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**AN ATTRIBUTIONAL ANALYSIS OF AGGRESSION AMONG
CHILDREN WHO ARE DEAF**

Tamera Burton Murdock & Ronald L. Lybarger

Abstract

This exploratory study applied attribution theory to explain aggressive behaviors using a sample of thirty children who are deaf, ages 9-12. Students were shown four hypothetical scenarios of a child causing another child minor harm, such as bumping into him or her in the hall. The intention of the provocateur was ambiguous. Participants were instructed to pretend they were the child who had been harmed. Subsequently, they were questioned about the provocateur's intentions, their own emotional responses, and their likely behavioral response. Consistent with our predictions, many children demonstrated hostile (i.e., hostile) attributional biases. Moreover, the results support the cognition, emotion, behavior sequence posited by attribution theory: the more intent participants ascribed to the provocateur, the angrier they reported being, and the more likely they were to anticipate responding aggressively. The relation between hostile attributions and aggressive responding was mediated by emotion. The findings underscore some potential cognitive and emotional antecedents of behavioral problems in a deaf population.

Introduction

In the past decade, there has been a burgeoning interest in the social adjustment of children who are deaf. Compared to hearing children, children who are deaf more frequently show deficiencies in social-cognitive abilities such as understanding emotions and social problem solving (Greenberg & Kusche, 1989). In addition, they are more likely than hearing children to exhibit inappropriate, impulsive, and aggressive behaviors. Longitudinal data on hearing children suggests that social deficits not only pose problems for immediate adjustment but are also predictive of poor adaptation in adulthood (Parker & Asher, 1987). It is therefore important to understand the factors that contribute to children who are deaf's inappropriate social behavior so that intervention programs can be developed.

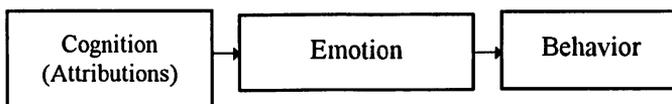
Aggression has a myriad of roots: biological, social, cultural, and psychological (for review see Feshbach & Zagrodzka, 1997). For example, the higher levels of aggression among males as compared to females is probably affected both by their higher levels of testosterone, as well as by social norms that portray aggression as more acceptable for males than females (Renfrew, 1997). Similarly, the high aggressiveness of many urban African-American males may well be affected by their exposure to continuous discrimination, as well as by living in low-income neighborhoods riddled with violence (Huessman & Huessman, 1997). Many children who are deaf are also exposed to a variety of forms of discrimination and societal oppression that may be related to their aggressive behavior. Ultimately, however, even within similar contexts some people are apt to be more

aggressive than others are. Not all boys are aggressive, and many African-American males are no more likely to hurt someone than any other group of individuals. In other words, the factors that explain the high levels of aggression within one group as compared to another do not necessarily explain the variation in aggression between individuals within that group. In this study, we examined aggression among children who are deaf through the psychological lens of attribution theory. A first goal of our study was to determine whether the high levels of reported aggression among children who are deaf might be linked to a preference for particular types of attributions, known as intentional or hostile attributions. In addition, we tested whether the attributional model could be used to explain individual differences in rates of retaliatory aggression among this population. Retaliatory aggression is defined as aggression that occurs in response to perceived harm or threat of harm.

Attributional Models of Aggression

Attribution theory (Weiner, 1991, 1995) has been used to explain variations in people's reactions to others in social situations. According to this theoretical perspective, our behavior towards others is driven by our emotions, which in turn are driven by our cognitions, or thoughts. This cognition → emotion → behavior sequence begins when a person experiences an unexpected or negative social event and asks him- or herself why the event occurred (e.g. "Why did he/she bump me?"). One's emotional response to the event is dependent on the attribution that was invoked to explain the behavior. Specifically, the degree to which another person's behavior is judged as intentional relates to the degree of anger in reaction toward the provocateur (Juvonen & Weiner, 1994; Weiner, 1991; Weiner, 1995). Subsequent behavior towards the individual will be mediated by the emotional reaction: the angrier one becomes, the more likely he or she is to retaliate (see Figure 1).

Figure 1. Attributions-Emotions-Behavior sequence as hypothesized by Weiner's attributional model (1995).



To illustrate the attributional process, imagine two children standing together on the playground. Suddenly, another peer bumps from behind one

of the children. When the child turns to assess the situation, the intent of the peer is unclear. According to attribution theory, the child makes an inference (attribution) as to the reason that he or she was bumped. If he or she believes that the child provocateur acted intentionally, he or she is more likely to become angry. Conversely, less anger is elicited if the child believes he or she was unintentionally bumped. Furthermore, if the resulting attribution was hostile, the child is likely to respond in anger and possibly attempt to retaliate whereas the child who makes the attribution that the bump was accidental (provocateur not responsible) will respond with more positive behavior, such as ignoring the bump (Dodge, 1980). A myriad of correlational as well as experimental findings confirm the attribution→emotion→behavior sequence that underlies this theory. For example, we know that in situations where the attribution is clear, children and adults get angry with others who intentionally versus unintentionally committed a social transgression against them such as knocking into them, or stand them up for an appointment. Our level of anger in the situation predicts the likelihood that we will respond in a retaliatory as opposed to forgiving or overlooking the other person's transgression.

Studies show that children who are nominated as highly aggressive by their teachers, peers and parents are often biased in the direction of making intentional (hostile) attributions for their peers' social transgressions, particularly in cases where the cause of the provocation is ambiguous (Dodge, 1980, 1993; Dodge, Price, Bachhorowski, & Newman, 1990). As such, they are more likely than other children to engage in retaliatory aggression. For example, Dodge (1980) presented aggressive and non-aggressive boys with hypothetical ambiguous peer provocation situations and asked them to explain why they believed the event occurred. Aggressive boys were 50 percent more likely than non-aggressive boys to attribute the events to hostile intentions. Hostile attributional bias has been demonstrated among a myriad of normal aggressive populations including socially rejected boys and girls from kindergarten through eighth grade (e.g., Dodge, 1980; Dodge & Frame, 1982; Feldman & Dodge, 1987; Was, 1988). Results based on studies of clinical populations indicate that hostile attributional bias is also evident among aggressive boys in residential treatment centers (Nasby, Hayden & DePaulo, 1979), adolescents receiving outpatient treatment for hyperactive-aggressive behaviors (Millet & Dodge, 1988), and among youth incarcerated for violent crimes (Slaby & Guerra, 1988). These studies are correlational in nature and therefore cannot confirm that attributional biases are the cause of the retaliatory aggression. However, these results combined with substantial experimental documentation of attribution→emotion→behavior linkages, cited above, suggest that attributional processes may play an important role in explaining aggression. More importantly, research has begun to suggest that attributions made

about social outcomes may play an important role in remediating problematic behaviors (Earn & Sobol, 1991) through inventions such as attributional retraining (Forsterling, 1985).

Although a vast body of evidence links hostile attributional biases to social problems in non-deaf populations, to date, no one has studied the attributional processes of children who are deaf. Yet, children who are deaf may be apt to have non-normative or “biased” attributional style. The majority of children who are deaf are socialized by hearing parents, who are often unable to teach them appropriate social and emotional behaviors because of their inability to communicate effectively. As such, these children receive limited explanations for feelings, responsibilities, roles, reasons for actions, reasons for reactions, and consequences of their and others' behavior (Kusche et al., 1983) and instead have to learn many things in the stimulus-response mode characteristic of classical and social learning theories. For example, a child who is deaf playing with his or her sibling may accidentally hurt him or her. In this instance, the sibling is likely to scream and or cry; the parent, unable to communicate that they should play more carefully so they do not accidentally hurt one another, may simply make them stop playing with each other. At another point in time, the child may purposely hit his or her sibling while they are playing together. Again, the sibling is likely to scream or cry, and the parent to tell them to stop playing with other. From the child's point of view, then, he or she perceives that others react negatively to him or her and punish when the outcome is negative, irrespective of the cause.

Following the work of Dodge and his colleagues (Dodge & Coie, 1987; Dodge & Crick, 1990; Dodge, Petit, Bates, & Valente, 1995), we examined the attributions made by children who are deaf following exposure to ambiguous harm situation to determine the prevalence of hostile attribution biases within this population. Not only did we anticipate that there might be a high prevalence of hostile attributional biases, we anticipated that the cognition-emotion-behavior sequence predicted by attribution theory would explain variations in levels of aggression among children who are deaf. Specifically, we hypothesized (a) there would be positive associations between frequency of hostile attributions, reported levels of anger, and aggressive (retaliatory) responses and, (b) the relations between students' attributions and their intended behavior would be mediated by their emotional response (i.e., anger; see Figure 1) . Finally, we hypothesized that students who more frequently demonstrated a hostile attributional style would be rated by teachers as having a lower level of social competence.

Method

The 30 children in this study were full-time students at a residential school for the deaf in the Midwestern region of the United States. Students ages 9-12 were included in this sample. Of the 30 students who participated, there were 12 females and 18 males. Four of the students were African-American and one Hispanic; the remaining students were all Caucasian. None of the students in the study was diagnosed with any learning disability and all were members of regular classes at the school. The data were collected as part of the pretreatment evaluation of the school's newly adapted social-emotional curriculum: Promoting Alternative Thinking Strategies (PATHS; Kusche & Greenberg, 1994). All children who participated had consent forms from parents or guardians on file with the school.

The data were collected during individual interviews conducted by the second author who is a bilingual consulting staff member at the residential school for the deaf. The testing took place in the schools' computer lab over the course of one month. The interviewer adapted his language to be appropriate to the individual student based on information gathered from classroom teachers, counselors, administrators and para-professionals. Students were told they would be shown a series of pictures of children, and that they would be asked to answer some questions about them. Students were advised they did not have to participate in the study and assured of the confidentiality of their individual responses.

After answering some basic demographic questions, participants were shown four pictures from the Home Interview With Child (HIWC; Dodge, Pettit, Bates & Valente, 1995) to assess their attributional style. Each line drawing depicts two children in a social situation in which minor harm has occurred to one child and the intent of the provocateur is not clear. The researcher explained each picture to the child and asked him or her to imagine they were in that situation. For example, a student was shown a picture of a child being hit in the back by a ball thrown by another child. Participants were instructed to imagine he or she was the child who had been hit. To insure that students understood the scenarios and the directions, researcher asked each student to re-explain the situation in his own words.

After each vignette was presented, the interviewer asked the child three questions to assess their attributional response, emotional response, and intended behavior. The first and third questions are standard components of the HIWC. Question one solicits the student's attribution for the event (i.e., why he or she thinks the offenders bumped or ignored him/her), and question three inquires about the child's intended behavior towards the provocateur (i.e., what he or she would do in response to the offense).

Question two was designed to assess students' emotional responses to the situation using a procedure we developed for this study. Children were presented with three line drawings taken from the PATHS curriculum which depicted the emotions "fine," sad," and "angry" (Kusche & Greenberg, 1994). They were instructed to identify which picture described how they would feel in each of the four situations. To insure the validity of students' responses, all children in the study were asked to identify the emotion portrayed by the picture before the study began. All children were able to complete this task. Once the child had identified the feeling he or she was experiencing, he or she indicated the strength of emotional response using a series of circles that progressively increased in size across a page from small to large (four total choices, 1-4 respectively). Specifically, each student were asked to indicate "how much" he or she would feel fine, sad, or angry. The researcher recorded the emotion and assigned a number to describe which circle was chosen. Anger scores were computed by averaging the students' reported level of anger response across the four scenarios.

The interviewer coded the attributional responses to the interpretation questions into one of three categories: hostile, non-hostile, and don't know/other. Examples of hostile attributional responses included "he wanted to hurt me," or "he was trying to knock me over." A Hostile Attribution score was calculated by dividing the number of hostile attributions by the number of scenarios. Thus, these scores have theoretical range of 0 to 1, and represent the percentage of time the student used hostile attributions. Higher scores indicated higher frequency of intentional, or hostile, attributional responses. Responses to the intended behavior questions were coded into one of five categories: don't know/other, do nothing, question or comment, issue verbal threat or report to teacher, or behavioral aggression. Examples of responses coded as behavioral aggression include "shove," knock over," and "throw ball back at him." An Aggressive Behaviors score was calculated by dividing the number of responses coded as behavioral aggression by the total number of behavioral responses. These scores also have theoretical range of 0 to 1, with higher scores indicating a higher percentage of aggressive responses.

Reliability data based on 387 HIWC profiles from the FAST Track Project (Conduct Problems Prevention Research Group, 1992) yielded inter-item coefficients (Cronbach's alpha) for the items that contribute to the Hostile Attributions and Aggressive Behaviors scores of .80 and .74, respectively. However, these data were collected on a hearing population of children.

The Social Health Profile (SHP) was used to assess student's social competence. The SHP is a 41-item measure (Werthamer-Larsson, Kellam & Wheeler, 1991). However, only the nine-item social competence scale was directly related to the present study. Teachers rated the frequency with

which students engaged in nine behaviors using a six-point scale, ranging from almost never (0) to almost always (5). For example, Item 11R states "controls temper when there is a disagreement." Final scores were computed by averaging of the nine items; scores range from 0 to 5 with lower scores reflecting higher levels of social competence.

Results

Descriptive data on students' attributions, emotions, and intended behaviors were computed for each of the four scenarios. As can be seen in Table 1, for each of the four scenarios, most of the students (83% - 97%) reported that their provocateur had intentionally harmed them and that they would feel anger (83% - 90%) in that situation. However, a much smaller percentage of the respondents said they would respond aggressively (i.e., retaliate) against their provocateur (23% - 40%).

Table 1. Frequency of Hostile Attributions, Anger, and Aggressive Responses for Each of the Scenarios in a Sample of Children who are deaf

Frequency of Responses	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Hostile Attributions	26 (87%)	26 (87%)	29 (97%)	25 (83%)
Anger	25 (83%)	27 (90%)	26 (87%)	27 (90%)
Anticipated Aggressive Responses	7 (23%)	12 (40%)	8 (27%)	12 (40%)

Note: ($n = 30$)

Summary statistics for the attributional, emotional, and behavioral responses of the students averaged across the four scenarios, as well as the teacher's ratings of social competence are presented in Table 2. Note that teachers' ratings of student's social health were generally quite high, suggesting they perceived few behavioral problems in this sample. To test the hypotheses regarding the relations between attributional, emotional, and behavioral responses, a series of correlations were computed and are presented in Table 2. In general, the results were consistent with attribution theory: There were significant direct correlations between hostile attributions and aggressive responding, between hostile attributions and level of anger, and between level of anger and anticipated aggressive responding. In sum, the more frequently students perceived others intentionally harming them, the angrier they reported they would be, and the more likely to respond aggressively. Contrary to our expectations, however, there was no

association between students' hostile attributions, and their social competence as rated by teachers.

Table 2. Means, Standard Deviations and Intercorrelations for all Scales in a Sample of Children who are deaf

Measure	Mean (SD)	Range	(1)	(2)	(3)	(4)
(1) Hostile Attributions	0.89 (0.21)	0.21 - 1.00		.54**	.36*	.04
(2) Anger	2.64 (1.06)	0.25 - 4.00			.58**	.09
(3) Anticipated Aggressive Response	0.33 (0.42)	0.00 - 1.00				.29
(4) Teacher Rated Social Competence	3.62 (1.91)	0.00 - 6.40				

Note: (n = 30), * p < .05; ** p < .01

Our second hypothesis posited emotions as a mediator between attributions and behavior. To test this hypothesis, a hierarchical regression was conducted with anticipated aggressive responding as the criterion variable, and hostile attributions and level of anger as the predictor variables. According to Baron and Kenny (1986), if the relations between students' attribution and behavioral responding are mediated by emotion, in this case anger, then the size of the Beta coefficient for hostile attributions should significantly decrease once level of anger is entered into the equation. As noted in Table 3, hostile attributions do in fact predict anticipated aggressive responding ($\beta = .36, p < .05$). However, in the second step of the analysis, when level of anger was added to the equation, the predictive effects of hostile attributions decreased to almost nothing ($\beta = .06, p > .70$). Such a drop in the strength of the coefficient suggest that anger mediates the relations between hostile, or intentional, attributions and aggressive responses.

Discussion

This exploratory study was designed to examine the applicability of attribution theory for understanding aggressive behavior of children who are deaf. Consistent with our expectations, there was a high prevalence of hostile attributional biases among our participants. That is, a majority of the children in this study interpreted the harmful behavior on the part of a

Table 3. Hierarchical Regression Using Hostile Attributions and Anger as Predictors of Anticipated Aggressive Responses among Children who are deaf

	<u>R²</u>	<u>Beta</u>
Step 1	.10*	
Hostile Attributions		.36*
Step 2	.23**	
Hostile Attributions		.07
Anger		.54**
Total R ²	.33**	

* $p < .05$, ** $p < .01$

hypothetical peer as intentional, even though the cause was ambiguous. This high rate of attributional bias may be related to the socialization of many children who are deaf.

The results of this study are consistent with the supposition that some children who are deaf do not receive feedback necessary to develop normative social cognitive skills (Greenberg & Kusche, 1989; Kusche et al; 1983). A major premise of attribution theory is that people are motivated to make meaning, and therefore seek to explain negative and/or unexpected outcomes in their lives (Weiner, 1995). As such, in the absence of language-based communication, people will use whatever data is available to them to make inferences about the causes of behavior. For example, Graham (1990) found that students infer their teachers based on the emotions they display. If a student receives a bad grade and the teacher appeared disappointed, they inferred that the teacher blamed them for the failure. However, if the teacher expresses mere sadness or pity, they reason they that teacher saw their failure as unintentional. As such, we might expect that children who are deaf will also infer attributions for their own and others' behavior, using whatever information is available to them. Alternatively, attributional thinking may not play a central role in Deaf culture. Although Wiener (1991) claimed that the tendency to make attributions for unexpected or negative events is universal, no one has investigated whether this assumption holds among a Deaf population/Deaf culture. In this study, students' gave reasons for the behaviors of others because they were asked to; we do not know if attributions are as used spontaneously among this population as among a hearing population. Future research might examine incidents of spontaneous attributions among deaf people.

Consistent with the attributional model was our finding that hostile attributional patterns were associated with increased anger and

aggressive responding. The more frequently children saw others as intentionally harming them, the angrier they became, and the more likely to respond aggressively. Counselors, teachers and other professionals who work with children who are deaf might therefore consider implementing attribution retraining programs (see for example, Forsterling, 1985) to teach children to discriminate between the intentional and unintentional behaviors of others. Adults will need to reinforce the training in their daily interactions with children who are deaf, by clearly discriminating their responses to negative behavior in accordance with the child's intentions.

The relations between intentional (hostile) attributions and aggressive, retaliatory behavior were mediated by the emotion of anger, suggesting that emotions rather than cognitive processes are most proximal antecedent of aggression. In other words, if hostile attributions did not lead to angry feelings, the students would not be likely to retaliate against their provocateur. Our data also suggest, however, that anger plays more than a mediational role in producing aggressive behavior: The correlations between anger and behavior were much larger than those between attributions and behavior. As such, attributional retraining alone will probably not be sufficient to reduce reactive aggression in this population. Students will most likely need a multifaceted intervention that includes lessons on students how to identify, contain and redirect their emotions (see Kusche & Greenberg, 1994 for an example of such a curriculum). In addition, whereas a majority of students reported hostile attributions, a majority did not respond aggressively. Contrary to our expectations, there was no significant relationship between students' attributional patterns and teachers' rating of social competence. A possible explanation for this finding is the lack of specificity of our social competence instrument. Whereas hostile attributions were assumed to predict aggressive behavior, the measure completed by teachers was a global measure of students' social skills. However, as hostile attributional styles have also been found among students with forms of social maladjustment other than reactive aggression. For example, significant differences have been found in the attributional styles of rejected, neglected and controversial versus popular and average students (Crick & Ladd, 1993), and lower versus higher achieving children (Peterson, 1990). These studies differ from our study, however, in that they isolate children with behavior problems and compare them to those without problems. Students in this study were not selected for their aggression. As such, these data only provide information about students' reported behavioral intentions, but not about their actual levels of aggressive behavior. Future studies of children who are deaf might compare the attributional patterns of students who are seen as the most aggressive by their teachers and peers to others in the school.

Although our data suggest that attributional biases may be prevalent among children who are deaf, it needs to be noted that many more children reported hostile attribution than actually than did those who said they would retaliate. There are several other limitations to this study. First, given that many children who are deaf are not educated in residential settings, these data are by no means generally representative of children who are deaf. Future investigations should include children who are educated in a variety of settings. One might predict that children in more mainstream educational settings would have more opportunities to learn concepts of the normative associations between interventions and consequences through the observations of their non-deaf peers. Alternatively, however, students in mainstreamed setting may be actually be given fewer of the types of explanations needed to develop those association explanations as compared to those in a school designed exclusively for children who are deaf. Future research should examine attributional patterns among children who are deaf in a range of educational placements. In addition, this study did not deal with other variables that maybe related to aggressive responding including gender, ethnicity, and/or special education status. Finally, we focused on the attributional processes underlying reactive aggression, whereas difficulties in discriminating between intentional and unintentional acts have potentially negative consequences in a variety of situations (see Weiner, 1991, 1994). Projects designed to assess the generality of attributional biases across situations, and the behavioral consequences of these biases might add to our understanding of children who are deaf's social behavior.

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