The Use of Laboratory and Performance-Based Measures in the Assessment of Children and Adolescents With Conduct Disorders

Paul J. Frick
Department of Psychology, University of New Orleans

Bryan R. Loney
Department of Psychology, University of Alabama

Provides a review of laboratory and performance-based assessment techniques that have been used in research with children who have severe conduct problems. Many of these techniques have proven useful for monitoring the effects of interventions, which seems to be their most immediate clinical use. With further development, several of these techniques have the potential for assessing clinically important processes that may be involved in the development and maintenance of conduct problems in youth, especially processes that may differ across subgroups of children with conduct disorders (CDs). The assessment of such processes could contribute to the development of individualized treatment plans for children and adolescents with CDs. However, a number of theoretical, methodological, and ethical issues limit the clinical utility of these laboratory and performance-based techniques in their current stages of development, especially in their contribution to making initial diagnoses of CDs. These limitations lead to very cautious recommendations for their clinical use.

There is substantial interest in developing clinically useful laboratory and performance-based techniques to aid in the assessment of severe conduct problems associated with the diagnoses of oppositional defiant disorder (ODD) and conduct disorder (CD; American Psychiatric Association, 1994). This interest comes primarily from three important aspects of these CDs. First, more so than for many other forms of childhood psychopathology, there is often substantial motivation for youth, parents, and knowledgeable others (e.g., teachers) to distort their reports of oppositional, aggressive, and antisocial behavior. Sometimes, this motivation is related to potentially serious consequences to the child that can result from the reporting of such behaviors (e.g., legal sanctions, special placement in schools, intensive and restrictive mental health placement). At other times, it is simply related to the fact that these behaviors have a clear negative connotation to most persons. Second, there is evidence that severe conduct problems are often elicited by specific types of environmental stimuli, such as perceived provocation, demands for compliance, and opportunities for instrumental gain (see Frick, 1998). Therefore, assessment of these behaviors in laboratory situations allows one to control these potentially important stimuli and vary important aspects of them (e.g., by studying different types of provocation) in a more systematic way than would be possible in an uncontrolled real-world setting. Third, many of the behaviors associated with CD are quite serious and potentially dangerous (e.g., aggression), and therefore, designing a safe analogue of these behaviors (e.g., aggression directed toward a hypothetical peer playing a computer game) is highly desirable if one wishes to directly observe them.

Because of the interest and clinical promise of laboratory and performance-based measures for the assessment of CDs, the first goal of this article is to provide a brief overview of some of the performance-based assessment techniques that have been used in research with children with severe conduct problems. In this review, we primarily focus on techniques that have shown evidence for their validity in multiple samples. However, promising techniques that are in their early stages of development and may not have yet been tested in multiple samples or that were developed primarily for the assessment of other forms of psychopathology but have the potential for contributing to the assessment of CDs are also reviewed in an effort to encourage additional development of these techniques. The second goal of the article is to highlight some of the critical theoretical, methodological, and ethical issues that have emerged in the use of these assessment techniques with children and adolescents that influence their clinical
utility. Within the context of these important issues, the third goal is to provide an overview of some clinical uses of these assessment techniques with suggestions for their further development to increase their usefulness in clinical assessments.

**Provocation Paradigms**

The first set of assessment techniques are provocation paradigms in which certain types of aggressive, antisocial, or noncompliant behaviors are elicited and systematically observed. Each paradigm reviewed focuses on a different type of conduct problem, and these techniques are summarized in Table 1. The common feature of these techniques and what differentiates them from naturalistic observations of behavior is that they all involve some standardized (i.e., provided in the same way to all children) “provocation” that is designed to elicit a specific type of conduct problem. For each of the techniques summarized in Table 1, there is evidence that children with CDs perform differently than children without conduct problems to the provocations provided in these tasks. Furthermore, many of these techniques have proven to be sensitive to treatment effects. One additional feature of these techniques is the finding that important subgroups of children with CDs may perform differently in response to the provocations, which could help to distinguish among clinically important subtypes of these disorders (see Frick & Ellis, 1999, for a review of the research on subtyping children with CDs).

**Aggression in Competitive Situations**

The first type of provocation paradigm involves placing a child in a competitive situation with an alleged peer and measuring a child’s response to hostile and instrumental provocations supposedly administered by this peer. These tasks were designed to test specific theories as to the type of provocations that may elicit aggressive responses in children, such as provocations that increase frustration (e.g., Hoving, Wallace, & LaForme, 1979), and whether the type of provocation that is most likely to elicit aggression differs for specific subgroups of children with conduct problems (e.g., Atkins & Stoff, 1993; Pelham et al., 1991). An early exemplar of this type of laboratory-based technique was found in a study conducted by Hoving et al. in which children were placed in a room by themselves and were asked to stack marbles in six consecutive cylinders (approximately 17 marbles per container) in competition with an alleged peer in another room. More recent computerized tasks involve a simulated pinball game in which the child is in competition for earning the most points with the alleged peer (Atkins & Stoff, 1993; Atkins, Stoff, Osborne, & Brown, 1993) or a computer reaction-time task in which the child is in competition with the alleged peer for the quickest reaction (i.e., computer key press) to a go prompt (Murphy, Pelham, & Lang, 1992; Pelham et al., 1991).

In each task, the provocation that the child experiences is administered in a standardized manner, but the child is told that it is controlled by the alleged peer. The provocation is in the form of a hostile provocation (e.g., a loud burst of white noise) or in the form of an instrumental provocation in which the alleged peer interferes with the child’s ability to successfully complete the task (e.g., emptying the containers with the child’s stacked marbles, causing the child’s pinball game to tilt and freeze momentarily). Finally, the standardized measure of aggression is the degree of hostile or instrumental aggression that the child directs toward the alleged peer following the provocations.

These tasks have been used in samples of children between the ages of 6 and 12, and each task has differentiated highly aggressive children (Hoving et al., 1979; Murphy et al., 1992; Pelham et al., 1991) or children with a diagnosis of ODD or CD (Atkins & Stoff, 1993; Atkins et al., 1993) from children without conduct problems. Also, in terms of its concurrent validity, children’s level of aggression on these tasks has been significantly correlated with negative peer interactions outside of the testing setting (Murphy et al., 1992). Another finding, and one that could provide clues to causal process that may place a child at risk for aggressive behavior, is that highly aggressive children have shown less physiological reactivity to the provocations provided by the alleged peer (Pelham et al., 1991). Finally, different subgroups of children with ODD and CD diagnoses show different patterns of aggression on this task. Children with both ODD or CD and attention deficit hyperactivity disorder (ADHD) exhibit more hostile aggressive responses (i.e., aggression in response to perceived provocation), whereas children with an ODD or CD diagnosis but without ADHD show more instrumental aggressive responses (i.e., aggression to achieve a goal; Atkins et al., 1993).

**Temptation Provocation Tasks**

Another type of laboratory and performance-based task that has been used in research studying childhood conduct problems is one that was designed specifically to assess covert conduct problems. This type of conduct problem is particularly difficult to assess by other means because their covert nature make them difficult to observe in naturalistic settings, and as a result, significant others in the child’s environment made not be aware of such behaviors. Furthermore, the clear social consequences associated with lying, stealing, and other
### Table 1. A Summary of Provocation Paradigms Designed to Elicit Conduct Problems

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Exemplar Studies</th>
<th>Type of Provocation</th>
<th>Age of Samples</th>
<th>Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggression in Competitive Tasks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Stacking marbles in containers in competition with an alleged peer | Hoving, Wallace, and LaForme (1979) 1979                                          | Hostile (burst of white noise) and instrumental (emptied container) provocation from alleged peer | 6–10           | 1. Highly aggressive boys exhibited more hostile and instrumental aggression than normal controls.  
2. Attack, prior to frustration, led to greatest hostile aggression, whereas frustration, without attack, led to greatest instrumental aggression. |
| Computer pinball game in competition with alleged peer | Atkins and Stoff (1993); Atkins, Stoff, Osbourne, and Brown (1993)               | Hostile (burst of white noise) and instrumental (blocked game performance “tilt”) provocation from alleged peer | 8–12           | 1. CD or ODD only was associated with increased instrumental responses, whereas CD or ODD plus ADHD was associated with increased hostile responses.  
2. Highly aggressive boys with ADHD responded more aggressively to provocation.  
3. Response to provocation was related to negative peer interactions but was not affected by a trial of Ritalin. |
| Computer reaction time task (rapid key pressing at “go” prompt) in competition with alleged peer | Murphy, Pelham, and Lang (1992); Pelham et al. (1991)                             | Hostile (burst of white noise) and instrumental (loss of points) provocation from alleged peer | 6–11           |                                                                              |
| Temptation Provocation Tasks |                                                                                  |                                                                                     |                |                                                                              |
| Children worked on an assignment involving a hidden picture search or word puzzle | Hinshaw, Heller, and McHale (1992); Hinshaw, Simmel, and Heller (1995); Hinshaw, Zupan, Simmel, Nigg, and Melnick (1997) | Answer key to assignment, money ($2.00 or less), toy cars, and baseball cards are left in view of the child | 6–12           | 1. Children with ADHD, who often had co-occurring diagnoses of ODD/CD, showed higher rates of stealing and property destruction than normal controls.  
2. Indexes of stealing and property destruction were significantly correlated with parent ratings.  
3. Stealing and property destruction was reduced with trial of Ritalin but cheating increased. |
forms of covert antisocial behavior provide strong motivation for the child not to accurately report on their own behavior. As a result, Hinshaw and colleagues (Hinshaw, Heller, & McHale, 1992; Hinshaw, Simmel, & Heller, 1995; Hinshaw, Zupan, Simmel, Nigg, & Melnick, 1997), in a series of studies using children (ages 6–12) with ADHD attending a therapeutic summer camp program, developed a task that provided children with the opportunity and temptation to cheat, steal small amounts of money or other objects, and destroy property. In this task, children are left alone in a room for 6 to 8 min, and they are instructed to work on an assignment involving either hidden picture searches for young children or word puzzles for older children. Several objects are partially hidden around the desk at which the child is to work. These include money (≤ $2.00), toy cars, baseball cars, and other small toys. Also, the answer key to the child’s work assignment is placed in the room and partially visible to the child.

In two of the four samples, the children were videotaped and the level of cheating was coded either 0 (no cheating), 1 (occasional looking between the key and worksheet), or 2 (repeated use of the key and clear evidence of copying from it). Because this index of cheating did not seem to show the expected pattern of associations, videotaping was not conducted in the latter two samples. In all four samples, the rooms were inspected after the child completed the task. Stealing was coded on a 0 to 5 scale on which the amount of money taken was coded as either 0 (none), 1 ($1.00 or less), or 2 (more than $1.00) and the number of other objects taken was coded from 0 to 3. Also, any instances of destroyed or defaced property that were evident in the room inspection were coded on a 0 (no evidence of property destruction) to 3 (writing on furniture or walls, ripping paper, breaking pencils) scale. Following the procedure, the children were debriefed and told explicitly that taking

Table 1. (Continued)

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Exemplar Studies</th>
<th>Type of Provocation</th>
<th>Age of Samples</th>
<th>Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Situations Involving Parental Demands for Compliance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DPICS: Parent–child interactions are observed and coded under three conditions (5 min each) in a clinic playroom</td>
<td>Robinson and Eyberg (1983); Forster, Eyberg, and Burns (1990)</td>
<td>Child and parent interact in free-play situation followed by two interactions with increasing parental demands</td>
<td>4–8</td>
<td>1. Children’s behavior in response to parent-directed interactions differentiated children with conduct problems from normal control children. 2. Children’s behavior was responsive to interventions designed to improve parent–child interactions.</td>
</tr>
<tr>
<td>Forehand Observational System: Parent–child interactions are coded under two conditions (5–10 min each)</td>
<td>Forehand and McMahon (1981); Forehand, Wells, and Sturgis (1978)</td>
<td>Child and parent interact in free-play situation followed by one parent-guided interaction</td>
<td>3–7</td>
<td>1. Children’s behavior during parent-guided interactions differed between clinic-referred and normal children and was correlated with home behavior. 2. Children’s behavior was responsive to interventions designed to improve parent–child interactions.</td>
</tr>
<tr>
<td>Compliance Test: Children’s responses to standardized parental commands are observed and coded</td>
<td>Roberts and Powers (1988); Day and Roberts (1983)</td>
<td>Parents are prompted through a “bug-in-the-ear” to give 30 standardized commands</td>
<td>2–8</td>
<td>1. Rate of compliance was correlated with other negative child behaviors and home behavior. 2. Rate of compliance increased after parenting intervention.</td>
</tr>
</tbody>
</table>

Note: CD = conduct disorder; ODD = oppositional defiant disorder; ADHD = attention deficit hyperactivity disorder; DPICS = Dyadic Parent–Child Interaction Coding System.
things and cheating were not right, and they were encouraged to return any stolen items.

Across the four samples, children with ADHD, who often had a comorbid diagnosis of ODD or CD, showed higher rates of stealing and property destruction than normal comparison children. In contrast, the measure of cheating did not differentiate groups. Similarly, when the ADHD sample was broken down further into those who were aggressive and those who were nonaggressive, the stealing and property destruction indexes differentiated the two groups, but the cheating index did not. Also, the laboratory index of stealing and property destruction was significantly correlated with parental ratings of stealing \((r = .41)\) and property destruction \((r = .26)\) in other situations. Again, the measure of cheating was not significantly correlated with parental ratings of cheating \((r = .07)\). Therefore, there was clear evidence for the validity of the stealing and property destruction indexes but little evidence for the validity of the cheating index. Interestingly, all indexes were affected by a trial of stimulant medication that was conducted in one of the samples (Hinshaw et al., 1992). However, the results were not all in the same direction. Stealing and property destruction were reduced when the child was on a active dose of medication, whereas the level of cheating increased. The authors speculated that the increase in cheating was due to an increase in the child’s investment in the academic task brought about by the medication trial.

**Situations Involving Parental Demands for Compliance**

A third provocation paradigm and perhaps the most widely used laboratory measure of conduct problem behavior is the assessment of child noncompliance and oppositionality during standardized parent–child interactions. Like the other provocation techniques, the child’s behavior is observed under standardized conditions designed to elicit conduct problem behavior; in this case, oppositional behavior. For example, in the Dyadic Parent–Child Interaction Coding System (DPICS), which was originally developed by Eyberg and Robinson (1983) and later revised by Eyberg, Bessmer, Newcomb, Edwards, and Robinson (1994), parents and their young children (ages 4–8) are observed interacting in a clinic playroom under three conditions (5 min each): a free play situation, a parent-guided interaction, and a cleanup procedure. The latter two conditions are designed to observe children’s responses to parental demands for compliance, especially in contrast to their behavior during the less structured task. A similar system was used by Forehand and McMahon (1981), although the cleanup condition was excluded. Finally, Roberts and colleagues (Day & Roberts, 1983; Roberts & Powers, 1988) developed the Compliance Test, in which the parent is instructed to give 30 standardized commands to their child. The instructions are delivered to the parent through a bug-in-the-ear device so that the child is unaware of the instructions.

In all of these procedures, children’s responses to parental demands and instructions are systematically coded. Although a number of different types of child behaviors are coded (e.g., crying, whining, yelling), a key variable that results from these techniques is the compliance ratio, which is the proportion of parental commands with which the child immediately complies. This ratio has proven to consistently differentiate children with conduct problems, who have a lower compliance ratio, from normal control children (see McMahon & Estes, 1997, for a review). Furthermore, performance on these tasks has proven to be significantly correlated with conduct problems observed during naturalistic home observations (Forehand & McMahon, 1981; Roberts & Powers, 1988). One of the most consistent sources of validity, however, is the finding that all of these procedures have proven to be sensitive to the effects of interventions designed to improve parent–child interactions, with improvements in both parent and child behavior being observed following treatment (Day & Roberts, 1983; Hembree-Kigin & McNeil, 1995; McMahon & Estes, 1997).

**Assessment of Clinically Important Processes**

All of the provocation paradigms summarized in Table 1 directly assess conduct problems that are the core symptoms of ODD and CD diagnoses. There are also a number of laboratory and performance-based techniques that do not directly assess conduct problems but assess potentially important processes that could underlie the behavioral difficulties of children or adolescents with CDs. These measures were developed for use in research to study the many different processes that can lead a child to act aggressively or antisocially (Frick, 1998). However, these measures potentially have several sources of clinical utility. First, they could tap important processes (e.g., deficits in problem-solving skills, dysfunctional family processes) that should be the focus of interventions for children or adolescents with severe conduct problems or processes that influence how an intervention is implemented (e.g., a specific learning style). Second, these assessments may uncover processes that could differentiate distinct subgroups of children with CDs and, thereby, help in classifying more homogeneous subgroups of children with these disorders who may respond differently to interventions (Frick & Ellis, 1999). A summary of these techniques and the processes they were developed to assess is provided in Table 2.
### Table 2. A Summary of Paradigms Designed to Assess Clinically Important Processes

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Exemplar Studies</th>
<th>Process Measured</th>
<th>Age of Samples</th>
<th>Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment of Social Cognition</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intention-Cue Detection:</td>
<td>Dodge and Coie (1987); Dodge, Bates, and Petit (1990); Dodge, Price, Bachorowski, and Newman (1990); Waldman (1996)</td>
<td>Child completes multiple-choice questionnaire assessing his or her perceptions of provocateur’s intent.</td>
<td>5–19 years</td>
<td>1. Hostile attributional biases are higher in children with conduct disorder, especially those who show reactive forms of aggression. 2. Hostile attributional biases may mediate the effects of physical abuse on aggression.</td>
</tr>
<tr>
<td>Dyadic Interaction Task:</td>
<td>Lochman (1987); Lochman and Dodge (1998)</td>
<td>Rates self and partner on seven semantic differential items related to verbal dominance and aggression.</td>
<td>Grades 4–7</td>
<td>1. Aggressive boys minimize their own aggressiveness and inflate their partner’s aggressiveness. 2. These perceptions carry over into cooperative situations.</td>
</tr>
<tr>
<td>Problem-Solving Measure for Conflict:</td>
<td>Lochman and Lampron (1986); Lochman, Lampron, and Rabiner (1989); Lochman and Dodge (1994); Dunn, Lochman, and Colder (1997)</td>
<td>Children provide solutions to explain conclusion; solutions are coded for number and content.</td>
<td>Grades 4–7</td>
<td>1. Aggressive and conduct-disordered children provide fewer verbal–assertive and more aggressive solutions.</td>
</tr>
<tr>
<td>Reward Dominance Tasks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Card Playing or Door Opening Task:</td>
<td>Daugherty and Quay (1991); Milich, Hartung, Martin, and Haigler (1994); Shapiro, Quay, Hogan, and Schwartz (1988)</td>
<td>Number of cards played or doors opened before child elects to quit</td>
<td>7–21 years</td>
<td>1. Participants with conduct disorders, screened for co-occurring conditions, played more trials than normal control children and children with other types of psychological difficulties.</td>
</tr>
<tr>
<td>Multigame Reward Dominance Task:</td>
<td>O’Brien, Frick, and Lyman (1994); O’Brien and Frick (1996);</td>
<td>Number of trials played across all four tasks</td>
<td>6–13 years</td>
<td>1. Only subgroups of children with conduct disorders played more trials; these included (a) those without elevated levels of anxiety and (b) those with high levels of callous and unemotional traits.</td>
</tr>
</tbody>
</table>
Assessment of Social Cognition

The first set of techniques have all been heavily influenced by the work of Kenneth Dodge and his model of the sequential stages involved in the processing of social information (Dodge, 1980). Each technique was developed to focus on a specific stage of information processing that is believed to be problematic for children with conduct problems and that is believed to make the child susceptible to acting aggressively (see Crick & Dodge, 1994). Increasing the clinical importance of assessing these deficits in social cognition, several interventions have been developed to teach children with conduct problems the skills needed to overcome or remedy their problems in processing social information in an effort to reduce their social and behavioral problems (see Lochman & Wells, 1996).

The first of these laboratory techniques is the Intention-Cue Detection Task (Dodge & Coie, 1987) that was designed to assess potential biases in how a child perceives intent in the actions of peers. Of all of the assessments of social cognition, this task is the most widely used technique and the one that has shown the most consistency in findings across studies (e.g., Dodge, Bates, & Petit, 1990; Dodge & Coie, 1987; Dodge Price, Bachorowski, & Newman, 1990; Milich & Dodge, 1984; Waldman, 1996). In this technique, a child is shown a series of 30-sec videotaped vignettes depicting a provocation by one child directed toward another (e.g., one child knocking down the blocks of another, one child taking the toys of another). The exact stimuli has been modified somewhat across studies to match the ethnicity of the sample (e.g., African American children; Dodge & Coie, 1987). However, the scripts for the vignettes all consistently vary the intent portrayed by the provocateur through the child’s verbal and facial cues. The different portrayals of intent include equal numbers of hostile (intentional act with malicious goal), accidental (act was unintended), prosocial (act was intended but with a clearly positive goal, such as helping the child), or ambiguous (both positive and negative cues were present). At the end of each vignette, the child is asked “to imagine being the protagonist in each story” (Dodge, Bates, & Petit, 1990, p. 1680) and to rate the protagonist’s intent as “being mean” (hostile), as “trying to help” (prosocial), or as “being an accident” (unintentional).

Studies of children who are aggressive (e.g., Dodge & Coie, 1987; Waldman, 1996), violent (Dodge, Price, et al., 1990), or who have CDs (Dodge, Price, et al., 1990; Milich & Dodge, 1984) have consistently found that these children show a hostile attributional bias compared to normal control children. That is, children with conduct problems are more likely than normal control children to attribute hostile intent to the actions of the provocateur. The difference from normal control children is largest in the ambiguous situation, suggesting that the bias is most evident when cues of both hostile and prosocial intent are present. However, it is important to note that the attributional bias assessed by this task does not always differentiate children with conduct problems or aggression from children with other types of psychological disturbances (Milich & Dodge, 1984). Another important finding from research using this task is that the attributional bias seems to be associated primarily with reactive forms of aggression, aggressive behavior that is a defensive response to perceived provocation. It has not been consistently associated with proactive forms of aggression, aggressive behavior that is unprovoked and aimed at achieving some social (e.g., coercion and dominance) or instrumental (obtaining goods or services) goal (Crick & Dodge, 1996; Dodge & Coie, 1987).

Finally, the hostile attributional bias assessed by this task has been linked to a child’s experience of physical abuse (Dodge, Bates, & Petit, 1990). These authors proposed that child abuse may lead to a cycle a violence in which “harmed children are likely to develop biased and deficient patterns of social information, including … a bias to attribute hostile intentions to others, and these biases in turn predict the development of aggressive behavior” (Dodge, Bates, & Petit, 1990, p. 1682).

In addition to this hostile attribution bias, other deficits in social information processing have been studied using laboratory and performance-based techniques. The Dyadic Interaction Task was designed by Lochman (1987) to assess children’s perception of their own aggressive behavior, especially in comparison to their perceptions of aggression in peers. In this task, children are tested in dyads involving an aggressive and nonaggressive child. The two children are placed in separate rooms and are read a vignette about two boys who accidently bump into each other at school. The vignette ends with the two boys engaging in a verbally and physically aggressive interchange, but the cause of the aggression is ambiguous, with neither character being clearly identified as the aggressor or victim. Each child in the dyad is asked to think about the problem from the perspective of a different vignette character. To establish a competitive set, each child is told that he will be discussing the vignette with his partner and he should “try to win” by getting his partner to agree with his opinion.

When the two children are brought together, they are instructed to discuss the story for 4 min. They are told that they will probably disagree about their answers but that they are to convince their partner of the correctness of their opinion. They are told that the purpose of the task is mainly to see which of them will win. In some uses of this technique, only one interactional session
was used (Lochman, 1987), whereas in others a second competitive session was used followed by a cooperative task (Lochman & Dodge, 1998). The interaction is videotaped so that raters can code several types of behavior, including the level of aggression present in the interaction. Aggression is defined as “agitated, mean, obnoxious verbal and nonverbal behaviors” (Lochman & Dodge, 1998, p. 501). After the dyadic discussions, each child rates themselves and their partner on seven dimensions, including an aggressive–nonaggressive dimension, using a 6-point scale.

This technique has been used in samples of fourth- and fifth-grade boys (Lochman, 1987) and fourth- and seventh-grade boys (Lochman & Dodge, 1998). In both samples, aggressive boys tended to overestimate their partner’s level of aggressive behavior and to underestimate their own level of aggression during the competitive situations compared to the ratings made by independent observers. In contrast, nonaggressive children showed an opposite perceptual pattern in which they attributed greater aggression to themselves than to their partners. Lochman proposed that this pattern of attributions suggests that “nonaggressive boys tend to assume greater responsibility for aggression in the early stages of conflict, and this attribution of greater self-blame may motivate their efforts to modulate their expression of hostility” (p. 408). Importantly, Lochman and Dodge also reported that the distorted perceptions of the aggressive boys carried over into a cooperative task, suggesting that these boys had difficulty modulating their perceptions to the changing situational demands. In contrast, the perceptions of the nonaggressive boys proved more dependent on the situational demands of the task and varied across the competitive and cooperative tasks.

Another aspect of social information processing that has been measured by laboratory and performance-based techniques is the child’s ability to develop appropriate strategies to resolve peer conflict. The Problem-Solving Measure for Conflict (PSM–C) was also developed by Lochman and colleagues (Dunn, Lochman, & Colder, 1997; Lochman & Dodge, 1994; Lochman & Lampron, 1986; Lochman, Lampron, & Rabiner, 1989). The PSM–C involves six means–end stories, with each story describing a problematic situation and a conclusion in which the problem is no longer occurring. Children provide the middle of the story, giving an initial solution to the problem and later providing additional solutions. The interpersonal contexts involved in the PSM–C stories cover several different types of conflict that vary across context (peer, teacher, or parent) and intent (ambiguous or hostile).

The scoring system for the PSM–C involves coding the total number of solutions that are generated by the child and coding 10 content areas that could be included in the solutions. These areas include the use of (a) verbal assertion (i.e., socially approved verbal statements), (b) direct nonaggressive action, (c) physical aggression, (d) verbal aggression (e.g., threats and coercion), (e) help seeking, (f) compromise, (g) bargaining, (h) negative verbal assertion (i.e., lying), (i) nonaggressive negative direct action (i.e., stealing, cheating, or disobeying), and (j) nonconfrontation (i.e., avoiding or escaping the situation). In the typical use of the PSM–C, these codes are based on the child’s opened responses to questions about the hypothetical problem situations.

Lochman et al. (1989) tested a more structured format in which the child was asked to pick solutions from a multiple-choice questionnaire on which the child was allowed to choose from four different solutions involving either verbal assertion, direct action, help seeking, or verbal or physical aggression. Aggressive boys who were given response alternatives in the multiple-choice format provided a very different pattern of solutions compared to aggressive boys who provided responses in an open-ended format. The pattern of responding did not differ between aggressive and nonaggressive boys using the multiple-choice format. The authors suggested that, in the absence of cues toward various response alternatives, aggressive boys select the responses that are most salient and most readily retrieved from memory. Therefore, the problem-solving deficits in aggressive boys are only evident in the open-ended response format.

The PSM–C has been used in various samples of children ranging in age from 6 to 15, both clinic referred (Dunn et al., 1997) and nonreferred (Lochman & Dodge, 1994; Lochman & Lampron, 1986). Across these samples, boys who were aggressive or who had a diagnosis of CD or ODD tended to generate fewer verbal nonaggressive solutions and more aggressive solutions than normal control children. They also responded to hostile situations with more direct action solutions than normal control children. However, these problem-solving deficits have not been consistently documented across studies. For example, Lochman and Dodge did not find differences between normal, aggressive, and violent children and adolescents in the number of aggressive solutions made on the PSM–C, and Lochman and Lampron did not find differences between aggressive and nonaggressive boys in the number of solutions generated. Furthermore, both Lochman and Lampron and Dunn et al. found that the problem-solving deficits were only apparent under certain conditions. Lochman and Lampron reported that fewer verbal assertion solutions for aggressive boys were only apparent in vignettes involving peers and involving hostile intent in the protagonist. Similarly, Dunn et al. reported that more aggressive solutions were only apparent for children with CDs in vignettes involving parent–child conflict in which parental intent was ambiguous. Therefore, across each of these studies, children with conduct problems had deficits in their social prob-
lem-solving abilities. However, the types of deficits and the conditions under which they were apparent were not consistent across samples.

**Reward Dominance**

For several decades, there has been great interest in understanding how antisocial individuals respond to rewards and punishments, largely stemming from Lykken’s (1957) seminal work, which showed that antisocial adults tended to be insensitive to cues of impending punishment. Renewed interest in the learning styles of antisocial individuals came from the work of Newman and colleagues (Newman & Kosson, 1986; Newman, Patterson, & Kosson, 1987), who demonstrated that an insensitivity to cues for punishment was only present in antisocial individuals under certain conditions, namely, when there were competing reward and punishment contingencies. Under these conditions, antisocial individuals tended to become overfocused on the cues for reward, leading to an insensitivity to the punishment cues. This research on the differential sensitivity to cues of reward and punishment has been important for theoretical models attempting to explain the development of CDs largely because the findings link the response style of antisocial individuals to the psychobiological research on the different neural systems underlying reward-oriented (appetitive) and punishment-oriented (inhibitory) motivational drives (see Gray, 1976, 1982). However, in addition to the theoretical importance of this research, differential sensitivity toward cues of reward and punishment could also have important implications for tailoring treatments for antisocial individuals because many interventions rely heavily on punishment-oriented approaches to behavior modification (Frick, 1998).

Because of the potential theoretical and practical importance of a child’s sensitivity to cues of reward and punishment, the laboratory paradigm developed by Newman and colleagues (Newman & Kosson, 1986; Newman et al., 1987) to study behavior under competing motivational sets in antisocial adults has been extended to children and adolescents with CDs. A summary of studies using this reward-dominance paradigm is included in Table 2. The most direct extension of the work of Newman and colleagues was conducted in a sample of older children and adolescents (M age = 13.9 years) by Shapiro, Quay, Hogan, and Schwartz (1988). They used a computerized card-playing task in which a deck of 100 cards was sequentially presented to children in a preprogrammed order. Winning cards, which led to the child earning 10¢, were face cards and losing cards, which led to a loss of 10¢, were numbered cards. The programmed order of presentation was such that the probability of a losing card being displayed increased by 10% over every succeeding block of 10 cards. During the first 10 cards displayed, only 1 was a losing card. In the next 10 cards displayed, 2 were losing cards. This steadily decreasing ratio of winning to losing cards continued until, in the final block of 10 cards, 9 of the 10 cards were losing cards. The child could not change the order of cards that were presented; however, he or she could stop playing at any time and keep the money earned to that point. In later modifications of this task for use with younger children (ages 6–13; Daugherty & Quay, 1991; O’Brien & Frick, 1996; O’Brien, Frick, & Lyman, 1994), the same contingencies operated. However, the stimuli (e.g., opening a door, pulling up a fish) varied from cards, and instead of winning money, the child won points that could be used to buy prizes.

Across all of these samples, children and adolescents with CDs consistently played more trials compared to normal control children (Daugherty & Quay, 1991) and compared to children and adolescents with other problems in adjustment (O’Brien & Frick, 1996; O’Brien et al., 1994; Shapiro et al., 1988). This pattern of responding is consistent with the reward-dominant response style found in samples of antisocial adults. It is important to note, however, that this reward-dominant response style did not seem to be present in all children with CDs. Specifically, O’Brien and Frick subdivided their sample of children with CDs into those high on callous and unemotional traits (e.g., lacking guilt, lacking empathy, showing little emotion) and those low on these traits. It was only those conduct-disordered children who were also high on these traits and low in anxiety, those that more closely fit with traditional conceptualizations of psychopathy (see Hare, Hart, & Harpur, 1991), who showed the reward-oriented response style. This finding is consistent with many other characteristics documented for this subgroup of children with CDs who show callous and unemotional traits, all of which suggest that there may be different processes underlying the antisocial behavior of these children compared to other children with CDs (see Frick & Ellis, 1999, for a review). As a result, this technique may assess a response style that is only present in a subgroup of children with CDs. Rather than being a limitation of this technique, however, this characteristic may make it an important tool for distinguishing this important subgroup of children from other youth with severe conduct problems.

**Promising Techniques**

All of the laboratory and performance-based tasks reviewed in the previous section were developed to assess processes that could underlie conduct problems, thus helping to advance research on the causes of CDs. In addition, each of these tasks have been used in multiple samples of children and adolescents. There are sev-
eral other laboratory performance-based tasks that have been used in research but have either not been used in multiple samples or were developed primarily for the assessment of other forms of psychopathology. Despite these clear limitations, each of these techniques has shown some initial promise for contributing to the assessment of children with CDs and, therefore, warrants further development and testing.

One such task is a lexical decision task that, like the reward-dominance paradigm reviewed previously, is a downward extension of a task used in the study of antisocial adults. It was designed to assess deficits in emotional reactivity, a process that has been critical to many theories of antisocial behavior (Hare et al., 1991; Lykken, 1995; Patrick, Bradley, & Lang, 1993). This task was originally developed and tested by Williamson, Harpur, and Hare (1991) in an incarcerated sample. The task presents letter strings on a computer screen, some of which form words. The child must indicate whether the letters form a word or not as quickly as possible. The words are divided into positive emotional words (e.g., happy), negative emotional words (e.g., kill), or neutral words (e.g., leaf). The response time in recognizing emotional words is faster for most persons because of the emotional arousal evoked by the word. Using this task in their incarcerated sample, Williamson et al. found that this response facilitation to emotional words was not present for their antisocial sample, especially for the negative emotional words. In fact, their antisocial sample showed slower response times to these words, suggesting the possibility of a subtle appetitive drive to the negative words rather than an inhibitory response.

This task was modified by Loney, Frick, Clements, Ellis, and Kerlin (2000) for use in child and adolescent samples. Only short words (four letters or less) and those that were of high concreteness (≥ 2.75) based on norms by Toglia and Battig (1978) were used in this modified task. Their initial test of the task was in a sample (N = 60) of adjudicated male adolescents ranging in age from 12 to 18 (M = 16.04 years, SD = 1.32). In this delinquent sample, a subgroup of antisocial adolescents, those who showed high rates of callous and unemotional traits, did not show the enhanced recognition time to emotional words compared neutral words. In fact, like the findings of Williamson et al. (1991) in incarcerated adults, antisocial adolescents with these traits showed slower recognition times to negative emotional words. More important, impulsive antisocial adolescents who were not elevated on callous and unemotional traits showed an opposite pattern of performance. This group showed an enhanced facilitation in their speed of recognition of negative emotional words, suggesting that they may be overreactive to emotional stimuli, in contrast to the apparent underreactivity of the callous and unemotional group. Recognizing the limitations of using a technique in only one sample, these findings suggest that this task may be a useful measure of the differences in emotional reactivity between subgroups (i.e., impulsive vs. callous and unemotional) of adolescents with CD.

In addition to the potential importance of a child’s sensitivity to emotional stimuli, Sequin, Pihl, Boulertice, Tremblay, and Harden (1996) used a laboratory task to determine if aggressive adolescents (age 14) showed differences in their pain sensitivity. Their laboratory task involves attaching a pressure device to the middle finger of each adolescent’s nondominant hand. The adolescent rates the level of pain caused by the device every 15 sec using a visual analog scale ranging from 0 (no pain) to 100 (intolerable pain). The task is discontinued after 3 min, or sooner if an adolescent’s ratings reach 100 before this time or if the adolescent requests it to be discontinued. Sequin et al. (1996) found that aggressive adolescents exhibited differences in pain sensitivity from nonaggressive adolescents by showing higher pain tolerance (lower ratings of pain intensity). However, like many of the other tasks reviewed in this article, this higher pain threshold was only apparent for a subgroup of aggressive adolescents, namely, those who had shown a stable pattern of aggression since childhood and who had intact executive functioning. Importantly, both of these characteristics have been linked to antisocial youth who also show callous and unemotional traits, possibly linking these findings on pain sensitivity to the findings on emotional responsivity during a lexical decision task.

All of the laboratory measures of parent–child interactions designed to elicit child noncompliance reviewed previously (see Table 2) also assess parenting factors (e.g., parental consistency, parental negativity) that could be related to the development and maintenance of children with conduct problems. Therefore, these tasks could also be considered as laboratory and performance-based measures of clinically important processes (i.e., parenting behaviors) associated with CDs. However, all of these techniques focus on relatively mild conduct problems (e.g., argumentativeness, noncompliance) that could be elicited under standardized and relatively innocuous conditions (e.g., cleaning up toys). Fagot (1992) developed a laboratory measure to assess parenting practices that used vignettes, thereby allowing it to focus on hypothetical parental responses to more severe child behavior.

In this technique, parents view 14 videotaped vignettes (about 1 min each) containing children engaging in risky and bothersome behaviors such as pulling garbage out of a container and hitting furniture with a stick. While watching the vignettes, parents are instructed to depress numbers on a keypad to indicate how they would respond to their child’s behavior in a similar situation. There are five possible responses represented on keyboard: (a) no action would be taken, (b) a warning would be given, (c) a redirection or explana-
tion concerning the behavior would be given, (d) a verbal reprimand would be provided, or (e) a physical reprimand would be provided. Fagot (1992) initially studied this technique in a sample of parents of 18-month-old children. In this study, parental responses to the vignettes were significantly associated with behavioral observations of coercive discipline practices used by the parents at home. Furthermore, parental responses showed the expected correlations with behavioral observations of parents’ aggression in playgroups and with parental report of their children’s conduct problems outside of the laboratory.

The laboratory task developed by Fagot (1992), as well as the other parent–child interactional techniques describe previously, all focus on parenting processes that have been associated with CDs. These processes are all integral to many causal theories of CDs (Frick, 1998). However, they have all assessed parenting practices in families of preschool or very young elementary-school-age children. Hops and colleagues (Dishion & Andrews, 1995; Hops, Davis, & Longoria, 1995; Sheeber, Hops, Alpert, Davis, & Andrews, 1997) developed a performance-based measure of parent–child interactions for use in adolescent samples. This technique was not originally designed for the assessment of conduct problems or aggression but was designed to assess the interactions of depressed mothers and their children (see Hops et al., 1995). However, it has proven to tap several interactional processes that could be important in the assessment of the parent–child interactions of adolescent’s with CDs.

In this technique, parents and children complete the Issues Checklist (Robins & Weiss, 1980), a list of 44 topics about which teens and parents frequently disagree (e.g., phone use, friends, homework). Both the adolescent and his or her parent rate whether or not each topic was discussed in the past 2 weeks, and they rate how “hot” the discussion became. The adolescent and parent are asked to discuss and try to resolve the two hottest topics rated on this checklist for 10 min while being videotaped for later coding of the interaction. Several different coding systems have been used to analyze parent–adolescent interactions during this problem-solving session. The Family Process Code (Dishion & Andrews, 1995) determines the affective valence of the discussion and measures several specific content areas involved in the discussion. An important summary code is the Negative Engagement score, which summarizes behavior across several negative interaction areas including negative verbal behaviors, coercive interactions, and physically aggressive behaviors. The Living in Family Environments coding system also involves both affect and content codes (Hops et al., 1995). Two composite codes from this system include a summary of time spent in facilitative discussion (Family Support) and a summary of time spent in irritable, threatening, and argumentative discussion (Family Conflict). In coding behaviors from the parent–child problem-solving discussions, high negative engagement, low family support, and high family conflict have all been associated with increased levels of aggressive behavior in adolescents. However, these studies have all involved community samples of adolescents, and therefore, their use in clinical samples of more severely disturbed adolescents has not been tested.

One final type of laboratory and performance-based task that has potential importance for assessing children and adolescents with CDs is various tasks assessing response inhibition. For example, Newman, Widom, and Nathan (1985) used a task in which adolescents, through a trial-and-error process, had to learn to respond to one type of stimulus and not respond (inhibit the response) to another. These authors reported that antisocial adolescents had more difficulty inhibiting responses under certain conditions than nonantisocial adolescents. This and other similar tasks measuring response inhibition and related constructs are not reviewed extensively here because they seem to be more specifically associated with ADHD. Research suggests that performance on these tasks only seems to be associated with CDs because of the frequent comorbidity between the two types of disorders (Milich, Hartung, Martin, & Haigler, 1994). As a result, these tasks are reviewed in more detail by Rapport, Chung, Shore, Denney, and Isaacs (this issue), who focus on laboratory and performance-based measures used in the assessment of ADHD.

**Overall Evaluation for Use in Clinical Assessments**

As evident from this review, there are a number of laboratory and performance-based measures that have been used in research of children with severe conduct problems. These techniques have helped to advance research on the many causal mechanisms that may underlie CDs. Therefore, they have great potential for bridging the gap between research on the causes of CDs and current intervention practices.

One of the most immediate areas of clinical use for these techniques is in monitoring the effects of treatment. Several of the provocation paradigms reviewed in this article have shown to be sensitive to the effects of intervention. For example, the Temptation Provocation Task summarized in Table 1, which assesses stealing and property destruction, has proven to be sensitive to the effects of stimulant medication (Hinshaw et al., 1992). Even more impressive is the evidence that parent–child interaction techniques are sensitive to the effects of family-based interventions targeting oppositional behavior in young children (Forehand & McMahon, 1981; Hembree-Kigin & McNeil, 1995). The utility for assessing treatment effects is important.
because these laboratory techniques, when conducted in a way in which the observations of conduct problems are blind to treatment status, may be less susceptible to expectancy effects inherent in self-report or informant report of problem behavior. Therefore, they may provide a more objective and conservative assessment of the effectiveness of an intervention. However, even in this area of most immediate promise, there are several important areas of development that could increase their usefulness as treatment outcome measures. For example, more data on the ecological validity of these techniques would increase confidence that changes in laboratory measures brought about by treatment provide an adequate approximation of changes in children’s behavior outside of the laboratory setting. Also, more data are needed to determine whether group differences in these measures that are brought about by treatment can be translated into assessments of an individual child’s response to treatment.

Another area of potential clinical utility for these laboratory and performance-based measures is in documenting processes that may be important targets of intervention and, even more important, in documenting processes that are specific to certain subgroups of children with CDs (see Frick & Ellis, 1999). Documenting these subgroups and their unique characteristics could aid in tailoring treatments to the specific needs of children within each of these subgroups. For example, the parenting behaviors that are assessed in the parent–child interaction paradigms summarized in Table 1 are the focus of many effective family interventions for young children with conduct problems (Hembree-Kigin & McNeil, 1995). However, the parenting practices that are targeted in these programs may be more important in the development and maintenance of conduct problems in some children with CDs than others (Wootton, Frick, Shelton, & Silverthorn, 1997). Similarly, the deficits in social cognition assessed by the social problem-solving tasks reviewed in Table 2 are the focus of many cognitive–behavioral interventions for children and adolescents with conduct problems (Lochman & Wells, 1996). Again, there is evidence that these deficits may be more strongly related to conduct problems for some children (e.g., those that show more reactive forms of aggression) than others (Crick & Dodge, 1996).

Despite the promise for designing and tailoring interventions for children with CDs, there are some critical issues that need to be addressed in future research to enhance the clinical utility of these techniques. First, it is important for future research to demonstrate that changes in children’s behavior after treatment are mediated by changes in these processes. For example, the change in children’s conduct problems following treatment for deficits in social problem-solving skills should be directly linked to improvements in children’s use of the problem-solving strategies taught in the intervention. Such information would provide a very important link between assessment and treatment that would greatly enhance the utility of these techniques in clinical practice. Second, if these techniques are to be used to tailor treatment, it is important to document that such individualization substantially enhances treatment effectiveness. It seems intuitive that, if one assesses for processes that are specific to a subgroup of children with CDs, designing treatments to alter these specific processes should enhance its effectiveness. However, the effectiveness of such treatment-to-patient matching needs to be tested directly, especially the incremental effectiveness of such an approach to treatment compared to a more traditional approach in which the same treatment package is given to all children with conduct problems.

Despite these areas of promise for laboratory and performance-based techniques, it is also evident that they have substantial limitations for use in clinical assessments, especially in making initial diagnoses of CDs. The techniques summarized in Table 2 do not directly assess conduct problems and, therefore, are not useful for making Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1994) diagnoses based on these symptoms. The provocation techniques summarized in Table 1 do directly assess conduct problems. However, each task focuses on a specific type of conduct problem (e.g., aggression, covert behavior) rather than assessing the full range of conduct problems that form the diagnostic criteria for ODD and CD (American Psychiatric Association, 1994). Furthermore, the primary validity information provided for all of these techniques is their ability to distinguish between children who are already diagnosed with a CD (or designated as aggressive) using interviews, ratings, peer nominations, or naturalistic observations and children without conduct problems. This validation has typically involved comparing children’s mean scores from the laboratory and performance-based techniques (e.g., mean level of hostile aggression in response to provocation) between children with conduct problems and normal control children. Unfortunately, such comparisons do not provide case-level data that are critical for the diagnostic process, such as what percentage of children diagnosed with a CD are also classified using the laboratory and performance-based technique. As a result, one cannot determine the true/false-positive rates and the true/false-negative rates that result from using these techniques (see Frick et al., 1994). Similarly, groups differences on the performance-based techniques do not necessarily indicate that the scores will be useful for determining the responsiveness to treatment of an individual child. Most important, however, group comparisons or simple correlational studies do not provide evidence for the incremental utility of these techniques over other techniques. As a result, it is not clear whether or
not the laboratory and performance-based measures provide clinically useful information that is not obtainable through other methods. The question of incremental utility is especially critical because other methods, such as ratings and interviews, are often less costly to use than the laboratory and performance-based measures. Furthermore, ratings, interviews, and direct behavior observations often possess greater ecological validity because they either directly or indirectly (i.e., through the perceptions of others) assess behavior in a child or adolescent’s natural environment.

Another critical limitation of these techniques relates to several important ethical issues involved in their use in clinical assessments. The two most troublesome of these ethical issues are (a) intentionally provoking or eliciting antisocial and aggressive behavior in children and adolescents, behavior that is clearly not considered socially acceptable and (b) using deception as part of a clinical assessment tool. The tasks involving parent-child interactions place demands on the child, similar to those experienced in a child’s natural environment (e.g., demands for cleaning up), and the conduct problems that they are designed to elicit are relatively mild (e.g., noncompliance). Therefore, the ethical issues involved in using these techniques are less troublesome than for tasks designed to elicit aggressive responding or covert antisocial behavior (e.g., stealing, cheating, property destruction). The potential for iatrogenic effects, such as unintentionally encouraging or at least condoning such types of antisocial behavior, needs to be considered in the design and implementation of these assessment procedures.

A potentially more problematic issue is the use of deception that is required by many of these paradigms, such as having children believe that they are in competition with an alleged peer or not informing them that their behavior is being observed or recorded. Use of such deception techniques is generally considered acceptable in research when (a) the risks involved in participating in the research are considered minimal, (b) the potential benefits of the research are great enough to justify the use of deception, (c) there is no other way to accomplish the same objective without using deception, and (d) the participant is debriefed following the study (American Psychological Association, 1992). However, the use of deception in clinical assessments is more problematic. In such contexts, the person being assessed is considered to have a right to a full explanation of the procedures to which he or she will be exposed. Furthermore, the clinical assessment typically takes place in the context of a therapeutic relationship, and therefore, the potential harm caused by deception and the lack of trust that it could engender in the current or in future therapeutic relationships is a serious concern.

All of these ethical issues suggest that there is a need for carefully and sensitively designed studies to investigate the potential impact of these procedures on children and adolescents. Also, they make the need to justify their usefulness in clinical assessments greater than for other assessment instruments with less potential for harmful effects. Hinshaw et al. (1992) provided a very sensitive and thoughtful discussion of these ethical issues in their use of the Temptation Provocation Task. This discussion focused on research uses of this task but are equally important for its use in clinical assessments. First, in their use of the Temptation Provocation Task, parents were fully informed of the procedures and were allowed to decline consent for their children to participate. Second, after the use of deception, children were debriefed concerning the deception and the reason for it. This debriefing procedure involved a discussion of why the behavior being assessed (e.g., stealing) is inappropriate. Third, the assessment procedures were conducted within an ongoing treatment program in which the child was involved, providing a context in which potential issues of trust could be processed and in which the behaviors elicited in the procedures could be addressed. In fact, the authors explicitly stated that they “do not recommend such procedures be adopted for one-shot assessments” (Hinshaw et al., 1992, p. 280). This quote illustrates the careful consideration of ethical issues needed in the use of these techniques in clinical assessments.

Summary and Recommendations

Based on these theoretical, methodological, and ethical considerations, the usefulness of many of these and other similar laboratory and performance-based assessment techniques in making initial diagnoses of CDs is probably quite limited. It is unlikely that, even with further development, they will prove to be very useful for this purpose. However, many of these techniques have already proven to be useful for monitoring the effects of interventions, which seems to be the most immediate clinical use for these procedures. Another clear area of promise is the assessment of clinically important processes that are involved in the development and maintenance of conduct problems in youth, processes that could be important targets of intervention. These techniques could prove to be especially useful in documenting processes that differ across subgroups of children with CD and, thereby, could aid in tailoring treatments to the specific needs of these subgroups. We have tried to outline some additional directions for future research using these techniques that would increase their usefulness for these clinical applications.

Because of the relatively frequent use of these techniques in the assessment of childhood conduct problems in research, it is likely that these techniques or modifications of them will continue to be developed and tested. The techniques reviewed in this article were
selected as exemplars to highlight some of the more common uses of existing techniques and to focus on several key issues that need to be considered in using techniques of this kind in clinical assessments. Clearly, there is reason to encourage more research into such techniques for the purposes outlined previously. They have the potential for bridging some important gaps between research on causal processes and interventions for children and adolescents with CDs. However, equally clear is the need to be very cautious in their use in clinical assessments until their usefulness can be more firmly established, especially in terms of their incremental utility compared to other less costly and less potentially harmful types of assessment techniques. Even then, it is critical that their use be done with careful consideration of the ethical issues involved in their administration.

References


Manuscript received December 1, 1999
Final revision received February 5, 2000