Aggression and Moral Development: Integrating Social Information Processing and Moral Domain Models

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Social information processing and moral domain theories have developed in relative isolation from each other despite their common focus on intentional harm and victimization, and mutual emphasis on social cognitive processes in explaining aggressive, morally relevant behaviors. This article presents a selective summary of these literatures with the goal of showing how they can be integrated into a single, coherent model. An essential aspect of this integration is Crick and Dodge’s (1994) distinction between latent mental structures and online processing. It is argued that moral domain theory is relevant for describing underlying mental structures regarding the nature and boundaries of what is moral, whereas the social information processing model describes the online information processing that affects application of moral structures during peer interactions.

Developmental psychologists have long had an interest in understanding sociomoral reasoning and behavior, especially as related to aggression and acts of overt victimization. In our view, however, progress has been impeded because of a historical split in the two major fields within developmental psychology that focus on this topic, namely, research on children’s aggression and on children’s moral development (see also Guerra, Nucci, & Huesmann, 1994). Our primary goals in this essay are: (a) to present a model of how core theories from these approaches can be integrated into a larger, coherent account of the connections between children’s social reasoning and their intentional behaviors involving victimization, and (b) to show how this integrated model can inform emerging research efforts in both literatures.

Many acts of aggression are clear moral transgressions, and in turn, many moral transgressions involve either physical or verbal aggression. Recent definitions offered in influential reviews on aggression (Coie & Dodge, 1998) and moral development (Turiel, 1998) support this claim. Coie and Dodge (1998) defined aggression as “behavior that is aimed at harming or injuring another person” (p. 781). Similarly, Turiel (1998) defined morality as based “on an act’s harmful consequences” (p. 904). In both views, the notion of creating intentional harm and victimization is central. Yet, despite this seeming conceptual overlap, these two parallel fields have developed in relative isolation from each other. For example, in the recent Handbook of Child Psychology (1998), Coie and Dodge’s review, “Aggression and Antisocial Behavior,” devoted one page to moral development, whereas Turiel’s review, “Moral Development,” included almost no research on aggression per se. Perhaps most telling, neither chapter cited any current research from the other’s theoretical perspective.

Although multiple theoretical and empirical approaches have emerged in these two fields, the present essay focuses on what are arguably the primary approaches in each field: the social information processing (SIP) model of social adjustment (e.g., Crick & Dodge, 1994; Dodge, 1986) and the domain model of moral development (e.g., Nucci, 2001; Smetana, 1995; Turiel, 1983). In addition to their common concern with harm and victimization, these two theories share several other similarities that make a meaningful integration feasible. Perhaps most important, both models emphasize the vital connection between children’s social cognition and their related behavior. The ways children understand and interpret (or misunderstand and misinterpret) the social behaviors and motives of others are seen as playing a fundamental role in both children’s immediate behaviors and their long-term aggressive and moral patterns.
A second important commonality between these theories is their focus on intentional, as opposed to accidental or ambiguously caused, harm. This focus on children’s understanding of morally relevant intentions (“did he/she mean to do this negative act?”) is a defining feature of domain theory as well as other moral developmental theories (Turiel, 1998). By contrast, in the SIP model, children’s understanding of others’ intentions is one of several SIP steps that influence children’s behavior. Although SIP-based studies of aggression have found intention judgments to explain individual differences in aggression, the moral implications of intention judgments have not been extended to recent, more differentiated models of aggression described in the SIP literature (see the SIP and Moral Intentions section in this essay).

In this essay, after first examining the issue of moral intentions and victimization, we then focus on how a combination of core concepts from SIP and domain models can begin to address long-standing, unresolved questions about the connections between children’s understanding and their behavior involving aggression and other morally relevant acts. The discussion of domain theory highlights the unique strengths of this approach for addressing those common but multifaceted social events that include elements involving harm and victimization as well as other types of social and personal concerns. Judging intentions, although critical, is not always easy, and domain theory provides systematic ways of addressing that complexity. The discussion of the SIP model emphasizes its unique ability to describe the complex real-time SIP steps that affect whether moral (and other domain considerations) get applied in a given situation, and even whether a seemingly moral situation is seen as such by a child. Overall, the SIP model is described as providing a systematic way of clarifying when and to what extent basic moral concepts are applied to behavior.

Another major goal of this essay is to outline a model that combines major features from both the SIP and domain models. An essential aspect of this integration involves the distinction between “latent mental structures and on-line processing actions” (Crick & Dodge, 1994, p. 79). SIP researchers have used a variety of terms to refer to social knowledge stored in long-term memory, including the label data base (e.g., Crick & Dodge, 1994, Figure 2). Although some of these terms are incompatible with structural development theories (including the domain approach), it is important to recognize that the SIP model acknowledges the essential role of stored social knowledge, even if it has been relatively silent about the specific organization of that knowledge. Moreover, SIP researchers sometimes acknowledge the dynamic interplay between these underlying social cognitive structures and active SIP (e.g., see Zelli, Dodge, Lochman, Laird, & Conduct Problems Prevention Research Group, 1999) in ways that parallel the structuralist emphasis that “the concepts of assimilation and accommodation imply a reciprocal relation between the subjects’ structuring activities and experienced events” (Turiel, 1983, p. 11).

Given the present emphasis on the integrated structure and organization of domain-related social knowledge, the term latent mental structures rather than data base is used throughout the remainder of this essay.

In brief, we argue that moral domain theory (e.g., Turiel, 1998; see also the following discussion) is especially relevant for describing children’s underlying understanding regarding the nature and boundaries of what is moral and nonmoral, whereas SIP theory (Crick & Dodge, 1994; see also the following discussion) is especially relevant for describing the nature of online SIP steps that affect children’s application of domain-related knowledge during their real-time social interactions.

A final theme that runs throughout this essay is the need to incorporate the role of emotions and emotional processes within existing cognitively focused versions of SIP and domain theories. Brief discussions describe the informational and motivational roles of emotions that are especially likely to influence children’s reasoning and behavior involving aggression and victimization (see also Arsenio & Lemerise, 2001; Lemerise & Arsenio, 2000).

To address these goals, the present article is organized into several sections. Of necessity, the first two sections provide brief summaries of each theory to help orient readers, followed by brief sections on the general theoretical similarities and dissimilarities between these two theories. After the discussion of moral intentions, however, much of this essay focuses on several examples illustrating how core concepts from each theory can help expand the explanatory strengths of the other approach. Particular attention is paid to how ideas from each theory are uniquely relevant for emerging research interests in the other field including: (a) the systematic influence that multiple SIP steps will have on children’s reasoning about complex, multidomain social events, and (b) the role of the various sociomoral domains (e.g., moral, conventional, and personal) in the interplay between long-term memory (i.e., latent mental structures) and more online SIP. Finally, an initial attempt will be made to provide an integrative
model that combines both approaches without distorting their core theoretical assumptions.

**Brief Summary of the Two Models**

**The SIP Model**

The SIP model, like the domain model, asserts that children’s understanding of social situations influences their subsequent behavior. Unlike the domain model, however, in the SIP model the emphasis is on online, or real-time, processing and decision making in the context of different kinds of social situations. Consistent with the SIP focus on individual differences, children are seen as coming into social situations with different biological capabilities and different sets of past experiences. These past experiences and knowledge constitute the latent mental structures (stored in long-term memory) that interact with and influence online processing (Crick & Dodge, 1994). Children’s online processing is hypothesized to occur rapidly and in parallel, but distinct steps of processing are described in a sequential order.

In the first two steps of this model (see Figure 1), children encode and interpret social cues; that is, children attempt to understand what happened in a particular situation and why. For example, imagine a child who trips on a classmate’s foot when getting up to sharpen a pencil. The child must figure out what happened (“I tripped on his feet”) and why it might have happened (“he tripped me” or “it was an accident”). In the next step of the model, guided by his or her understanding (or misunderstanding) of the initial situation as well as his or her past experiences stored in long-term memory, the child must clarify and select goals for the situation (“I just want to get my work done” or “I’m going to show that kid he can’t do this to me”). Then, in the fourth and fifth steps of the model, the child generates possible responses to the situation and evaluates them in terms of his or her self-efficacy for performing the response and the likely social relational, instrumental, and other consequences of performing the response (“I’d like to punch him out, but he’s too big, so I better just ignore it”). Finally, in the last step the child enacts his or her selected response. Under certain conditions, however, children’s responding may not be the result of all of these processing steps. In situations involving high arousal, preemptive processing, or processing without thinking, is more likely (Crick & Dodge, 1994). Therefore, in the preceding tripping situation, the child might just process that the other child tripped him or her and automatically retaliate.

Anger, in particular, is associated with hostile attributions and less friendly goals and social behavior (e.g., de Castro, Slot, Bosch, Koops, & Veerman, 2003; Murphy & Eisenberg, 2002).

**The Domain Model**

The domain model also begins with the premise that children’s understanding of social situations has a strong influence on their subsequent behavior. As in earlier cognitive-developmental models of morality (see Turiel, 1998), moral behavior is seen as stemming from children’s and adults’ attempts to understand social interactions involving deliberate physical and psychological harm. The domain model, however, differs from earlier cognitive-developmental models in its emphasis on distinguishing between moral and nonmoral elements of children’s sociomoral worlds. One key distinction is between moral (i.e., issues of fairness, justice, and deliberate harm) and conventional (i.e., rules that promote smooth social interactions) events. Numerous studies (for reviews, see Tisak, 1995; Turiel, 1998) have shown that even young children view stealing or torturing their core theoretical assumptions.

**Integrating SIP and Domain Models**

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unprovoked harm or violating common rules of etiquette. In the last decade or so, however, there has been a growing interest in understanding how people reason about events that combine elements from multiple domains. Topics have ranged from parent–child conflicts over mixed personal and conventional events (e.g., Nucci & Weber, 1995) to broad societal conflicts regarding conventional gender and class norms and moral issues involving the equitable distribution of resources (e.g., Turiel, 2002; Wainryb & Turiel, 1994). Whereas there are few individual differences in reasoning about prototypical domain events, the ambiguous nature of mixed-domain events seems likely to be associated with individual differences. Thus, we argue that mixed-domain situations are particularly appropriate to examine using an integration of SIP and domain approaches (see the Mixed Domains and Ambiguity, and Understanding and Predicting Individual Differences sections in this essay).
Basic Similarities and Differences Between the SIP and Domain Models

Metatheoretical differences: Is an integration possible? Although we stress the commonalities between the SIP and domain models, it is important to acknowledge that there are substantial metatheoretical differences in the origins of these approaches that could potentially make their integration difficult. For example, the SIP model traces its roots to cognitive information processing models that “frequently focus not on change but on real-time processing within steady-state systems” (Karmiloff-Smith, 1994, p. 694), whereas the domain model emerges from a cognitive-developmental approach that emphasizes children’s gradual construction of broad mental structures. These underlying cognitive theories differ in several of their core assumptions, including how much of cognitive functioning is the result of innate, modularized brain structures versus more domain-general brain–environment interactions, and whether it is cognitively useful to have conscious access to one’s mental representations or whether representations per se are even important at all (as in some connectionist models; e.g., see Crick & Dodge, 1994).

Fortunately, some of these metatheoretical differences are not especially relevant for attempts to integrate the SIP and domain models. Perhaps most important, SIP theorists stress the centrality of children’s active understanding of social experiences in much the same way as do domain theorists: “The information-processing approach ... has been characterized as a model of a ‘conscious rule interpreter,’ in contrast with the ‘intuitive processor’ of the connectionist approach” (Crick & Dodge, 1994, p. 77). Second, the issue of modularized versus more global brain structures is not very important for the present integration. Unlike other cognitive developmental theories, the domain model does not rely on the idea that there is a single overarching set of cognitive structures that apply to everything children can understand. More generally, Karmiloff-Smith (1992) and others (e.g., Case, 1985) have shown that it is possible to develop coherent, hybrid information processing and structural developmental models that can explain novel aspects of young children’s cognitive and social cognitive development.

Additional differences between the SIP and domain models. Broad differences in the historical origins of these theories (e.g., information processing and social cognitive learning theories for the SIP approach, and structuralist/Piagetian theories for the domain approach) have led to several other more specific differences. Very briefly, the SIP model was explicitly designed to assess individual differences in socially competent behavior (especially involving aggression and victimization) by modeling the online information processing that occurs during social situations. The domain approach, on the other hand, was designed to assess how children’s sociomoral knowledge is organized into separable domains (e.g., moral, social conventional, personal) as a result of children’s efforts to understand differences in the social interactions associated with those domains. In general, domain theory has not focused on individual differences but rather on domain differences, with the goal of creating a normative model powerful enough to have more than local, culture-specific explanatory power (e.g., see Turiel, 2002).

The different theoretical orientations and goals of the SIP and domain models also are reflected in their respective methodologies. Although both approaches present children with stories or situations that often involve similar types of activities (especially aggression of various types), there are important differences in the nature of the stimuli and questions that children are asked. Given that these methodological differences are likely to have a major effect on the kinds of data and interpretations produced by each theory, they are worth examining in some detail.

The SIP focus on individual differences in online, social cognitive processes is often addressed by asking children to imagine being a character faced with a peer-caused problem or provocation to which there are a variety of possible responses. Information about the causal intentions of the peer provocateurs is often varied (e.g., prosocial, accidental, clearly hostile, and ambiguous) to see how this affects reasoning at various SIP steps. It is interesting that situations depicting clear hostile intent tend to produce few individual differences, but those depicting ambiguous intent reliably elicit individual differences at several SIP steps (Crick & Dodge, 1994).

The SIP questions children are asked vary as a function of the processing step(s) studied. To assess SIP steps involving encoding and interpretation of events, children are asked what happened and why the other child acted that way. To assess later SIP steps, children are asked about their goals for that situation (e.g., would they prefer to be liked by the other child or to achieve some instrumental goal?) or their strategies for attaining those goals, which include: (a) generating possible responses to the situation, (b) evaluating these responses (e.g., one’s self-efficacy for performing the response and expectations regarding social relational vs. instrumental consequences), and (c) deciding what do in the
situation. Some studies also ask children to enact their chosen response. Note that in the situations studied, children may have to make choices with moral implications, but SIP methods do not typically measure moral reasoning. Although some SIP studies have asked children to evaluate how “good or bad” particular responses are (e.g., Deluty, 1983), good–bad judgments are ambiguous in that they could be interpreted as right–wrong or as expedient judgments (e.g., see Turiel, 1998).

In domain work, the focus on understanding how children interpret and categorize different types of sociomoral events (moral, conventional, personal), is often assessed by presenting stories depicting a completed event (e.g., “Susie really wants to swing and Debbie has been on the swing a long time, so Susie pushes her off and takes the swing for herself”). Children are asked to make various judgments about the act, such as whether it would still be wrong in the absence of a rule (rule alterability) or whether it would be wrong if members of another school or society or culture had no rule about it (rule generalizability), and to provide rationales for these judgments.

The stimuli used in moral domain research are most similar to the clearly hostile provocation stimuli used by SIP researchers. As in SIP research, studies of moral judgment for these prototypical events find few individual differences in wrongness and alterability judgments about these stimuli (Nucci, 2001). In a small number of domain studies, however, individual differences have been found in answers to questions about how the characters depicted in stimuli may feel (e.g., Arsenio & Fleiss, 1996; Smetana et al., 1999). In these studies, children with a risk status (behavior disorder, history of maltreatment) make emotion judgments that differ from those of their typically developing peers. There is also some indication that the rationales given by at-risk children and adolescents for why moral and social conventional events are wrong differ from those of their peers (Nucci & Herman, 1982; Tisak & Jankowski, 1996). But even in these studies, typically and atypically developing children and adolescents are generally similar in their domain placement of sociomoral events and there is overlap in the kinds of rationales they give. However, in newer research on mixed-domain situations, there is evidence of group and individual differences in how these more complex situations are construed (e.g., Horn, 2003a, 2003b; Killen, Lee-Kim, McGlothlin, & Stangor, 2002). Thus, we argue here that mixed-domain events constitute a context in which an integration of the SIP and domain approaches is likely to be especially fruitful.

Basic similarities between the SIP and domain models. Despite these theoretical and methodological differences, it is our view that larger commonalities in the SIP and domain models make it possible to integrate them into a single model. In addition to the deep similarities mentioned earlier (i.e., a common focus on social cognitive processes as they relate to behaviors involving deliberate harm), both models also emphasize the central role of peer–peer interactions in the formation of that social knowledge. Aggression and other moral transgressions are seen as problematic largely because of their impact on peer relations rather than because of confrontations with adult authority figures. Finally, although both models explicitly address children’s understanding and behaviors involving acts of aggression and victimization, they also focus more broadly on other types of nonaggressive, nonmoral social events. The domain approach addresses not only children’s understanding and behavior involving acts of victimization but also their understanding of social conventions and other categories of social events involving the boundaries of social regulation. Furthermore, despite the fact that most SIP research addresses children’s aggressive behavior, the model is theoretically constructed to address a much wider range of socially competent and incompetent behaviors (e.g., Nelson & Crick, 1999).

Integrating the Two Models

SIP and Moral Intentions

One area of potential integration between domain and SIP models involves the role of moral intentions and evaluations. In domain theory (and other cognitive moral models), children’s judgment that a harmful act was committed intentionally has a central role in determining the moral (or nonmoral) status of that act. By contrast, in the SIP model it is argued that as part of the second of six steps (interpretation of cues) children make attributions of intent about the behaviors of others. For example, in the moment after a child experiences a negative social outcome, such as getting hit by a ball or excluded from a game, that child attempts to understand the intentions of others before responding. Was the ball thrown at him or her on purpose? Was he or she excluded from the game because there was no room or because others wanted to be mean?

Morally relevant intentions were an important focus in early SIP research. When Dodge (1980) first assessed the social reasoning of aggressive and nonaggressive boys he found that both groups were
strongly influenced by their perceptions of the intentions of provocateurs who had created negative outcomes. What distinguished the two groups, however, was their response to ambiguous situations where the peer’s intentions were unclear: “Aggressive children responded as if the peer had acted with a hostile intent. Nonaggressive subjects responded as if the peer had reacted with benign intent” (p. 162). Other studies on intent judgments (for reviews, see Coie & Dodge, 1998; Crick & Dodge, 1994) support the idea that both aggressive and nonaggressive children are concerned with the fairness and moral legitimacy of others’ actions: If a child judges that a peer deliberately created harm, that harmful act is considered both aggressive and unfair (see also Astor, 1994), and retaliation is considered legitimate. In other words, both aggressive and nonaggressive children appear to share a core moral value, essentially, “It’s not ok (right/fair) for someone to do something bad to me on purpose.”

Subsequent SIP research, however, suggested that this description may apply to only a subtype of aggression. A hostile attributional bias in combination with frustration or anger characterizes a form of hot-blooded, or reactive, aggression (Dodge, Lochman, Harnish, Bates, & Pettit, 1997). By contrast, proactive forms of aggression are thought to be motivated more by expectations of reward than by anger or deficits in intention or cue detection. Moreover, recent observational and physiological evidence supports the idea that reactive, but not proactive, aggression is accompanied by anger and heightened physiological arousal (Hubbard et al., 2002). Proactive aggression has been linked with biases in the response-generation and response-evaluation steps, including the belief that aggression is a relatively easy and effective way to obtain desirable outcomes and sometimes with the expectation that the aggressor will feel happy after success fully victimizing others (Crick & Dodge, 1996; Dodge et al., 1997; Smithmyer, Hubbard, & Simons, 2000). Proactive aggression is also associated with favoring instrumental goals (“I want his jacket”) over more relational goals (“I want to be his friend”; Crick & Dodge, 1996), whereas a bias toward relational goals characterizes prosocial children and adolescents (Nelson & Crick, 1999).

Recently, this distinction between reactive and proactive aggression has received extensive critical attention (e.g., Arsenio & Lemerise, 2001; Crick & Dodge, 1999; Sutton, Smith, & Swettenham, 1999a), in large part because of the implicit moral questions raised by proactive aggression (bullying). Given that both aggressive and nonaggressive children demonstrate moral knowledge about intentions and fairness, why do some children violate moral standards by deliberately choosing to harm others for instrumental gains (proactive aggression)? What seems paradoxical is how proactive aggression involves a combination of an amoral or even immoral Machiavellian view of one’s own victimizing behaviors (e.g., “It’s easy and it works”) with a focus on morally relevant knowledge regarding the encoding and interpretation of others’ intentions (e.g., Crick & Dodge, 1996; Dodge & Coie, 1987; see also Hawley, 2003a, 2003b).

An exchange between Sutton et al. (1999a, 1999b) and Crick and Dodge (1999) reveals some of the complexities in understanding this apparent moral asymmetry. In that debate regarding one form of proactive aggression, bullying, Crick and Dodge rejected Sutton et al.’s argument that some bullies are socially skilled because this “implies that competent social cognitions can result in incompetent behavior” (p. 13). As Sutton et al. (1999a) noted, however, for proactively aggressive children, the specific form of social incompetence “may lie in the values of the bully rather than the accuracy of the cognitions” (p. 122). In other words, in proactive aggression, incompetence consists of either ignoring or rejecting one’s own moral knowledge and values about fairness, justice, and reciprocity, and deliberately using aggression to obtain desirable material goals at the expense of others. Descriptions of proactive aggression that focus on value-free notions of incompetence miss a central issue: Most children and adults are guided by their moral values (“What’s fair, what’s right?”) in judging the permissibility of certain forms of behavior, whereas proactive aggressive children do not appear to be guided by those values.

Although moral cognition models are essential for identifying this moral asymmetry in proactive aggression (“My harm is ok, yours is not”), neither SIP nor domain models can provide a compelling psychological explanation of how children arrive at and maintain this view. In large part this is because most moral cognition theories share the assumption that “to know the good is to do the good”; that is, a logical understanding of how one ought to behave inevitably leads to moral behavior. As Nucci (2001) put it, “Knowing the good is not always sufficient to motivate someone to do the good. For moral action to take place the individual must also want to do what is moral, rather than engage in actions that lead to other goals” (p. 196).

It is interesting that both the SIP and domain models contain hints of the essential motivational core missing in cognitive theories of aggression. For
example, SIP research suggests that in the context of socially challenging interpersonal situations, socially competent children are concerned with relational goals such as maintaining friendships, whereas aggressive children are more concerned with instrumental goals such as controlling an object or situation. As noted earlier, Turiel (1983) described morality as emerging “from factors intrinsic to the event (e.g., from the perceptions of consequences to the victim)” (p. 35). Implicit in both theories is the idea that most children care about their relationships with others and are affected by the negative consequences experienced by the victims of aggressive and immoral behaviors. The existence of proactive, instrumental, and other forms of bullying aggression, however, suggests that caring about and avoiding intentionally harming others requires more than “knowing the good.”

As we and others have argued elsewhere, what is mostly missing from both moral cognition and SIP models is a systematic account of the affective and relational contributions to socially competent behavior and moral cognition and behavior (Arsenio & Lemerise, 2001; Lemerise & Arsenio, 2000; Nucci, 2001). However, it is possible to integrate emotional processes into these social cognitive models, and there are multiple emotion processes that can contribute to socially competent (or moral) behavior (see Lemerise & Arsenio, 2000). At a minimum, to “do the good,” a child must not only be able to understand a situation from another’s point of view but must also feel empathy or sympathy for that other person’s situation or perspective (e.g., see Hoffman, 2000). For example, there is evidence that bullying, conduct disorders, and psychopathy are associated with deficits in reading cues in self and others, in empathizing, and in participating in other emotion-related processes (Arsenio & Fleiss, 1996; Casey & Schlosser, 1994; Cohen & Strayer, 1996; Slaby & Guerra, 1988; Warden & Mackinnon, 2003; see also de Castro, Bosch, Veerman, & Koops, 2003). Insensitivity to emotion cues as well as failures in empathy are likely to influence children’s processing of information in morally relevant situations, including the retrieval of morally relevant information (Arsenio & Lover, 1995; Lemerise & Arsenio, 2000; see also the following discussion).

Mixed Domains and Ambiguity

As discussed earlier, individual differences at the encoding and interpretation steps of the SIP model are often found when the intentions of a peer who has created a negative outcome for the target child are ambiguous. In this case, children must determine “was this on purpose?” and implicitly, “is this a moral issue?” At other times, however, the ambiguities that children face may have as much to do with the moral nature of the act itself as with the intentions of the event initiator. For example, imagine a child waiting in line for a drink when an obviously hot and thirsty child cuts in front because he has to hurry back to his kickball game. Or imagine a high school girl who wants to join the drama club, but she is rejected and a less talented boy is selected instead because the club needs boys for roles in upcoming plays.

Domain theorists have long recognized (e.g., Smetana, 1982) that many, perhaps even most, social events combine elements from two or more domains. Lining up at a water fountain, for example, is clearly a convention in that alternative arrangements could serve the same organizational goal. Once a procedure is established, however, a unilateral decision to violate that norm often becomes a moral issue: “It’s not fair cause I was waiting longer.” In response to these concerns, domain researchers have devoted extensive research in the last decade to studying how children and adults reason about complex multidomain events and how that reasoning affects behavior.

Turiel and Smetana (1984; see also Nucci, 2001) initially proposed that children and adults usually display one of three increasingly integrated patterns in their reasoning about domain interactions and overlaps: domain subordination, lack of domain resolution, and domain coordination. In the lining-up situation, for example, a child might say that she was waiting her turn and it is never okay to take cuts, thus reducing the event to a simple, clear-cut moral event (i.e., domain subordination). Another child might be aware of the conflict between waiting for a turn and the cutter being very thirsty and in a rush to get back to the game, but be unable to integrate these elements in any coherent or integrated manner (lack of domain resolution). Finally, some children are clear about the competing domain issues in the event and are able to form an integrated response: “This one-time cuts are ok because of the rush, but mostly cutting is a bad thing cause it can lead to fights at the water fountain” (domain coordination).

Much of the research on reasoning about mixed domains, however, has focused less on patterns of domain integration than on the specific contexts in which domain mixtures are likely to be important. Recent research by Killen, Horn, and colleagues (e.g., Horn, Killen, & Stangor, 1999; Killen, Pisacane, Lee-Kim, & Ardila-Ray, 2001; Killen & Stangor, 2001) on children’s reasoning about inclusion and exclusion,
in particular, illustrates some of the implications that mixed-domain concepts have for understanding early SIP steps involving event understanding and interpretation. In this research, children and adolescents are presented with hypothetical situations in which they must decide whether to allow another child to join an activity (a club or after-school activity). Characteristics of the target child, such as gender, race, or peer group, are varied as are domain-relevant characteristics of the event. Overall, results suggest that most children (from preschool through seventh grade) view it as unfair (moral) to reject a person from an activity based solely on his or her race or gender (Killen et al., 2001; Killen & Stangor, 2001). Yet, when pragmatic (conventional) constraints limit effective group size, older children, especially, are more likely to believe that it is legitimate to use information regarding group functioning, stereotypes, and personal characteristics in their judgments about exclusion.

Furthermore, some recent domain research suggests that group stereotypes that do not involve race or gender can affect reasoning about mixed-domain events in important ways (Horn, 2003a, 2003b). For example, when there was a lack of information about a potential group member, adolescents used stereotypic information and provided more conventional rationales in support of their decision. Moreover, in the ambiguous condition, members of adolescent-defined high-status groups (e.g., preppies) were more biased toward using stereotypes in their group selection than were adolescents from low-status (e.g., goths) or unaffiliated groups.

Collectively, Killen and Horn’s research suggests that certain moral ambiguities (e.g., “Is this a moral event?”) not only depend on the inherent domain mixture of the event but also on the specific group and psychological characteristics of the individuals involved. Take a situation in which a high school drama club is going through difficult times and has room for only one new member, either a talented but volatile adolescent or a less talented but even-tempered peer. In this case the need to coordinate between moral (being fair to both prospective members) and conventional (keeping the club going) concerns is complicated by the legitimate need to attend to how individual psychological factors may influence the coordination. It makes little sense, for example, simply to ignore personality on moral grounds if this greatly increases the chances that the club will break up after the more volatile candidate is admitted.

We have obtained preliminary data (Arsenio, Grossman, & Gold, 2003) that illustrate how emerging domain findings on exclusion could influence future SIP research. Our research began with the fact that when SIP researchers assess children’s interpretations of exclusion (or provocation) contexts they often ask both open-ended questions (e.g., “Why didn’t they let you play?”) and close-ended questions of whether the exclusion was hostile or benign in intent. Typically, this information is collapsed into a single measure assessing attribution of intent. However, when we coded participants’ hostile and benign attributions and their explanations for these attributions separately, we found that when adolescents judged that excluders’ intentions were benign, more than half of their attributions focused on conventional and organizational aspects of the situation (e.g., “There probably isn’t enough room; they’ll let me play later”). In contrast, when adolescents judged that excluders’ intentions were hostile, they mostly focused on personal attributions (“They don’t like me”), somewhat on moral issues (“It isn’t fair”), and rarely on conventional concerns. By extension, these findings suggest that children who suffer from hostile attributional biases (and consequently are more likely to be aggressive and rejected; Coie & Dodge, 1998) may be likely to view their exclusion from an activity as stemming from personality issues rather than from conventional concerns. A similar approach to coding attribution of intent data for provocation situations is likely to yield evidence that mixed-domain issues apply here as well.

There are, of course, some key differences in the domain and SIP approaches to inclusion and exclusion. In domain work, children are presented with the information needed to interpret potentially ambiguous mixed-domain events (e.g., there is room for one club member, and one candidate is more qualified), and then as a member of the group they are asked to judge who should be selected and why. In contrast, SIP exclusion contexts are deliberately ambiguous in that the child being considered must infer the potential causes of his or her peer group exclusion. Research that addresses both perspectives within one research design (e.g., judging from inside and outside the group), however, might prove especially fruitful. Therefore, for example, if rejected, aggressive children do explain their group exclusion in personal/psychological terms (“They don’t like me”), are these children also more likely than their peers to focus on personality issues in their judgments about admitting others to groups? More generally, it is clear that children are grappling with aspects of mixed domains in the contexts already being assessed by SIP researchers.
Understanding and Predicting Individual Differences

A major strength of the SIP approach is its explanation and prediction of individual differences in socially competent and incompetent behavior. By modeling online SIP in the context of challenging interpersonal situations, SIP research has demonstrated that differences in how children think about the social world have important connections with both social competence, in general, and aggression, in particular. A key ingredient in this success has been the design of stimuli and related interview questions that place the child in a hypothetical yet challenging situation to which there are many possible responses. We argue that a similar approach that models online processes in mixed-domain-related choices would help clarify the relation between moral cognition and behavior. In addition, the SIP model and methodology can help investigate why “knowing the good” does not always translate into “doing the good,” providing valuable suggestions for the design of interventions for aggressive children.

As described earlier, SIP research has shown that situations where a peer’s intent is ambiguous are especially useful for examining how individual differences in social cognition are related to aggression and social competence. However, as the domain model has shown, events themselves can be ambiguous if events are a mixture of domains. In fact, some situations used in SIP methodology, such as cutting in line, involve such domain mixtures. For example, as noted earlier, waiting in line for the water fountain is a social convention because other procedures could work in this situation (take a number, youngest children first). However, when there is an accepted procedure such as waiting in line, cutting is often perceived as unfair (moral domain). Reasoning about mixed-domain situations such as this can range from a fairly simplistic focus on only one of the domains (domain subordination) to an integrated view where both domains are coordinated. Given that coordination of domains is likely to have high information processing load, it is reasonable to expect developmental differences in children’s ability to integrate and coordinate their reasoning about the two domains (Nucci, 2001). We suggest that some types of emotional arousal that narrow attentional focus also can make domain subordination more likely (see Lemerise & Arsenio, 2000). Finally, from an SIP perspective, children’s SIP biases, deficits, and goals can influence whether only one or both domains are considered as well as which domain is the focus of processing.

To begin with, we argue that knowledge about the moral, social conventional, and personal domains is stored in long-term memory (latent mental structures; Crick & Dodge, 1994). For domain knowledge to influence behavior in a given situation, it must be retrieved from long-term memory and used in the child’s online processing in the context of that event. Aspects of events themselves (e.g., is the event clearly hostile or nonhostile, or is it ambiguous, as in a mixed-domain situation?) may affect the likelihood of retrieval cues for moral or other domain knowledge, and children’s cue detection and interpretation may also make the retrieval of different types of domain knowledge more or less likely. If retrieved in these early SIP stages, moral or other domain knowledge could potentially influence other steps of information processing (goal clarification, response generation, response evaluation). Exactly which steps are influenced depends partly on the timing of the retrieval of domain knowledge. The child’s role as target or initiator also will affect the likelihood, timing of retrieval, and type of moral knowledge retrieved.

In mixed-domain events, such as the line-cutting situation, the first step of SIP, cue detection, could contribute to whether children will engage in domain subordination or in a more integrated response. For example, if the child waiting in line notices that the line cutter has just run in from outside and is very hot and sweaty, that information could influence the interpretations made of the cutter’s behavior. At the interpretation of cues processing step (Step 2 in the SIP model), the child who is waiting in line must decide whether the child who cut in the line did so with malicious or benign intent. Failure to detect that the cutter is desperately hot and thirsty may make a hostile attribution more likely (“He cut to be mean”). A hostile attribution in this situation could cue moral knowledge structures about fairness (“Cutting isn’t fair”) and domain subordination. On the other hand, knowledge that the cutter is hot and thirsty could act as a mitigating factor (if the child can integrate this information with other aspects of the situation), leading to a more benign attribution (e.g., “He didn’t mean anything by it; he was just very thirsty”). This more benign interpretation and the information about the cutter’s thirst are likely to cue different kinds of domain knowledge structures (moral domain: “We should help people in need or trouble”; social conventional domain: “Exceptions to these kinds of rules are not morally wrong”). The cutter’s identity as friend or foe may also influence whether his or her thirst is a mitigating factor in interpreting the cutting behavior.
or whether the child is motivated to do the extra cognitive work required for more integrated domain reasoning (Lemerise & Arsenio, 2000).

Either armed with a hostile attribution of intent and a sense that the line cutter is violating moral norms about fairness, or with a more benign interpretation, the line waiter must now clarify his or her goals for the immediate situation (Step 3 in the SIP model). Although the line waiter’s original goal was instrumental (to get a drink), another potential goal involves the child’s desired relationship with the line cutter: “Do I want to be/remain friends with the kid?” (a social relational goal). Alternative goals might include exhibiting dominance, teaching the line cutter a lesson, avoiding conflict, or doing what is right or morally justified (note that no studies have assessed moral goals). Past SIP research has shown that in the context of interpersonal conflicts, children who prefer instrumental goals (get my place in the line back) to social relational goals (be friends) are more likely to choose an aggressive solution such as pushing the classmate out of line (e.g., Crick & Dodge, 1994, 1996; Erdley & Asher, 1996; Slaby & Guerra, 1988). Indeed, children’s ratings of different goals in situations like this have been shown to predict their behaviors better than do their attributions of intent (see Erdley & Asher, 1996).

In the line-cutting situation, the line cutter’s strongly motivated instrumental goal of getting a drink may supersede the social relational goal of getting along with others (which under normal conditions might be a fairly strong goal). More generally, having a strong instrumental goal and a weak (or no) competing social relational goal may make it less likely that domain knowledge structures will be retrieved and, consequently, that domain coordination will be exhibited in children’s reasoning and behavior. In the water fountain situation, being extremely thirsty also raises arousal level, focusing attention more narrowly on the goal of getting the needed drink of water. On the other hand, the child who has been patiently waiting in line will have to make some adjustment to his or her goals when provoked by the cutter. Note that rejected aggressive children have been shown to have more difficulty integrating multiple goals in the context of challenging social situations such as these (see Rabiner & Gordon, 1992).

Although we emphasize the ways children’s goals influence their retrieval of domain knowledge structures and their subsequent SIP, it is also important to acknowledge that goals and the means of achieving them are potentially separable (e.g., see Killen & Nucci, 1995). For example, in the line-cutting example we can assume that the line waiter originally had the instrumental goal of getting a drink. When the other child cuts, additional goals may then be activated: “I want my place in the line, but I want my classmate who cut in line to like me” or “It is important to me to ‘win’ in situations like this”. For many children, focusing on both the line-cutting classmate’s unfairness to the self and the instrumental goal of getting the place may be sufficient to lead to the generation, evaluation, and selection of a hostile or aggressive strategy such as pushing the classmate away from the water fountain (“After all, that kid was unfair to me and should be punished for it”). Some children, however, may have a similar focus (“The cutter is unfair and I want my drink now”) and may generate several aggressive responses, only to reject them at the response-selection step when moral domain concerns become activated (“I’d like to just push him out, but he might get hurt then”). The central issue is not so much whether goals or other SIP-related steps are most influential but rather that mixed-domain events are an essential context for examining how children combine domain and SIP-related reasoning and how that integration affects their behavior.

Latent Mental Structures and Online Processing: Toward an Integrated Model of SIP and Domain Theories

Despite the obvious differences between these two theories, we have argued it is possible to combine them into a single integrated model without distorting the core theoretical and empirical strengths of either approach. A key aspect of this integration involves Crick and Dodge’s (1994) distinction between the rapid, real-time processing of social information and the representations of earlier social events stored in long-term memory. In their words:

Thus, two types of mental processes are proposed in the reformulated model: latent mental structures and on-line processing actions. It is proposed that (a) social experiences lead to the generation of latent mental structures that are stored and carried forward over time in memory in the form of social knowledge, (b) these mental structures constitute the “database” in processing models and influence a child’s on-line processing of social cues, (c) on-line processing directly influences social behavior, and (d) the child mentally represents social behavior and its outcomes and stores them in memory, and they become part of his or her general social knowledge that will influence future actions. (p. 79)
Several SIP-related studies have already begun to examine this combined focus on children’s online social reasoning and their latent mental structures (e.g., Burks, Laird, Dodge, Pettit, & Bates, 1999; Zelli et al., 1999). For example, in a short-term longitudinal study, Zelli et al. (1999) found that school-age children’s beliefs about the acceptability of aggressive behavior (one aspect of their latent mental structures) predicted aggressive behavior, with SIP steps mediating this relationship. “There also is consensus with respect to a general hypothesized model in which knowledge influences current behavior by regulating the ways one encodes, interprets, and evaluates responses to any current situation” (p. 161).

No comparable study has assessed both children’s latent mental structures involving sociomoral domains and the online aspects of their social reasoning. Although this gap is not surprising given the minimal contact between these fields, it is relatively easy to imagine this integration. The SIP model explicitly acknowledges the centrality of the latent mental structures, including acquired rules and social knowledge, and domain theory provides the sophisticated model of those sociomoral rules and knowledge that is missing from the SIP approach. In turn, the SIP model helps domain theory address its limited focus on individual differences by providing a powerful model of how real-time constraints can affect the application of domain knowledge during ongoing social interactions.

Figure 2 provides a schematic summary of some of the discussed connections between SIP and domain models in terms of latent mental structures and SIP steps. At the center of the model, the latent mental structures include stored representations of many different types of social rules, schemas, and knowledge. Much of the knowledge, we have argued, is organized in terms of knowledge structures associated with the moral, conventional, and personal domains. These domain structures, which are formed through repeated social interactions that share certain core features (see Turiel, 1998), are

Figure 2. A simplified model of domain latent mental structure influences on social information processing. This figure depicts the domain influences that should be added to Figure 1. Note that for the sake of clarity, specific information regarding affect processes and details within each social information processing step have been eliminated (see Figure 1 for these details).
thought to include schemas for assessing new social events, as well as numerous representations of past prototypical domain-related experiences. In addition, there may be representations of some common mixed or ambiguous domain events (e.g., cutting in line), although children’s understanding of the frequent novel mixed events they experience may require more active online processing (“Cutting isn’t ok but he sure does look hot and thirsty”).

As discussed earlier, domain-related latent mental structures can inform and influence several SIP steps. In the SIP paradigm, where a child is usually responding to a provocation (rather than initiating an unprovoked sociomoral behavior), domain knowledge is critical at the interpretation step (“Is this a moral event?” “Does he/she mean to harm me?”). Another important SIP step is goal clarification (Step 3) because some goals may be more likely than others to cue relevant moral knowledge structures. For example, relational goals, with their more interpersonal focus, and instrumental goals, with their greater self-focus, may differ in their tendency to cue moral knowledge structures that will influence subsequent SIP steps of response generation, evaluation, and decision. Domain-related structures, however, are also likely to have an influence on the SIP steps of response generation (Step 4) and especially response selection (Step 5). For example, children may generate several ways of responding to a provocative peer, but when it comes time to select a response, most children’s underlying moral knowledge structures will exert strong selective pressures for some choices over others (“I’d really like to pinch her, but I’ll try asking nicely again”).

**Directions for Future Research**

One basic recommendation for future research is to include aspects of the core methodologies of each model within a single research design. Existing SIP studies on latent mental structures provide a rough framework for how to assess latent mental structures separately from more online aspects of children’s social reasoning. Given that most domain research has shown few individual differences in children’s conceptions of prototypical domain events, it may be especially useful to start with domain reasoning regarding mixed and ambiguous events, including some of the provocative situations used in SIP research such as cutting in line or not being allowed to join an activity. Group differences in children’s related knowledge structures could be assessed using techniques from domain studies on inclusion and exclusion (Horn, 2003a, 2003b; Killen et al., 2002).

Specifyingly, children can be presented with simple mixed events, and changes in their reasoning can be assessed as additional domain-relevant information is added (e.g., does an aggressive child alter his or her view of a line cutter if the cutter has to get back to a game quickly). The more online SIP aspects of children’s reasoning can then be assessed using many of the standard highly elaborated techniques already used in the literature, with only slight modifications to assess specific steps where morally relevant information may affect that reasoning (e.g., cue interpretation, clarification of goals).

Another issue for future research involves obtaining a better understanding of how online processing is influenced by existing mental structures. In the structuralist view (e.g., Turiel, 1983), new information may be processed either in ways that are highly consistent with existing knowledge structures (assimilation) or in ways that subtly extend or contradict those structures (accommodation). In either case, children’s ability to interpret and understand new information is seen as depending on their pre-existing knowledge structures. The Zelli et al. (1999) study described earlier both supports the claim that children’s online processing is clearly influenced by their underlying social knowledge, and provides some methodological clues for studying how underlying domain knowledge might influence children’s SIP. Specifically, by using a short-term longitudinal design with measures of children’s domain-related knowledge and their SIP at different time points, it would be possible to assess whether domain-related knowledge mediates the influence of children’s subsequent SIP on their related behaviors.

We also propose, however, that attempts to examine the effects of domain-related knowledge on children’s SIP depend on having descriptions of underlying domains that can address meaningful individual differences as well as the deep commonalities that have been found to underlie most children’s reasoning (see, Turiel, 1998). For example, Astor’s (1994) study revealed that physically aggressive and nonaggressive children did not differ in their domain judgments for prototypical moral events (“Is it alright to hit?”), but that given a verbal provocation, only aggressive children believed it was legitimate to respond with physical aggression. Moreover, related findings regarding legitimate exceptions to moral prescriptions have emerged in the literature on children’s normative beliefs about aggression (e.g., Huesmann & Guerra, 1997). Successful attempts to integrate the domain and SIP models will depend, in part, on having a better understanding of the systematic differences in children’s beliefs about
when and under what conditions prototypical moral prescriptions do or do not apply.

Other recommendations for future research have been made at length elsewhere (e.g., Arsenio & Lemerise, 2001; Lemerise & Arsenio, 2000) and will only be mentioned briefly here. Both the SIP and domain models emphasize the systematic connections between children’s social cognitions and their morally relevant behaviors. By contrast, little attention has been paid to the emotional processes involved in children’s morally relevant social cognitions and behavior. One important consequence of this gap is that many of the motivational roots of moral behavior seem opaque. For example, from a strictly social cognitive perspective it is not clear why “knowing the good” should automatically lead to “doing the good” (e.g., take proactive aggression). As we suggested earlier, children’s capacity for empathy and sympathy is a key contributor to “doing (or not doing) the good.” Assessments of children’s skill at reading emotion cues in self and others can be added to SIP-based methodology in a relatively straightforward manner. Although the assessment of emotional arousal and emotion regulation may be less straightforward, Eisenberg et al. (1997) have developed measures that could be used to identify children who differ in these traits. The resulting groups can then be compared in studies of SIP and domain knowledge. Directly assessing emotional arousal and emotion regulation in the context of online processing is likely to be more challenging, though not impossible (see Hubbard et al., 2002).

Conclusion

The present paper is an initial effort to integrate two of the most influential theoretical and empirical accounts of children’s social reasoning and behavior: the SIP and domain models. This integration is initially made possible because both theories share: (a) a core assumption that children’s understanding and interpretation of their social worlds are related to their behavior, (b) a major focus on acts involving intentional harm and victimization, and (c) interests in additional nonmoral aspects of social functioning (e.g., social conventions and personal events for the domain model, and other aspects of social competence for the SIP model). The heuristic power of this integration, however, stems from the ability of each model to address relative weaknesses in the other without distorting either approach. Specifically, domain theory is essential for describing children’s latent mental structures regarding the nature of boundaries of what is moral and nonmoral, whereas the SIP model is essential for describing nature of the online SIP steps that affect children’s application of these moral and nonmoral mental structures during their social interaction.

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