



# Toward a conceptual framework of instrumental antisocial decision-making and behavior in youth<sup>☆</sup>

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## Abstract

This paper reviews and organizes relevant theory and research toward a conceptual framework of instrumental antisocial decision-making and behavior in youth. To date, social cognitive study of the development of youth antisocial functioning has largely focused on *response* patterns (e.g., cognitive responses to aversive cues). Though instrumental decision making is paid significant attention in research on adult criminality, there exists no framework by which youths' goal-driven behavioral decisions that are made in pursuit of antisocial motives and interests may be understood. This is a problem in that lessons from research on children and adolescents suggest that there are meaningful differences in structure, phenomenology and function of subtypes of antisocial behavior (instrumental versus reactive). The absence of such a model may account, at least in part, for why the study of instrumental antisocial behavior in youth remains relatively limited.

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Antisocial conduct problems in youth have consistently been found to lead to more severe maladjustment and antisocial outcomes in later life (e.g., see Caspi & Moffitt, 1995; Farrington et al., 1990; Huesmann & Moise, 1998; Lahey & Loeber, 1997; Loeber & Farrington, 1997; Loeber & Hay, 1997). Numerous, significant contributions toward understanding relevant developmental pathways have been provided by research in social cognition. However, models of child social cognition and deviance have focused on cognitive and behavioral responses and response patterns and have neglected mechanisms of instrumental activity. Alternatively, adult models of decision making and deviance and crime have paid significant attention to instrumental processes but, of course, are not guided by research on child and adolescent populations that is directly relevant to understanding youth antisocial behavior.

Research on antisocial conduct has continued to draw a theoretical and empirical distinction between reactive (or hostile or defensive) and instrumental (or proactive or offensive) styles of aggressive behavior (see Kempes, Matthys, de Vries, & van Engeland, 2005, for a recent review related to aggressive behavior). Reactive antisocial behavior is characterized as emotionally and physiologically aroused, often impulsive or automatic, and enacted in response to aversive social cues (i.e., stimuli that are perceived as threatening or potentially harmful). Instrumental antisocial conduct is distinguished as calm, deliberate, harmful acts that are carried out in pursuit of goal attainment. At the core of this distinction are the different social cognitive patterns associated with reactive versus instrumental styles of behavior. Note that whereas reactive antisocial behavior is performed in response to *external* social stimuli (that are perceived as *negative* or aversive), instrumental deviant behavior is proximally motivated by *internal* desires and goals (that are perceived as *positive* or attractive).

The social cognitive psychology of the instrumental/reactive distinction is central to the uniqueness and importance of the present youth model. For the purposes of this paper, instrumental decision making is defined as the evaluative decision processes, and organization of such processes, that are potentially active during one's intentional mental preparation to engage in behavior by which he or she may benefit (i.e., attain a goal or satisfy a desire). By their nature, goal-directed cognitive processes are at the core of even the most rudimentary of intentional human actions (e.g., survival behaviors such as hunting). Given the degree to which social cognitive processing and evaluative decision making have been associated with models of alternative antisocial trajectories (e.g., Crick & Dodge, 1996; Fontaine, 2006b), it is clear that evaluative decision processes play an important and specific role in the development of instrumental antisocial behavior.

To date, the majority of social cognitive research on antisocial subtypes in youth has focused on aggressive behavior (see Fontaine, 2006b). Most studies have concentrated on alternative ways that proactive versus reactive aggressive youths process information during social situations. Reactive aggressive youths have been shown to have a tendency to attribute hostile intent in response to ambiguous provocations, compared to their nonreactive aggressive peers. In contrast, although proactive aggressive youths have not been shown to be particularly biased in their interpretational or attributional styles, they have been demonstrated to be significantly different in their evaluative decision making. Relative to their nonproactive aggressive peers, proactive aggressive youths have been shown to evaluate aggression as an acceptable approach to attaining instrumental goals, expect positive outcomes from their aggressive actions and appraise aggression favorably across social dimensions (Crick & Dodge, 1996; Dodge & Coie, 1987; Dodge, Lochman, Harnish, Bates, & Pettit, 1997; Hubbard, Dodge, Cillessen, Coie, & Schwartz, 2001; Schwartz et al., 1998). Scientific evidence that distinguishes instrumental from reactive antisocial functioning has come not only from social and cognitive research, but also from studies of psychophysiology (Barratt, Stanford, Kent, & Felthous, 1997; Smithmyer, Hubbard, & Simons, 1998) and neuropsychology and brain mechanisms (Barratt, Stanford, Dowdy, Liebman, & Kent, 1999; Barratt et al., 1997; Blair, 2004). Findings from this body of work suggests that evaluative decision processes in youth may be critical to our understanding of the development of goal-driven decision making, instrumental deviant behavior and assaultive criminal offending across the life course.

Over the last two decades, advances in social developmental psychology led to the application of information processing principles to social contexts. To date, one of the leading social cognitive perspectives in child aggression research is social information processing theory (SIP; Crick & Dodge, 1994; Dodge, 1986; Huesmann, 1988, 1998). According to SIP, upon being presented with a social stimulus, a responding individual engages in a set of processing steps that can range from simple perception to advanced evaluative processing. Namely, when reacting to a social cue, the respondent (A) encodes social information about the cue and social context, (B) interprets the cue and makes attributions about its meaning and intentionality, (C) clarifies his or her goals with respect to the given social situation, (D) generates alternative responses (or scripts), (E) evaluates response options across different domains and (F) selects a script for behavioral enactment. There has been extensive empirical support for this theory and studies have supported each of the posited stages (see Crick & Dodge, 1994).

Most recently, Fontaine and Dodge (2006) have elaborated upon the more advanced SIP processes of *response evaluation and decision* (RED; represented by E above). RED offers a sophisticated computational representation by which decision operations may be quantitatively represented, calculated and reduced to overall decision scores for alternative response scripts. According to this model, after being presented with a social cue, the responding individual generates alternative response scripts that are then evaluated across multiple levels. A script that is fully processed and behaviorally employed is ( $E_i$ ) admitted past an initial threshold of acceptability, ( $E_{ii}$ ) evaluated according to both its response efficacy and value, ( $E_{iii}$ ) considered in light of its outcome expectancy and value, ( $E_{iv}$ ) compared with other responses options and ( $E_v$ ) selected for behavioral enactment. This model allows for feedback loops and infinite nonlinear patterns among the processes described in components  $E_{ii}$  through  $E_{iv}$  (component  $E_i$  necessarily must occur first just as component  $E_v$  need be last). Because of time pressures that are typically perceived in social interactions that call for responses, the authors hypothesize multiple levels of thresholds that may be lowered or elevated in real time as contextual factors change or more is learned about the given situation. The model also incorporates and accounts for heightened emotional arousal and impulsivity—factors that have been asserted as being particularly important in distinguishing reactive antisocial behaviors from instrumental ones (Dodge, 1991).

SIP research has provided substantial scientific evidence in support of a developmental model of chronic aggressive behavior. Two limitations of SIP theory (and the RED model, more specifically), however, must be addressed. First, SIP necessitates a static social cue as it is designed to account for social cognitive processes that are activated *in response to* a social stimulus. In this way, SIP is a theory of reactive social cognitive and behavioral functioning. Second, the success of SIP has been largely limited to the development of aggressive conduct problems. Relatively little SIP research has been published with respect to antisocial behavior other than aggression. This may be because many other forms of antisocial conduct – for example, stealing, cheating, vandalism and illicit substance use – are more typically instrumental and nonreactive. It has been illustrated, though, that many of the behavioral judgment and evaluative decision processes examined in SIP research may equally apply to these alternative, and potentially instrumental, forms of antisocial conduct (Fontaine, 2006b).

## 1. Instrumental antisocial decision-making and behavior in youth

At the outset, it is acknowledged that, although this paper reviews and conceptually frames the psychology of instrumental decision making and antisocial behavior in youth, its already broad scope does not attempt to cover the development of individual differences in social and antisocial motivations (readers are referred to Gibbs, 1992). As an alternative to current perspectives on child psychopathology and juvenile delinquency, the present conceptualization of instrumental antisocial decision-making (IAD) is offered as a heuristic model of evaluative decision processes that are associated with youths' instrumental antisocial behaviors. It is posited that cognitive operations outlined in this model represent actual mind processes that are potentially active during children's consideration of antisocial interests and opportunities. Also, the present model may have important predictive utility and facilitate earlier identification of children who are at-risk for later maladjustment (e.g., delinquent recidivism), thus maximizing the likelihood of intervention success.

The IAD framework incorporates five domains of behavioral evaluation that are hypothesized to be particularly influential in youths' instrumental antisocial choices and behavioral enactments (as illustrated in Fig. 1). First, for a behavior or decision making process to be consistent with goal striving, there must be some motivational recognition (see Bagozzi, Dholakia, & Basuroy, 2003). During *goal assessment*, the youth (A) identifies the subject goal, (B) assesses its overall valence to be greater than that of a fleeting thought (i.e., a notion that is only momentarily



Fig. 1. A schematic representation of instrumental antisocial decision-making (IAD) processes that are potentially active during a youth's consideration of acting upon deviant goals and desires.

entertained), (C) determines the degree to which the goal is consistent with, or in opposition to, perceived social norms and rules and (D) evaluates the goal in terms of its feasibility. Goals that are identified to violate sociomoral norms, but are sufficiently motivating and feasible, are then evaluated across multiple levels.

During the second IAD stage of processing, the youth accesses or generates one or more behavioral approaches that may be considered as possible means by which the antisocial goal may be realized (called *strategy and opportunity realization*). Central to one's identification of a possible approach (or script or plan) is the youth's need to identify and evaluate one or more opportunities by which the approach (or script or plan) may be applied. Note that these first two sets of processes – *goal assessment* and *strategy and opportunity realization* – are key domains of IAD as they are essential to the types of instrumental cognitive processing that are basic to antisocial-goal-striving behaviors and contribute to distinguishing IAD from other models of behavioral decision making in youth.

Third, a child may evaluate a generated means according to whether it is congruent with his or her sociomoral identity (called *sociomoral congruence*). One's sociomoral identity is defined by the way one perceives oneself as a moral agent and as a member of his or her specific social network, subculture and society-at-large. Sociomoral congruence defines the “fit” between a behavioral plan and one's social and moral identity, as evaluated by the actor.

A fourth domain of IAD processes that potentially influences a youth's choice making has to do with how the child identifies and evaluates possible positive and negative outcomes that may result as direct or indirect consequences of enacting the strategy being considered. A critical component of this set of processes has to do with the degree to which the youth expects that the antisocial behavior that is being considered will successfully lead to actualizing the subject motive versus its likelihood to lead to undesired outcomes (termed *outcome and risk appraisal*). Because there exists risk in enacting antisocial behaviors (at least to the degree that the youth values freedom from punishment and social scrutiny and disapproval), youth decision making may be influenced by the degree of risk that he or she associates with the subject behavior. Associating risk with behavior (or “risk appraisal”) may serve to deter the choice to behave in an antisocial manner when great risk is perceived *or* promote a deviant behavioral choice when risk is assessed to be trivial (or tolerable), a critical domain of evaluating outcome probabilities.

Ultimately, the actor chooses whether to act upon his or her antisocial interest and, if he or she chooses to pursue goal attainment, selects a behavioral script for enactment (called *behavioral decision*). It is hypothesized that these five sets of processes contribute uniquely to the formation and enactment of instrumental antisocial acts. Of course, the degree to which these processes are utilized during the course of instrumental deliberation varies according to how impulsive versus mindful the actor is.

For the purposes of this paper, a goal is defined as a state of the world that a person explicitly desires to achieve, preserve, avoid or destroy (see Slade, 1994). Instrumental decision making, then, is the set of cognitive processes by

which one assesses how he or she may be able to achieve the desired state. Instrumental *antisocial* decision-making has to do with evaluative processes that are potentially active during the consideration of behaving in a way that violates social rules or laws. Thus, an instrumental antisocial behavior is any socially unacceptable act that is purposefully carried out in order to realize a desire or goal.

### 1.1. *Thresholds of acceptability*

Models of decision making (particularly with respect to decision making under uncertainty, which applies to IAD) have long incorporated contingency and threshold mechanisms. With respect to behavioral decision making, the idea is that a strategy or behavioral option that is being assessed and considered for possible enactment must meet a minimum evaluative standard or threshold before it may be further considered in the decision making process. That is, if the behavior that is being evaluated does not meet some personally defined minimum value, then it will be discarded and no longer considered. Alternatively, if the identified behavior does meet the primary (or general) threshold, then it may be further considered across domains of evaluative decision making until it is enacted, discarded because it is deemed less worthy of enactment as compared to another way of behaving, or discarded because the individual has gained new social information that has led to a reevaluation of the behavior and conclusion that it does not meet context-specific demands. This final possible scenario illustrates the idea of a multiple thresholds of acceptability that are based on different aspects of situational applicability (Fontaine & Dodge, 2006). As time passes, there may become reason for behavioral options to be reevaluated according to previously applied acceptability thresholds via feedback loop mechanisms. The feedback loop is utilized upon the receipt of new relevant information that places the behavior in question again, due to the need to reassess the situational applicability of the behavior.

The concept of the threshold of acceptability is further developed in the current decision making framework. In IAD, a primary threshold of acceptability is hypothesized to be active within each domain of decision processing. In other words, for a behavior to be conceptually processed and evaluated in a meaningful way, it must meet the minimum value standard for each IAD domain. For example, if a youth desires a new pair of basketball shoes and he does not have the money, a behavioral script that entails taking money from his mother's purse may meet minimum thresholds for positive and negative outcome assessments (the money will allow the youth to attain the desired shoes and it is unlikely that his mother will realize that the money is missing) but fail to meet the minimum standard of sociomoral congruence (the youth knows that taking the money from his mother's purse is strictly wrong in a moral sense and it is not a behavior he can envision himself enacting). As a result, the youth discards the behavioral option and does not steal the money. In contrast, this behavior may meet the minimum standards across all domains for a different youth in the same situation if, for example, he or she views the stealing behavior as less culpable because his or her mother has lots of money and will not miss the money that is taken from her purse. In this latter scenario, the youth may continue to evaluate the behavior and consider it more fully (e.g., by imagining the specific steps by which he or she could successfully carry out the behavior without detection).

Of course, the threshold for a domain (or for multiple domains) may be set a zero if the domain itself is deemed meaningless to the situation at hand or in general. For example, the youth who has the strong goal of social dominance may decide to bully peers regardless of what the negative consequences may be. It may be that the desires to dominate and be feared by peers are so strong that it is a goal that he or she will pursue at all costs. In this sense, the risk appraisal process is essentially inactive (or bypassed) as its primary threshold of acceptability is set at zero.

Also, a domain threshold may be set at zero if the person understands or misunderstands the domain to be irrelevant to the goal or goal-driven behavioral scripts. A person may validly understand that a specific domain is irrelevant to the given decision making situation due to significant past experience and familiarity with the decision making at hand. For example, the child who cheats on his homework by copying the answers from a peer's worksheet may be completely unconcerned with the sociomoral congruence of the action because he or she has been trading homework assignments with peers in a mutually helpful way for years. The child is not concerned with the degree to which his or her moral and social standards are met because these issues were previously rationalized and resolved. Alternatively, a youth may misunderstand the relation between an IAD domain and the considered behavior. The child who asks a peer for some answers on a homework assignment may misunderstand the situation as one in which the students are allowed to work together in order to complete the work. As a result, the acceptability threshold of sociomoral congruence is set at zero as the child mistakenly believes that there is no sociomoral conflict between his or her behavior and the social rules and/or his or her internal moral standards (note that the child may still appraise a level of risk greater than zero if the child

believes that the answers provided to him may be incorrect; as a result, the risk appraisal minimum threshold would be positive and this process would not be bypassed).

It is also likely that not all actors utilize all IAD domains, so if a domain is generally neglected or discounted, it may not be necessary for the behavioral alternative to meet the minimum threshold of that domain. This is an important concept because this is how incomplete decision making *styles* can develop and repeatedly lead to bad (or less than optimal) behavioral decisions. For example, perhaps an actor completely discounts outcome expectancy. He or she has generated a strategy that would normally fail the minimum thresholds of outcome appraisal domains – that is, the behavior is highly unlikely to lead to the desired outcome (e.g., attainment of desired material goods) and/or is highly likely to lead to a severely adverse outcome (e.g., incarceration) – however, because the outcome appraisal domain is completely discounted, the behavioral option is not ruled out and may be selected for enactment, only to fail to lead to the desired outcome and cause a highly negative one. Phenomenologically, this functions as persistent impulsivity.

### 1.2. Goal assessment

Individual goals may be generated internally (e.g., hunger or sexual arousal) or may be activated by characteristics of the environment (e.g., media presentation of lifestyles of privileged individuals). Often goals are constructed based on a combination of internal drives and environmental features (e.g., working toward a promotion at one's job may be driven by internal need for pride and pressure to meet vocational demands) and, in turn, may influence both intra- and extrapersonal functioning. To the degree that the decision maker interprets a goal as having sociomoral implications, the goal falls into this latter category. Sociomoral goals, by their nature, are individually determined and have implications for the decision maker. The implications may have both to do with outcomes that are desired and outcomes that the decision maker finds aversive and wants to avoid. Comprehensive decision making about an antisocial goal means understanding both the positive (social and moral) and negative (antisocial and immoral) aspects of the goal, identifying the various ways the goal may be achieved, evaluating the alternative goal strategies across relevant evaluative and expectancy dimensions and determining that the goal is feasible by some determinable minimum standard.

For decades, psychologists have been working on developing theories of personal goals and antisocial behavior (e.g., see Carroll, Houghton, Hattie, & Durkin, 2001; Staub, 1984). Although a comprehensive discussion of goal formation as related to deviant and antisocial interests is outside the scope of this paper, the processes of identifying, ascribing initial value to, and assessing the antisocial nature of goals are central to the relation between instrumental decision making and antisocial behavior. First, the youth must identify or recognize a goal before conscious decision making as to how to go about achieving the goal may be undertaken. Second, the goal must be initially assessed at some level as valuable or important enough to consider it further. This is entirely consistent with the idea of the goal needing to meet an initial threshold of acceptability. If a goal is identified but immediately assessed to be one of little importance, it may be deemed to fail to meet the minimum standard and will not pass the initial acceptability threshold. In addition to goals that fail to meet the minimum standard, goals that barely meet the threshold may receive limited further consideration (expressed verbally when a person states “I could take it or leave it” or “I could go either way”).

Another set of processes that is potentially active has to do with assessing the social/antisocial and moral/immoral nature of the goal. A goal may need to be determined to have sociomoral implications before certain decision processes that are inherent to antisocial decision making are activated. The degree to which the goal is consistent with or in opposition to perceived social norms and rules, for example, may be particularly relevant. During this process, the goal is clarified and recognized for its antisocial status. Perhaps it is clearly a deviant goal (e.g., stealing money) or perhaps it is only an antisocial goal if the pursuit of the goal is carried out in an antisocial fashion (e.g., cheating on a test versus taking the test without cheating). Another possibility is that the goal is deemed to be antisocial to the degree to which it is pursued. For example, the child who wins a race in gym class wants to later remind his competitor in front of their friends in order to gain peer recognition. Whereas reminding a peer of the victory one time may be an acceptable way to achieve this goal, doing so repeatedly in a relentless or harsh manner may serve more to anger and humiliate the peer and have an antisocial effect.

Another dimension of initial goal assessment is goal feasibility. Just as decision theorists have addressed issues of behavioral feasibility and applicability (e.g., Slade, 1994), an initial overview or assessment of a goal may determine whether the goal is feasible and attainment of the goal is possible. Goal feasibility functions as an initial threshold of acceptability that must be passed prior to the conceptual processing of alternative means by which the goal may be

realized. Pursuing any goal that one could have definitively assessed to be infeasible is cognitively and behaviorally inefficient.

Psychological theory that links goal setting and appraisal to youth antisocial theory is sparse. One recent approach has combined facets of reputation enhancing goals and goal-setting theory in order to account for adolescents becoming involved in delinquent activities (Carroll et al., 2001). The model, which takes into account criminological, rational choice, social control, symbolic interactionist and other perspectives, posits that adolescents engage in delinquent behavior because it informs them about their own self-image and status as well as how to interpret the social image and status of others. Assumptions of this work include that delinquency is a social phenomenon in that it is engaged in with or recognized by others and that it is driven largely by social motivators (enhancing social image and status and understanding the social image and status of peers).

There are several limitations of this approach, all of which the IAD framework is designed to address. First, this approach does not account for numerous nonsocial goals that may drive antisocial behaviors (e.g., greed motivating attainment of material goods or money). Second, many antisocial behaviors are not only nonsocial, but the actor goes to great lengths to assure that the goal is kept a secret and the behavior is conducted covertly. Many of these behaviors are enacted by an individual without even indirect involvement or contact with other people. Third, this model addresses behavior in adolescence but does not discuss delinquent behaviors at earlier developmental periods or stages. Furthermore, the model does not account for development or how, across time and transactions with one's environment, a youth may develop antisocial tendencies or enact an antisocial behavior in a specific interpersonal situation.

Lastly, the flow of information as it is being evaluated across IAD dimensions is of extreme importance to the mechanics of a working decision model. Immediately important to the presentation of the IAD model, though, is the concept of feedback loops as it relates to how cognitive information travels through decision making domains. Feedback loops serve as the mechanism by which thresholds of acceptability may be revisited as cognitive processing leads to the decision maker to consider issues that were not previously addressed or as novel social information is acquired. Feedback loops are proposed to be active at multiple levels throughout the IAD model (as illustrated in Fig. 1) and will be addressed further during the *behavioral decision* stage of decision making. Note that it is hypothesized that all subsequent domains of IAD are connected to the goal assessment stage in order for goals to be revisited and reassessed prior to more elaborate evaluative processing (and nonlinear and even circular decision making patterns such as "second guessing" and operations that may be at play during indecision).

### 1.3. Strategy and opportunity realization

Following the identification and assessment of an antisocial goal, possible strategies (also called means or scripts; Huesmann, 1988; Schank & Abelson, 1977) may be realized by which pursuit of the goal may take place. Inherent to the process of strategy realization is the consideration of at least one opportunity via which the behavior plan may be enacted. Essential to instrumental decision making is the realization (either by constructing anew or recalling from memory) of at least one strategy.

Decision theorists have long debated the degree to which alternative behavioral strategies need be considered one at a time (serial processing) or simultaneously (parallel processing) (e.g., see Rumelhart, McClelland, & the Parallel Distributed Processing Research Group, 1986a,b). Early theories of social information processing were questioned because they were interpreted solely as sequential processing models that did not account for empirical research that provides support for psychological and biological simultaneous operating. IAD allows for serial and simultaneous interpretations as may be seen in Fig. 1. It remains unclear to what degree and under what conditions humans process information serially versus across parallel tracks, particularly since human brain functioning is so advanced that extremely rapid serial processing may appear to be simultaneous, depending, in part, on the methods employed for analysis.

During the decision making stage of strategy and opportunity realization, the youth realizes one or more means by which his or her goal may be satisfied. One empirical question has to do with whether children who successfully carry out antisocial behaviors in order to have their deviant interests met are able to generate and/or recall more ways to achieve their antisocial goals than are their nondeviant peers. Another empirical question asks whether it is easier for antisocial children to construct or access antisocial behaviors and enact them because they are confident that they can find or even create opportunities by which the antisocial scripts may be successfully enacted. Although there is little science to answer these questions with respect to instrumental antisocial conduct, research on social information

processing and aggressive behavior in children provides evidence that these hypotheses are worth testing (Crick & Dodge, 1994).

IAD hypothesizes that the proactively deviant child makes his or her environment more opportunity laden, thus increasing his or her likelihood of being successful in achieving antisocial goals. Ability in creating promising opportunities and success in carrying out instrumental antisocial behaviors are separate but mutually complementary mechanisms of learning and reinforcement in the development of IAD and antisocial conduct. In this way, antisocial strategies may become endorsed more strongly across various IAD domains and come to characterize the child's general approach to his or her social world. The more success the child has – with creating antisocial opportunities as well as achieving deviant goals – the more he or she may learn that “crime” actually does pay and, in turn, become confident and comfortable in processing the IAD mechanisms and carrying out antisocial behaviors.

A note should also be made about subtypes of antisocial strategies. It is well accepted that decision making is an essential component of behavioral planning (Slade, 1994). The youth who identifies alternative strategies in the process of antisocial planning may do so across various categorical dimensions. One dichotomy that may be particularly important to antisocial planning may be the consideration of overt versus covert behavioral strategies. Although covert antisocial behaviors are not unique to proactive or instrumental approaches (i.e., a covert antisocial act may be entirely reactive by its nature—take the example of retaliatory property destruction that is carried out as a function of delayed responding to a perceived provocation in the absence of others), covert decision making and planning is often likened to certain types of antisocial behavior (e.g., cheating, stealing and illicit substance use). In fact, many antisocial goals may not be achieved but for covert action. As a result, differences in decision making that distinguish covert versus overt antisocial functioning are important to better understand. Although it is outside of the scope of the current paper to comprehensively address these differences, it should be recognized that the realization of covert versus overt strategies and opportunities likely have important implications for how instrumental antisocial decision-making operates and influences behavioral enactment.

#### *1.4. Sociomoral congruence*

It is well recognized by developmentalists that, over time, children develop internal standards by which they identify themselves, represent themselves to others and gauge the degree to which thoughts, feelings and behaviors “fit” with such standards. In this way, the child develops a sense of self as a sociomoral agent, combining social, civic and moral factors into a continually developing array of latent cognitive structures of personally defining information. This “self-understanding” and its relation to moral behavior has been a critical focus of multiple programs of empirical research, such as those of Blasi (1980; Blasi & Oresick, 1986), Damon (1984; Damon & Hart, 1988), Fontaine (2006a,b; Fontaine, Burks, & Dodge, 1998, 2002), and Huesmann (1988, 1998). The process of sociomoral congruence is defined by the degree to which a decision maker matches a behavioral option to his or her self-ascribed identity. The individual may recognize one or more ways of behaving that may function to fulfill a goal or respond to perceived demands in a social situation. A behavior may be assessed in terms of one's social identity (i.e., how the person perceives himself or herself to be viewed by others, in terms of social specificity and relevance) and moral agency (i.e., a person's self-assessment as a morally good or bad person).

In terms of moral development and reasoning, the structuralist contributions of Piaget (1965) and Kohlberg (1963, 1964, 1984) have been critical for understanding links of social and moral judgment and antisocial behavior. Piaget believed that egocentrism and perspective taking were developmental processes that distinguish moral action in the developing child. The general idea was children who were able to become less egocentric and develop skills by which they could take the perspectives of others and understand how other people experience similar situations would be more capable of advanced moral reasoning and moral and prosocial behavior (e.g., altruism). Kohlberg addressed the simultaneous development of moral cognition and antisocial behavior from a stage theory framework and theoretically and empirically linked facets of each moral development stage to variability of antisocial conduct. He posited that developmental lags at each stage of moral development were responsible for antisocial behavior and, in this way, focused on developmentally defined social cognitive deficits as mechanisms of sociomoral deviance.

The concept of sociomoral congruence is consistent with work on moral internalization. Hoffman (1977) described this process as “how individuals come to manage the inevitable conflict between personal needs and social obligations” (p. 300). For the antisocial child, it is hypothesized that the values that are attributed to each side of this scale are disproportionate to how the nonantisocial child assigns importance. For children who are more regularly or even

habitually antisocial, the conflict that Hoffman describes may be of mild potency if it exists at all. In contrast, particularly moral, prosocial and selfless youths may recognize little conflict, as well, for a directly opposing set of reasons and therefore may suffer little struggle prioritizing the competing interests. To the degree that conflict exists, it is likely that decision processing variability is directly related to differences in actual antisocial behavior. The cognitive processing by which the presumed conflict is resolved is at the heart of the IAD model.

Moral internalization is believed to develop, in part, due to the child's early experiences with parents and authority figures (e.g., discipline for lying) and other interactive (peer relations) and noninteractive environmental factors (e.g., observing punishment of peers in school). As the child continues to interact with his or her environment, learn and develop, he or she may incorporate two sets of rules by which future behavior is guided (Akers, 1990). First, informal personal sanctions that are self-imposed may develop. Though these sanctions may vary in flexibility, they serve to give the child a sense of what types of behavioral schemata he or she is comfortable with acting out. Second, the child develops a sense of normative commitment. Normative commitment is defined for each individual based on a combination of their understanding of social rules and their interest in abiding by such rules. Note that it is likely that informal personal sanctions and normative commitment are likely continually interacting and evolving as the child continues to transactionally engage with his or her environment. It is via the development of informal personal sanctions that a person sharpens his or her self-understanding as a moral agent. Similarly, as the child gains a sense of normative commitment, he or she is developing social identity. Cognitive developmentalists who adhere to a structuralist perspective argue that both of these processes are critical to the development of moral judgment, reasoning and decision making across childhood and adolescence (see Blasi, 1984). It is hypothesized that sociomoral decision making is related to antisocial behavior to the degree that the youth (A) understands the sociomoral nature of the identified goal, (B) recognizes the sociomoral qualities and implications of the generated behavioral means by which the goal may be achieved and (C) maintains a sense of internally and extrapersonally imposed rules (or guidelines) by which sociomoral judgment, reasoning and behavior are influenced.

Important to the study of sociomoral skills and deficits is analysis of how individual differences in life experiences shape social knowledge and moral belief structures. Extrapersonal factors such as parental teachings, neighborhood and community and early exposure to a diversified social world are likely to have crucial effects on the child's sociomoral development. A transactional model of development posits that it is through one's interactions with these environmental variables that one experiences and comes to understand social life. In this way, the child actualizes social learning, which guides the child's effect on his or her environment. With respect to sociomoral decision making and antisocial behavior, Bandura's contributions to the field have been essential. Bandura's (1997, 1983, 1986, 1991) social learning theory was foundational in the early development of social information processing theories of social competence and aggressive behavior (e.g., Dodge, 1986) and significantly influenced rational choice models of crime and deviance (e.g., Akers, 1990). Whereas the former approach is social cognitively focused and the latter is behaviorally oriented, these research programs both hypothesize that antisocial behavior may be understood and explained as the transactional development of repeated individual behavior and environmental consequence interactions across time.

Also of considerable import to the IAD framework is Bandura's more recent work on the phenomenon termed "moral disengagement" (e.g., Bandura, Barbaranelli, Caprara, & Pastorelli, 1996). Moral disengagement is defined as the processes by which a person comes to view a normatively immoral behavior as excusable (or not bad) or justifiable (or good). A person can morally disengage from a specific situation or behavior for reasons that range from those that are in sync with sociomoral norms (e.g., "It is alright to fight to protect your friends") at one end of the continuum to reasons that are outright sociomorally unacceptable (e.g., "Some people deserve to be treated like animals") and even irrational (e.g., "It is ok to insult a classmate because beating him/her is worse") at the other extreme. Bandura and his colleagues classify various forms (or components) of moral disengagement, including moral justification, displacement of responsibility, dehumanization of victims and diffusion of responsibility. These and other forms of making excuses for or justifying deviant acts are potentially active during the instrumental decision making and planning processes associated with the development of antisocial behavior.

Farrington et al. (1990) has addressed the concept of disengagement as well as related research with respect to delinquent and criminal offending. It is likely that disengagement is a process by which the actor is affording him- or herself the convenience or ease of being able to carry out antisocial acts that may otherwise lead to stress, confusion, frustration or anxiety, as a function of cognitive dissonance. That is, if there is a way to excuse, justify or otherwise rationalize the behavior so that it is more in line with the actor's beliefs and attitudes, it will likely be easier to enact

as well as organize in memory so that it may be more readily accessed again in the future. In support of this idea, Akers (1990) has posited that the criminal is more likely to offend if he or she can find a way to excuse or justify the behavior.

Another process by which a youth may disengage from the moral nature of the subject behavior is via a sense of entitlement. Phenomenologically, personality and attitudinal features such as entitlement and narcissism may develop as a function of prolonged egocentrism. Psychologists have hypothesized that egocentrism and entitlement are core features of antisocial personalities that are consistent with psychopathy and chronic violent offending (Hare, 1993; Nestor, 2002). Children who are self-focused and less able to consider the perspectives, wants and needs of others (or may be able to consider the interests of others but care little or nothing about them) may be more likely to favor deviant decision processes and engage in antisocial behavior. Related to moral disengagement, the entitled child may actually justify an antisocial behavior by rationalizing that the behavior is not sociomorally unacceptable because the desired outcome that the behavior is believed to lead to is actually deserved—that is, the child is entitled to that which he or she wants.

Perhaps the most basic of reasons that a given antisocial behavior meets the sociomoral congruence standards of the actor have to do with ignorance of social rules and/or misunderstanding of the moral nature of the behavior. If the actor does not know of social rules (whether they be cultural norms or formal laws) that prohibit the behavior in question, then it is less likely that his or her sociomoral identity would serve as an obstacle to enacting violative behavior. Likewise, if the actor mistakes the goal as nonantisocial or the nature of the behavior as nonimmoral, it may not be deemed morally culpable to act on the desire to achieve the goal. Although it is necessary to recognize these alternative scenarios and the IAD framework accounts for such possibilities, it is not hypothesized that these patterns account for a significant amount of antisocial behavior in youth, with one exception. It may be that lack of sociomoral understanding of goals and behaviors in children and adolescents who suffer from significant cognitive deficiencies (e.g., mental retardation) is associated with increased likelihood to develop antisocial goals, generate antisocial behavioral schemata and engage in antisocial conduct.

Related to deficits in moral-cognitive processing is psychopathy. Historically, instrumental antisocial behavior has been likened to cold, unfeeling acts that are accompanied by little to no psychophysiological or emotional arousal (Bushman & Anderson, 2001; Dodge, 1991). Although this is not necessarily a valid characterization of many acts of instrumental antisocial conduct, it is certainly exemplary of the style of behavior associated with psychopathic offenders. Chandler and Moran (1990) conducted an important study in which they compared psychopathic-delinquent, nonpsychopathic-delinquent and nonpsychopathic-nondelinquent youths in order to better understand differences in moral reasoning, moral sentiment and antisocial behavior. As an inclusive group, delinquents showed developmental delays across multiple dimensions of moral-cognitive processing as compared with their nondelinquent peers. Although differences between psychopathic and nonpsychopathic delinquents were fewer in number than expected, a significant difference in moral maturity was found in that delinquents who were more psychopathic evidenced the lowest levels of socialization. These results leave open certain questions as to whether psychopathic individuals are relatively less morally developed or have specific moral-cognitive deficits. One area of differentiation that was not explored in this and related studies is decision making. One hypothesis of the IAD model is that psychopathic youths develop decision making skills that are superior and may therefore be better able to create opportunities for antisocial offending or quickly and successfully act upon opportunities that are unexpectedly presented. This hypothesis is consistent with other scholars' theoretical views that psychopathic individuals are relatively highly skilled in finding social and moral justifications for antisocial behaviors (Link, Scherer, & Byrne, 1977) and are particularly sophisticated with respect to understanding social conventions and how to exploit others through role taking and other social strategies (Cleckley, 1984).

In summary, upon considering ways by which an antisocial goal may be realized, it is hypothesized that, via the IAD framework, there are multiple mechanisms that are consistent with the concept of sociomoral congruence that may be active during youth decision making. The youth may consider the behavior relative to whether it matches him- or herself as a social actor. He or she may question the degree to which the behavior is a morally good or bad thing to do. Although it may be determined that the behavior in question may sometimes be socially or morally unacceptable, the youth may further consider whether the behavior is excusable or justifiable in light of a variety of different factors, such as personal need or hardship, view of the world at large, degree to which the victim will realize harm, frequency of the behavior in society at large or within the actor's subcultural group and frequency with which the actor him- or herself has engaged (or plans to engage) in the behavior. Note that some of these sociomoral domains of evaluative decision

making are related to the consideration of alternative outcomes that may be associated with a given behavior. Clearly, the ways in which youths evaluate and anticipate outcomes play a potentially important role in instrumental antisocial decision-making and behavior.

### *1.5. Outcome and risk appraisal*

Common to behavioral and psychological decision making theories is the idea of the interaction of outcome valuations and outcome expectancies. In quantitative terms, the multiplicative output with respect to evaluating a single potential outcome is defined as outcome valuation  $\times$  outcome expectancy. Outcome valuation is represented by as how much the decision maker desires the outcome (a positively attributed outcome) or finds the outcome to be aversive (a negatively viewed outcome). Outcome expectancy is the estimation of how likely it is that the outcome will be realized; that is, that the outcome will actually happen. So, in the case of the outcome that is highly desired and expected to be reasonably likely to occur, the overall value or power of the outcome will be high and, presumably, make it more likely that the behavior that is believed to lead to the outcome will be enacted. Alternatively, if the outcome is of little import and is thought to be only somewhat likely to occur, the outcome will be less motivating and the corresponding behavior less likely to occur. Note that an outcome expected to be highly likely to occur but of little value is often quite different from the outcome that is of great value but estimated to be unlikely to happen, though the appraisal of each of these outcomes may lead both types to carry similar motivational weights in the behavioral decision making process (because their respective multiplicative scores may be close in value). The bidimensional framework of this type of processing reflects this distinction and it is hypothesized that both expectancy and valuation judgments take place within a larger outcome assessment process.

#### *1.5.1. Appraisal of positive (or instrumental) versus negative (or aversive) outcomes*

With respect to antisocial and deviant behaviors (or sociomoral conduct in general), positive (or instrumental) outcome appraisals often need be considered in light of negative outcome (or risk) evaluations. For example, the instrumental outcome of attaining another person's wallet may be highly valued and expected to be easily realized if a certain stealing script is enacted at the right time. However, the decision maker may want to pause before enacting the stealing script so that he or she may weigh this outcome against possible risks that carrying out the script poses (e.g., incarceration, social harm and public scorn).

IAD acknowledges the potential importance of evaluating foreseen possible outcomes that are both negative and positive in attributed valence. A comprehensive decision making process regarding an antisocial goal would take into consideration the focal outcome (that which corresponds to the antisocial goal) in light of identified negative outcomes and the valuations and expectancies of the latter's associated risks. Essential to the distinction of positive versus negative outcome expectancies is the work of Gray (1972a,b, 1975) and Quay (1988a, 1993), who have examined systems of activation and inhibition in the context of behavioral action. Gray's neuropsychological theory explains human learning as the combined product of three independent, interrelated systems of brain functioning. First, the fight-or-flight appraisal system serves automatically (and nonconsciously) to assess the degree to which a stimulus may be harmful or threatening in order to produce a fight or flight response. Second, the behavioral activation (or reward) system responds to conditioned stimuli that signal reward (leading to increased responding: hope and approach) or safety from punishment (leading to increased responding: relief and either active avoidance or escape). Third, the behavioral inhibition system controls forms of responding that attend to conditioned stimuli that signal impending punishment (leading to decreased responding: fear and passive avoidance) or unyielding nonreward (leading to decreased responding: frustration and extinction). Several types of psychopathology have been linked to Gray's model including anxiety disorders (e.g., Gray, 1985), attention deficit hyperactivity disorder (e.g., Quay, 1988a,b, 1997), conduct disorder (Quay, 1993) and psychopathy (e.g., Newman & Wallace, 1993). Possible relations between behavioral activation and inhibition systems and outcome expectancies and valuations may be of utility in identifying additional patterns of maladaptive behavior and psychopathology.

Gray's distinction between systems of behavioral activation and inhibition is of critical importance to modeling outcome expectancy and valuation components of IAD. In terms of linking brain functions with decision processes, it is proposed that (A) behavioral activation is associated with positive outcome expectancies and valuations, and (B) behavioral inhibition is indicative of negative outcome expectancies and valuations. Whereas this neuropsychological dichotomy has been attributed to differences in responsive decision making (e.g., Fontaine & Dodge, 2006), it may be

equally useful to understanding youths' processing of instrumental decisions. In instrumental decision making, the stimulus is the antisocial goal itself. The antisocial goal may be associated with various types of positive or negative attributes and, in this way, trigger behavioral activation versus behavioral inhibition systems when the goal is recognized. For example, the goal of attaining an expensive jacket owned by another person may be associated with the positive feeling that one has when he or she is dressed in expensive clothing and looks a certain way; but it may also be cognitively linked to the negative feeling of guilt that a person experiences when he attains a desired item via immoral means.

There are three subprocesses that are hypothesized to play roles in antisocial outcome appraisal: outcome identification, valuation and expectancy. *Outcome identification* is defined as recognizing alternative (but not necessarily mutually exclusive) outcomes of a behavior. *Outcome valuation* is the process by which evaluative weights (or valences) are attributed to the identified possible outcomes. Finally, *outcome expectancy* operates to determine the predicted likelihoods of various possible outcomes. These subprocesses are not necessarily always active during instrumental decision making, but it is hypothesized that differences in the degrees to which the subprocesses are utilized as well as how they are used account for individual variability in instrumental antisocial conduct.

With respect to instrumental decision making, outcome identification may take place early in the decision process due to its association with the recognized goal. Identifying the goal that the person wants to achieve is similar, if not identical, in many cases to identifying the desired outcome. By definition, instrumental actors have identified goals and outcomes that they are interested in having realized.

The desired outcome must also be evaluated; that is, it must be determined just how desirable or valuable realization of the goal is. The more desirable the goal, it may be presumed that the more persistent the decision maker will be in determining a behavior by which the goal may be achieved. In considering a script by which the goal may be achieved, however, the behavior must be assessed in terms of how likely it is that it will actually lead to achievement of the goal—that is, its outcome expectancy strength must be estimated.

An outcome expectancy may be evaluated in general (how likely it is that outcome  $y$  will be realized) or with specific reference to an identified script (how likely it is that outcome  $y$  will be actualized if behavior  $x$  is enacted). It is possible, of course, for the former to be estimated in the process of assessing the latter. That is, if an outcome is deemed to be particularly likely or unlikely to be realized in the consideration of a specific script, it may be viewed as generally likely or unlikely to happen. For example, the teenage girl who wants to attain money so that she can buy a certain pair of jeans may consider stealing money from her mother's purse. In considering the behavior by which she would take the money, she may estimate the likelihood of this behavior leading to the desired outcome as low because her mother generally does not keep that kind of money in her purse. The evaluation of the outcome expectancy with respect to the script may be so low that the girl decides that it is simply too unlikely that she will be able to steal the money that will allow her to buy the jeans. She may then (A) abandon the goal, (B) consider a direct behavior to achieve her goal, such as stealing the jeans from the store, (C) contemplate another indirect behavior to achieve her goal, such as asking a friend to steal the money from the friend's parents for her or (D) consider a nonantisocial avenue such as borrowing or earning the money. Of course, it may be that all legal means by which the goal may be realized were ruled out, leaving only the options of antisocial routes or abandonment of the goal.

The extremely high valuation of a goal may lead to undesired outcomes in that an outcome expectancy may not need to be particularly strong in order for the considered behavior to be endorsed and enacted by the decision maker. If achievement of a particular goal is so highly desired that a person is willing to enact particularly risky behaviors in order to achieve the goal, the actor may not only be faced with failure of reaching the desired outcome, but the realization of one or more negative consequences that are substantially aversive. Alternatively, goals that are of mild interest but trigger one or more behaviors that are believed to be means by which the goal may be achieved, may also be quickly pursued. Regardless, any assessment of an instrumental outcome that disregards the potential risks and possibilities of unwanted consequences is, by definition, incomplete.

Another issue in instrumental decision making has to do with weighing short-term goals and outcomes with those that are long term. Theories of economic appraisal, cost–benefit analysis and decision making have examined the concept of *discounting* with great rigor (e.g., Brocas & Carrillo, 2003). When goals compete with each other, their corresponding costs and benefits are assessed and compared. Discounting is the phenomenon by which outcomes that are further into the future are devalued—that is, they are assigned valences that are lower than are outcomes that are believed to be more immediate. Shorter term goals may be more attractive because they seem more tangible, in that they will be more quickly realized, as well as more necessary, in thus carry some sense of urgency.

With respect to instrumental antisocial decision processing, discounting may be illustrated in the case of the person who steals in order to satisfy his or her hunger. The immediate outcome of relieving the hunger sensation is more heavily weighted whereas the long-term outcomes of self-esteem, social acceptance and freedom from incarceration are discounted due to a stronger interest in achieving the short-term goal. This phenomenon is captured by the saying “I’ll cross that bridge when I come to it,” meaning that the later outcome is discounted in light of making a decision that is consistent with meeting a short-term interest. Economists assert that the attraction of discounting is driven or justified by one’s positive time preference, treating as fact the idea that people have a strong preference for realizing outcomes sooner as opposed to later (Sheldon, 1992). Discounting, of course, can lead to serious problems for the decision maker if applied without sufficient consideration or too cavalierly. Also, habitual discounting may lead to chronic life problems as there is regularly inadequate preparation for the future. An example of an antisocial actor who chronically discounts long-term goals and outcomes is one who is drug addicted. In social cognitive and decision making terms, addiction may function via impulsive discounting of long-term goals and outcomes or even preemptive consideration of interests and values that are inconsistent with (or at least of minimal or indirect relevance to) the immediate goal of satisfying the addiction-driven urge.

### 1.5.2. Risk appraisal

Discounting may also serve to influence, hinder or even preempt processes of *risk appraisal*—the set of processes by which risks of various possible negative outcomes are identified and assigned probabilities. Social beings normally have multiple goals that serve to motivate decision making and behavior. Often, these goals are in at least partial conflict with each other. This is a common scenario with respect to antisocial goals because the actor is faced with the driving goal at hand but may need to weigh this goal against opposing goals, such as avoiding the harmful consequences that typically result when morally unacceptable, socially prohibited and illegal behaviors are enacted.

Akers (1990) and others have pointed to a large variety of negative outcomes and potential deterrents that may result from engaging in antisocial outcomes. Such outcomes and deterrents have been explained, categorized and otherwise organized according to a number of dichotomies and classifications: legal versus nonlegal social sanctions, direct versus indirect consequences and specific versus general deterrence. It is likely that individual differences in decision making across youths allow for infinite combinations of how negative outcome evaluations are applied in real-time ways, as well as organized in memory networks, regardless of the factors that serve as the focal points of the decision-making model at hand (e.g., instrumental goals). Identifying possible negative outcomes of a behavior, though, is of little utility to the decision making process without identifying and estimating the associated risks.

In terms of antisocial decision processing, this point may be illustrated with the expected utility model (see Cornish & Clarke, 1986). The central premise is that the behavior with the highest overall expected utility across identified outcomes is the one selected and enacted. However, this model is insufficient in modeling antisocial decision making and behavior because it inadequately accounts for the identification of risks and the estimation of risk probabilities across alternative behavioral strategies. The IAD model accounts for instrumental antisocial behaviors in which a goal is identified in order for it to be evaluated across outcome and risk probabilities. This is an approach that is supported by models of risky choice that are commonly drawn upon in scholarly discussion of understanding the development and enactment of risky behaviors (Payne, 1985).

Of course, the role of risk appraisal may widely vary in meaning among antisocial youths. First, the youth who entirely devalues negative outcomes and their associated risks (i.e., the valence attributed to risks that are associated with the goal is zero) does not engage in meaningful risk appraisal. Second, there is the child who does not recognize the antisocial implications of his or her antisocial goal and thus fails to utilize risk appraisal processing because the ignorance precludes the activation of these operations. As Akers and Sagarin (1974) point out, a person cannot be deterred by risks associated with breaking a rule if the rule is not known or if the person does not realize that the subject behavior is in violation of the rule. Third is the case of the youth who values avoidance of negative outcomes and realizes the antisocial nature of his or her goal but has decision making deficits that disallow him or her from activating (or at least utilizing) risk appraisal in a way that promotes successful decision making.

Another important factor associated with risk appraisal is child fear. In their study of criminal offending across the life course, Laub and Lauritsen (1994) asserted that fearlessness neutralizes the deterrent effect that an identified aversive outcome otherwise imposes. Individual differences in how children experience fear are likely to serve as a key factor in IAD and, more specifically, the role of risk appraisal in the larger decision making context. As is typically the case with emotional states, the range of fear experiences in children varies considerably (Camras et al., 1994; Izard,

1977). At the ends of the fear continuum are *fearfulness*, in which children are hypersensitive to certain kinds of social information and may be biased toward interpreting social information in ways that lead to worries of impending harm, and *fearlessness*, which is characterized by the complete devaluation of possible negative consequences and their associated risks. Fearlessness may pose a great danger to the child as the otherwise deterrent effect of an aversive outcome is rendered meaningless and thus cannot protect the child from making decisions and enacting behaviors that lead to negative consequences. In decision making terms, fearlessness precludes critical components of outcome and risk appraisal and promotes the likelihood of realizing harmful outcomes that are associated with incomplete processing.

Thrill seeking may be viewed as a step even beyond fearlessness. The child who seeks the thrill of risk or danger may appraise risk with an entirely different value system. The thrill-seeking child may be just as skilled in assessing risk as other children, but unlike children who fear the dangers and harms that are associated with risks, the thrill-seeking child attributes a positive valence to the identified risk. For the thrill-seeking child, it may be that the higher the risk, the stronger the urge to enact the script. Thrill seeking likely plays a role in the IAD of many youths who engage in a variety of antisocial and delinquent activities, including alcohol and drug use and train surfing (in which the youth rides on top of a train as if it were a surfboard), as well as various occasions of stealing and vandalism. Thrill-seeking youths may go as far as to discard a goal or strategy that is ascribed an insufficient degree of risk.

Youths who are experienced or even expert in antisocial decision making and behavior may display differences in risk appraisal processing. It is likely that children who have engaged in repeated prior antisocial acts have learned both helpful and hurtful facets through their goal pursuits. As a result, deviant children may assign less risk to antisocial behaviors because they (A) feel more confident in carrying out the antisocial scripts successfully, (B) know how to enact antisocial scripts in ways that maximize their success probabilities, (C) know what environmental obstacles and potential problems to be wary of and avoid (e.g., inopportune timing) when acting on their antisocial interests and (D) feel more confident in and capable of getting out of trouble if they are exposed for having acted in a wrongful manner (i.e., if they get caught). It is also possible that chronically antisocial children assign lower risk to antisocial behaviors because they have suffered the harms that are associated with acting in deviant ways in the past enough times that the harms do not have the same effects or carry the same meaning any longer. That is, the risks are lower because the negative valences applied to the potential aversive outcomes have declined.

As discussed above, psychopathic individuals may display differences in their behavioral decision making. In addition to differences in sociomoral congruence, it is here hypothesized that the developing psychopath may be differentiated from nonpsychopathic individuals in how he or she appraises outcomes and their associated risks. Specifically, psychopaths may be more likely to fail to consider or at least discount risks because the meaning that the risks carry is different or less potent. This hypothesis is consistent with the repeated empirical finding that psychopaths do not experience fear or related emotional reactions in response to normatively aversive stimuli (Cleckley, 1984; Herpertz & Henning, 2000). As a result, it is reasonable to predict that identified risks may be of less importance to psychopathic decision making in that such risks have reduced impact on what they potentially mean to the psychopathic individual's well-being.

### 1.6. Behavioral decision

During the final stage of IAD, a decision as to whether to enact a behavior in pursuit of the goal is made. If no behavior is evaluated as sufficiently promising, one of three main outcomes occurs. First, this question may be answered *no* and the idea of pursuing the goal is abandoned, at least temporarily. Second, via a feedback loop, the decision maker may revert back to the goal assessment stage. The youth may then generate a new goal or adjust the goal so that means may be generated that will ultimately be acceptable for behavioral enactment. Third, the decision process may loop back to the process of strategy generation so that a new approach may be accessed from memory or constructed to be evaluated across IAD domains. As mentioned earlier, feedback loops play a critical role in productive decision making in that they allow for an infinite number of alternative patterns by which different IAD dimensions may be activated and utilized, thus increasing the potential for a successful outcome.

Of course, a behavioral decision may vary widely in terms of the cognitive resources it draws upon and how difficult it is to make. In the case of the actor who has successfully pursued an antisocial goal in the past, the decision mechanisms by which the goal is assessed, the strategy is identified and evaluated and the behavior is enacted may be relatively automatic. Also, a person who is impulsive in his or her goal and strategy generation and

assessment may quickly decide to act out a behavior in pursuit of a goal, though a more thoughtful and conceptual decision making process may well have been needed in order to increase the likelihood of the behavior's success or rightfully decide to abandon the plan due to its high-risk nature. At times, though, such as when a new goal is being considered, IAD may require a higher degree of conceptual processing. Unlike reactive and retaliatory antisocial conduct, instrumental behaviors suggest a necessary component of conceptual processing and perhaps strategic planning. Of course, as a youth develops and learns from his or her own (as well as others') experiences, he or she may store information in memory and use latent cognitive resources to efficiently process instrumental antisocial decisions in the future.

## 2. Directions for future research and concluding comments

### 2.1. Testing the IAD model

There are four main approaches to testing the IAD framework. First, hypothetical vignettes (or social stories) – in written, orated and video-recorded formats – have been used successfully in repeated studies of children's social information processing and behavioral decision making. The usual protocol involves the study participant being asked to imagine him- or herself as the protagonist in a specific social scenario (or set of social situations). The participant then hears about or views (via video) a vignette in which he or she imagines interacting with other youths. While imagining interacting in the social situation, the participant is asked questions that correspond to domains of social decision making. In this way, the examiner is able to gather information about how youths evaluate social situations and make interpersonal decisions in interactions that are typical of the everyday lives of children and adolescents. Researchers have had considerable success with this method.

Historically, the vignettes used by social cognitive researchers have involved the participant responding to a social cue. For example, the participant may be asked to imagine him- or herself as the person in a vignette in which another child has bumped into him or her in the school hallway. The examiner collects information about the participant's interpretation of the cue (e.g., attributions of causality and intent) as well as how the participant evaluates alternative responses to the cue (e.g., to what degree the participant would endorse a retaliatory versus forgiving response to the person who bumped into him or her).

With respect to IAD domains, video vignettes may be designed to account for situations in which instrumental behaviors may be enacted. For example, the participant may be asked to imagine a situation in which he or she is broke and is in need of money in order to obtain a desired material item (material interests may be discerned prior to such assessment). The participant would then watch a video vignette in which different opportunities to legally and illegally acquire money are presented. Similar to studies of responsive social cognitive processing, participants may be asked to evaluate different aspects of the opportunity situations presented. Participants may also be asked to compare and contrast different strategies by which the instrumental goal may be realized. Questions asked of participants may be specifically designed to represent IAD domains and subdomain processes. In this way, the reliability and validity of the IAD framework may be assessed.

Video vignettes may also be used in which study participants are asked to evaluate actual instrumental offenses across various decision domains. Children may be asked to view vignettes in which instrumental acts of aggressive bullying, stealing, cheating and other forms of delinquency are conducted by the protagonist. At specified points in each scenario, participants may be asked questions about what he or she (imagining him- or herself as the protagonist) is thinking, how he or she plans to act next and what outcomes are likely to result. Individually or in combination, these video vignette approaches may have utility in assessing IAD.

Second, it is imperative to explore IAD processing in the context of real-life decision making and behavioral situations. One avenue by which this may be accomplished involves virtual reality (VR) methodologies. Adaptation of VR techniques have been used in a variety of social and cognitive psychology studies and provide numerous possibilities in empirical investigation of social decision making factors (Loomis, Blascovich, & Beall, 1999). However, to date, this type of study has not been conducted to examine social cognition and antisocial behavior in youth. In fact, few VR studies relate even indirectly to this area of research. VR contexts may allow for more valid measurement of IAD processes in that it may be experienced as real and more compelling by youth participants. However, this approach is not without its limitations as it may be, for example, that the IAD process of risk assessment would be discounted if participants recognize that the context is unreal. Also, VR protocols tend to be costly to design and significant resources may be required for training and administration, as well as protocol manipulation.

A third method utilizes computer simulation with a pseudoconfederate. Compared to a VR approach, this method can be less costly and perhaps experienced as real by the participant in that he or she would believe that there is involvement with another person and that his or her behaviors will lead to actual consequences. By using computer simulation, participants may interact with perceived confederate opponents and be provided with opportunities to cheat, steal and aggress (nonphysically) against them. During the interactive game or competitive task, the participant may be asked to generate and evaluate different strategies to achieve the instrumental goal, which would have been introduced as a premise of the game at the outset of the protocol administration. In this way, the examiner may assess IAD in the context of real on-line processing that is immediately prebehavioral.

Lastly, laboratory studies may be designed in which real-life precriminal opportunities are presented to participants. For example, at the end of a staged interactive task, a peer confederate may leave his wallet on the table upon leaving the study condition, making it look like it was accidentally left behind. Regardless of whether the participant decides to take the wallet, the participant may be asked about his or her thoughts and decision making upon noticing that the wallet was left behind and was available for acquisition. Of course, this approach has ethical implications that would need to be resolved prior to administration.

## 2.2. *Additional directions for basic science research*

IAD is intended as a heuristic model or organization of evaluative decision processing that is hypothesized to play a role in youths' instrumental antisocial behavior. Throughout this paper, numerous specific hypotheses related to the IAD model have been articulated. These hypotheses have addressed critical procedural and substantive components of the model including exploring the bivariate and cumulative effects of IAD on different antisocial behaviors and conduct patterns. The scope of this paper, though, did not allow for full discussions of other critical areas of research that are relevant to IAD including parallel versus linear processing, moderating and mediating effects of decision operations, the role of emotion in decision making, testing developmental hypotheses with longitudinal data and methodologies by which on-line behavioral evaluations may be reliably and validly assessed. Additional areas of research in need of investigation include the study of judgment and decision processes considered by the IAD model that remain untested at present—particularly those cognitive operations that are hypothesized to be unique to predominately instrumental antisocial actors. Whereas evaluative and decision processes have been shown to discern proactive from reactive aggressive styles of behavior, a conceptualization of how instrumental actors decide to follow through on antisocial goals has not been considered by past models of response evaluation and decision (e.g., [Crick & Dodge, 1994](#); [Dodge & Schwartz, 1997](#); [Fontaine & Dodge, 2006](#)) and script evaluation ([Huesmann, 1988](#)), and there is little empirical work with children (with the exception of studies of aggressive behavior) that is closely related. It is essential to the development of a comprehensive model of IAD that it be determined whether such theoretical dimensions represent actual human cognitive processes that are unique to and account for individual differences in instrumental forms of antisocial conduct.

[Crick and Ladd \(1990\)](#) have called for more research looking at children's simultaneous evaluations of multiple outcomes for single behaviors. Similarly, it is important to examine behavioral decision strategies that consider multiple possible outcomes that are differentially valued. Children are likely to find certain outcomes more salient and personally valuable than others. Additional research is needed to identify how degrees of salience and value weights are assigned to outcomes. Also, it is necessary to investigate how outcomes of varying salience and importance may affect child behavioral decisions, particularly across different social settings.

Studies that investigate possible causal relations among decision processes and aggressive behaviors are also needed (see [Crick & Dodge, 1994](#)). [Erdley and Asher \(1998\)](#) suggest that one way to test causal paths experimentally is to manipulate children's judgment and decision styles and measure the subsequent reduction of aggressive behavior in the experimental group. [Guerra and Slaby \(1990\)](#) conducted an intervention experiment of this nature with adolescent offenders in which impressive results were obtained—although, ultimately, the experimental group's level of aggressive conduct resumed following participants' release from incarceration. It is suggested that future studies implement longer term interventions in order to determine whether intervention strategies similar to the one used by [Guerra and Slaby](#) may extend to other populations of antisocial children and lead to effects that better endure the passing of time.

Another area of study has to do with examining extreme groups. There is only a limited amount of social cognition and antisocial behavior research on groups of youths who have been defined as violent offenders, conduct disordered or

psychopathic. The IAD framework outlines decision processes that are hypothesized to be active during the consideration of the fulfillment and realization of antisocial goals. Youths who have exhibited criminal recidivism and chronic antisocial conduct may be most likely to utilize these mental strategies. Research that compares extreme instrumental versus noninstrumental antisocial youths as well as clinical versus normative populations may be able to better distinguish the degree to which these processes are accurately captured and have predictive utility for subgroups of antisocial actors.

Finally, one avenue of future research should entail the examination of automatic processing, impulsivity and habituated responses. Regarding studies of how instrumental actors respond to opportunity situations, measures of response time and priming effects that are common in cognitive psychology may be adapted in order to operationalize these techniques. Questions that are most important to IAD are: *Do impulsive individuals enact the first behavioral script that is accessed?*, *Does the degree to which behavioral alternatives are considered depend on an individual's threshold of behavior acceptability?* and *Does the degree to which decision making processes are activated depend, at least in part, on an individual's state of emotional or physiological arousal?* Answering these questions is imperative to our understanding of the role of instrumental decision making and its subprocesses in antisocial development.

### 2.3. Directions for intervention research and design

Over the past two decades, an increasingly popular trend among aggression researchers has been to subclassify styles of aggressive behavior (see Dodge et al., 1997). Driving this trend is the rationale that the role of antisocial conduct in human development may be explained only to the degree that unique types of conduct problem behaviors are identified and understood. Not only does this perspective have important implications for basic science, but it is potentially crucial to practical applications of psychology and other social sciences. For example, interventions that focus on educating children about the wrongfulness of behaving aggressively toward others may be ineffective for aggressive children who are unconcerned about treating others with fairness and respect.

It is possible that many of the judgment and decision processes considered by the IAD model can be taught to antisocial children in positive ways. Teaching antisocial children ways to increase their threshold of behavior acceptability and to consider and evaluate social alternatives may allow for well-reasoned decision making and, ultimately, socially competent interpersonal conduct. McFall (1982) asserted that, once we understand the association between an individual's deficits in social skills and his or her behavior, we are better able to intervene. He proposed training social skills to individuals based on an information processing model of social competence. In their recent examination of on-line processes and beliefs associated with aggression in children, Erdley and Asher (1998) suggested that interventions should focus on modifying children's beliefs about the legitimacy of aggression at the preschool level. The idea is that, as time passes, children's beliefs about behaviors become solidified—preschool interventions could help to guide children's social cognitive development before their cognitive patterns become relatively stable. Other researchers have called for interventions to incorporate training skills that are focused on specific IAD processes. For example, Boldizar, Perry, and Perry (1989) provided evidence in favor of their position that training aggressive children to alter the value they place on outcomes of aggression may be necessary for successful behavior change. Findings from a study by Fontaine et al. (2002) suggest that teaching children that aggressive interpersonal behaviors are unacceptable from a sociomoral perspective may also be a valuable intervention technique with some aggressive youths.

Slaby and Guerra (1988; Guerra & Slaby, 1990) systematically related their assessments of decision processes to intervention with adolescent offenders. Their objective was to understand the sample population's decision making profiles before designing an intervention program intended to improve participants' cognitive functioning as related to their aggressive behavior. The general cognitive dimensions investigated were offenders' skills in solving social problems and their beliefs supporting aggression. Among other cognitive characteristics, antisocial-aggressive adolescents were identified as more likely to generate fewer behavioral alternatives, value hostile goals (or outcomes) and evaluate aggressive behavior favorably (Slaby & Guerra, 1988). They designed a 12-session intervention program to alter these cognitive factors both generally and across specific social contexts. The intervention focused on participants' development of cognitive self-control and reasoning styles that challenge beliefs that favor interpersonal aggression. Findings supported the authors' hypothesis that a decrease in cognitions favoring hostile goals, the generation of fewer response alternatives and beliefs legitimizing aggression, among others, would be directly related to a decrease in aggressive behavior (Guerra & Slaby, 1990). Specifically, aggressive adolescent offenders who received intervention were found to (A) develop better social problem-solving skills, (B) endorse aggression less and (C) inhibit their later aggressive, impulsive and inflexible behaviors.

Because IAD-related processes that have been associated with proactive aggressive children are known to vary across individuals (Dodge, 1993), it is likely that no one intervention will be the most effective strategy for all antisocial youths. Instead, interventions that allow for individual tailoring are most likely to produce noteworthy effects. Crick and Dodge (1996), for example, suggested that different interventions need to be developed to account for reactive and proactive aggressive patterns, based on the clear empirical distinction in social cognitive processing among these subtypes of aggressive children. Individual tailoring is costly and often inefficient given financial and time constraints on intervention programs, so identifying subgroups of deviant decision making in children may be of considerable importance in attaining a balance between individual tailoring and considerations of funding and time efficiency in developing interventions.

### 3. Concluding comments

Scientific attention to the relation between cognition and behavior in childhood has increased substantially in recent decades (see Conger & Simons, 1997). Social cognitive scientists have posited that behavior is ultimately subject to one's cognitive functioning and regulation (e.g., Crick & Dodge, 1994; Guerra, Nucci, & Huesmann, 1994; Huesmann, 1988, 1998). Another motivation stems from long-standing interest among policy makers and government agencies in understanding causes of chronic social problems (e.g., violent crime and psychopathology) so that they may be controlled and minimized (e.g., see Jensen et al., 1993; Quinsey, Harris, Rice, & Cormier, 1998).

The social science literature contains an abundance of theoretical and empirical works that are tailored to explain misconduct in childhood and how early psychosocial problems lead to later maladjustment (e.g., Farrington, 1989; Loeber, 1982; Loeber & Dishion, 1983; Robins, 1966; Robins & Ratcliff, 1980). For example, Dodge (1980, 1986, 1993; Crick & Dodge, 1994) and his colleagues have provided theoretical and empirical support for the hypothesis that early maladaptive social cognitive processing contributes to the development of conduct disorder and other maladaptive patterns. Similarly, numerous research programs have been successful in predicting criminal behavior in adolescence and adulthood from preadolescent tendencies to participate in deviant activities (e.g., Farrington, 1989, 1990, 1992; Lynam, 1996; West & Farrington, 1973; White, Moffitt, Earls, Robins, & Silva, 1990) and interact with delinquent peers (e.g., Agnew, 1991; Akers, 1985; Bennett, 1986; Elliot, Huizinga, & Ageton, 1985).

Although cognition plays a substantial role in the development of social behavior and conduct problems (Dodge & Pettit, 2003; Feldman & Weinberger, 1994), and crime rates have continued to escalate over the past five decades (Rutter, 1997; Smith, 1995), there remains considerable progress to be made in understanding how cognition may function in antisocial decision making and influence deviance in youth. Remarkably, some social and behavioral science models continue to except the role of cognition in the development of social deviance and delinquency (see Akers, 1997; Jensen & Rojek, 1992; Shoemaker, 1990; Thornberry, 1997) or treat it as a secondary factor within a larger theory of “soft behaviorism” that allows for choice” (Akers, 1990, p. 666) but focuses on social conditioning as the principal mechanism of antisocial behavior (Akers, 1985). Even less attention has been paid to potential effects of instrumental cognitions and decision making on the onset and maintenance of child antisocial behavior. The model proposed herein serves as a response to these observations and concerns.

The instrumental antisocial decision-making (IAD) framework presented herein proposes a set of evaluative decision processes (or domains) that are hypothesized to contribute to scientific understanding of youths' instrumental antisocial functioning. IAD is offered as a heuristic model that may help to explain (A) differences between instrumental and noninstrumental antisocial youths, and (B) individual differences among youths' who engage in instrumental deviant acts. The unique and critical contribution of the model is that it provides a framework for understanding how instrumental decision processes contribute to individual antisocial behaviors as well as the development of antisocial conduct styles—whereas past social cognitive and evaluative decision making models have approached the link between social cognition and behavior from a social cue-to-actor response approach.

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