Preliminary Examination of a Cartoon-Based Hostile Attributional Bias Measure for Urban African American Boys

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Abstract

The current study illustrates how researchers developed and validated a cartoon-based adaptation of a written hostile attributional bias measure for a sample of urban, low-income, African American boys. A series of studies were conducted to develop cartoon illustrations to accompany a standard written hostile attributional bias vignette measure (Study 1), to determine initial psychometric properties (Study 2) and acceptability (Study 3), and to conduct a test-retest reliability trial of the adapted measure in a separate sample (Study 4). These studies utilize a participatory action research approach to measurement design and adaptation, and suggest that collaborations between researchers and key school stakeholders can lead to measures that are psychometrically strong, developmentally appropriate, and culturally sensitive. In addition, the cartoon-based hostile attributional bias measure appears to have promise as an assessment and/or outcome measure for aggression and bullying prevention programs conducted with urban African American boys.

Keywords

measurement development; African American boys; hostile attributional bias; relational aggression; participatory action research

For many years researchers have documented both the frequency and impact of low level physically aggressive actions, such as hitting, pushing, and threatening others. For instance, research has demonstrated that many school-age children exhibit these behaviors daily (Nansel et al., 2001), and that the perpetrators of these actions are at heightened risk for experiencing peer relationship difficulties, problem-solving deficits, internalizing problems, and academic challenges (see Leff, Power, Manz, Costigan, & Nabors, 2001). Further,

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repeated involvement as the perpetrator of low level physical aggression is associated with higher levels of adjustment difficulties in adolescence and young adulthood (Coie, Terry, Lenox, Lochman, & Hyman, 1995; Loeber, Green, Lahey, & Kalb, 2000). Because boys are more likely than girls to be involved in these types of physical conflicts with their peers, studies have suggested that boys are therefore much more aggressive than girls. However, in the mid-1990's, researchers began to hypothesize that physical aggression may not fully capture the scope of female aggressive behavior (Crick, 1995; Crick & Grotpeter, 1995) and that the primary focus on physical aggression in research may lead to other types of aggression being overlooked and underestimated (McNeilly-Choque, Hart, Robinson, Nelson, & Olsen, 1996). Thus, there has been a recent movement to examine the multitude of ways in which boys and girls tend to express aggression towards others (e.g., Card, Stucky, Sawalani, & Little, 2008; Crick, Ostrov, & Kawabata, 2007).

Boys' primary use of physical aggression is well documented in the literature; however, it was only recently that aggression in girls was thoroughly examined. Recent research suggests that girls tend to display aggression through the manipulation of one's social standing or reputation (see Card et al., 2008). Crick and Grotpeter (1995) termed this form of behavior *relational aggression*. Relational aggression includes behaviors in which relationships serve as the vehicle of harm (Crick et al., 2007). Some examples include purposely excluding a peer from the social group, gossiping, saying mean things or spreading rumors about a peer in order to encourage rejection by others, and withdrawing friendship or acceptance in order to control another child (Crick & Grotpeter, 1995). Relational aggression has been found to be relatively stable over time (Crick, 1996) and is associated with a range of current and future psychosocial difficulties including problematic peer difficulties, internalizing symptoms, and social problem-solving deficits (Card et al., 2008; Cillessen & Mayeux, 2004; Crick, 1996; Leff, Kupersmidt, & Power, 2003).

Pioneering studies in relational aggression demonstrated that the gender gap in overall levels of aggression was smaller than previously believed when one considers relational as well as physical aggression (e.g., Crick & Grotpeter, 1995; McNeilly-Choque et al., 1996; Ostrov & Keating, 2004). However, the presumption that only girls display relationally aggressive behavior has been found to be too simplistic (Swearer, 2008). While it holds true that boys are more physically than relationally aggressive and that girls are more relationally than physically aggressive (see Crick et al., 2007), recent findings suggest that boys do indeed utilize relational forms of aggression (Card et al., 2008; Leff, Waasdorp et al., 2010; Swearer, 2008). Thus, it may be more appropriate to consider that boys and girls participate in and experience both forms of aggression, with varying levels of importance placed on the type of aggressive act (Henington, Hughes, Cavell, & Johnson, 1998; Rys & Bear, 1997; Tomada & Schneider, 1997; Underwood, Galen, & Paquette, 2001). Specifically, research suggests that girls experience relational aggression as more hurtful or distressful than boys (e.g., Crick, 1995; Crick, Bigbee, & Howes, 1996; Paquette & Underwood, 1999); however, recent research indicates that boys are also distressed by relationally aggressive behaviors. For example, adolescents of both sexes who experience high levels of relational aggression in school perceive their school to be unsafe (Goldstein, Young, & Boyd, 2008). Further, some researchers have found that for boys, being involved in relational aggression leads to

high levels of social-psychological maladjustment, perhaps because relational behaviors (i.e., gossiping and social exclusion) may be considered a gender non-normative expression of aggression (Crick, 1997). Thus, it follows that boys' experience of and distress over relational aggression is a very real phenomenon that warrants additional research.

Paradoxically, it seems that just as girls were excluded from much of the early research on physical aggression, boys are now being understudied in the relational aggression literature. This is unfortunate given the aforementioned findings. Several factors may impact the limited understanding of relational aggression in boys. First, boys' use of relational aggression may be overshadowed by the field's focus upon physically aggressive actions among boys. A second possible explanation may be that boys are less likely than girls to talk about their experience of relational aggression, and therefore tend to either ignore the aggressor or respond with a physically aggressive act, thereby causing the relational aggression to go unnoticed as the overt behavior demands attention (Paquette & Underwood, 1999). Regardless, given the prevalence and negative implications of relational aggression in boys, it is clear that more research is needed on the perception, processing, and experience of relational aggression in boys.

The Urban School Context and Additional Challenges Faced by African American Males

Youth living in urban, high poverty communities face a number of risk factors that may be associated with increased levels of aggression and violence (Johnson, 2009, Stoddard, Henly, Sieving, & Bolland, 2011; Tolan, Gorman-Smith, & Henry, 2003). For instance, urban youth often must cope with disorganized, unstructured schools, high levels of family unemployment, single-parent homes, crime, and feelings of hopelessness about the future (Stoddard et al., 2011; Teitelman et al., 2010; Tolan et al., 2003; Wandersman & Nation, 1998). In fact, sixty-two percent of African-American children ages 6 through 11 (2.1 million individuals) live in low-income families (Wight & Chau, 2009), and homicide is currently the leading cause of death for African Americans 10 to 24 years old) and rates of homicide for African-American males in this age group exceed those of Hispanics and White males (Centers for Disease Control and Prevention, 2010).

In urban schools, 7.6% of students report feeling too unsafe to attend class (Centers for Disease Control and Prevention, 2003). Additionally, African American boys are overrepresented in special education classes (Jackson, 2008) and are more likely to be suspended and expelled from school than boys from other race or ethnicities (Noguera, 2003) and are underrepresented in college preparatory and honors classes. Furthermore, African-American boys from low-income families are at great risk for poor educational outcomes (Thomas & Stevenson, 2009; Wood, Kaplan, & McLoyd, 2007), and are often at heightened risk for violence, drug use, and school drop-out. The effect of this is evident in college enrollment numbers: in 2000, 12.9% of the U.S. population was African American; yet, African American males represented less than 4% of the young people enrolled in colleges and universities in the U.S (Harvey & Eugene, 2005). The risks associated with the inner-city neighborhoods and schools where urban African American youth spend their time make it critical to better understand relational aggression and hostile attributional biases.

Social Information Processing and Hostile Attributional Biases

The social information processing (SIP) model (i.e., the way in which individuals process and interpret the meaning of social cues) has been extensively investigated with youth who are physically aggressive, and suggests that physical aggressors differ fundamentally from non-physically aggressive youth at each stage of the SIP model (e.g., Crick & Dodge, 1994). These stages include the encoding of social cues, interpretation of social cues, generation of possible solutions, selection of a response, and enactment of a response. Similar research over the past 10 to 15 years suggests that relational aggressors also experience some social processing deficits (Crick, 1995; Crick, Grotpeter, & Bigbee, 2002; Leff, Kupersmidt et al., 2003).

The second step in this SIP model, the interpretation of social cues, has been studied most extensively (see Orbio de Castro, Veerman, Koops, Bosch, & Monshouwer, 2002). For instance, considerable research has demonstrated that the interpretation of a neutral action (e.g., someone bumping into you from behind or not being involved in a group activity) as hostile (Hostile Attributional Bias; HAB) has been found in both physical and relational aggressors. In fact, HAB has been studied more frequently than any of the other SIP steps because it has been shown to be related to the development and maintenance of aggressive behavior in children (Orobio de Castro et al., 2002). Therefore, researchers have attempted to better measure (Hughes, Meehan, & Cavell, 2004; Leff, Kupersmidt et al., 2003) and intervene (Conduct Problems Research Group, 1999; Hudley, Britsch, Wakefield, Smith, DeMorat, & Cho, 1998; Leff et al., 2009; Leff, Waasdorp, et al., 2010; Lochman & Wells; 2003; Lochman & Wells, 2004) at the level of social information processing.

Cartoon Illustrations as a Modality for Assessment

Following the lead of other researchers, cartoon illustrations were used by the authors of the current study as a modality for exploring the second step in social information processing. Cartoon illustrations have been proven useful in many psychological measures, especially in the assessment of pain (Creemeens, Eiser, & Blades, 2006; Chambers, Giesbrecht, Craig, Bennett, & Huntsman, 1999), but also to facilitate comprehension and interest in the measure (Bidaut-Russell, Valla, Thomas, Bergeron, & Lawson, 1998; Praver, DiGiuseppe, Pelcovtiz, Mandel, & Gaines, 2000; Sadowski, Gulgoz, & LoBello, 1994; Shea et al., 2008).

The current assessment tool utilized cartoon illustrations to aid in the acceptability and comprehension of an existing HAB measure for boys (Crick, 1995). The current research team previously developed a cartoon-based version of this measure for girls (Leff et al., 2006). This adapted measure was novel in that cartoon illustrations were designed specifically for an underserved population (urban African American girls) and accompanied the standard written vignettes (Crick, 1995; Crick et al., 2002). Notably, this version of the measure was created through participatory action research (PAR) with urban youth and community members in order to ensure that it was developmental-appropriate and culturally-responsive. Results from a subsequent study found that the adapted measure was psychometrically strong, and was acceptable, interesting and meaningful to the targeted population. In fact, there are relatively few measures that are culturally and developmentally

appropriate for urban youth (Fantuzzo, Coolahan, & Weiss, 1997; Leff, Cassano et al., 2010), a focus of the current investigation. A limitation of the original cartoon-based measure was that it was developed solely for girls. Therefore, the development of an attributional bias measure depicting relationally and physically provocative social situations for urban African-American boys appeared to be a logical next step.

Using a Participatory Action Research Approach in the Design of Measurement Tools

Traditionally, psychological assessment tools have been developed by researchers who define primary constructs and then develop and assess items based on extensive literature reviews and psychometric analyses. While this approach has served the field well and has resulted in theoretically and psychometrically sound instruments, the process tends to be expert-driven (see Leff, Cassano et al., 2010). Thus, the important role participants and community stakeholders can play in the development of culturally sensitive assessment tools has often been ignored (Nastasi et al., 2000). This expert-driven development may also be disenfranchising to ethnic minority populations and may (1) undermine these individuals' belief in the importance of the research being conducted (Fantuzzo et al., 1997), (2) cause these individuals to conceal their true feelings thereby weakening the ecological validity of the measure (Nastasi et al., 2000), or (3) allow these individuals to put forth only minimal effort when completing the indices (Leff et al., 2006).

Because of this, some researchers have advocated for the use of a participatory action research (PAR) paradigm in which the strengths of traditional assessment techniques (prior empirical support, psychological theory, psychometric soundness) are combined with important key stakeholder and/or participant feedback (Leff, Cassano et al., 2010; Leff, Power, Costigan, & Manz, 2003; Nastasi et al., 2000). Input from research participants and key stakeholders in the development process helps ensure that the resulting measure is not only psychometrically sound, but is also culturally-sensitive to the particular community from which the stakeholders were drawn. Further, a PAR process enhances the meaningfulness and ecological validity of the resulting research (Nastasi et al., 2000). Therefore, the current measure was designed within a PAR framework. Specifically, the research team recruited and worked with many key stakeholders from the local urban community (students, teachers, and parents) in the development and refinement of this HAB assessment tool.

It is noteworthy that the research team applied the PAR model to a relatively under-studied and vulnerable population. Specifically, the partnering stakeholders and youth for which the cartoon-based HAB measure was designed were low income, African American males living in a large urban city. Because prior research has suggested that some traditional written vignette measures, though valid, have been viewed as inappropriate for and/or of low interest to urban African American youth (Leff et al., 2006), it seemed especially important to engage youth and key stakeholders in adapting a measure to be of interest to this at-risk group. Further, a number of studies have demonstrated that although physical aggression tends to be the focus of research and media attention within urban African American

communities, recent studies suggest that relational aggression is also of considerable concern (Leff et al., 2009; Talbott, Celinksa, Simpson, & Coe, 2002; Xie, Farmer, & Cairns, 2003). Moreover, the fact that some relational aggressors also exhibit high levels of physical aggression (Card et al., 2008; Cillessen & Mayeux, 2004) suggests that it is important to address both forms of aggression among urban African American youth.

The Current Study

The current study illustrates how researchers partnered with key stakeholders to develop and preliminarily validate a cartoon-based adaptation of a written hostile attributional bias measure for urban African American boys. A series of studies are described in which the researchers attempted to better understand the cultural sensitivity, developmental appropriateness, and psychometric properties of the newly adapted measure that we hope will have applicability as an outcome measure for aggression prevention programs conducted with urban African American boys. We expected that student and teacher reported acceptability of the cartoon-based measure would be higher than the traditional written vignette measure, and that the cartoon measure would demonstrate adequate psychometric properties across relevant subscales. In addition, we hoped that our study would serve as an illustration for how researchers can work collaboratively with community stakeholders to ensure the developmental and cultural appropriateness of measures for the needs of particular at-risk populations.

Methods

Description of Standard Hostile Attributional Bias (HAB) Measure and Overview of a Series of Adaptation Studies Undertaken

All activities in the current manuscript were undertaken to adapt a recognized HAB measure to include cartoon illustrations specifically tailored for use with African American boys that would accompany the standard written vignettes. The *Measure of Hostile Attributional Bias (HAB) and Feelings of Distress* (Crick, 1995; Crick et al., 2002; Leff et al., 2006) includes ten written vignettes depicting common social conflict situations of ambiguous intent that occur at school. Five of the vignettes depict a relationally provocative social situations (i.e., someone is not included in an activity though it is unclear why this occurred) and five depict a physically provocative social situations (i.e., someone is bumped from behind though it is not clear why this has occurred). On two questions per vignette, the participant is asked to indicate whether they think the action depicted was intentional (score of 1 point) or unintentional (score of 0). Children's intentionality responses are then summed across the five relationally provocative or physically provocative vignettes; scores range from 0 to 10, with higher scores indicating higher levels of HAB. This score can also be represented as a percentage of the time that the child makes an HAB on the measure (e.g., a 0.50 would indicate that 50% of the time the child made a hostile attribution). Children's level of distress is measured by their response to how upset (scored on a 1 to 3 likert scale where 1 = Not Upset at All and 3 = Very Upset) and how mad (scored on the same likert scale) they would be if the depicted situation happened to them. Children's feelings of distress are then summed across the relational or physical vignettes and can range from 10 to 30.

A number of studies have demonstrated that the traditional measure has strong reliability, validity, and acceptability (Crick, 1995; Crick et al., 2002). Despite this, our pilot studies with urban African American youth suggest that this group of children and adolescents may approach the standard written vignettes in a different manner than the predominately Caucasian middle-class samples involved in the original Crick studies. Urban African American youth reported that they were bored and not particularly interested in completing the traditional written measure (Leff et al., 2006). Given this, the research team developed a cartoon-based adaptation of this measure designed for urban African American girls that has demonstrated strong psychometric properties and higher acceptability levels than the traditional written measure (Leff et al., 2006). Therefore, developing a cartoon-based adaptation for urban African American boys appeared warranted.

A series of four studies using a partnership-based framework were conducted for the current manuscript. Specifically, Study 1 describes how the standard measure (Crick, 1995) was adapted and finalized so that appropriate cartoons depicting urban African American youth accompanied each of the ten standard written vignettes. In Study 2, the research team conducted a psychometric study with 3rd and 4th graders and their teachers within the context of a large urban elementary school. In Study 3, the acceptability of the cartoon-based adaptation was directly compared to the standard written vignette measure in an independent sample of boys attending a different urban elementary school. Finally, Study 4 was conducted to determine whether certain psychometric properties (especially the test-retest reliability) of the primary subscales of the new measure were adequate for another separate sample of urban boys.

Study 1: Measurement Adaptation

Participants

Forty boys ranging in age from 8 to 12 years participated in the measurement adaptation phase of the current study. Participants were attending either a summer day camp program or a summer school enrichment program serving a large public urban school district. The majority of participants were African American (92.5%) with the remaining youth being Asian American (7.5%). Youth were entering either the 3rd (17.5%), 4th (25%), 5th (42.5%), or 6th (15%) grades. Ninety percent of the youth attended public school with the remaining youth attending either private (5%) or charter (5%) schools in the area.

Stakeholders

A team of community partners, including one teacher and two school support staff from three different schools, helped the researchers interpret findings obtained from the youth. All three individuals were African American and spent the majority of their lives living in the community served by participating schools. They were chosen because of their experience working with youth and teachers in the local urban schools and because they had worked with the research team previously.

Procedure

The goal of Study 1 was to create cartoon illustrations to accompany each of the ten written social conflict vignettes included in the original HAB measure (Crick, 1995; Crick et al., 2002). The research team followed a series of steps in order to accomplish this. First, an experienced cartoonist drafted cartoon illustrations of urban African American boys to accompany each vignette. Participating boys were then individually shown the cartoon illustration and asked to describe what they thought was happening in the cartoons without knowledge of the vignette content. Subsequently, the corresponding written vignette was read aloud to them while they looked further at the cartoon. Next two standardized questions related to the intentionality of the provocateur and two standardized questions related to feelings of distress (being mad or upset) were asked. Each boy was also asked whether this type of situation had ever happened to him or to a friend in order to determine the relevance of the social situation depicted. Finally, participants were asked to provide specific feedback related to the depiction of the cartoon characters and background context of each illustration so that they would be most appropriate for use with urban males of their age. After following this process for all ten of the stories, boys were asked several general questions about what could make the experience more enjoyable and understandable.

The research process progressed in an iterative manner that is characteristic of using a participatory action research model (PAR; see Leff, Costigan, & Power, 2004; Leff, Cassano et al., 2010; Nastasi et al., 2000). Approximately five or six youth at a time worked with the research team. Their feedback was tabulated and modifications to the depiction of the cartoon characters and setting characteristics were made, and then the updated versions of the cartoon vignettes were used with the next group of boys.

Results

In general, as more youth participated in the measurement adaptation phase and the cartoons were updated, it was clear that the majority of youth felt that the cartoons provided appropriate illustrations of the written vignettes. It was determined that there was an adequate heterogeneity in responding about the intentionality of the provocateur in 9 out of the 10 vignettes over the course of the 40 participant administrations. The one vignette which was still largely viewed as depicting an unintentional action was further developed through extensive feedback from the community partners prior to the finalization of the measure. Suggestions for cartoon depiction modifications included providing longer and baggier shorts for the characters, making closer cropped hair and changing the way braids were drawn on the boys, giving characters a smaller nose and considerably darker complexion, and trying to make several characters look younger and more like children. In addition, a number of suggestions were made to change the spatial relations between characters so that the intentionality of the situations was more ambiguous. Finally, responses to the relevance of the depicted situations revealed that approximately 76% of the boys thought that each physical social situation had happened to themselves or a friend (range from 67.5% to 87.5% per vignette), and approximately 66% reported that each relational social scenario had happened to themselves or a friend (range from 55% to 80% per vignette). Figure 1 contains the final cartoons used for one relationally provocative social situation and one physically provocative social situation.

Study 1 Conclusions and Implications for Psychometric Study

Feedback from the participants and the community stakeholders indicated that the resulting cartoon illustrations were viewed as credible and engaging, and the situations frequently occur for urban male youth in the 3rd to 6th grades. Thus, results from the measurement adaptation study suggested that the measure would be appropriate for a systematic psychometric study, which was the goal of Study 2.

Study 2: Psychometric Study

Participants

All 3rd and 4th grade boys from one large urban public elementary school were offered the opportunity to be involved in the psychometric study. One hundred and sixteen 3rd and 4th grade boys gave assent for the study, had parental permission, and were present on the day of testing (82.3% of the sample). Ninety-six of the boys were African American (83%), with the rest being Caucasian (6%), Asian American (7%), or of another ethnic minority background (4%). Given that this manuscript is specifically focused upon African American youth, data were analyzed only for these 96 children. Most participants were between the ages of 8 and 10 years of age with a range of 7 to 11 years of age. The majority of youth who attend this school receive free or reduced lunch, and therefore this group is considered a low socioeconomic status sample. No further information from the families of these youth was available. Each of the 3rd and 4th grade classroom teachers ($n = 10$) agreed to be administered the cartoon-based version of the measure in order to assess the acceptability of the measure for their students. All of the teachers were female, 70% were African American and 30% were Caucasian, and they had an average of 13 years of teaching experience (range from 1–24 years).

Procedures

Participating boys were randomized on a 1:2 ratio to the standard written vignette only version ($n = 34$) or to the written plus cartoon vignette version ($n = 62$). Participants were individually administered this measure along with a brief acceptability measure immediately following in order to better understand their perception of the measure. It took youth approximately 15 minutes to complete both forms. Approximately 20 boys from each condition were randomly selected to participate in a 2 week test-retest reliability phase.

The ten teachers were then administered the ten vignettes with cartoon illustrations. They were asked several questions about how a typical male youth in their class would respond and/or feel in each situation.[1] Following this, teachers were asked to complete a brief 5-item acceptability questionnaire indicating how acceptable, engaging, and enjoyable they thought that the written vignette plus accompanying cartoon illustrations would be for their male students (see Figure 2). In addition, they were asked to provide ratings for an additional six questions in order to help the research team better understand their thoughts about the new measure.

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[1]Results from this portion of the study are not reported as they go beyond the purpose of the current manuscript.

Measures

Measure of Hostile Attributional Bias (HAB) and Feelings of Distress (Crick, 1995)—As described on pages 8 and 9, this measure includes 10 written vignettes depicting common social conflict situations of ambiguous intent, and a series of studies have demonstrated strong reliability and validity of the measure for use with a diverse group of youth (Crick, 1995; Crick et al., 2002; Leff et al., 2006). The written vignettes of the standard measure were administered to participants along with the cartoon illustrations described in Study 1.

Student Acceptability Questionnaire (SAQ)—The SAQ is a brief five-item acceptability questionnaire that has been used in a previous study to determine perception of acceptability for the measure. The SAQ has previously demonstrated adequate internal consistency and test-retest reliability (Leff et al., 2006).

Teacher Acceptability Questionnaire (TAQ)—The TAQ is a brief five-item acceptability questionnaire that was adapted for use in the current study based upon similar measures used in previous research (Leff et al., 2009). In addition, teachers were asked to provide ratings for an additional six questions in order to help the research team better understand their thoughts about the new measure and how they anticipated their students would experience the new measure.

Results

Correlational analyses suggested that attributions of intentionality in physically and relationally provocative social situations are moderately correlated with one another in both the standard written ($r = 0.43$, $p = .01$) and written plus cartoon ($r = 0.51$, $p < .001$) conditions. There was not a significant difference between these two correlations ($z = 0.46$, $p = 0.64$). In addition, feelings of distress were moderately correlated between physically and relationally provocative social situations for the standard written ($r = 0.55$, $p = .001$) and the written plus cartoon ($r = 0.35$, $p < .01$) conditions. There was also not a significant difference in correlations between the written versus the written plus cartoon conditions for feelings of distress ($z = 1.13$, $p = 0.26$).

Two analyses of variance (ANOVA) were conducted to compare boys' responses of intentionality and feelings of distress in physical situations across conditions. These analyses indicated that boys exhibited similar levels of hostile attributional bias in physical situations for the written condition ($M = 3.38$, $SD = 2.45$) as compared to the written plus cartoon condition ($M = 3.48$, $SD = 2.51$) and similar levels of distress in physical situations for the written condition ($M = 22.85$, $SD = 4.03$) as compared to the written plus cartoon condition ($M = 23.11$, $SD = 4.43$). Similar ANOVAS were conducted to compare intentionality responses and feelings of distress in relational situations across conditions. These analyses indicated that boys exhibited similar levels of hostile attributional bias in relationally provocative situations for the written condition ($M = 5.50$, $SD = 2.08$) as compared to the written plus cartoon condition ($M = 5.08$, $SD = 2.37$) and similar levels of distress in relationally provocative situations for the written condition ($M = 19.0$, $SD = 4.18$) as compared to the written plus cartoon condition ($M = 18.03$, $SD = 3.78$).

Two paired sample *t*-tests were conducted in order to compare boys' hostile attributional biases in physical versus relational social situations, collapsing across vignette condition (e.g., standard written and written plus cartoon version) given the non-significant results reported above. Results indicated that boys displayed higher levels of a hostile attributional bias in relational situations ($M = 5.23$, $SD = 2.27$) as compared to physical situations ($M = 3.46$, $SD = 2.49$); $t = 7.09$, $p < .001$; $d = 0.75$). In contrast, results suggested that boys' displayed higher levels of distress in physical ($M = 23.01$, $SD = 4.29$) as opposed to relational situations ($M = 18.37$, $SD = 3.93$), $t = 10.09$, $p < .001$; $d = 1.13$).

Psychometric Analyses—Adequate internal consistency was obtained for attributions of intentionality and feelings of distress in both the standard written version and the written plus cartoon version across both physical and relational situations (see Table 1). Test-retest reliability was conducted across both the standard written version and written plus cartoon version for relational and physical situations. As can be seen in Table 1, test-retest reliability for attributions of intentionality and feelings of distress was marginal in the physical vignettes across the written and written plus cartoon versions and generally quite poor in relational situations across both versions.

Student Acceptability Analyses—The internal consistency of the acceptability measure was poor for the standard written version ($\alpha = 0.45$) and marginal for the written plus cartoon version ($\alpha = 0.62$). As such, student acceptability on this measure is not reported.

Teacher Acceptability Analyses—Adequate internal consistency was found for the teacher acceptability measure ($\alpha = 0.84$). Teachers reported the written plus cartoon version of the measure to be extremely acceptable. Specifically, teachers responded with a mean score of 1.52 (SD = 0.60) on a 1 to 5 point scale anchored by 1 = Strongly Agree (indicating high acceptability) to 5 = Strongly Disagree (indicating high unacceptability).

Teachers also provided ratings on a series of descriptive questions designed to better understand their thoughts about the measure and the experience they felt their students had in completing the measure. As can be seen in Figure 2, teachers clearly felt that the average student in their class would feel that the cartoons and stories made sense and were easy to follow, the length of the measure was appropriate, and in comparison to the traditional written measure, students would find the written plus cartoon version to be a better way to discuss friendships and conflicts and much more enjoyable and fun to complete.

Study 2 Conclusions and Implications for Follow-up Studies

Results from Study 2 highlight several conclusions as well as additional areas of future research. It appears that urban African American boys attribute hostile intentions to others relatively frequently when interpreting relationally provocative social situations of ambiguous intent (e.g., 50% of the time boys think others were purposefully mean when in fact the intent of the provocateur is unclear). In fact, boys in the sample were more likely to express a hostile attributional bias in relational as compared to physical social situations (52% versus 35% of the time). At the same time, however, boys are more distressed in physically as compared to relationally provocative situations. Taken together, these findings

suggest that relationally aggressive situations occur frequently among urban boys, and while they are sometimes interpreted as being intentional, boys appear more upset and distressed by physical aggression. These findings may provide a bridge between discrepant findings in the literature by suggesting that relational provocation occurs quite frequently among boys (e.g., Swearer, 2008), but that boys do not show the same emotional reaction or distress that is often experienced among girls in relationally aggressive situations (Crick et al., 1996; Murray-Close & Crick, 2007; Paquette & Underwood, 1999).

The psychometric analyses suggest that all subscales of the standard written and written plus cartoon version of the measure are internally consistent. However, the test-retest reliability suggests that the way in which boys respond to a number of subscales across both the traditional written measure and the cartoon-based version may not be consistent over a short period of time. In discussing these findings with the community stakeholders, it was pointed out that the test-retest reliability may have been low due to the time of year in which the study was conducted. Specifically, low test-retest reliability may be due to the fact that participants were often tested on the first occasion just before the winter holidays and then retested just after the holidays. The stakeholders felt that the testing may be unreliable due to the children's decreased attention and increased excitement over the holiday. Unfortunately, when conducting research within busy urban schools the timing of assessments may not always be ideal, as was the case in this phase of our study.

Another primary finding was that teachers found the cartoon-based measure to be extremely acceptable and enjoyable for their students, and also judged this version of the measure to be a much better way to learn about friendships and conflicts than the traditional written measure. On the other hand, low internal consistency was found for the student acceptability measure, especially with regard to thoughts about the standard written measure. This made the research team reluctant to interpret student levels of acceptability for both the standard and adapted versions of the measure.

The combination of findings from Study 2 led the research team to propose two additional studies. In Study 3 the researchers enrolled youth from a different urban elementary school to determine which version of the HAB measure (traditional written versus written plus cartoon) they would prefer after being administered several examples of both versions. In Study 4, the research team aimed to determine whether the poor test-retest reliability of both versions of the measure (standard written and written plus cartoon) for urban boys in Study 2 was a replicable finding, or whether this finding may have been attributable to the time-of-year concerns as hypothesized by the stakeholders.

Study 3: Student Acceptability Study

Participants

Participants included twenty 3rd and 4th grade boys from another urban elementary school within the same public school district as Studies 1 and 2. All participants were African American and in 3rd grade (n=9) and 4th grade (n=11). The vast majority of students at this school received free or reduced price lunches.

Procedures

In order to directly test the hypothesis that the cartoon version would be more acceptable than the standard written version for a sample of urban African American boys, students were individually administered vignettes from each of the two conditions. Each student received five standard written and five written plus cartoon vignettes in a counterbalanced order.

Measures

Measure of Hostile Attributional Bias and Feelings of Distress (Crick, 1995)— See previous description.

Student Acceptability Measure—An eight item forced choice acceptability measure that has been used in prior research (Leff et al., 2006) was utilized in the current study. Participants were asked to choose which condition (standard written versus written plus cartoon) was more enjoyable, acceptable, and meaningful to them. Following each question students were given an opportunity to write an open-ended response as to why they felt that one condition was more acceptable than the other.

Results

A binomial probability analysis was conducted to compare student responses across the eight acceptability questions. Results clearly indicated that the written plus cartoon version was more acceptable and enjoyable than the standard written version ($p < .001$). Some of the qualitative responses for why students preferred the cartoon version included: "I like cartoons and I can see what is going on;" "Because you can hear (when it is read) and see what happened (from the cartoons);" "Because seeing them (the cartoons) gave me ideas;" and "Because cartoons are fun."

Study 3 Conclusions and Implications

Study 3 suggests that the written plus cartoon version of the attributional measure is more enjoyable, understandable, and acceptable for urban African American boys than the traditional written version of the measure. This finding suggests that the use of community partnerships to adapt assessment tools may increase the cultural sensitivity, meaningfulness, and utility of the resultant measures. This is supported by other research that has used acceptability as a marker for the developmental and cultural appropriateness of measurement tools (Leff et al., 2006).

Study 4: Test-Retest Reliability Study

This test-retest study was undertaken to determine whether the relatively weak test-retest reliability found in Study 2 was indicative of an actual finding (e.g., that urban boys do not consistently respond to the traditional or cartoon-adapted measure across short time periods) or an artifact of the timing of the re-testing (e.g., in study 2 the re-testing occurred primarily just before or after the winter holidays). A secondary goal of Study 4 was to determine whether Study 2 findings regarding boys being more likely to exhibit higher levels of hostile

attributions in relational as opposed to physical situations while experiencing more distress in physical than relational situations could be replicated.

Participants

Seventy boys who were attending one of three urban public summer camps participated in Study 4. This represented the vast majority of boys who had just completed the 2nd – 5th grades in attendance on the days in which the testing was conducted[2]. Ninety-one percent of the sample was African American, 4.3% were biracial including African American, and the remaining participants were drawn approximately equally from other ethnic minority groups. The participants included five boys who had just finished the 2nd grade, 24 boys who had just finished the 3rd grade, 25 boys who had just finished the 4th grade, and 16 boys who had just finished the 5th grade. Most participants were between the ages of 9 and 11 years of age with a range of 7 to 12 years of age. Only data from African American and/or biracial youth were used for all subsequent analyses ($n = 67$).

Procedure

The boys were randomly assigned to the standard written vignette measure ($n = 32$) or to the written plus cartoon measure ($n = 35$). Participants were individually administered the standard questionnaire on two occasions, such that the second occasion occurred approximately two weeks after the initial administration for a test-retest reliability trial.

Measures

Measure of Hostile Attributional Bias and Feelings of Distress (Crick, 1995)— See previous description.

Results

Strong test-retest reliability for attributions of intent and feelings of distress in relationally provocative and physically provocative social situations were obtained on both versions of the measure and can be seen in Table 2. The one exception to this was for feelings of distress in physically provocative social situations in the standard written version which was marginally significant ($r = 0.62$).

Correlational analyses suggested that attributions of intentionality in physically and relationally provocative social situations are moderately correlated with one another in both the standard written ($r = 0.38$, $p < .05$) and written plus cartoon ($r = 0.42$, $p < .05$) conditions. There was not a significant difference between these two correlations ($z = 0.18$, $p = 0.85$). In addition, feelings of distress were moderately correlated between physically and relationally provocative social situations for the standard written ($r = 0.47$, $p < .01$) and the written plus cartoon ($r = 0.44$, $p = .01$) conditions. There was also not a significant

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[2]The Institutional Review Board approved all phases of the studies described in the manuscript. While in Studies 1–3 of the research active parent permission was obtained for participants, in Study 4 researchers and camp leaders collaborated such that the completion of the measures were integrated within the typical camp day. Given this, and that it is extremely challenging to obtain parent permission within the urban summer camp format, parents were informed of the study through flyers and meetings but did not have to sign permission forms for their child's participation. Enrollment in the study was stopped after 70 boys had participated during the first administration.

difference in correlations between the written versus the written plus cartoon conditions for feelings of distress ($z = 0.15$, $p = 0.88$).

Similar to the findings in Study 2, internal consistency was generally strong for attributions of intentionality and feelings of distress in relational and physical social situations for both the standard written measure and the written plus cartoon version.

In order to replicate findings from Study 2, a paired sample *t*-test was conducted to determine whether boys displayed stronger hostile attributions in relational as compared to physical social situations while experiencing more distress in physical as compared to relational situations. For these analyses we collapsed across vignette condition (standard written versus written plus cartoon). Results replicated Study 2 findings, such that boys displayed higher levels of a hostile attributional bias in relational situations ($M = 5.59$, $SD = 2.15$) as compared to in physical situations ($M = 3.98$, $SD = 2.98$); $t = 4.52$, $p < .001$; $d = 0.62$). Also similar to Study 2 findings, boys displayed higher levels of distress in physical ($M = 24.17$, $SD = 4.46$) as opposed to relational situations ($M = 20.11$, $SD = 4.85$), t $= -6.92$, $p < .001$; $d = 0.87$).

Study 4 Conclusions and Implications

Findings from Study 4 suggest that the new cartoon-based version of the Crick attributional bias measure demonstrates adequate psychometric properties (internal consistency and test-retest reliability) for urban predominately African American boys. Further, these findings suggest that weak test-retest reliability findings from Study 2 may have, in fact, been attributable to causes separate from the measure itself (i.e., possibly time of year considerations or other factors). This highlights the importance of implementation factors and the timing of test administrations when conducting research in the public school system. It further suggests that the active involvement of community stakeholders may lead researchers to better understand the meaning of initially *surprising* results. Alternatively, the divergent findings between Study 2 and Study 4 may be due to other factors, such as age. Specifically, the sample for Study 2 included a slightly younger sample of youth than those participating in Study 4.

Study 4 also replicates an interesting finding from Study 2. Specifically, with an independent sample, urban boys were again more likely to demonstrate a hostile attributional bias in relational social situations as opposed to physical social situations (56% to 40% of the time, respectively). At the same time, they were more distressed in physical situations than relational situations. Future research is needed to elucidate whether this finding is specific to urban predominately African American boys or to the majority of boys regardless of their background and community context.

Discussion

Given the high rates of community violence that plague many urban communities across the nation (Tolan et al., 2003; Stoddard et al., 2011), it is extremely important to develop accurate and culturally-responsive assessment tools that can help guide prevention planning and also help to determine intervention success. Research suggests that not only do urban

African American youth witness acts of violence within their community, but that many of these youth interpret these stressors as concerning and even traumatic (Farrell & Bruce, 1996; Teitelman et al., 2010). Developing measures that are responsive to the needs of these youth is extremely important in helping to better understand their needs and the success of prevention programming within the urban school context.

The series of studies outlined here highlight the importance of engaging key stakeholders in a partnership-based process in the design and adaptation of measures, especially measures for individuals in low-income, urban minority groups (Tucker & Herman, 2002; U.S. Public Health Service, 2001). This is particularly notable given the growing recognition that assessment tools are only reliable and valid for use with the specific samples of participants for which they have been designed and/or validated (Leff, Cassano et al., 2010). The fact that the cartoon-based adaptation of the HAB measure demonstrated strong psychometric properties and was also considerably more acceptable than the standard written measure for the sample of urban African American boys suggests that it is possible to maintain psychometric soundness while adapting measures to ensure their developmental and cultural sensitivity, acceptability, and appropriateness. It also suggests that more researchers may want to consider following procedures similar to those outlined in this paper in order to adapt other measures to minority populations.

Moreover, the engagement of key community partners in measurement development and adaptation can also be helpful in interpreting discrepant or unexpected findings. This was evidenced in Study 2, in which test-retest reliability was lower than researchers anticipated. Rather than assume these findings were attributable to the measure itself, community partners helped the research team understand the potential relevance of other factors in the study, such as the time of year when the students were retested. Because the results of Study 4 indicated that the psychometric properties of both the standard written measure and the cartoon-adapted measure were adequate, including strong test-retest reliability across all subscales, the researchers have confidence in the use of the adapted measure within the urban predominately African American male sample. Without input from the community stakeholders, the researchers may have reached different conclusions and not fully appreciated the usefulness of the measure.

In addition to the benefits of the participatory action research model, there are also challenges to conducting this type of research. First, it can be difficult at times to forge relationships with community members when they may not have a positive opinion of research (see Leff, Thomas et al., 2010). This barrier is not prohibitive, but it can take some time to build trusting relationships (Israel, Schulz, Parker, & Becker, 1998). Second, although PAR produced a beneficial suggestion in our series of studies, it is not always the case that key stakeholders will make suggestions that are in line with the team's research goals. For example, community stakeholders may provide suggestions that will add a significant amount of work to the study, may not be feasible, or are not consistent with the goals of the research. In situations like this it is important for researchers to balance the goals of the research team with the needs of the community. However, having partners in the community may increase the cultural sensitivity of the research being conducted, and that

contribution makes PAR extremely valuable, despite these possible challenges (Hughes, 2002; Leff, Thomas, et al., 2010; Nastasi et al., 2000).

The cartoon-based hostile attributional measure may be of use in understanding an important mediator of violence prevention and treatment in urban ethnic minority communities and schools. Specifically, this measure appears to be appropriate for $3^{rd} - 6^{th}$ grade African American urban boys. Further, given that hostile attributions have been shown to be a key social information processing deficit in aggressive children (Crick & Dodge, 1994; Orbio de Castro et al., 2002), this measure may also be useful in designing and evaluating secondary and tertiary prevention/intervention programs for urban African American boys. That is, because HAB can lead to increased aggression, it is extremely important to have measures that appropriately measure this construct, and can identify any effects of treatment. It is also possible, that a times a hostile attributional bias may serve a protective function given the neighborhoods and schools that African American males find themselves in. Future research needs to examine hostile attributional biases as a mediator between urban settings and life outcomes.

Future Directions and Considerations

Because this cartoon-based HAB measure may potentially be used to evaluate the outcomes of prevention/intervention programs, its sensitivity to treatment effects is an important area of future study. For instance, future research needs to examine whether the measure reliably identifies children who are more or less likely to make hostile attributions, and then to relate this to relevant outcome indices. If this outcome measure is found to be sensitive to treatment effects for urban African American boys, then it could be disseminated and used with this specific population. Additionally, given that some samples included in the current study were relatively small, future research may also be warranted with larger sample sizes. Although it is recommended that the cartoons be adapted before use with different treatment populations (i.e., Caucasian boys; boys from rural settings), the process by which key school and community stakeholders are able to engage in the research in order to ensure its meaningfulness sheds light upon the flexibility often required of researchers working in partnership within the urban schools and the importance of adapting social cognitive measurement tools so that they are maximally responsive to the developmental and cultural context.

Acknowledgments

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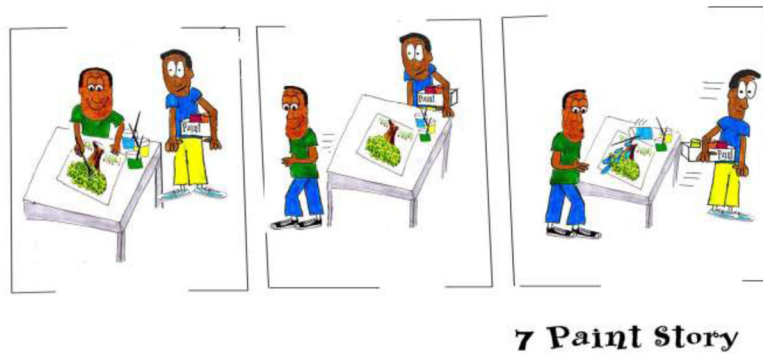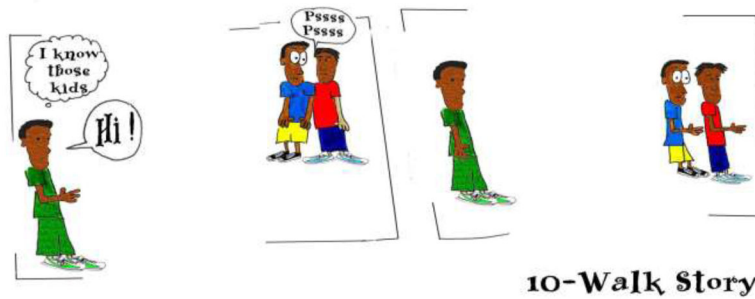
Figure 1. Cartoon Illustration of a Relationally Provocative Vignette and a Physically Provocative Vignette

Imagine that you are taking a walk in your neighborhood one day. After you walk a block or two, you see two kids that you know from school. You walk over to the kids and say "hi". The kids act as if you are not there -- they don't say anything to you. Then they say something to each other that you can't hear and they walk the other way.

Imagine that you have just finished an art project for school. You've worked on it a long time and you're really proud of it. Another kid comes over to look at your project. The kid is holding a jar of paint. You turn away for a minute and when you look back the kid has spilled paint on your art project. You worked on the project for a long time and now it's ruined.

Number of Teachers out of 10 Answering in the Following Manner About the Measure
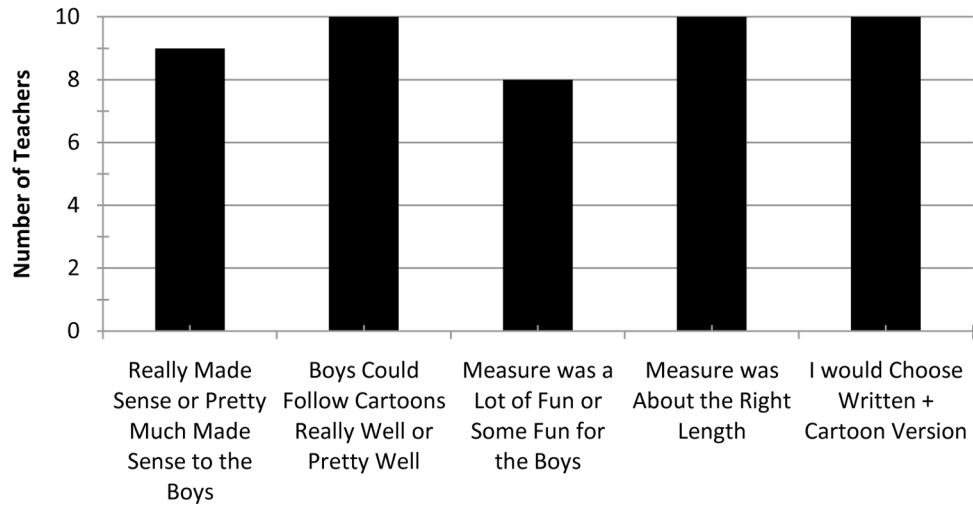
Figure 2.
Teacher Perceptions of the Cartoon-Based Version of the HAB Measure

Table 1

Internal consistency and test-retest reliability for Study 2

| | Internal Consistency Reliability | | | | Test-Retest Reliability | | | |
| | Physical Situations | | Relational Situations | | Physical Situations | | Relational Situations | |
	α written	α cartoon	α written	α cartoon	r written	r cartoon	r written	r cartoon
Hostile Attribution Bias	.68	.73	.74	.73	.67	.58	.30	.39
Feelings of Distress	.75	.71	.77	.80	.50	.46	.58	.41

Table 2

Internal consistency and test-retest reliability for Study 4

	Internal Consistency Reliability				Test-Retest Reliability			
	Physical Situations		Relational Situations		Physical Situations		Relational Situations	
	α written	α cartoon	α written	α cartoon	r written	r cartoon	r written	r cartoon
Hostile Attribution Bias	.82	.77	.74	.75	.82	.86	.76	.81
Feelings of Distress	.79	.86	.85	.81	.62	.76	.83	.79