining pool is when they make their harvest decisions. This is the *sequential protocol*. In the sequential protocol, there is a clear position effect. The requests of those who come earlier in the sequence tend to be larger than those of

the players who come later (Budescu, Rapoport, & Suleiman, 1992; Rapoport, Budescu, & Suleiman, 1993). It is as if there is an advantage associated with being one of the earlier players to withdraw resources from the pool. The interpretation of this effect is that those who play first feel entitled to take more than they would if they came later. Players who come later must make allowances for the decisions that were made by those who came earlier.

An interesting variant of this phenomenon comes from the *positional protocol*. In this protocol, players are assigned sequential positions in which they make their decisions, however they have no knowledge of the size of the remaining pool. In this case, first movers cannot depend on those who come later to adapt to larger initial harvests because the magnitude of the early harvests is not known. This protocol permits three hypotheses about decision making. First, because sequential pool-size information is unavailable, there should be no position effect—the results should look similar to the simultaneous protocol. Second, if players all expect the position effect to exist, then they will act in accordance with it and create the effect, and the results should look similar to the sequential protocol. There may be ambiguity and uncertainty about the early players, even for the early players, with some thinking that the appropriate model is the simultaneous protocol and others thinking that the appropriate model is the sequential protocol. Thus, a third hypothesis is that the results should fall somewhere between the two pure benchmarks. Budescu and his colleagues (Budescu et al., 1995; Budescu et al., 1997) confirmed this third hypothesis.

Finally, Budescu et al. (1997) described a *cumulative protocol* in which a player knows only how much of the resource remains but does not know his or her serial position. (Because players know the total group size and the average pool size they can make an inference about their serial position from the pool size.) With the methodology used in this study, there was little difference between this protocol and the sequential protocol.

The interesting empirical riddle posed by research on protocols of play is this: Why does the positional protocol, which is formally identical to the simultaneous protocol, show a position effect similar to the sequential protocol? Two suggestions have been offered (e.g., Budescu et al., 1997). First, the knowledge of position may provide a "coordinating device" that allows players to share expectations and deal with the dilemma effectively. The second suggestion is that the effect reflects the operation of a "social decision heuristic" of the sort discussed by Allison and Messick (1990). A heuristic of this sort is a cognitive rule that is evoked by a social situation. In the simultaneous protocol, where there is no way to differentiate among players, the heuristic that is likely to be evoked is an "equal-

ity” heuristic (Messick & Allison, 1993). This heuristic requires that one divide the likely pool size by the number of participants to calculate an equal share. The sequential protocol may evoke a different heuristic such as the first-come, first-served rule that governs social behavior in queues. People early in the queue get better options than people later in the queue. The positional protocol is ambiguous in that it could evoke either or both of these heuristics. If this interpretation is correct, variables that accentuate one interpretation over the other should also have an impact on the size of the position effect with the positional protocol. Some of the factors that have been shown to influence (at least the first mover’s) behavior are group size (Allison, McQueen, & Schaerfl, 1992; Budescu et al., 1995), the divisibility of the resource (Allison & Messick, 1990), the reason behind the position assignment (Samuelson & Allison, 1994), the title (leader, for instance, or supervisor) associated with the first mover (Samuelson & Allison, 1994), and the degree of uncertainty about the size of the pool (Budescu et al., 1995).

There is no incompatibility between viewing the position effect as a coordinating device, on one hand, and as a social decision heuristic on the other. Many heuristics do coordinate to the extent that they are shared. Traffic on the right has priority. Take turns passing through intersections. These are commonly held rules or heuristics that effectively coordinate action. Within the appropriateness framework, such heuristics are the rules that are applied as a result of the process of defining the situation. The suggestion that the positional protocol is ambiguous and may evoke more than one heuristic raises the possibility that the positional protocol evokes more conscious and deliberate processing than the sequential or simultaneous protocols. Investigation of this possibility might help to better understand how automatic or shallow situational processing and rule selection are in social dilemmas.

**Response options.** Other important aspects of a dilemma’s decision structure are the behavioral choices available. What options are open to the people facing the dilemma? The vast majority of experimental social dilemma research has been done in “forced play” contexts. In other words, participants in social dilemma experiments generally have no choice but to play with the counterparts they are assigned. Although such constraints are reflective of the majority of experimental dilemma situations, they represent the minority of real world dilemmas. As Orbell and Dawes (1993) noted, “outside of prisons and other total institutions (e.g., mental hospitals, prep schools, ghettos, and the military), humans usually don’t have to interact with each other...” (p. 787). Furthermore, “even the most long-lasting relationships such as

marriage and friendship ... entail possibilities of termination by voluntary moves of the people involved” (Hayashi & Yamagishi, 1998, p. 227). These quotations identify two typical features of most real-world social dilemmas: People can generally choose whether to play, and if they play, they usually have some influence over the selection of counterparts with whom they interact.

Although a great deal more remains to be done in this area, recent research offers some insight into the impact of offering parties to a dilemma a larger palette of behavioral choices. Drawing on earlier experimental work using the prisoners’ dilemma paradigm, Orbell and Dawes (1991) offered a theory-driven account of the “cooperators’ advantage” in situations in which parties can choose to play or not play. Because cooperators have higher estimates of the likelihood that others will cooperate than do noncooperators, cooperators should be more likely to play in such situations, to encounter other cooperators playing, and therefore reap superior returns. Noncooperators, on the other hand, should opt not to play given their pessimistic estimates of the likelihood that they will encounter cooperation. Building on their initial model, Orbell and Dawes (1993) later reported that the freedom to choose whether to play improves aggregate outcomes for groups (social welfare) by increasing the frequency of beneficial cooperate-cooperate pairings. The probability of cooperators encountering one another in voluntary play also improved their outcomes relative to noncooperators.

In the spirit of Axelrod’s (1984) groundbreaking computer tournaments, Hayashi and Yamagishi (1998) competitively tested a collection of programmed strategies in a prisoners’ dilemma setting in which parties could choose with whom they would play. More interesting, strategies that performed well in such an environment demonstrated considerable trust in strangers. In fact, the winning strategy was unconditionally cooperative—with a selective eye for new partners that had yielded positive outcomes for it in the past. The winning strategy would never betray a partner, however it coolly remained focused on its own outcomes without becoming enmeshed in a single relationship. The general trust demonstrated by the best performing strategies seemed to play “the role of emancipating people from the confinement of existing relationships by providing booster power for launching them from the security of old relationships into the unknown world of opportunities” (p. 287).

The research reviewed in this section emphasizes the role of factors that may predispose people to take risks in social dilemmas. Orbell and Dawes’ work (1993) suggests the importance of social motives in such risk taking. Hayashi and Yamagishi (1998) pointed to general trust. However, it seems that the probability of acting on such identity-based predispo-

sitions to take cooperative risks (e.g., prosocial motives or general trust) is significantly increased (or in the case of computer simulations, rewarded) by situational parameters that minimize the long-term risks. The response options available to participants (or programmed strategies) made it possible to sanction an offending party by withdrawing, thereby minimizing losses, and possibly even going in search of a new, more cooperative partner.

### Social Structure

**Power and status.** Under the heading of power and status, we highlight a handful of interesting findings related to leadership, power asymmetries, and justifications of deviant behavior.

Since the early days of formal social dilemma research, appointing a leader has been offered as a possible solution to social dilemmas (Hardin, 1968). A significant body of experimental research has since investigated the circumstances under which leaders are appointed. For example, people are more likely to appoint leaders when a common resource is being overused (D. M. Messick et al., 1983; Rutte & Wilke, 1984), and when managing a common resource is perceived to be a difficult task (Samuelson, 1991). This suggests that the appointment of a leader is a solution to a problem that people apply in particular kinds of situations—when there is a crisis, or when the difficulty of a challenge makes the possibility of a crisis seem imminent.

Leaders themselves, however, also constitute situational cues—aspects of the environment worthy of evaluation and likely to help define the nature of the situation. Experimental evidence tells us, perhaps not surprisingly, that followers endorse their leaders when their leaders are successful (e.g., Wit & Wilke, 1988; Wit, Wilke, & Van Dijk, 1989). Leaders tend to get more credit for their ability when they face a predictable environment than when they face an unpredictable environment, even though their failures are equally likely to be attributed to their ability (or lack thereof) regardless of whether the environment is predictable or unpredictable (Wit et al., 1989).

Wit and Wilke (1990) offered a provocative set of findings from the perspective of how identity factors shape the response to situational cues where leadership is concerned. In Wit and Wilke's study, participants were given the role of chemical company managers who had to make a choice between storing waste and treating waste. Storing waste was in the company's short-term financial interests, whereas treating waste was in the long-term interests of the community. As in the real world, leaders were the source of incentives and sanctions, and in this particular study, one half the participants encountered an incentive or sanction system administered by the parent company whereas the

other half encountered a system administered by the government. For 124 undergraduate students, rewards and punishments were equally effective regardless of whether they were administered by the parent company or the government. For 239 real-world managers, on the other hand, parent company rewards were very effective in focusing them on long-term considerations, whereas rewards offered by a government source were actually counterproductive. The experiences people bring to new dilemmas even affect how they assess equivalent actions coming from different sources of power or leadership. Findings such as this one are difficult to accommodate within a rational choice framework, in which a reward is a reward, regardless of who offers it.

Sometimes the decision people face in a social dilemma is what kind of leader to select. Van Vugt and De Cremer (1999) demonstrated that the level of group identification affects the kind of leader deemed most appropriate, and the differential effectiveness of leader types. All participants in their study preferred to select leaders who were legitimate—for example, elected, internal—however this was particularly true when individuals identified strongly with their group. Strong identification made the democratic selection from within the appropriate choice. In a second study, the researchers found that when group identification was low an instrumental leader who would punish free riders was more effective than a leader who instead focused on building positive relationships within the group. When group identification was high, both kinds of leaders were equally effective.

In most settings, and especially in organizational settings, one can assume that there are frequent power asymmetries in working groups. Building on a stream of research regarding coalition formation in groups (Mannix, 1991; Mannix & White, 1992), Mannix (1993) used an organizational resource distribution task (a commons dilemma) to examine the impact of power imbalance versus power balance on coalition formation and group outcomes. In her study, groups had five members, the option of forming coalitions, and were either composed of individuals with balanced power or individuals with unequal power.

Mannix (1993) found that groups with power imbalances were more likely to start the exercise by forming coalitions, made less efficient use of the available resources, included fewer people in their resource distributions, and had to expend more effort to reach agreements. In addition, those in groups with a power imbalance were, understandably, more likely to see the group as competitive, and more likely to seek to retaliate against other group members. Mannix explained her results in terms of the difficulties group members have focusing on mutual gains in groups with power imbalances; they instead focus on protecting their own interests. Relative power imbalance, then, seems to cue

individuals to define the social dilemma as a competitive situation, rather than a group task.<sup>2</sup> People may, in general, have experienced such situations of imbalance as competitive in their pasts and therefore readily invoke competitive rules based on their personal histories. Indeed, four decades ago Emerson (1962) noted that people experience power imbalances as fundamentally aversive, and he identified coalition formation as one of a limited number of strategies available to redress the experience of imbalance. Because coalitions appear inefficient in social dilemmas, Mannix offered another solution. She suggested that organizations can try to balance power in groups by selecting people from the same organizational or social stratum, thereby reducing the likelihood of individuals feeling threatened by one another and forming coalitions defensively.

Massey, Freeman, and Zelditch (1997) reported a series of interesting findings concerning the effects of different kinds of justifications in social dilemmas. Justifications are defined as taking responsibility for an act but denying that the action was wrong or inappropriate. As one would predict using an appropriateness framework, justifications can be of pivotal significance in how social dilemmas play out. A successful justification involves accepting that something that seemed a violation of social norms or reasonable expectations was, in fact, acceptable. A justification asks others to redefine their understandings about the norms that govern a given situation and the rules that should be applied.

The researchers found that offenders who had higher status than other group members (a Ph.D. in resource management in this case) were judged to have acted less egregiously when they offered valid justifications, or justifications that were at least ambiguous in terms of their validity. Status had its greatest positive impact for those offering ambiguously valid justifications. However, high-status individuals were judged more harshly than anyone if the justifications of their offending actions were invalid.

Furthermore, offending individuals with higher power than their group members were judged publicly to have acted more appropriately than those with equivalent power to their group members. However, power had no salutary effect on private judgments of behavioral appropriateness. Finally, when offending individuals were high in status and in power, this had a salutary effect on public and private judgments of their behavior's appropriateness. These findings suggest that the power and status of actors—even deviant actors—can be powerful situational cues in the definition

of the norms that should apply in a social dilemma. Furthermore, it is worth noting that power and status were operationalized relative to the power and status of those making the judgments, reinforcing the significance of the identity/situation interaction.

To summarize, the power and status literature offers evidence that is supportive of an appropriateness framework being applied to decision making in social dilemmas. The specifics of a situation elicit different kinds of leadership solutions as a function of social motives (e.g., Roch & Samuelson, 1997). Situational factors shape how leadership skills are assessed (e.g., Wit et al., 1989), and the kind of leader that people favor (Van Vugt & De Cremer, 1999). The source of leadership can also shape how different people understand the same situation (e.g., Wit & Wilke, 1990). In two structurally identical situations, rational choice models would anticipate identical choices. The appropriateness framework, on the other hand, anticipates that superficial features of the situation can lead to fundamentally different understandings, and therefore markedly different choices.

**Group size.** One of the longest standing assumptions in social dilemma research is that small groups are better able to establish and sustain cooperation than larger groups (e.g., Agrawal, 2002; Dawes, 1980). Only in the past 10 years, however, has compelling work been done on the mechanisms that might explain the small group effect. Kerr (1989) hypothesized that work on self-efficacy could provide a key insight. Self-efficacy is an individual's belief in her or his capacity to act effectively to achieve a particular outcome (Bandura, 1986). The experience of self-efficacy is not necessarily the same as the objective capacity of an individual to achieve an outcome. In a step-level public goods dilemma in which contributions to the public good must reach a certain level for the public good to be achieved, for example, there is an objectively discernable capacity for each individual to make a difference. Kerr demonstrated that even when group size had no objective impact on the ability of individuals to make a difference, participants still felt more self-efficacious—more able to personally make a difference in the group's outcome—when they were in smaller groups than when they were in larger groups.

In the final experiment in a series of three, Kerr (1989) measured individuals' assessments of collective efficacy, or people's beliefs that their groups were capable of succeeding at their task. Group size had no effect on such assessments when the provision point (proportion of group members that needed to contribute to achieve the public good) was high (67%). When the provision point was lower (33%), however, participants perceived smaller groups to be more efficacious than large groups. More striking, even when the opposite was objectively true, (i.e., members of larger

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<sup>2</sup>An alternative, or complementary interpretation in light of our discussion of rules is that the application of more cooperative rules and heuristics (e.g., equal division of resources) is more difficult in situations with power and status differences. There is a set of potentially contentious contingencies, for example, about how one would determine equality in such situations.

groups could be more efficacious) participants persisted in their beliefs that smaller groups were better. Consistent with Kerr's (1989) data, Seijts & Latham (2000) reported that members of seven-person groups were more likely to set greedy personal goals than were members of three-person groups, and similarly had lower estimates of collective efficacy and lower outcome expectancies. Seijts, Latham, and Whyte (2000) found that smaller groups had higher collective efficacy than larger groups.

More interesting, it was only in his third study that Kerr (1989) actually found group-size effects on cooperative behavior. In an attempt to make sense of such complexities, Kerr proposed that smaller groups not only increase participants' sense of the potential efficacy of their own contributions but also increase assessments of the potential efficacy of others' contributions—thereby encouraging free riding. The temptation to free ride may have been particularly great in Kerr's study because the paradigm minimized the interaction and identifiability of group members.

Kerr's (1989) explanation for these "illusions of efficacy" is consistent with the dual-process assumptions of the appropriateness framework as it is presented here. He suggested that the illusions are attributable to "familiar judgmental heuristics, involving an overgeneralization of experience in groups of varying sizes" (p. 287). People, the argument goes, generally experience small groups as more effective, and in the absence of an attention-grabbing reason to believe otherwise, they use these experiences to define the situation they face. In small groups, they are generally more likely to define cooperative goals as attainable. However, the lack of significant findings in the first two studies, and Kerr's proposed explanation, begs an appropriateness framework-driven question of whether prosocial individuals understand small groups as prime opportunities for free riding, whereas prosocial individuals see it as a more opportune context in which to make contributions.

It may be that people generally experience members of small groups to be more accountable to their fellow group members than those of larger groups. This could flow from the norms that are assumed to guide people's behaviors in such situations. Allison and his colleagues, for example, found that members of small groups are more motivated to use the equal division of resources as a distribution rule than are members of large groups (Allison et al., 1992).

Some experimental economists have disputed the general assertion that a group's capacity to achieve the optimal level of a public good is "inversely related to group size" (Isaac et al., 1994, p. 1). In fact, in their studies they found that under certain conditions, groups of 40 and 100 were able to more efficiently provide a public good than were groups of 4 and 10. How large and small groups differ appears to be a consequence, at least in part, of "marginal per capita returns"

(MPCR) from the public good (or group account). "The marginal per capita return from the group account ... is defined as the ratio of benefits to costs for moving a single token from the individual to the group account" (p. 3). When the MPCR was .30, the larger groups were more efficient in providing public goods (higher contributions to the group account) than the smaller groups. However, when the MPCR was .75, there was no significant difference in efficiency attributable to group size. Specifically, with a higher MPCR the contributions made in the smaller groups rose to the level attained by larger groups under conditions with a lower MPCR.

In the face of the failure of standard economic predictions, Isaac et al. (1994) offered "an asymmetric, forward-looking, non-binary approach" (p. 23) to the data that focuses on individuals' hypothesized interests in signaling:

This approach is composed of three principal components: (1) the assumption that individual *i* believes his decisions have signaling content to others; (2) a benchmark earnings level for measuring the success of signaling; and (3) the formulation of a subjective probability function for evaluating the likelihood of success. (p. 23)

Assume, for example, that people are interested in ensuring that at the end of each round they earn as much as they would have if they had not contributed to the public good. Isaac et al. (1994) argued that people then assess the probability that their actions will have sufficient signaling strength to elicit per capita contributions from others that will result in achievement of their benchmark for success. If people act in this way, MPCR has an important and intuitive role to play in predicting outcomes. Holding MPCR constant, the larger the group the lower the probability one must assign to each other group member responding to cooperative signals to achieve the personal success benchmark. Furthermore, the lower the MPCR, the higher the probability one must assign to others' contributions to achieve a personal success benchmark. This might explain why people in large groups would contribute more with a low MPCR, and why differences between large and small groups would disappear as MPCR rises.

There is, however, another plausible explanation worth considering based on the same mathematical derivations: that people establish a benchmark—or experience a threshold—for reciprocity, rather than for assessing the success or failure of cooperative signaling. In other words, people may experience a psychological need to reciprocate when they reach a certain level of enrichment as the result of others' contributions. Additional research is required to determine which of these explanations provides a more accurate

description of people's decision making. Furthermore, as the appropriateness framework suggests, people may differ systematically in the way they arrive at the same decisions; some may focus on the success of signaling whereas others are more attuned to issues of reciprocity. In either case, the findings demonstrate that interactions among key situational cues can be as important in the definition of a situation as interactions between situational and identity factors.

Contrasting Kerr's (1989) findings with those of Isaac et al. (1994) highlights a potentially pivotal contingency in assessing the effect of group size on cooperation: the nature of the public good. Kerr's research used a step-level public good; everyone was rewarded if the "provision point" was reached. Isaac and his colleagues, on the other hand, utilized a continuous payoff paradigm. Given the opposing findings, this distinction seems significant. It is not clear, for example, how one would operationalize efficacy (except in the most subjective of ways) in a continuous payoff environment.

Group size is clearly a salient situational cue that has noteworthy effects on the conclusions people reach about appropriate behavior in social dilemmas. However, as the appropriateness framework anticipates, it is also clear that it is a cue that is open to many possible construals, and that more research into the mechanisms that drive group size effects is merited.

**Communication.** Another well-replicated finding in the social dilemmas literature is that communication among participants results in higher levels of cooperation (e.g., Dawes, McTavish, & Shaklee, 1977). Systematic investigations by many researchers pointed to the conclusion that all but two explanations for the communication effect were insufficient: (a) communication enhances group identity and/or solidarity and (b) communication elicits commitments to cooperate (Dawes, van de Kragt, & Orbell, 1990).

Kerr and Kaufman-Gilliland (1994) compared these two explanations. Although groups that communicated with one another about a public good did express a greater sense of group identity, and group identity was found to explain some variation in the results, the identity explanation was found to be insufficient. The commitment explanation proved more powerful. The researchers found that groups that communicated with one another generated behavioral commitments, and that most participants followed through with such commitments.

Bouas and Komorita (1996) extended these findings. Their results led them to agree that group identity enhancement was an insufficient explanation, and that commitments offered a more satisfactory explanatory mechanism. However, whereas Kerr and Kaufman-Gilliland (1994) investigated the effect of universal consensus commitments, Bouas and Komorita (1996) found that a less restrictive or ex-

treme degree of consensus was also sufficient to elicit similar cooperative effects.

One of the provocative aspects of Kerr and Kaufman-Gilliland's (1994) results was that anonymity regarding individual participants' contribution decisions had no effect on their decisions. In other words, the participants whose decisions were hidden from their fellow group members made the same kinds of contributions as those whose choices were transparent to their fellow group members. Did participants in their anonymous condition really feel anonymous? In the original study, participants might have believed the experimenters would know whether they had cheated on their commitments—thereby introducing the experience of social monitoring. If so, then the cooperative behavior in the anonymous condition might have been attributable to dominant social norms regarding follow-through on commitments.

In a follow-up study, however, Kerr and his colleagues (Kerr, Garst, Lewandowski, & Harris, 1997) ensured that those in the anonymous condition felt no fear of effective monitoring by anyone else; the experimenter's videotape was publicly mangled beyond repair after communication but before decision making. Even under such circumstances, people still honored their commitments. The results of two experiments converge on the conclusion that those who enter into cooperative commitments during periods of discussion seem driven by internalized personal norms—"that still, small voice"—rather than the fear of reprisal attached to external social norms. (See Murnighan, Oesch, & Pillutla, 2001, for a theory of self-impression management based on similar data.)

However, once again there is evidence that identity factors interact with situational cues in defining appropriate behavior. Whereas the vast majority of participants honored their commitments under conditions of anonymity, 32% did not. For some individuals, the anonymous conditions were more likely to help define the situation as an opportunity for exploitation than the making of a commitment was to define it as a situation to be guided by a promise.

Communication studies, by their nature, are highly social. They are, therefore, precisely the kinds of situations in which we would expect the appropriateness framework to offer a more compelling account of observed behavior than an EU or rational choice model. That is clearly the case. How would a rational choice model account for cooperative behavior in an anonymous interaction with a fixed endpoint? To make sense of such behavior, a situational definition that invokes guiding social norms is necessary.

**Group dynamics.** An increasingly important stream of experimental research acknowledges that group associations and identifications (or the absence of them) are important social features of many social

dilemmas, and that individuals behave differently in groups than they do alone.

Group identification can be powerful, as demonstrated in an experiment by Kramer and Brewer (1986). Two groups of three participants were harvesting a common resource. Indication that the resource was being rapidly depleted by members of an individual's own group prompted the individual to compensate for the fellow group member by harvesting less. If the offending individual(s) were members of the other group, participants increased their harvests.

As Campbell (1965), Sherif (1966), and others suggested decades ago, intergroup competition can improve within-group cooperation. Employing a within-subjects design, Erev, Bornstein, and Galili (1993) conducted a field experiment involving high school boys picking produce (an orange grove dilemma). When the boys were rewarded based on their personal performance they picked 30% more fruit than they did when they were rewarded based on their group's performance. In conditions of collective rewards, there was a greater free-rider problem. However, the 30% loss of productivity disappeared when there was between-group competition. Also worth noting was the fact that the more similar the other group was, the more effective the competition in motivating performance.

In the Erev et al. study (1993), the public good was conceptualized as endogenous to the group; the behavior of interest was within-group cooperation. What happens when groups are discrete parties to the same social dilemma? Insko, Schopler, and their colleagues invested over a decade in careful exploration of an important and provocative finding using the prisoners' dilemma paradigm: Groups interacting with other groups are more competitive than individuals interacting with other individuals (see Schopler & Insko, 1999, for a concise account of this stream of research). This oft-replicated finding has been labeled the "interindividual-intergroup discontinuity effect." Other researchers have found similar effects when they contrast how groups and individuals play "chicken"—a variant on the Prisoner's Dilemma Game (Bornstein, Budescu, & Zamir, 1997).

There are at least three different factors that have been found to drive the discontinuity effect. The first two explanations are fear and greed (e.g., Insko, Schopler, Hoyle, Dardis, & Graetz, 1990). Fear arises from the assumption that groups are competitive by nature (a rational conclusion given the robustness of the experimental evidence). Therefore, when people face groups, they should act defensively or competitively, which is the same thing in a prisoners' dilemma (i.e., defect). Greed also seems a potent factor. Groups offer social support/facilitation of individuals' short-term, selfish inclinations. Individuals acting alone may feel more bound to social norms such as reciprocity, in the

absence of the counternormative encouragement and support of others.

The third explanation for the discontinuity is that individuals feel less identifiable when they act in groups—and are therefore liberated to act selfishly. This explanation was supported by the finding that, when individuals in groups knew their votes regarding the action the group should take would be identifiable by the members of the other group, individuals were more likely to vote for cooperative action (Schopler et al., 1995).

Groups add an important dynamic to social dilemma settings. From the perspective of the appropriateness framework, intergroup activity seems to cue mechanisms, such as fear and greed, that drive competitive behavior. Furthermore, participation in a group may also define the situation as one in which self-serving behavior is unlikely to be sanctioned or punished socially. As Dawes and Messick (2000) noted, the "vigorous tendency" (p. 114) to support one's own group can, in social dilemma situations, result in negative outcomes for not only other groups but also for one's own group in the long (or even short) run. Given the long-term risks, it is important to consider that Insko and his colleagues (Insko et al., 1998) found that one reliable way to reduce the discontinuity between intergroup and interindividual situations was to induce a collective focus on long-term outcomes, or as Axelrod (1984) described it, the "shadow of the future" (p. 126). Within the appropriateness framework, this is shaping the situational cues that individuals use to define the situation. The shadow of the future may evoke uncertainties other than the immediate choice of the other group.

### Perceptual Factors

External agents often provide people with explanations and labels for the situational cues they encounter in social dilemmas. People may be told why something is the way it is (e.g., the salmon stock is close to nil because of gross overfishing). This is a statement regarding causes. People may also simply be given a label for an aspect of the dilemma (e.g., "this is the altruistic choice, and that is the selfish choice"). Such labels invoke cognitive frames. There is a growing literature addressing the impact of manipulating causes and frames in social dilemmas. This literature is interesting, in part, because it points out how subtle manipulations that have nothing to do with the underlying structure of a social dilemma can affect decision making. The appropriateness framework suggests that such subtle manipulations are effective because they tap into people's associations with surface features of social situations, their value orientations, and a pervasive use of efficient and shallow processing of social stimuli.

**Causes.** The reasons given for why things are the way they are matter in determining choices and outcomes. In a commons dilemma in which group members made serial (rather than simultaneous) harvests, those who were told they had earned the right to make the first harvest took significantly more than those who were simply designated the priority position (Hoffman & Spitzer, 1985). In similar work, Samuelson and Allison (1994) varied the reasons participants were given for being assigned the first position for harvesting from a common resource. Those who were told they had been assigned the position as a consequence of a fair-selection mechanism (i.e., a coin toss or the best score on an achievement test) took almost 50% more of the common resource than those whose position was assigned as a result of a mechanism that was deemed to be a poor prototype of a fair mechanism (i.e., distance of birth date from a randomly selected date and receiving the easiest version of a selection test).

Participants can also be expected to infer causes based on information provided to them. Rutte, Wilke, and Messick (1987) reported an experiment in which all participants were told they were the fifth person in a six-person group to harvest from a common resource. Each person was presented with the harvesting decisions of the (fictitious) first four group members. Together, the first four took 20 units. One half of the participants were told that there were 35 units initially, and one half were told that there had been 25 units. Furthermore, in each of these two conditions one half were told that their fellow group members knew how big the pool was, and one half were told that they had not known how big the pool was.

When participants thought the pool size was known by the previous four harvesters, the available number of units could be attributed to the greedy (5 points left) or generous (15 points left) behavior of their group members. Under these conditions, the cause of the state of the common resource was attributable to the other people involved. Where people were seen as the cause, participants were more greedy when there had been an apparent norm of greed, and more generous when there had been an apparent norm of generosity, than those participants who could only attribute the state of the resource to forces beyond anyone's control. The greedy behavior of others appeared to liberate participants to act greedily (though this meant punishing an innocent—the sixth person in the group), whereas the generous behavior of others appeared to constrain such greedy inclinations and elicit more cooperative behavior (cf. the consistent contributor effect, Weber, 2003).

Solution preferences (rule selection, in appropriateness terms) may also be driven by causal understandings in a social dilemma. As noted in the section on leadership, Samuelson (1991) found that people who

believed their group had performed poorly in managing a common resource because of the greedy behavior of group members were more likely to favor appointing a leader than those who believed that the poor performance was due to environmental conditions.

**Frames.** Framing is a matter of description and labeling. The interest in framing originated with Kahneman and Tversky's (1979) prospect theory. Prospect theory proposes that people respond differently to outcomes depending on whether they are described as gains or losses. Specifically, people experience the threat of a loss as more serious than an equivalent gain (hence the idea of loss aversion). The frame can shift with the reference point used. For example, a \$17,000 living stipend for an organizational behavior graduate student might be seen either as \$2,000 more than students receive in other similar graduate programs (positive frame) or as \$2,000 less than marketing students at the same institution (negative frame).

To many, the social dilemma literature offered an obvious example of structurally similar tasks with different labels that correspond with prospect theory's notions of gain and loss framing. In public goods dilemmas, people must make decisions about making contributions to the public good (loss of a personal resource). In common resource dilemmas, on the other hand, people must make decisions about harvesting from the common resource (gain of personal resources). However, early attempts to study gain/loss framing effects in social dilemmas failed to yield a clear and consistent story (cf. Aquino, Steisel, & Kay, 1992; Brewer & Kramer, 1986; De Dreu, Emans, & Van de Vliert, 1992; McDaniel & Sistrunk, 1991). More recent research points out that social dilemmas have many possible reference points, any one of which may form the basis for individuals' decision making (Sonnemans, Schram, & Offerman, 1998). This makes the single clear reference point required by a test of prospect theory difficult to identify. The appropriateness framework presented here highlights the fact that the labels and descriptions used to frame dilemmas will evoke different interpretations and, hence, different behaviors in otherwise identical situations. A number of studies support this generalization.

For example, De Dreu and McCusker (1997) found that framing outcomes as gains or losses had different effects for prosocial individuals and individualists. Prosocial individuals, motivated to maximize the sum of outcomes for both parties, were more likely to cooperate in loss frames than in gain frames. Conversely, individualists, motivated to maximize their own outcomes, were more likely to defect in loss frames than in gain frames. Their respective motivations interacted with the gain-loss frame.

Allison, Beggan, and Midgety (1996) found that people perceive social dilemmas quite differently when they are described using different metaphors. The metaphors create connotations that lead to different construals of the situation. More concretely, Batson and Moran (1999) found that cooperation in a prisoner's dilemma task was greater when the task was labeled as a social exchange study than when the structurally identical task was labeled as a business transaction study. Batson and Moran referred to this effect as a "business exemption on moral motivation" (p. 912). However, they also found that inducing empathy for the other party induced increased cooperative choices in the business and social frames. In fact, in the high empathy condition, there was no difference in the proportion of participants opting for cooperative versus competitive choices as a function of task framing. Thus, broad normative associations with classes of human endeavor can also make framing a powerful determinant of individual decision making.

Elliott and her colleagues (Elliott, Hayward, & Canon, 1998) demonstrated how recent exposure to different institutional understandings can alter the effect of frames by simply priming the kinds of normative associations noted in the Batson and Moran (1999) study. Participants read materials that emphasized either entrepreneurial or cooperative business strategies and were asked to create examples of the kinds of strategies they had read about. Then, under the auspices of participating in a separate experiment, the same participants engaged in an iterated public goods dilemma. Those primed with thinking about business in entrepreneurial terms cooperated significantly less than those primed with thinking about business in cooperative terms.

Larrick and Blount (1997) reported that the way an action is labeled also affects people's decisions. They pointed out that the structure of a sequential social dilemma (in this case a sequential commons dilemma) and an ultimatum bargaining game is identical. However, people typically cooperate more in the social dilemmas than in the ultimatum bargaining games. The researchers demonstrated that the differences could be attributed to how the actions were described. In the social dilemma setting, the second participant may claim what is left after the first participant makes a decision; in the ultimatum game, the second participant may accept or reject the first mover's offer. Not only are second movers in social dilemmas more likely to claim what is left than second movers in ultimatum games are to accept what is offered, but the claiming language also elicits higher offers from the first participant in such social dilemmas.

Another key frame is one of property rights; is one dealing with one's own private resource, or a communal resource? van Dijk and Wilke (1997) compared behavior in a common resource dilemma framework and a public goods dilemma framework. In the com-

mon resource dilemma setting, people drew more from their personal, partitioned piece of the resource pool than they did from a common resource pool. The authors attributed the greater care with a common resource to concern about the others who had similarly been yoked to the common resource. When the resource was characterized as personal property, there was no need to be concerned with the impact of one's behavior on others. In the case of the public goods setting, however, the contribution—whether from a personal or collective source—is directed to a shared outcome, so awareness of the interests of others is inescapable. Consequently, as the researchers predicted, personal versus private frames on resources in a public goods dilemma made no difference. An appropriateness account would argue that when framing draws attention to the interests of others, the situation is more likely to be defined as one in which norms of other-regarding concern are experienced as appropriate, and greater cooperation results.

In fact, van Dijk and Wilke (2000) articulated a similar account of the mechanism that drives framing effects in social dilemmas and provided empirical evidence that backs it up. They argued that framing manipulations focus people on particular aspects of a complex problem. Cooperation in resource dilemmas involves deciding how much to take and how much to leave, whereas cooperation in public goods dilemmas involves how much to give and how much to keep. These verbs may focus people on some heuristic or rule that determines choices, rather than on the numerical outcomes of the choices. For example, in public goods dilemmas in which people have different endowments of the relevant resource (i.e., an asymmetric dilemma), people tend to contribute equal proportions of their personal resources. They do not like to feel that they were suckers relative to other members of their cohorts (cf, Kurzban, McCabe, Smith, & Wilson, 2001). The notions of giving and keeping may keep people focused on tweaking their choices to achieve the status of equivalent contributions. People in resource dilemmas, on the other hand, seem more focused on achieving equal final outcomes, that is, having equal sums in their personal coffers at the end of the day. In the common resource dilemma, then, the framing of relevant action as taking seems to evoke a focus on what they get rather than what gets left behind. The researchers tested their hypotheses by creating both common resource and public goods dilemmas that focused either on what participants got to have themselves (take or keep) and the benefits the collective enjoyed (leave or give). Calculations were made to determine whether individuals attempted to achieve proportionality in contribution, or equality of outcomes. As predicted by van Dijk and Wilke (2000), the focus induced by the action frames accounted for

a great deal of the variation between the two kinds of social dilemma.

To this point we have characterized framing as a description of situational characteristics (e.g., outcomes, actions, etc.) that focuses attention in systematic ways and, in turn, affects how people facing a dilemma think about the dilemma and the nature of the problem they face. Frames can also be indirectly invoked by situational characteristics. Batson and Moran (1999) explicitly labeled their experimental situations as having to do with business or social exchange—however characteristics of the situation can, of course, invoke the same frames of reference and attendant heuristics without explicit labels. Tenbrunsel and Messick (1999) reported on a series of studies that did just that. The researchers were interested in the effects of economic sanctions on decision makers facing an environmental dilemma. Their research suggests that sanctions changed the way decision makers understood their problem. For many participants, the presence of sanctions changed the problem from an ethical concern (e.g., what is our responsibility here?) to a business concern (e.g., what are the economic costs and benefits of reducing emissions?).

Participants in this research were given the role of decision makers at a moderately sized manufacturing plant that produced toxic gas as a byproduct of its operation. Environmentalists had grown concerned about the impact of the gas on the ecosystem. The industry agreed to install scrubbers and run them 80% of the time to assuage the environmentalists' concerns and avoid the probable compliance costs of imposed legislation. However, running the scrubbers had a significant financial cost. Participants in the no-sanction condition were told that there would be no inspections to ensure compliance. Participants in the weak-sanction condition were told that there was a 5% chance of being caught if they failed to comply, and the fine would be negligible (\$50,000). Participants in the strong-sanction condition were told that there was a greater than 50% chance of being caught if they failed to comply, and the fine would be significant (\$2M). Complying with the 80% agreement was a cooperative choice; the costs for the whole industry would increase dramatically if the majority of plants failed to comply and the threatened legislation was imposed.

The presence of sanctions evoked a business problem framing. In the absence of sanctions, the problem was understood in ethical terms, and most participants cooperated. When the business frame was evoked, the authors noted that sanctions had to be sufficiently strong (size of fine), and monitoring sufficiently certain (high probability of being caught), for the economics to come down on the side of the angels. If sanctioning was weak and monitoring uncertain, those viewing the problem through a business frame were more likely to cheat.

The framing of social dilemmas can clearly have significant effects—whether it is a framing of the task (e.g., business or social exchange), the action (e.g., take or keep), or the outcomes (e.g., gain or loss). Furthermore, cognitive frames can be evoked explicitly with labels and descriptions, however they can also be primed (e.g., Elliott et al., 1998) or prompted indirectly by other situational cues (e.g., Tenbrunsel & Messick, 1999). Compared to many other ways to increase cooperation in social dilemmas (e.g., adjusting group size, controlling the values of people in a group, etc.), framing seems more strategically useful, if only because it is easier to accomplish. For social scientists, framing effects offer insight into how the decision process works. That insight is consistent with the appropriateness framework. The framing effects documented here demonstrate how subtle changes in the perception of a situation and its appropriate norms change the way the situation is understood. They demonstrate how similar situations can evoke different responses for people with different social motives (identity). And finally, they demonstrate how situational definitions impact rule selection.

The phenomena that we described in this section are perhaps the most important in highlighting the differences between traditional rational choice models and the appropriateness framework. The former focuses attention on the underlying economic structure of decision situations; the latter acknowledges that this structure is important but also accepts the importance of surface features that deal with interpretations, connotations, assumed causal processes, and linguistic variations—variables that create an interpretational stretch for rational choice theories. A psychology of decision making that rests on the appropriateness framework can handle these phenomena in stride whereas an economics of decision making that privileges risks and consequences does so less gracefully.

## Conclusion

Our purpose in writing this article was twofold. First, we have tried to provide an up-to-date, selective review of the experimental literature on social dilemmas. The framework presented in Figure 2 may assist researchers in thinking about the factors that influence people's behavior in social dilemmas. Second, and more important, we have adapted March's (1994) logic of appropriateness into a process framework and applied it to the literature to outline a theory of decision making in social dilemmas. We believe the appropriateness framework presented in Figure 1 may integrate some of the mechanisms that underlie decisions in social dilemmas. March (1994) clearly intended his logic of appropriateness ideas to be broadly applicable to decision making in social situations—not only in the con-

text of social dilemmas. The sheer size of the social dilemma literature offers a unique opportunity to focus on how an appropriateness framework can help explain and advance a particular domain of inquiry. Our hope, therefore, is that by effectively making the case for its efficacy in this domain we can simultaneously make a contribution to our own literature (social dilemmas) and offer an opportunity for others in the broader field of social psychology to adopt and adapt the framework to advance their subfields as well.

It is not our purpose in this article to attack rational choice or expected utility models *per se*. The point that we want to make about these approaches to the explanation of social behavior is that they do a good job in some contexts and a less good job in others. Our approach parallels that of Fiske (1992) who argued that there are four elemental forms of social life and that these four forms characterize different domains of our social worlds. One of these forms, which Fiske refers to as “market pricing,” is similar to the consequentialist focus of rational choice theories. Our claim, similar to that of Fiske, is not that market pricing such as rational choice models of social behavior are wrong, just that they have been, in the case of social dilemmas, overgeneralized. The logic of appropriateness that we are advocating is a conceptual perspective that allows us to ask how else social dilemmas are perceived and how these perceptions influence decision behavior.

One of the strengths of the appropriateness framework as it is presented here is that it offers a process model for decision making in social dilemmas and therefore directs attention to opportunities to intervene in the choice process. This opportunity for intervention is important in a field such as social dilemma research in which people are motivated by an interest in encouraging a particular kind of behavior—in this case cooperation and better joint or social outcomes.

The appropriateness framework specifies several key relationships and interactions. It clarifies the interaction of identity factors (broadly defined) and situational cues in jointly determining how individuals define the situations they face. The suggestion that behavior is jointly determined by intra- and extraindividual factors is as old as the field of social psychology itself. However, documenting such interactions is a relatively recent effort among experimental social dilemma researchers, and it is our intention to put that interaction back at the forefront of researchers’ consciousness. As we have argued, and as classic studies have demonstrated (e.g., Liebrand et al., 1986), consideration of situational factors without considering relevant identity factors is likely to miss important, and sometimes critical, dynamics. Furthermore, the field has invested energy in understanding a narrow band of identity variables. The majority of this research has focused on social motives. Additional research investigating identity factors such as self-effi-

cacy (e.g., Kerr & Kaufman-Gilliland, 1997), self-monitoring (e.g., Kurzban & Houser, 2001), and personal histories (e.g., Bettenhausen & Murnighan, 1991) may prove fruitful, as might research into new areas like locus of control or the need to manage self-impressions (Murnighan et al., 2001).

The appropriateness framework (Figure 1) not only proposes that identity factors interact with situational cues to determine an individual’s definition of the situation but also proposes that the situational cues play a role in eliciting the very identity factors that then interact with the situational cues. For example, features of the situation may elicit memories of personal experiences in similar situations that in turn evoke information relevant to the role played by the individual in those previous situations (e.g., professional or personal).

Considering how the situation elicits identity factors opens the door to another promising way to think about advancing identity research in social dilemmas. In experimental social dilemma research, identity factors have generally been conceptualized as discrete individual difference variables. Such variables have been documented to be relevant and important. However, when March (1994) wrote about identity, he argued that people have messier, multifaceted, multiple “incompletely integrated” (p. 68) identities. As a close colleague recently pointed out, it seems unlikely that anyone facing a social dilemma and asking the question “what does a person like me do in a situation like this” is thinking “what does a high self-monitoring proself individual like me do in a situation like this?” More plausible is the notion that people ask themselves what a father, or Christian, or lawyer does in “a situation like this.” As March put it, “A decision maker is a parent as well as a police officer, a friend as well as a physician, a lover as well as a woman” (p. 68). Research to date tells us very little about the phenomenology of people in social dilemma experiments. Systematically collected data tends to be limited to reports of the probabilities participants apply to the decision making of their counterparts (e.g., “how likely do you think it is that player 2 will make a contribution in the next round?”). Richer data, when collected, tends to be reported as anecdotal explanations offered or elicited during debriefing. Understanding the complexities of what people actually think, and when they think it in relation to social dilemmas is a wide open arena for future investigation that the appropriateness framework calls for.

We concur with others (e.g., Bargh & Chartrand, 1999; Gigerenzer & Todd, 1999; Gollwitzer, 1999) that much decision making in everyday social situations involves shallow cognitive processing. For this reason, subtle manipulations such as framing can guide people to different behavioral choices in structurally similar situations. One of the themes that emerged from our conceptual review is the pivotal role of construal in de-

termining decisions. Framing highlights particular aspects of the dilemma. Reduced social distance seems to increase the likelihood that people see a dilemma as a group task rather than an individual task. Social motives research suggests that people's personal characteristics influence the aspects of a dilemma on which they focus. Influences of this kind can fly under the radar of consciousness, however they can also evoke deliberate processing. One of the underresearched areas in the social dilemma literature is the degree of energy, attention, and consciousness of processing involved in different situations and for different people—and the implications of different modes on outcomes and the kinds of interventions that successfully evoke conscious consideration.

Situations in which there are nested or competing social dilemmas also merit further consideration. For example, when a fisherman takes a large harvest from a fish stock, on one hand he may be acting selfishly relative to the large-scale common resource dilemma, while at the same time he sees himself making a contribution to the public good that is his family's welfare. Very little has been done to understand the dynamics of such situations (for two noteworthy exceptions see Polzer, Stewart, & Simmons, 1999; and Wit & Kerr, 2002). The appropriateness framework suggests that identity factors, and the particular situational cues that evoke them, should play critical roles in directing attention to the different levels of nested dilemmas.

We want to stress that the appropriateness framework we are offering in this article is more than just a way to view the results of experiments that have been done in the past. We are suggesting this framework as a first approximation to a theory of how decisions are made in social dilemmas. As D. M. Messick (1999) argued, this approach not only allows for predictions and independent variables that would not be obvious from a more traditional decision making standpoint but also has some important implications for the nature of the data that should be observed in appropriately designed experimental studies. Most of the studies we have reviewed in this article do not report data in a way that allows us to evaluate the properties that D. M. Messick (1999) and Tenbrunsel and Messick (1999) outlined. We mention these properties in the following paragraph to urge researchers to take the appropriateness framework seriously as a description of the decision-making process and to design studies that can assess its validity.

The basic ideas are these. If a situational construal or recognition is causally central (the proximal mediator) to judgments about a dilemma situation and the decisions that are made in it, and if different construals are available to decision makers, then the decision variable and the related judgments should be bi- or tri-modal, depending on the numbers of available interpretations there are. This "clumping" should characterize not only

the decision variable, for example, how much to contribute to a public good, but also related variables, for example, how much one expects others to contribute. Furthermore, the variables should be correlated, an implication that has been confirmed many times, for instance, with choice and expectation in social dilemmas. Finally, in the simplest version of the appropriateness approach, the situational interpretation causes the decision and the related judgments, implying that there should be complete mediation of the decision with any of the related judgments. In other words, the only impact of independent variables is to change the likelihood of one situational interpretation relative to another. Tenbrunsel and Messick (1999) found support for such a notion in their experiment. Ultimately, the value of the framework that we are suggesting will be measured in terms of clustering, correlation, and mediation as well as the creativity of the predictions that it can support.

Our approach, similar to Fiske's (1992) and many theories that strive to broaden the understanding of an empirical domain, is vulnerable to the charge that it cannot be disproven, that it is invulnerable to falsifiability. In addition, if a theory cannot be embarrassed by data, then it cannot be taken seriously as an explanation. We do not believe that the appropriateness framework is immune to embarrassment by data. D. M. Messick (1999) spelled out some empirical implications of the processes that we have been describing more fully here and summarize briefly in the preceding paragraph. If subsequent research that carefully looks for evidence of multimodality, clustering, and mediation fails to find such evidence, then the conclusion is that our proposal in this article is incorrect. However, we will then be left with the need to find alternative explanations for the results reported by Tenbrunsel & Messick (1999), or by Weber (2003) who has data indicating that consistent contributors in multiparty social dilemmas can earn more, on average, than people in groups without consistent contributors because they encourage others in their own groups to cooperate more (i.e., define the situation differently) than they would otherwise. Findings such as these, and many others, derail rational choice theories and yet are relatively simple to explain within the appropriateness framework. There are many details of how these decision processes work that are not yet understood, however the framework that we are offering here is a step in the direction of achieving a more complete understanding.

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