The Children's Evaluation of Everyday Social Encounters Questionnaire: Comprehensive Assessment of Children's Social Information Processing and Its Relation to Internalizing Problems

Debora J. Bell¹; Aaron M. Luebbe¹; Lance P. Swenson; Maureen A. Allwood⁰

¹ Department of Psychological Sciences, University of Missouri,
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Two studies describe the development of a comprehensive, vignette-based measure of social information processing (SIP) particularly relevant for children with internalizing problems. Study 1 (N = 219 3rd–6th graders) describes the creation of the Children’s Evaluation of Everyday Social Encounters Questionnaire (ChEESE-Q) and evidence for its reliability and validity, including internal structure and relation of SIP variables to depressive and anxious symptoms. Study 2 (N = 127 5th–6th graders) replicated the factor structure and validity evidence found in Study 1 and provided support for the reliability of alternate forms of the ChEESE-Q. Overall, results supported ChEESE-Q scores’ moderate temporal stability and internal consistency in assessing SIP. Results also supported the presence of positive- and negative-valenced SIP patterns. Child internalizing symptoms were strongly related to a negative SIP style across both depression and anxiety, whereas only depressive symptoms were negatively associated with positive aspects of SIP.

Social information processing (SIP) has been a useful paradigm for understanding individual differences in children’s responses to their social worlds. According to Crick and Dodge’s (1994) widely adopted model, when faced with a social event, children first attend to and encode internal and external cues relevant to the event. They interpret these cues, making attributions about likely causes or others’ intent and forming expectations for their performance outcomes. They are presumed to identify their goal or desired outcome for the situation (e.g., instrumental, relationship-oriented, or internally oriented outcomes). Children engage in problem solving by accessing or constructing possible responses, selecting a response based on their evaluation of expected outcomes and self-efficacy for enacting the response, and finally enacting the selected response. Maladaptive SIP has been implicated in several childhood behavioral and emotional problems, including externalizing problems (e.g., aggression, conduct problems, antisocial traits; Crozier et al., 2008; Dodge, Laird, Lochman, & Zelli, 2002), internalizing problems (e.g., depression, anxiety, posttraumatic stress; Dalgleish et al., 2003; Dickson & MacLeod, 2004; Marien & Bell, 2004), and even health problems (e.g., obesity; Braet & Crombez, 2003). Despite support for utility of SIP models, research has yet to realize their full potential. To date, relatively little literature has offered integrated, comprehensive examination of SIP across a range of socially relevant situations using instruments with known psychometric properties. Our study addressed these gaps in the literature through two major goals. First, we developed the
Children’s Evaluation of Everyday Social Encounters Questionnaire (ChEESE-Q), a comprehensive measure of SIP. Because most extant literature has focused on SIP’s relation to aggression and externalizing problems, the ChEESE-Q focuses on situations and SIP responses relevant to child internalizing problems. Second, we examined the reliability of ChEESE-Q scores and tested their validity based on test content, factor structure, and relations to internalizing domains (i.e., depression and anxiety).

UTILITY OF SIP MODELS IN UNDERSTANDING CHILD ADJUSTMENT

SIP models have proved useful for describing the complexity of factors that contribute to children’s social behavior and for advancing theory development and treatment for a wide variety of child issues (Bijttebier, Vasey, & Braet, 2003). Research supports the inclusion of SIP constructs in models of etiology and maintenance of both externalizing and internalizing issues such as aggression and anxiety (e.g., Crick & Dodge, 1994; Lonigan, Vasey, Phillips, & Hazen, 2004; Vasey & Dadds, 2001), and indicates that multistage SIP models offer greater predictive power than single or more general indices of social cognition (Crick & Dodge, 1994; Dodge, Pettit, McClasky, & Brown, 1986). Evidence also suggests that SIP variables may mediate relations between individual factors (e.g., social knowledge, emotion understanding, physiological reactivity) or early experiences (e.g., peer rejection, community violence) and development of problematic behaviors (Crozier et al., 2008; Dodge et al., 2002; Schwartz & Proctor, 2000).

Although most SIP research has focused on children’s externalizing problems, the past decade has seen increased attention to SIP’s value for understanding internalizing problems (Daleiden & Vasey, 1997). Research suggests that children with both clinical and subclinical levels of anxiety, depression, and related constructs (e.g., worry, withdrawal) differ from nondistressed peers on several SIP dimensions. Symptoms of both anxiety and depression have been related to interpreting ambiguous situations negatively, overestimating danger, expecting negative outcomes, and endorsing avoidant coping (Barrett, Rapee, Dadds, & Ryan, 1996; Bogels & Zigterman, 2000; Burgess, Wojcikiewicz, Rubin, Rose-Krasnor, & Booth-LaForce, 2006; Daleiden & Vasey, 1997; Marien & Bell, 2004; Muris et al., 2000; Quiggle, Garber, Panak, & Dodge, 1992; Rheingold, Herbert, & Franklin, 2003; Suarez & Bell-Dolan, 2001; Suarez-Morales & Bell, 2006). Anxious youth have been shown to attend selectively to threat-relevant information and other negative aspects of the environment (Dalglish et al., 2003), to select avoidant and passive responses (Barrett et al., 1996; Bell-Dolan, 1995), and to have lower confidence or self-efficacy regarding their ability to respond to social situations effectively (Bogels & Zigterman, 2000; Daleiden & Vasey, 1997; Suarez-Morales & Bell, 2006). Depressed youth have been shown to make more critical self-referent attributions about ambiguous peer situations (Pristin, Cheah, & Geyer, 2005) and generate and select fewer assertive and more ineffective problem-solving responses (Goodman, Gravitt, & Kaslow, 1995; Quiggle et al., 1992; Sacco & Graves, 1984). Goals have received little attention in the internalizing literature, but research suggests that anxious children endorse both avoidant and prosocial goals (Dickson & MacLeod, 2004; Erdley & Asher, 1996).

LIMITATIONS IN MEASUREMENT OF SIP

Although evidence is mounting that an SIP paradigm is useful for describing childhood adjustment, several measurement issues merit additional attention, especially for understanding internalizing problems. One major limitation in the literature is the frequent piecemeal approach to assessing SIP or related social cognitive constructs. Because individual studies or measures often focus on circumscribed aspects of SIP rather than examining the process more fully, our understanding of SIP is incomplete. For example, commonly used measures of distorted internalizing-relevant cognitions often include a mixture of negative attributions, self-evaluations, or anticipated ineffective/maladaptive responses, focusing more on cognitive content than on the specific processes that make up the SIP model (e.g., Thought Checklist for Children, Laurent & Stark, 1993; Social Anxiety Scale for Children–Revised, La Greca & Stone, 1993; Children’s Negative Cognitive Errors Questionnaire, Leitenberg, Yost, & Carroll-Wilson, 1986; Children’s Thought Questionnaire, Marien & Bell, 2004; Children’s Automatic Thoughts Scale, Schniering & Rapee, 2002).

Also, as previously noted, we have relatively good evidence that child anxiety and depression relate to biased attention to and interpretation of threat, and to maladaptive problem-solving, but are much less informed about associated goals or self-efficacy in social situations. Perhaps more important, the lack of comprehensive assessment of the SIP model prevents us from understanding the process or patterns of SIP. As several prominent researchers have recently noted, despite the SIP model’s assumption of interrelationships among stages (i.e., that stages influence one another), these relationships and the relative importance of separate stages in predicting child adjustment have been neglected (Bijttebier et al., 2003; Dodge et al., 2002). Recently,
studies of child aggression have provided support for the related but separate nature of SIP stages (Dodge et al., 2002) and for mediational relationships among SIP stages in predicting outcomes (Schippell, Vasey, Cravens-Brown, & Bretveld, 2003). Our study begins the much-needed extension of this line of research to internalizing problems.

Relatedly, studies of SIP pay limited attention to psychometric properties of their assessment measures (Bijttebier et al., 2003; Dodge et al., 2002). Studies generally present children with vignettes that are presumed to be ambiguously threatening, but the vignettes’ actual threat potential and relevance to participants is frequently not established a priori. Also, although many studies report basic information on internal consistency and temporal stability of specific SIP questions, more general evidence of validity, especially of model structure, is neglected. Dodge et al. (2002) conducted one of the few studies to examine this issue in depth in their assessment of SIP in aggressive children. In their study, four aspects of SIP (intent attributions, goal endorsement, response generation, response evaluation) demonstrated moderate internal consistency, as well as convergent and discriminant validity. However, as evidenced by multiple studies (e.g., Dirks, Treat, & Weersing, 2007; Dodge et al., 2002), children’s SIP may show situation specificity, thus limiting the internal consistency of SIP measures that assess multiple vignettes. Further psychometric evaluation of SIP assessment across studies and measures is clearly needed.

THE CURRENT INVESTIGATION

We present two studies on the development and initial validation of a measure of SIP that address several gaps in the literature. Institutional Review Board approval was obtained prior to beginning the research in each study. In Study 1, we developed the ChEESE-Q and conducted initial psychometric evaluation of the measure. Measure development focused on creating vignettes of interpersonal and social-evaluative events that are particularly relevant for children with internalizing issues, as well as designing questions that provide a more comprehensive evaluation of the SIP model than is currently available. The measure assesses multiple aspects of both interpretation (e.g., attributions about event causes and protagonist intent) and response decision phases (response selection, expectations about outcomes, self-efficacy), as well as providing one of the first examinations of goals in the internalizing literature. In examining the ChEESE-Q’s psychometric properties, we identified its factor structure and assessed temporal stability, internal consistency, and relations to internalizing symptoms.

In Study 2, we attempted to replicate and extend findings from Study 1. Based on Study 1 findings, we made minor modifications to the ChEESE-Q and examined the psychometric properties of the modified measure (i.e., internal consistency, temporal stability, relations to internalizing symptoms). Using confirmatory factor analysis we attempted to replicate the ChEESE-Q’s factor structure. Finally, we examined the comparability of individual interview and group administration formats.

Based on theory and prior research, we expected anxiety and depressive symptoms to be associated with more negative attributions, less effective proposed solutions, and lower self-efficacy. Because of the paucity of research examining multiple internalizing constructs or SIP variables simultaneously, we did not form more specific hypotheses at the outset. As initial analyses identified the ChEESE-Q’s factor structure, we formed more detailed hypotheses about how depression and anxiety might relate specifically to ChEESE-Q scores. These hypotheses are presented as we describe relevant results in each study.

In initial measure development, we focused on upper elementary-aged boys and girls (third to sixth grades), for whom cognitive aspects of both SIP and social anxiety have likely emerged, can be measured reliably, and are presumed to influence children’s behavioral and emotional adjustment. We suspected that patterns of SIP responding and links between SIP and social anxiety might be stronger for older youth in our sample, for whom internalizing symptomatology is becoming more prevalent and patterns of cognitive responding more stable (Beidel & Turner, 1998; Bell-Dolan & Wessler, 1994; Hammen & Rudolph, 2003; Verhulst, 2001). We also hypothesized that findings might differ for boys and girls, based on evidence of sex differences in both internalizing symptoms and SIP. Evidence suggests that girls report more internalizing symptoms than boys (e.g., Hankin et al., 1998; Kearnay, 2005) but also tend to display fewer SIP problems (e.g., maladaptive social goals; Lansford et al., 2006; Rose & Asher, 1999). Thus, relations between internalizing symptoms and SIP problems might actually be weaker for girls than for boys.

STUDY 1: CHEESE-Q DEVELOPMENT AND INITIAL VALIDATION

Phase I: Measure Development

Development of ChEESE-Q vignettes and SIP questions involved literature reviews, evaluation by expert consultants and adult volunteers, and pilot testing with elementary-aged children. Because of our targeted interest in internalizing-relevant social information processing, potential vignettes were written based on
literature identifying social-evaluative situations of particular relevance to children with internalizing problems such as social anxiety (e.g., Beidel & Turner, 1998; La Greca & Stone, 1993; Morris, 2001; Schniering & Rapee, 2004; Silverman, La Greca, & Wasserstein, 1995), including (a) initiating conversations or activities, meeting someone new; (b) performing in front of others, doing something new; (c) being evaluated negatively by being teased, talked about, or rejected by peers; or (d) disagreeing or demonstrating assertiveness with a peer. Consistent with the adult and child anxiety literature (e.g., Beidel & Turner, 1998), each vignette was written to reflect self-referent concerns. Of 58 initial vignettes, 38 were rated by expert colleagues and undergraduate volunteers as clear and realistic for elementary-aged children, and were then piloted with elementary-aged children.

Methods

Participants and procedures. Elementary-aged children were recruited from the local public school district (23 boys, 31 girls; 10 third graders, 16 fourth graders, 16 fifth graders, 12 sixth graders). Project staff mailed recruitment letters to parents of randomly selected students and followed up with telephone calls. Parents of 80 children (52% of parents reached by telephone) scheduled interview sessions at the child’s home or the university lab, although 26 families failed to complete sessions despite reminder calls and rescheduling. After obtaining parent consent and child assent, a research assistant read vignettes aloud while the child followed along and recorded his or her answers on a questionnaire form. To assess vignette clarity, participants described briefly, in open-ended format, what happened in the situation; responses were coded as accurate/inaccurate by independent trained undergraduates, with disagreements resolved by a third coder. Prior to actual data coding, coders completed training, which involved reviewing written coding definitions, completing practice coding along with the first author on a minimum of 10 open-ended responses. Realism was assessed by asking participants to rate, from 1 (extremely unrealistic) to 5 (extremely realistic), whether the situation realistically could happen to a 9- to 12-year-old child. Ambiguous threat potential was evaluated by asking children to rate, from 1 (not at all anxious) to 5 (extremely anxious), how anxious they would be if the situation happened to them. To allow assessment of the relation between participants’ anxious response to each vignette and their trait social anxiety, children also completed the Social Anxiety Scale for Children–Revised (SASC–R; La Greca & Stone, 1993; see Phase II Measures section for SASC–R description).

The resulting six vignettes for the ChEESE-Q are presented in Appendix A. Vignettes that optimized clarity (M % accurate vignette description ≥87%) and realism (M realism rating ≥3.77) were identified. The vignettes also were selected based on their relevance to social anxiety as evidenced by variability in state anxiety provocation (ratings ranged 1–5 on a 5-point scale) and significant relationships between children’s state anxiety and trait social anxiety (rs = .40–.69).

SIP question development. Because the literature contains examples of effective ways to assess most SIP stages in elementary-aged children, we adopted most of the ChEESE-Q’s SIP questions fairly directly from existing measures (e.g., Barrett et al., 1996), from literature on children’s social information-processing (e.g., Crick & Dodge, 1994; Daleiden & Vasey, 1997), and from literature on anxious children’s cognitive and behavioral response tendencies (e.g., Bell-Dolan, 1995; Vasey, Crnic, & Carter, 1994). However, our interpretation questions differed somewhat from existing measures (i.e., we assessed causal and intent attributions separately) and goal formation has received relatively less attention in SIP measures. Thus, we piloted these questions. One fairly novel aspect of the ChEESE-Q SIP questions was our use of rating scales for several SIP stages rather than a multiple-choice or forced-choice format. For example, rather than asking children to select one attribution or goal in a situation, we presented a range of possible attributions and goals and children rated agreement with each possibility. This response format recognizes that children may have multiple thoughts about situations simultaneously and allows them to report on their experiences more fully than would a single response.

Prior to piloting SIP questions, experts in child psychology and development helped create goal options reflecting the range of goals typically assessed (e.g., in the peer relations literature; Rose & Asher, 1999) and that would encompass internalizing-relevant goals. Six general goal option categories were constructed: (a) task-focused (e.g., “just work out the situation”), (b) avoidant (e.g., “try to avoid or ignore the situation”), (c) face-saving (e.g., “show that it’s okay/not a big deal”), (d) affect management (e.g., “try to make myself feel better”), (e) distress expression (e.g., “show that I’m angry or upset”), and (f) relationship-focused (e.g., “just focus on getting along with friends”). We piloted SIP questions to assess clarity and whether they elicited variability in responses. A subset of children who evaluated vignettes (n = 7) completed a semistructured interview. Both interpretation and goal formation questions demonstrated satisfactory clarity (i.e., 100% of questions were accurately understood by children) and variability in response elicitation (i.e., for interpretation questions,
Phase II: Initial ChEESE-Q Validation

Phase II addressed psychometric properties of the newly created ChEESE-Q-beta. Specifically, we examined the factor structure of the ChEESE-Q-beta, internal consistency and test-retest reliability, and associations of ChEESE-Q beta scores with internalizing symptom measures.

Methods

Participants. Participants were 219 third- to sixth-grade children recruited from a public school district in a small midwestern city. Children were 8 to 13 years old (\(M = 10.27, SD = 1.25\)) and included 55 third graders (29 girls, 26 boys), 48 fourth graders (31 girls, 17 boys), 56 fifth graders (21 girls, 35 boys), and 60 sixth graders (30 girls, 30 boys). Chi-square analyses indicated no significant differences in number of participants in each grade level, \(\chi^2(3) = 1.56, p = .66\). The ethnic/racial composition of the sample reflected the geographic area: 81% Caucasian, 7% African American, 3% Asian American, and 3% Hispanic (6% identified themselves as “other.” 1 participant was American Indian, and 2 participants did not report ethnicity). Children came from primarily middle-class to upper-class families, with 43% of families’ income ranging $40,000 to $80,000 per year, and 29% of families earning more than $80,000 per year.

Procedures. Participant families were recruited from public school district enrollment rosters by sending introductory letters to randomly selected parents and following up with telephone calls approximately 1 week later. Recruitment continued until a sufficient sample size, divided roughly equally across grades, was secured. Investigators were able to reach 430 parents by telephone (47% of those sent letters); of these, 257 agreed to their child’s participation (60% of families reached by telephone). Although verbally agreeing to participate, 38 children failed to complete data collection because of repeated family cancellations or no-shows of scheduled interview sessions (36 children), withdrawal of assent (1 child), or cognitive deficit that interfered with understanding the interview task (1 child). Sex and grade level of children who failed to complete data collection did not differ from those of participants (\(\chi^2’s < 1.64, ps > .15\)).

Data were collected in individual sessions conducted in families’ homes or at the first author’s university lab. Upon obtaining parental consent and child assent, a research assistant read all items of the ChEESE-Q-beta aloud and recorded the child’s responses verbatim. Next, the internalizing symptom measures were read aloud while the child recorded his or her responses. Approximately 2 weeks after initial data collection session, 41 children completed the ChEESE-Q-beta a second time. After each data collection session, participants were paid for their time ($12 for initial participation, $5 for test-retest).

Measures

ChEESE-Q-beta. In response to six social vignettes (Appendix A), the ChEESE-Q-beta assesses five SIP stages described by Crick and Dodge (1994; see Appendix B for questions corresponding to Vignette 1). Separate boy and girl versions include gender-specific references to peers in each vignette. An open-ended question (Question 1) helps children orient to key aspects of the vignette, and a state affect question (Question 4) assesses children’s positive and negative affective responses to vignettes. Eight other questions assess specific aspects of SIP. Items, response formats, and item scoring are described next. For all rating scale questions, children use a 1-to-5 scale (unless otherwise indicated, 1 = definitely not to 5 = definitely), and scores are the average rating across the six vignettes. For all items requiring categorical responses, scores are the proportion of each type of response, averaged across the six vignettes.

Interpretation is assessed with two attribution questions. For causal attributions, the child rates his or her belief that the vignette event occurred because of something positive about himself or herself (positive internal), negative about himself or herself (negative internal), positive about the vignette’s protagonist (positive external), and negative about the protagonist (negative external). Intent attributions are assessed by having the child rate his or her belief that the vignette protagonist acted accidentally and with positive, negative, and neutral intent. For goal formation/clarification, the child rates the extent to which she or he would have each of six goals (task-focused, avoidant, face-saving, affect management, distress expression, and relationship-focused) for meeting the demands of the situation. Two questions assessed the problem-solving components of SIP. In response generation, the child generates all the things she or he could do in response to the situation portrayed in the vignette. Consistent with previous literature (e.g., Barrett et al., 1996), generated solutions are classified as one of four solution types. “Prosocial” solutions include behaviors that directly attempt to maintain the social relation or clarify the social interaction (e.g., efforts to compromise). “Passive Avoidant” solutions include non-effortful responses that allow the child to avoid the social interaction (e.g., pretending not to notice).
“Active Avoidant” solutions reflect effortful attempts to redirect or physically escape from an interaction (e.g., leave the room). “Negative” solutions are direct behaviors that would likely result in adverse consequences for others (e.g., insulting). Responses that do not include behaviors (e.g., emotional responses such as “be scared,” “I don’t know”) are not considered solutions and were not included in analyses. For response selection, the child indicates possible response she or he would actually select in that situation. For both response generation and response selection, four scores are generated, representing the proportion of each solution type generated/selected (prosocial, passive avoidant, active avoidant, negative), averaged across the six vignettes. In the current study, response sets for response generation and selection were coded independently by two undergraduate research assistants trained using procedures similar to those in Phase I. Discrepancies (15% of original codings) were resolved by a third coder. Finally, evaluation of likely response enactment is assessed with three questions. The child indicates which of the six goals the selected behavior would meet (multiple selections permitted), and the child’s score for each selected response goal is the proportion of times across the six vignettes the child endorses the specific goal. Behavioral enactment efficacy is assessed by having the child rate (1 = not at all well to 5 = very well) how well she or he could perform the selected response. For goal attainment efficacy, the child rates on a 1-to-5 scale how effective the selected response would be in meeting the child’s primary goal.

SASC–R. The SASC–R (La Greca & Stone, 1993) is an 18-item scale that assesses trait social anxiety for preadolescent children. Individuals indicate on a 5-point Likert scale ranging from 1 (not at all) to 5 (all the time) how much each self-description is true for them (e.g., “I worry about doing something new in front of others”). Scores, based on the sum of ratings across 18 items, range from 18 to 90, with higher scores indicating higher social anxiety. The SASC–R has demonstrated adequate internal consistency in community and clinical samples (zs = .69–.90; Ginsberg, La Greca, & Silverman, 1998; La Greca & Stone, 1993) and moderate 1-year test–retest reliability (rs = .36–.42; La Greca & Stone, 1993). In the present study, internal consistency was high (z = .91).

State-Trait Anxiety Inventory for Children–Trait Version (STAIC–T). The STAIC–T (Spielberger, 1973) is a 20-item self-report tool used primarily with 9- to 12-year-old children to measure somatic, behavioral, affective, and cognitive aspects of general trait anxiety. The child indicates whether each statement (e.g., “I worry too much”) is “hardly ever,” “sometimes,” or “often” true for them (scored 1, 2, or 3, respectively). Scores range from 20 to 60, with higher scores indicating higher levels of trait anxiety. The STAIC–T has demonstrated adequate internal consistency (Crowley & Emerson, 1996; Spielberger, 1973), moderate 8-week test–retest reliability (rs between .65 and .71; see Spielberger, 1973), and adequate convergent and discriminant validity (Reynolds, 1980, 1982; Spielberger, 1973). For our sample, coefficient alpha was .85.

Children’s Depression Inventory (CDI). The CDI (Kovacs, 1992) is a 27-item self-report scale assessing somatic, cognitive, affective, and behavioral symptoms of depression in youth age 7 to 17 years. Children indicate which of three sentences best describes them in the past 2 weeks (e.g., “I am tired once in a while”; “I am tired many days”; “I am tired all the time”). Items are scored in terms of increased presence of symptomatology (0 indicates symptom absence; 1 indicates mild symptom presence; 2 indicates a definite symptom); higher total scores indicate higher levels of depressive symptoms. Per University Institutional Review Board and local school district’s request, and as in many prior studies (e.g., Cole, Martin, & Powers, 1997; Oldenburg & Kerns, 1997), the item assessing suicidal ideation was excluded, thereby yielding a possible range of scores between 0 and 52. The CDI has demonstrated acceptable levels of internal consistency (Smucker, Craighead, Craighead, & Green, 1986; Weiss & Weiss, 1988), test–retest reliability (Saylor, Finch, Spirito, & Bennett, 1984; Smucker et al., 1986), and convergent and discriminant validity (Smith, Mitchell, McCauley, & Caulderon, 1990). In the current study, coefficient alpha was .82.

Results

Preliminary analyses. Table 1 presents means and standard deviations for ChEESE-Q beta SIP items and internalizing symptom measures. In general, means were higher for positive SIP items (e.g., positive attributions, prosocial goals and problems solving response) than negative SIP items (e.g., negative attribution, avoidant goals, negative problem solving). Yet, each item had considerable variance in individual responses (e.g., all forced-choice items had ranges that included the maximum and minimum scores). Although means were generally low for the SASC–R, STAIC–T, and CDI, ranges for each measure included several individuals scoring at or above clinical cut-offs suggested in previous literature (e.g., Chartier & Lassen, 1994; La Greca & Stone, 1993) indicating sufficient variability to be meaningful for our research questions.

Exploratory factor analysis of the ChEESE-Q-beta. Several possible latent constructs may underlie individual SIP items. Crick and Dodge’s (1994) model suggests a structure containing stage-specific factors,
TABLE 1
Response Format, Means, and Standard Deviations for SIP Variables Across Vignettes and for Internalizing Symptoms

<table>
<thead>
<tr>
<th>SIP Stage (Response Format)</th>
<th>Study 1*</th>
<th>Study 2*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Causal Attributions*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive Internal</td>
<td>3.12</td>
<td>0.48</td>
</tr>
<tr>
<td>Negative Internal</td>
<td>2.59</td>
<td>0.53</td>
</tr>
<tr>
<td>Positive External</td>
<td>3.49</td>
<td>0.45</td>
</tr>
<tr>
<td>Negative External</td>
<td>2.56</td>
<td>0.50</td>
</tr>
<tr>
<td>Intent Attributions*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>3.13</td>
<td>0.56</td>
</tr>
<tr>
<td>Negative</td>
<td>1.82</td>
<td>0.41</td>
</tr>
<tr>
<td>Neutral</td>
<td>3.00</td>
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</tr>
<tr>
<td>Accidental</td>
<td>1.65</td>
<td>0.51</td>
</tr>
<tr>
<td>Goals (Before Problem Solving)*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solution-Focused</td>
<td>3.62</td>
<td>0.84</td>
</tr>
<tr>
<td>Avoidant</td>
<td>1.89</td>
<td>0.62</td>
</tr>
<tr>
<td>Face-Saving</td>
<td>3.49</td>
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<tr>
<td>Affect Management</td>
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<td>0.04</td>
</tr>
<tr>
<td>Distress Expression</td>
<td>1.42</td>
<td>0.42</td>
</tr>
<tr>
<td>Relationship-Focused</td>
<td>4.20</td>
<td>0.69</td>
</tr>
<tr>
<td>Total Responses Generated</td>
<td>2.80</td>
<td>1.04</td>
</tr>
<tr>
<td>Response Type*</td>
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<tr>
<td>Prosocial</td>
<td>0.62</td>
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<tr>
<td>Passive Avoidant</td>
<td>0.16</td>
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</tr>
<tr>
<td>Active Avoidant</td>
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<td>0.09</td>
</tr>
<tr>
<td>Negative</td>
<td>0.12</td>
<td>0.12</td>
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<tr>
<td>Response Selection*</td>
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</tr>
<tr>
<td>Prosocial</td>
<td>0.78</td>
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<td>Passive Avoidant</td>
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<td>Negative</td>
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<tr>
<td>Goals (After Problem Solving)*</td>
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<td>Solution-Focused</td>
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<td>Avoidant</td>
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<td>Affect Management</td>
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<tr>
<td>Relationship-Focused</td>
<td>0.87</td>
<td>0.21</td>
</tr>
<tr>
<td>Total Responses Generated</td>
<td>2.80</td>
<td>1.04</td>
</tr>
<tr>
<td>Internalizing Symptoms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>5.33</td>
<td>4.29</td>
</tr>
<tr>
<td>General Anxiety</td>
<td>33.28</td>
<td>6.86</td>
</tr>
<tr>
<td>Social Anxiety</td>
<td>42.03</td>
<td>12.78</td>
</tr>
</tbody>
</table>

Note. SIP = social information processing.
* N = 219.
** N = 127.
† Five-point Likert score.
‡ Sum across six vignettes for Study 1; because Study 2 used forced-choice problem-solving items, no total number of responses generated could be calculated.
§ Open-ended response for Study 1; 5-point Likert score for Study 2.
¶ For Study 1, response selection was open-ended, for Study 2, participants had to choose from the provided list of potential problem-solving responses which they were most likely to actually do in that situation. Means of proportions do not add to 1.00 because of rounding.
* Study 1 means represent average proportion of respondents endorsing “Yes” for whether the specific goal was achieved by the solution chosen: Yes (1)/No (0) for Study 1; 5-point Likert score for Study 2.

whereas broader models of personality and affect (Watson & Clark, 1984) would support valence-related factors underlying SIP. To examine the underlying factor structure of the ChEESE-Q beta, we conducted exploratory factor analysis using iterated principal factor analysis with oblique rotation (promax). Because of problems with linear dependence among the response generation and response selection items (i.e., scores calculated as proportions), they were removed from these analyses, and so the factor analysis represents the interpretation, goal-setting, and response evaluation stages of SIP. Based on the scree plot, Velicer’s minimum average partial test (O’Connor, 2000), and interpretability of resulting factors, we determined that a three-factor solution best fit the data, supporting the notion of valence-related patterning across SIP stages. Table 2 contains individual item loadings and eigenvalues for the three subscales.

Items with factor loadings greater than or equal to .40 were retained for three subscales: (a) a negative information-processing style factor (NIPS: incorporating negative causal and intent attributions; avoidant and distress expression goals pre- and post-problem

TABLE 2
Communalities, Factor Loadings, and Factor Means for Factor Analysis of SIP Variables: Study 1

<table>
<thead>
<tr>
<th>Causal Attributions</th>
<th>NIPS</th>
<th>PIPS</th>
<th>PRES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Internal</td>
<td>.20</td>
<td>.17</td>
<td>.45*</td>
</tr>
<tr>
<td>Negative Internal</td>
<td>.24</td>
<td>.45*</td>
<td>-.13</td>
</tr>
<tr>
<td>Positive External</td>
<td>.31</td>
<td>.03</td>
<td>.57*</td>
</tr>
<tr>
<td>Negative External</td>
<td>.52</td>
<td>.75*</td>
<td>.17</td>
</tr>
<tr>
<td>Intent Attributions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>.25</td>
<td>.09</td>
<td>.52*</td>
</tr>
<tr>
<td>Negative</td>
<td>.34</td>
<td>.52*</td>
<td>-.15</td>
</tr>
<tr>
<td>Neutral</td>
<td>.08</td>
<td>.16</td>
<td>.31</td>
</tr>
<tr>
<td>Accidental</td>
<td>.06</td>
<td>.25</td>
<td>.07</td>
</tr>
<tr>
<td>Goals (Before Problem Solving)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solution-Focused</td>
<td>.43</td>
<td>-.05</td>
<td>.43*</td>
</tr>
<tr>
<td>Avoidant</td>
<td>.32</td>
<td>.58*</td>
<td>.08</td>
</tr>
<tr>
<td>Face-Saving</td>
<td>.38</td>
<td>.01</td>
<td>.47*</td>
</tr>
<tr>
<td>Affect Management</td>
<td>.27</td>
<td>.23</td>
<td>.28</td>
</tr>
<tr>
<td>Distress Expression</td>
<td>.56</td>
<td>.75*</td>
<td>.08</td>
</tr>
<tr>
<td>Relationship-Focused</td>
<td>.48</td>
<td>-.07</td>
<td>.52*</td>
</tr>
<tr>
<td>Goals (After Problem Solving)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solution-Focused</td>
<td>.43</td>
<td>-.11</td>
<td>.05</td>
</tr>
<tr>
<td>Avoidant</td>
<td>.23</td>
<td>.48*</td>
<td>.02</td>
</tr>
<tr>
<td>Face-Saving</td>
<td>.45</td>
<td>-.02</td>
<td>.11</td>
</tr>
<tr>
<td>Affect Management</td>
<td>.44</td>
<td>.22</td>
<td>-.05</td>
</tr>
<tr>
<td>Distress Expression</td>
<td>.30</td>
<td>.55*</td>
<td>.03</td>
</tr>
<tr>
<td>Relationship-Focused</td>
<td>.48</td>
<td>-.28</td>
<td>.08</td>
</tr>
<tr>
<td>Response Evaluation</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Self-Efficacy</td>
<td>.43</td>
<td>-.13</td>
<td>.64*</td>
</tr>
<tr>
<td>Goal Attainment</td>
<td>.50</td>
<td>-.32</td>
<td>.57*</td>
</tr>
</tbody>
</table>

Note: N = 219. Items with factor loadings greater than or equal to .40 (denoted by an asterisk) were retained for the subscale. Factor means were calculated for sums of items loading on each factor.
solving), (b) a positive information-processing style factor (PIPS: including positive attributions; solution-focused, face-saving, relationship-focused goals; positive success and efficacy expectations), and (c) a positive response evaluation style factor (PRES: including post-problem-solving reports that selected response was solution-focused or relationship-focused, positive affect expression goals). To increase utility of the ChEESE-Q beta and because weightings based on factor loadings are sample specific, we calculated NIPS, PIPS, and PRES scores as the sum of items retained for each scale (i.e., those starred in Table 2). Means for these scores are presented in Table 2. NIPS was negatively correlated with both PIPS and PRES factors (PIPS: \( r = -.33, p < .001 \); PRES: \( r = -.14, p < .05 \)). PIPS and PRES were moderately positively correlated (\( r = .36, p < .001 \)).

**Reliability of ChEESE-Q-beta scores.** Internal consistency was adequate for each SIP factor (see Table 3). Two-week test-retest reliability estimates for the factor scores were also fairly strong, although the coefficient for the PRES factor was somewhat lower than optimal (Table 3).

**Associations with internalizing symptoms.** We evaluated validity evidence for convergence by examining relations of ChEESE-Q beta factor scores to depression, general anxiety, and social anxiety. Our hypotheses were consistent with the tripartite model of anxiety and depression (Watson & Clark, 1984), which posits that high negative affect characterizes both depression and anxiety whereas low positive affect is more specific to depression. Research on this model also suggests that low positive affect characterizes social anxiety (Brown, Chorpita, & Barlow, 1998; Chorpita, Plummer, & Moffitt, 2000). Extending this valence-related model of affect to SIP and consistent with prior literature (e.g., Marien & Bell, 2004), we hypothesized that depression, general anxiety, and social anxiety would be related to higher negative SIP (NIPS). Depression and social anxiety were further hypothesized to be negatively related to positive SIP (PIPS, PRES), but general anxiety was hypothesized to be unrelated to positive SIP. Because we hypothesized that age and sex might moderate relations between SIP and internalizing symptoms, we included tests of interactions with grade and sex in a series of regressions in which SIP functioning predicted each of the internalizing outcomes. No notable findings emerged for either potential moderator and for ease of presentation grade and sex are not considered further.

Pearson product-moment correlations between SIP variables and internalizing symptoms are presented in Table 3. In support of our hypotheses, each of the three internalizing constructs was associated with increased negative SIP and at similar magnitudes. Our hypothesis that positive SIP would be related to lower depression and social anxiety but unrelated to general anxiety received partial support. Depression was significantly, negatively associated with the PIPS factor and unrelated to the PRES factor (though in the expected direction). General and social anxiety were unrelated to both PIPS and PRES factor scores.

### Table 3

<table>
<thead>
<tr>
<th>Test–Retest Coefficient</th>
<th>Coefficient Alpha</th>
<th>Depression</th>
<th>General Anxiety</th>
<th>Social Anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study 1&lt;sup&gt;⁶&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NIPS</td>
<td>.83</td>
<td>.75</td>
<td>.32**</td>
<td>.35***</td>
</tr>
<tr>
<td>PIPS</td>
<td>.82</td>
<td>.78</td>
<td>-.17</td>
<td>-.12</td>
</tr>
<tr>
<td>PRES</td>
<td>.55</td>
<td>.72</td>
<td>-.13</td>
<td>-.01</td>
</tr>
<tr>
<td>Study 2&lt;sup&gt;⁷&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NIPS</td>
<td>.67</td>
<td>.82</td>
<td>.40***</td>
<td>.34***</td>
</tr>
<tr>
<td>PIPS</td>
<td>.69</td>
<td>.81</td>
<td>-.27**</td>
<td>.07</td>
</tr>
<tr>
<td>PRES</td>
<td>.60</td>
<td>.81</td>
<td>-.37***</td>
<td>.02</td>
</tr>
<tr>
<td>NIPS + PS</td>
<td>.68</td>
<td>.87</td>
<td>.41***</td>
<td>.35***</td>
</tr>
<tr>
<td>PIPS + PS</td>
<td>.67</td>
<td>.84</td>
<td>-.29***</td>
<td>.07</td>
</tr>
</tbody>
</table>

**Note.** SIP = social information processing; NIPS = negative information processing style; PIPS = positive information processing style; PRES = positive response evaluation style; NIPS + PS = negative information processing style plus negative problem-solving component; PIPS + PS = positive information processing style plus positive problem-solving component.

<sup>⁶</sup>For Study 1, retest period was 2 weeks (\( N = 41 \)). For Study 2, retest period was 4 weeks (\( N = 65 \) who were administered the ChEESE-Q in group format at both time points).

<sup>⁷</sup>\( N = 219 \).

<sup>⁴</sup>\( N = 127 \).

<sup>⁴</sup>p < .05. <sup>**</sup>p < .01. <sup>***</sup>p < .001.

![Image](Florida Gulf Coast University) A: 201123 January 2011
STUDY 2: REPLICATION AND EXTENSION

Study 2 extended validation of the ChEESE-Q instrument using a second sample of elementary-aged youth. For Study 2, we modified the ChEESE-Q beta version to address linear dependence within the problem-solving items and facilitate group administration. We attempted to replicate the factor structure identified in Study 1 and examined whether the factor structure held when problem-solving variables were included. We also evaluated the revised measure resulting from Phases I and II of the initial pilot work (referred to hereafter as ChEESE-Q) on internal consistency, test–retest reliability, alternate forms reliability for individual and group administration formats, and associations with internalizing symptoms.

Methods

Participants

Participants were 127 fifth- and sixth-grade children recruited from a small Midwest rural public school in a different school district from that used for Study 1. Children were 10 to 13 years old ($M = 11.11, SD = .69$) and included 58 fifth graders (28 girls, 30 boys), and 69 sixth graders (43 girls, 26 boys). Self-identified race/ethnicity of the sample was mostly Caucasian (87%), with 4% African American, 2% American Indian, 2% biracial, 1% Hispanic, and 3% who identified as “Other.” Although socioeconomic status data were not collected for individual children, the school enrolled children from a range of socioeconomic backgrounds, with 28% of students participating in the free/reduced cost lunch program.

Procedures

All fifth- and sixth-grade classrooms in the school participated. School personnel visited classrooms to describe the study and distribute parent consent forms, which children were asked to take home to their parents and return with parent signatures. On the signed form, parents could indicate whether they did or did not consent to their child’s participation. Extra forms were distributed to children who lost their forms or forgot to return them within 2 weeks of initial recruitment. Of 205 potential participants, 139 children returned signed forms and 129 received parent consent for participation, for a total participation rate of 63%. Two students were absent during testing, yielding a final sample size of 127 students.

Data collection took place in the school at two time points. At Time 1, children completed study measures in group administration format in their classrooms or the lunchroom. To address potential differences in reading comprehension, a research assistant read the assent form and all study measures aloud while children recorded their responses. Additional research assistants circulated to answer questions, provide assistance as needed, and ensure that children kept their responses private.

Approximately 4 weeks after Time 1, 124 children (3 children were unavailable because of absences) completed the ChEESE-Q a second time. Classrooms were randomly assigned to a second group administration session (“same-format” group, to assess test–retest reliability; $n = 65$) or to individual administration (“cross-format” group, $n = 59$). Participants in the cross-format group met individually with a research assistant in a private setting within the school (e.g., a quiet corner of the lunchroom). The research assistant read all ChEESE-Q items aloud while children recorded their responses. After each data collection session, participants received a small token of thanks (e.g., snack, decorative pencil).

Measures

ChEESE-Q. The ChEESE-Q was the same as the beta version described in Study 1, with one exception. We modified the format of the problem-solving items to address problems with linear dependence from Study 1 and to facilitate group administration. Instead of asking children to generate possible responses to each vignette and to identify the response they would select, children rated on a 1 (definitely not) to 5 (definitely) scale the likelihood that they would choose each of several potential responses. Response options were based on response categories and common examples generated in Study 1, and included prosocial (e.g., “tell them your name,” “just do the problem”) and maladaptive (e.g., “leave the room,” “hit the other kid”) behaviors (see Appendix B for SIP questions, including revised problem-solving questions, corresponding to Vignette 1; the complete ChEESE-Q is available from the first author). The score for each potential solution item was the child’s average rating across vignettes.

Internalizing symptom measures. As in Study 1, children completed the SASC–R, STAIC–T, and CDI to assess social and general anxiety and depression, respectively.

Results

Preliminary Analyses

Table 1 also presents means and standard deviations for SIP variables as assessed in Study 2. Scores on depression ($t [344] = 6.42, p < .001, \eta^2 = .11$) and anxiety ($t [344] = 2.85, p < .05, \eta^2 = .02$), but not social anxiety ($t [344] = 1.69, p = .09, \eta^2 = .01$), were significantly
higher in Study 2 than Study 1. As before, we included tests of interactions with grade and sex in all primary analyses. Again, no notable findings emerged for either potential moderator; therefore grade and sex are not considered further.

**Confirmatory Factor Analyses of the ChEESE-Q**

**Replication of three-factor solution.** A confirmatory factor analysis using maximum likelihood was estimated using the three-factor model suggested by the exploratory factor analysis in Study 1. Because affect management goals did not load significantly on any of the three factors in Study 1, we excluded affect management goals and the corresponding affect management justifications from the confirmatory factor analysis model. We included paths representing theoretically meaningful covariances between error terms in the model. Specifically, error terms between similarly valenced intent attributions (e.g., negative internal and negative external intent attributions), similar goal–justification combinations (e.g., face-saving goals and face-saving response justifications), and the two self-efficacy items were allowed to covary.

Although the chi-square goodness-of-fit test was significant, \( \chi^2(124) = 152.26, p = .04 \), most likely because of the large sample size, the three-factor model fit the data quite well according to various other indicators of fit (root mean square error of approximation [RMSEA] = .04 [90% confidence interval (CI) = .00–.06], comparative fit index [CFI] = .98, Tucker–Lewis index [TLI] = .97). Figure 1 shows the three-factor model; for ease of presentation, error variances are not included. Each item loaded significantly on its respective latent factor (loadings ranged .41–.77). All specified covariances were significantly different from zero with the exception of the covariance between error terms associated with positive internal and positive external intent attributions. Correlations between factors were more pronounced than in Study 1. Specifically, NIPS was negatively associated with both PIPS (\( r = -.43 \)) and PRES (\( r = -.35 \)). PIPS and PRES were highly related (\( r = .95 \)).

Given the high correlation between PIPS and PRES, we compared the three-factor model with a two-factor model in which PRES and PIPS were combined. Although the two-factor model also fit the data well (RMSEA = .05 [90% CI = .03–.07], CFI = .97, TLI = .96), a chi-square difference test suggested that the three-factor model fit significantly better, \( \chi^2 \text{diff}(2) = 13.74, p < .05 \). Given this, and differential validity findings for PIPS and PRES in relation to depression in Study 1, we retained the three factor model.

Like in Study 1, we calculated factor scores as the sum of items loading on each factor. The mean of NIPS (\( M = 14.52, SD = 3.07 \)) was significantly higher in Study 2, \( t(344) = 15.72, p < .001, \eta^2 = .42 \). Scores on PIPS (\( M = 27.88, SD = 3.59 \)) were slightly, but significantly, lower in Study 2, \( t(344) = .42, p < .001, \eta^2 = .05 \). Because of the difference in response formats, the mean for PRES (\( M = 10.42, SD = 2.21 \)) from Study 2 is not directly comparable to Study 1.

**Extension to include problem solving.** After replicating the factor structure from Study 1 using a new sample, we extended the model to include problem-solving items (which were not included in Study 1’s factor analysis). Items assessing prosocial responding loaded on PIPS, whereas those assessing passive avoidant, active avoidant, and negative/aggressive responding loaded on NIPS. Model fit for the model including these items was good (RMSEA = .05 [90% CI = .03–.07], CFI = .96, TLI = .95), and each item loaded significantly on their respective factors (loadings ranged .82–.87), lending support for including these problem-solving items in the overall model of SIP functioning.

**Reliability of ChEESE-Q Scores**

Internal consistency was adequate, and higher than in Study 1, for each SIP factor with and without problem-solving items (see Table 3). For Study 2, a test–retest period of 4 weeks was assessed versus 2 weeks as used in Study 1. Correspondingly, test–retest reliability estimates were slightly lower in Study 2 but still acceptable (see Table 3). Once again, the PRES factor had the lowest coefficient. There were no significant differences between the same-format and cross-format groups on mean scores for NIPS (\( M[SD]_{df = 12.24} = 12.20[2.35] \)), \( t(122) = .08, p = .94 \); PIPS (\( M[SD]_{df = 29.58}[4.57] \)), \( t(122) = -.10, p = .27 \); or PRES (\( M[SD]_{df = 11.03}[2.89] \)), \( t(122) = -1.44, p = .15 \), for same- and cross-format groups, respectively. These results suggest little difference in administering the ChEESE-Q in either group or individual format.
Associations with Internalizing Symptoms

We attempted to replicate the validity analyses conducted in Study 1 by examining relations of ChEESE-Q factor scores to depression, general anxiety, and social anxiety. As in Study 1, significant associations supported the ChEESE-Q’s relation to internalizing symptoms. Further, the ChEESE-Q demonstrated even stronger ability to discriminate between internalizing symptoms in theoretically meaningful ways. Each of the three internalizing constructs was related to increased NIPS scores calculated with and without the problem-solving variables (see Table 3). PIPS (with and without problem-solving variables) and PRES were each negatively related to depression scores, and the magnitude of these relations was much stronger than in Study 1. There were no associations between general anxiety and either PIPS or PRES. However, contrary to Study 1, PRES was positively associated with social anxiety.

GENERAL DISCUSSION

The current study contributes to our options for measuring SIP in a comprehensive and psychometrically sound manner as well as to conceptual understanding of the SIP model and its relation to child internalizing symptoms. Our results suggest the ChEESE-Q is a psychometrically promising measure of SIP. Used with a sample of typically developing elementary-school-age children, the ChEESE-Q demonstrated a replicable factor structure reflecting positive and negative SIP styles. Factor scores demonstrated internal consistency and temporal stability, supporting the promise of these
broader SIP constructs. These findings are encouraging given what we see as the ChEESE-Q’s unique strengths in attending to several limitations in the current literature. In particular, the ChEESE-Q includes hypothetical situations with theoretical and demonstrated relevance to child internalizing distress. Although SIP difficulties have been related to diverse types of child adjustment problems, the situations that trigger maladaptive thoughts and behaviors can differ greatly across problem type. For example, situations that involve disagreeing or demonstrating assertiveness are a common social concern for anxious or depressed youth, but include much more subtle conflict than the provocation situations frequently problematic for aggressive children. Similarly, the ChEESE-Q’s SIP questions assess responses that may be more relevant to internalizing youth than often assessed in the literature and use a response format that allowed us to disentangle multiple aspects of children’s attributions and goals. For example, in our goal endorsement and problem-solving stages, in addition to the more direct negative goals and solutions (e.g., “show that you’re upset,” “tell them they’re all stupid”) that may characterize children’s distress, we included avoidant goals and solution options that may be especially relevant for internalizing youth. At the attribution and goals stages, the ChEESE-Q’s rating scale (vs. multiple choice) format allowed children to endorse multiple types of attributions and goals simultaneously, which may be particularly useful for distinguishing patterns of SIP responding that characterize various child adjustment problems. For example, whereas both anxious and depressed youth endorse negative thoughts and affect, only depressed youth also endorse low positive thoughts/affect (Joiner, Catanzaro, & Laurent, 1996; Jolly & Dykman, 1994; Marien & Bell, 2004).

Our findings also inform the literature on SIP. Although Crick and Dodge’s (1994) model is more than a decade old, interrelations among individual pieces of the model have more often been assumed than tested. One of the most interesting and robust findings about the SIP model was the emergence of valence-related SIP styles. The factor structure that emerged in Study 1 and was confirmed in Study 2 suggested positive and negative styles that encompassed several individual SIP variables, including causal and intent attributions, goals, proposed responses, and response evaluation.

Considering the general consistency of findings for positive and negative SIP styles, it was surprising that the positive goals endorsed post–problem solving loaded on a separate PRES factor rather than on the PIPS factor. Several explanations are possible. Perhaps negative SIP style encompasses a youth’s entire experience in interpreting, responding to, and evaluating social interactions but a positive SIP style is somewhat less stable. It is also possible that the positive evaluations of the PRES factor represent socially desirable responding, with children’s post-problem-solving endorsement of prosocial goals reflecting their belief (or desire to believe) that their chosen response was a good option regardless of their positive or negative interpretation style. For youth with a negative SIP style, this reframing would be consistent with evidence that aggressive youth frequently see their behavior as reasonable (Dodge et al., 2002).

Our studies inform the growing literature on the nature and development of internalizing problems, supporting an exciting integration of heretofore separate literatures on social information processing and a tripartite conceptualization of children’s internalizing experiences. Theory and research on the tripartite model in children and adults suggest that, whereas negative affect characterizes both anxiety and depression, positive affect is one critical place where they differ (Joiner et al., 1996; Lonigan, Phillips, & Hooe, 2003; Watson & Clark, 1984), although more recent research indicates social anxiety’s relation to positive and negative affect is more similar to depression than to other anxiety disorders (Brown et al., 1998; Chorpita et al., 2000; Watson, Clark, & Carey, 1988). Our findings add to newly emerging evidence that the tripartite conceptualization may extend beyond the affective domain and into cognitive experiences (Marien & Bell, 2004). As expected, in both Study 1 and Study 2, depression and anxiety were each related to a negative information-processing style. In addition, with the exception of one case in which a relationship failed to reach significance, depression was related to a less positive information-processing style, and general anxiety was unrelated to a positive SIP style. Thus, SIP assessment may be an important tool for identifying children’s internalizing distress as anxious versus depressive.

Our failure to find the expected relation between social anxiety and a less positive information-processing style, instead finding a relationship between social anxiety and more positive PRES scores, was surprising. Our studies differ from other research in several ways. In addition to our focus on cognitive versus affective experiences, most research documenting social anxiety’s relation to positive affect has been conducted with adults; one study conducted with youth (Chorpita et al., 2000) used a clinic-referred sample. Perhaps the similarity between depression and social anxiety does not emerge until adolescence or adulthood, does not emerge in nonclinical youth, or does not characterize children’s cognitive experiences. Clearly, more work is required, but these are intriguing questions for theory and research.

Aside from a tripartite conceptualization, SIP assessment may be a useful alternative or addition to affect
assessment in predicting who is at risk for internalizing difficulties. As suggested by Hankin and Abramson’s (2001) model and other affect regulation models of depression and anxiety (e.g., Lonigan et al., 2004; Nigg, 2006), cognitive factors are instrumental in refining and, in essence, solidifying an individual’s initial affective response to negative events. The ChEESE-Q may prove useful in predicting which youth exhibit the cognitive vulnerabilities to depression and/or anxiety. Currently, we are examining whether SIP style variables improve our ability to predict concurrent anxious and depressive symptoms over and above children’s affect; additional longitudinal research is an important next step.

Limitations

When interpreting results of this study, several caveats should be considered. First, although promising, the ChEESE-Q is a new measure and its ultimate utility depends on the results of continued psychometric evaluation. Examining the ChEESE-Q’s relation to externalizing problems, as an index of discriminant validity, is important future direction. Second, our study relied solely on child-report measures, albeit with both questionnaire and interview methods. Use of self-report is common and appropriate when assessing internal experiences such as anxiety, depression, and SIP, but using a single informant to report on both internalizing symptoms and SIP could have inflated their relationships. Extension of these results with additional reporters and methods would lend support to our findings.

The ChEESE-Q’s reliability and validity with other samples also merits attention. Our samples of typically developing children were an important first step in evaluating the ChEESE-Q as a measure of SIP given the importance, from a developmental psychopathology perspective, of understanding the typical continuum of children’s experiences before focusing on more extreme symptoms or disorder (Ciccetti & Rogosch, 1999). However, extending this work to youth with more severe internalizing problems will be a valuable future direction. Also, consistent with the demographics of the communities from which they were drawn, our samples primarily comprised White, middle-class children; generalizability of our results to youth from more diverse socioeconomic and racial/ethnic backgrounds is an important next step.

Finally, although the ChEESE-Q provides more comprehensive assessment of the SIP model than such measures have typically done, there are still aspects of the model that the measure does not address. Expansion of the efficacy questions to include responses that the child did not select would enable us to examine whether, for example, children with anxious symptoms generate both adaptive and maladaptive responses but select maladaptive ones because they doubt their ability to enact or be effective with adaptive responses. Further research expanding the ChEESE-Q to include enactment of the child’s selected response could also enhance the value of the measure. This might be done using videotaped role-plays of the child’s selected response, or the ChEESE-Q might be adapted to use ecological momentary assessment methodology (e.g., Trull et al., 2008) to assess children’s responding in real-world situations. This sort of assessment would address the single-informant limitation of the current work. Evaluating everyday nonsocial experiences that may elicit maladaptive SIP is also an avenue for future work.

Implications for Research, Policy, and Practice

Our results have interesting implications for clinical research and practice. Clearly, research that replicates our findings with more distressed samples of youth with anxiety and depressive disorders will offer the strongest guidance for clinical practice. However, in conjunction with existing literature, our results offer theoretical and empirical support for tailoring clinical practice in several ways. First, the ChEESE-Q measure may be a useful adjunct to clinical practice. Used as part of functional analysis and treatment planning, the ChEESE-Q may help identify specific social situations or information-processing problems that are part of the larger picture of children’s social difficulties (e.g., identifying attributions that consistently trigger avoidance or acting out). As part of treatment evaluation, the ChEESE-Q may be used to assess SIP changes over the course of treatment. Because the ChEESE-Q can offer more specific information about a youth’s SIP process in specific social situations, it can provide greater detail than existing clinical tools such as fear hierarchies. Also, as future research examines the ChEESE-Q’s applicability to other types of situations (e.g., physical threats), clinicians who wish to examine clients’ SIP in diverse and personally relevant situations can help to build this database.

A second implication of our research is that the general pattern of social information processing seems more important than specific SIP variables, suggesting that therapy might focus on attributions, goal setting, problem solving, and self-evaluation as examples of an overarching approach to thinking about and responding to social situations. Second, the valence of youths’ social cognition seems to be the key factor characterizing these general SIP patterns. By itself, this is not at all surprising; treatments for anxiety and depression routinely focus on positive and negative thinking (e.g., Kendall, 1994; Lewinsohn, Clarke, Hops, & Andrews, 1990). However, differential relationships of anxiety and depression to positive and negative social information processing suggest that although a focus on reducing
negative thinking about social events is important for both depression and anxiety, attention to increasing positive thoughts may be less effective or necessary for anxious youth than for depressed youth. Thus, the most efficient treatments for youth depression and anxiety might follow a tripartite conceptualization, including a common core of attention to increasing nonnegative thinking, with additional disorder-specific modules to target positive thinking for depressed youth and perhaps, as suggested by the tripartite model, physiological hyperarousal for certain anxious youth (e.g., panic, generalized anxiety). Rather than continuing to focus on separate treatment programs for such interrelated disorders, development of theoretically and empirically informed internalizing treatments for youth, similar to Barlow’s “unified protocol” (Allen, McHugh, & Barlow, 2008), seems like a fruitful avenue for future research. Finally, the ChEESE-Q seems a promising method to address gaps in the SIP literature. With continued validation, we hope that it will prove useful to other researchers and clinicians in integrated examinations of SIP in youth with diverse adjustment problems.

REFERENCES


APPENDIX A: CHEESE-Q VIGNETTES

Situation A: You’ve just joined a club (like scouts) and are going to your first meeting. You see that all of the other kids are looking at you when you come in, and one kid asks who you are.

Situation B: You’re going to the movies with a friend. Your friend wants to see one movie, but you heard it wasn’t good and you really don’t want to see it.

Situation C: Your parents are having a dinner party. You’re in another room watching t.v. and your mom says that some of her friends would like to meet you and asks you to come join everyone at the table.

Situation D: You’re in math class and the teacher is having people do problems on the board. The teacher asks you to go to the board to do the next problem.

Situation E: It’s the beginning of the school year and you are in a class with a bunch of kids you don’t know. Everybody is doing introductions. Your teacher asks you to stand up, introduce yourself, and say something about yourself.

Situation F: You had to get glasses because you were having trouble seeing the board in school. Your parents say you’re too young to get contact lenses. When you walk into school, your friends are laughing.

APPENDIX B: SAMPLE CHEESE-Q QUESTIONS (CORRESPONDING TO VIGNETTE 1)

1. Why do you think [vignette event happened]? (Child provides open-ended answer)
2. Do you think it was because: (child provides 1–5 rating)
   a. you are new
   b. you look strange
   c. they are interested in meeting you
   d. they are suspicious of you (don’t trust you)
3. Do you think [vignette event happened] because: (child provides 1–5 rating)
   a. he was being nice to you
   b. he was being mean to you
   c. he just wanted to (it wasn’t about you)
   d. it was an accident (he didn’t mean to do it)
4. If this happened to you, how ___ would you feel: (child provides 1–5 rating)
   a. worried or nervous
   b. angry or mad
   c. sad or down
   d. happy or excited
5. If this happened to you, how much would your goal be to: (child provides 1–5 rating)
   a. just work out the situation
   b. try to avoid or ignore the situation
   c. show that it’s okay/not a big deal
   d. try to make yourself feel better
   e. show that you’re angry or upset
   f. just focus on getting along with the other kid
6. If this happened to you, what would you do? Your answer should be what you WOULD do, not what you think you should do. How much do you think you would: (child provides 1–5 rating)
   a. tell the kid your name
   b. talk to the kid and ask his/her name
   c. ignore the kid
   d. talk to the parents or teachers instead
   e. leave
   f. tell the kid you don’t want to talk
   g. tell the kid it’s none of his/her business
   h. insult or say something smart to the kid
   i. other (Child can provide an additional response)
7. How well do you think you could do the response you circled? (child provides 1–5 rating)
8. How well do you think your circled response would work to meet your goal? (child provides 1–5 rating)

9. How much would your circled response meet these goals? (child provides 1–5 rating)
   a. to work out the situation
   b. to avoid or ignore the situation
   c. to show that it’s okay/not a big deal
   d. to try to make yourself feel better
   e. to show that you’re angry or upset
   f. to focus on getting along with the other kid
   g. other (Child can provide an additional goal)
10. How well do you think your circled choice would work to meet your goal? (child provides 1–5 rating)