

Abstract

Thompson, Julie A. Implicit Beliefs about Relationships Impact the Sibling Jealousy Experience (Under the direction of Dr. Amy G. Halberstadt).

The effects of implicit beliefs about relationships were examined in relation to children's sibling jealousy. Participants were 63 sixth-grade children from a local middle school and one of their parents. Children completed a questionnaire assessing their implicit beliefs (fixed or malleable) and were interviewed about the causes of and frequency, duration, and intensity of their jealousy towards a sibling. Parents completed a demographics questionnaire and checklist about the target child's jealousy. Differences between fixed and malleable theorists were found for duration and intensity of jealousy, but not for frequency. Findings suggest that fixed beliefs with regard to relationships are associated with less enduring and intense jealousy than malleable beliefs about relationships.

Implicit Beliefs about Relationships Impact
the Sibling Jealousy Experience

By

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Running Head: IMPLICIT BELIEFS AND SIBLING JEALOUSY

Implicit Beliefs about Relationships Impact the
Sibling Jealousy Experience

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Siblings are of special significance to one's socio-cognitive development for three primary reasons (Dunn, 1983,1988). First, siblings spend a good deal of time together. As younger children, siblings generally spend more time with each other than with their parents (Stocker & Dunn, 1990; Brody, 1998). And as siblings enter middle childhood, they spend an even greater amount of time together compared to the first few years of life, therefore increasing the likelihood of more interaction. Because the quality of the sibling relationship appears stable from middle childhood into adolescence (Dunn, 1996), it is possible that the events occurring during this age span influence the relationship for a rather long time, thus making a significant impact on future behavior.

Second, siblings experience considerable reciprocity by way of the intense pleasure inherent in joint play, mutual empathy, and frequent interchanges of anger and teasing. This reciprocal behavior has been found to impact the child's representation of and approach toward interpersonal situations (Patterson, 1982).

Third, the non-voluntary status of the relationship creates greater intensity during sibling encounters (Dunn, 1983; Stocker & Dunn, 1990). Because the child understands that there is no way to lose the sibling, there may be more willingness to be in conflict. You cannot end a sibling relationship like you can a friendship! Altogether, these characteristics of the sibling relationship make it different from other social relationships and offer a distinct influence on a child's social cognitive development and approach to interpersonal encounters.

In the time they spend together, siblings encounter both positive (playing together) and negative (conflict) situations, but the overall relationships tend not to be

only positive or only negative (Abramovitch, Corter, Pepler, & Stanhope, 1986). Thus, it is important to examine both positive and negative events' influences on the relationship. However, negative events, such as frequent aggression and conflict shown by some siblings seem to be of most concern to parents (Dunn, 1988).

Parents have reason to be concerned about sibling conflict. Studies of children from their second year through middle childhood report associations between frequency and style of aggressive behavior of one sibling with that of the other (Brody, Stoneman, & Burke, 1987; Dunn, 1988; Patterson, 1986). For example, detailed observations within the family indicate that the coercive behavior of one sibling appears to make a substantial contribution to the frequency of others' coercive behavior above and beyond the contribution of parental behavior (Patterson, 1986). Concerning style of behavior, the incidence of teasing, bossing, and physical aggression in conflict by second borns was correlated with behavior of older siblings at an earlier age (Dunn, 1988).

However, sibling conflict can lead to positive outcomes. For example, research demonstrates that children gain a better understanding of another's motives, feelings, and behavior during conflict (Brown & Dunn, 1996; Dunn & Brown, 1994). If a child is able to understand the actions and thoughts of the other person during a conflict, it can impact the way the child feels and acts because he/she acknowledges that there is more than one way to look at the situation. In addition, sibling conflict creates awareness of tension between concern for oneself and for the social relationship. Thus, the child may be aware of how he/she feels and the other person feels as individuals,

along with understanding how conflict can impact the relationship and not just each person separately.

Finally, when siblings face conflict, their argument style with their sibling relates to affective perspective taking, a form of social understanding (Dunn, 1988, 1990; Dunn & Slomkowski, 1992). In this case, not only is the child able to acknowledge that there is another point of view but they also have the ability to see the situation from that point of view.

These studies suggest that a child's interpersonal skills during later conflict are influenced by conflict with the sibling. Moreover, these skills may carry over into adult relationships, according to adults' retrospective reports of conflict management skills learned through sibling interactions (Bank & Kahn, 1982; Bigelow, Tesson, & Lewko, 1996). These reports suggest that the behaviors of children during conflict situations with siblings are likely to impact their behavior in subsequent relationships later in life.

A common cause of sibling conflict that may impact relationships throughout the lifespan is sibling jealousy, characterized in this study as children's competition for attention from the parent. Although childhood jealousy is a normal, perhaps daily experience for children, there are frequent parental concerns about it (Volling, McElwain, & Miller, 2002). On a positive note, if a child is able to understand that the situation involves feeling jealous, instead of another emotion, he/she may adjust their behavior to reflect this ability to differentiate his/her feelings. In essence, sibling jealousy may be a way to develop socio-cognitive abilities.

Jealousy Defined

Jealousy is defined as the loss or threat of loss of valuable attention to a rival. It is a key dimension in the sibling relationship because of its influence on social approaches and behavior (Dunn & Kendrick, 1983). Jealousy is often confused with envy. Envy is the emotion elicited when a person feels that another person possesses something that one desires but lacks, whereas jealousy is elicited when there is concern with the loss of a relationship that one already possesses (Parrott & Smith, 1993).

Both emotions may involve a number of typical, specific affective elements. Envy includes feelings of inferiority and longing toward the envied person. Jealousy includes feelings of fear of loss, anxiety, and suspiciousness and anger about betrayal toward the valued relationship (Hupka, 1984; Mathes, Adams, & Davies, 1985; Parrott & Smith, 1993). In addition, jealousy is thought to include feelings of resentment and ill will toward the rival for having something that is gaining the attention of the valued person (C. Dweck, personal communication, March 13, 2003; Parrott & Smith, 1993). Both feelings carry a variety of affective components, but these components are different and can be separated. Sometimes this separation can be difficult because envy and jealousy often co-occur. For example, when a parent gives attention to the sibling, the child may be both jealous of the sibling for having something that gains attention from the parent and also envious of the sibling for possessing that trait or quality associated with receiving that attention.

Thus, although frequently co-occurring, it is important to recognize that jealousy necessarily occurs in the context of relationships and involves three elements (oneself,

partner, and a rival to whom one fears the attention will be lost), whereas envy only requires two (oneself and a person to whom one compares poorly). Although jealousy is often accompanied by envy, they are still distinct emotions (Parrott, 1991).

Jealousy is also confused with rivalry. However, rivalry is an instance of competition with a rival, and involves only two elements, the person and the rival (Stearns, 1989). Jealousy involves the person, the rival, and the valued attention of a third element, which can be a person or an object (Dunn & Kendrick, 1983; Miller, Volling, & McElwain, 2000; Parrott & Smith, 1996; Tov-Ruach, 1980). Because of the complex triangular relationship in jealousy, the primary focus shifts from the rival to the object of value, which is defined as the attention from the parent. Thus, it is likely that jealousy will elicit different reactions and outcomes than rivalry. Acknowledging these differences between jealousy, envy, and rivalry has fostered a relatively recent growth of literature concerning sibling jealousy and its role in sibling conflict.

Research on Sibling Relationships

Much of the previous work in sibling dyadic interaction has focused on family constellation variables such as age interval, birth order, and sex (mixed-sex and same-sex siblings). The findings from studies in these areas are mixed. The next section introduces a small portion of the extensive literature in this area, so as to give an overview of the common findings.

One correlate, age interval, initially appeared to affect levels of cooperative and imitative behavior between siblings in that siblings who were relatively close in age (three years or less between birthdates) were more imitative than children who had a larger age interval (Cicirelli, 1973). However, age interval did not have a significant

effect on initiations and responses of prosocial and agonistic behaviors during two one-hour observations at home (Abramovitch, Corter, & Pepler, 1980). A follow-up study again found no effect of age interval (Abramovitch et al., 1986). In general, it appears that age interval has no impact on quality of sibling interaction.

Regarding birth order, younger siblings imitated their older siblings' dominance, rather than vice versa, which suggests some influence on sibling interaction (Abramovitch et al., 1986). In other studies looking at emotional and social development, however, birth order played a minor role (Brody, Stoneman, MacKinnon, & MacKinnon, 1985; Dunn, 1983, 1988), and rarely showed a considerable impact on sibling interaction.

And regarding sex, some suggest that same-sex siblings report a higher degree of childhood companionship than siblings of the other sex (Furman & Buhrmester, 1985; Dunn, 1988, 1990). For example, one study found that older sisters were more intimate and affectionate with younger sisters than were older brothers (Buhrmester, 1992). However, several other studies found no effect of sex on interactions between siblings (Abramovitch et al., 1980, 1986; Brody et al., 1985).

Despite their popularity due to simplicity and convenience, constellation models have been the target of several criticisms. First, an extensive review of the literature suggests that neither age interval, birth order, nor sex of the child influence an individual's interests, style of thinking, or self-esteem as an adult (Dunn, 1988). In addition, the field is lacking a theory to interpret the "sibling constellations" research. Finally, structure variables such as age interval and birth order are static, and therefore

do not allow us to attempt studying how *changes* can influence development. Overall, they make little contribution to a child's socio-cognitive *development* (Dunn, 1983).

A more developmental analysis of family influence on social relationships is attachment theory. Attachment theory suggests that the internal representation of relationships from early attachment figures will influence subsequent relationships, such as those with siblings and friends (Ainsworth, Blehar, Waters, & Wall, 1978).

Evidence suggests that sibling dyads in which both siblings are securely attached to their mother are most likely to develop non-antagonistic relationships, whereas those in which both are insecurely attached appear less likely to do so (Teti & Ablard, 1989). This finding supports the prediction that insecurely attached children will re-enact aspects of the non-nurturant caregiver role in their interaction with each other. Another study found that positive parenting and positive sibling relationships were associated and were reported as compatible with predictions of attachment theory (Boer, 1990).

However, a majority of the findings on sibling behaviors did not show associations to attachment status (Dunn & McGuire, 1992). In fact, 36% of sibling dyads in Teti & Ablard's (1989) study differed in attachment status. This difference is interesting because attachment theory predicts that a mother's behavior to her children is influenced by her own childhood experiences. Thus, one should expect consistency in her own maternal behavior with her children and therefore, uniformity in their security of attachment (Dunn & McGuire, 1992). Attachment status as an explanation of sibling relationships has been rather unsatisfactory, and the findings suggest the need for further work in this area.

Another explanatory framework regarding sibling relationships is social learning theory (Bandura, 1977), which suggests that children learn particular behaviors in their family that generalize to interactions with others. Studies have found that when siblings frequently play games together, the elder child frequently helps the younger sibling and they often imitate each other (Dunn & Kendrick, 1983).

In a longitudinal analysis of sibling relationships, role asymmetry between older and younger siblings emerged, which suggests that sibling relationship quality is likely to have greater influence on the younger sibling of the dyad than the older sibling (Dunn, 1983, 1988; McCoy, Brody, & Stoneman, 1994). In addition, children's observation of supportive communications between family members also helps them learn how to listen to their sibling, empathize with siblings' distress, and engage in cooperative efforts to resolve disputes (Dubow & Tisak, 1989).

Social learning is a useful theory, but an understanding of how the child interprets and represents the event may be important in understanding when and why a child models behavior, and what its underlying meaning is for the child. For example, many children may model jealous behaviors but how do they learn to interpret an event as evoking jealousy? What is the internal representation of the situation? In an effort to discover the answers to these questions, the present study employs a social cognitive approach in explaining the process of jealousy within the sibling relationship.

A social cognitive perspective views cognitive processes as regulators of social learning. The framework promotes a triadic relationship between the person, the environment, and behavior such that an individual is able to use cognitive representation to regulate the reciprocal interactions between their thoughts, the

environment, and their behavior (Goldhaber, 1996). Thus, the way a child perceives a jealous environment is likely to impact the regulation of behavior. Furthermore, predicting the child's behavioral style in specific conflict situations may help explain the factors that can lead to better understanding of the quality of the overall social relationship, such as the sibling relationship.

How the child represents social situations is evident in their implicit theories, or beliefs, about jealousy situations. An implicit theory about a situation predicts behavior in that situation, and the behavior then leads to an outcome. This outcome will affect the child's representation of the overall relationship. In essence, the ability to understand the way a child will react in a negative situation can offer a better picture of why children are reporting high or low ratings for the quality of the relationship.

The importance of social cognitive influences was well demonstrated in a sibling jealousy study that examined the characteristics of the parents, the quality of the relationship within the triangle (child, sibling, parent) and external features of the social environment (Volling et al., 2002). The researchers coded children's behavior in a validated jealousy-inducing paradigm, and found that older siblings' cognitive understanding of emotion, not their temperament or sex, was a significant predictor of the older siblings' affect (emotion) with others.

In addition, there is evidence that differences in the behavior of older siblings are associated with differences in the socio-cognitive abilities of later-born siblings. For example, associations have been reported between older siblings' behavioral style and younger siblings' affective perspective taking and social reasoning skills (Dunn, 1988). In situations where these skills are important, it might be helpful to know the impact of

previous sibling interpersonal situations, such as conflict. Furthermore, the discovery of more than one reason for conflict (Stearns, 1989) suggests that each component of conflict, including jealousy, may have differing influences on the development of social reasoning skills.

Aim 1: What makes children jealous?

Previous research on jealousy between siblings lacks two vital components: a descriptive analysis of sibling jealousy and an explanation of the processes that occur. Thus, one objective of the proposed research was to understand specific scenarios that evoke jealousy for children in middle childhood. It is important to gather information on the perceptions that children have about sibling jealousy, and to understand what specifically activates jealousy. The present study was designed to collect children's reports of a jealousy experience with their siblings, and measures of frequency, duration, intensity, and reactions to their jealousy of siblings.

Pilot data of children aged six to 10 ($n = 15$) support the premise that children feel the threat of loss of relationship with the parent when attention is given to the sibling. Children reported three kinds of reasons for attention being given to the sibling: (1) the sibling has a talent or trait that the target child is lacking, (2) the sibling did not do something that the target child did and the parent praised the sibling, and (3) the sibling did do something that the target child did not do and the parent praised the sibling. Thus, an assumption of the present study was that the target child perceives that the quality of relationship with their parent is contingent upon the ability to gain attention from the parent and not allow the sibling to take or threaten to take the

parental attention. The data collected will allow for a more detailed examination of children's reasons for feeling jealous.

The middle childhood age group was chosen based on evidence that age 10 is when the implicit theory and goals and motivation for a child become more coherent (Dweck & Leggett, 1988; Erdley & Dweck, 1993). Also, eight-year olds appear to be able to use standard measures of time and have accurate time perception approaching that of adults in accuracy (Huang & Zhang, 1979). And children begin to judge the time of an event relative to other events accurately about age nine (Friedman, Gardner, & Zubin, 1995). Thus, ages 10-12 are developmentally appropriate ages to ask children about the timing of events, including the frequency and duration of jealousy.

Aim 2: Implicit Beliefs and Jealousy

The second goal of the proposed research was to determine whether different kinds of beliefs about relationships are associated with differential frequencies, intensities, and durations of jealousy. Thus, this study also seeks to provide an explanation of the process of sibling jealousy, focusing on children's implicit beliefs as predictors of siblings' reactions in jealousy situations. From a social cognitive standpoint, a child's beliefs will predict his/her behavioral and feeling reactions. These reactions will then support or contradict the child's implicit beliefs about relationships.

A child's implicit theory about their relationship with the parent and his/her relationship with the sibling are predicted to be important factors in how the child will react to sibling jealousy. There are two types of implicit theories: entity and incremental. Entity theory about relationships consists of thoughts that there is nothing that can be done to change relationships, and leads to helpless behaviors, for example

the child may withdraw from the situation. An incremental theory consists of thoughts that there is something that can be done to change relationships, and leads to behaviors of increasing effort to create that change. These theories are adapted from Carol Dweck and colleagues' work in implicit beliefs about intelligence, moral beliefs, and personality (e.g., Dweck & Leggett, 1988; Erdley & Dweck, 1993; Erdley et al., 1997; Hong, 1994).

Do implicit theories matter? A growing set of studies suggests they play an important role for intelligence (Dweck & Leggett, 1988; Erdley, Cain, Loomis, Dumas-Hines, Dweck, 1997; Henderson & Dweck, 1990; Hong, Chiu, & Dweck, 1995) and, as described below, for interpersonal relations (e.g., Erdley & Dweck, 1993; Erdley et al., 1997; Hong, 1994).

There are fewer studies relating implicit theories to intra- and interpersonal goals, but these are also suggestive of the importance of implicit beliefs. A study examining children's implicit beliefs about personality in relation to their responses to social challenge (rejection of a pen-pal tryout) found that those who believed personality was fixed were more likely to endorse performance goals (stressing the evaluative nature of the tryout), whereas children with malleable beliefs about personality tended to focus on learning goals (stressing the potential learning opportunities). Furthermore, children endorsing performance goals were more likely to react with helplessness when faced with social rejection after the tryout. Incremental theorists were more likely to react with mastery-oriented responses, such as increasing social efforts and not blaming the failure on their own inadequacies (Erdley et al., 1997).

Another study involved presenting children with a narrated slide show portraying a new boy in school. In trying to make a good impression, the boy committed a number of transgressions, like trying to copy the neighbor's work. In this slide show, the boy's motives and psychological states were made very clear, as was the fact that his action really never harmed anyone. For global traits, entity theorists viewed the boy far more negatively than did incremental theorists, whereas for specific traits, incremental theorists were just as negative and extreme as entity theorists. Thus, it is not the case that incremental theorists view negative behavior in a positive light, but rather that incremental theorists remain more anchored to the specific behaviors they observe and less anchored to more global conclusions about the person (Erdley & Dweck, 1993). This offers further evidence that incrementalists have a more malleable assessment of the domain of interest.

And finally, participants read about a jealous student who tried to sabotage a classmate's chemistry work by mixing the wrong chemicals together. They also read about a student who accidentally mixed the wrong chemical, putting his classmate's work in jeopardy. After each scenario, the participants generated personality adjectives that described the person in the story, and rated the person on trait dimensions, such as 'kind-cruel', and 'responsible-irresponsible'. Results indicated that when the person performing that act had a negative intention, entity theorists generated more negative character traits than did incrementalists. When the person accidentally mixed the wrong chemicals, the entity theorists ascribed more positive traits to the person having a positive intention. Thus, in both conditions, the entity

theorists rated the person more extremely (intensely) on the trait scales than did incremental theorists.

Even knowing the intentions of the actions, the actions were still seen as indicative of 'badness' or 'goodness' of the person's traits for entity theorists. When the actions were unintentional, the significant differences remained between entity and incremental theorists in their tendency to make trait inferences. Those holding an entity perspective asserted that someone who creates the potential for harm on purpose is cruel, but someone who does it unintentionally is irresponsible. Providing more information about situational pressures or psychological states does not seem to eliminate the differences between the two types of theorists.

The child's loss of parental attention to the sibling may activate an incremental or entity implicit theory about relationships, which elicits a chain of events beginning with thoughts and feelings and ending with the child's reaction to the situation. The implicit theory the child holds about the parent-child relationship represents the beginning of a cascade of attributions, behaviors, and confirmations in the child's mind concerning sibling jealousy. These findings suggest two main questions: What do our implicit beliefs lead us to perceive in a situation concerning the attention of the parent, and what do they lead us to think, feel, and do once we have defined an event as a jealousy situation?

Figure 1 illustrates how implicit theories about the parent-child relationship are likely to impact various aspects of jealousy throughout the experience. First, the implicit beliefs are likely to influence whether or not the child perceives the relationship as being threatened. It is recognized that many factors may impact the interpretation of an

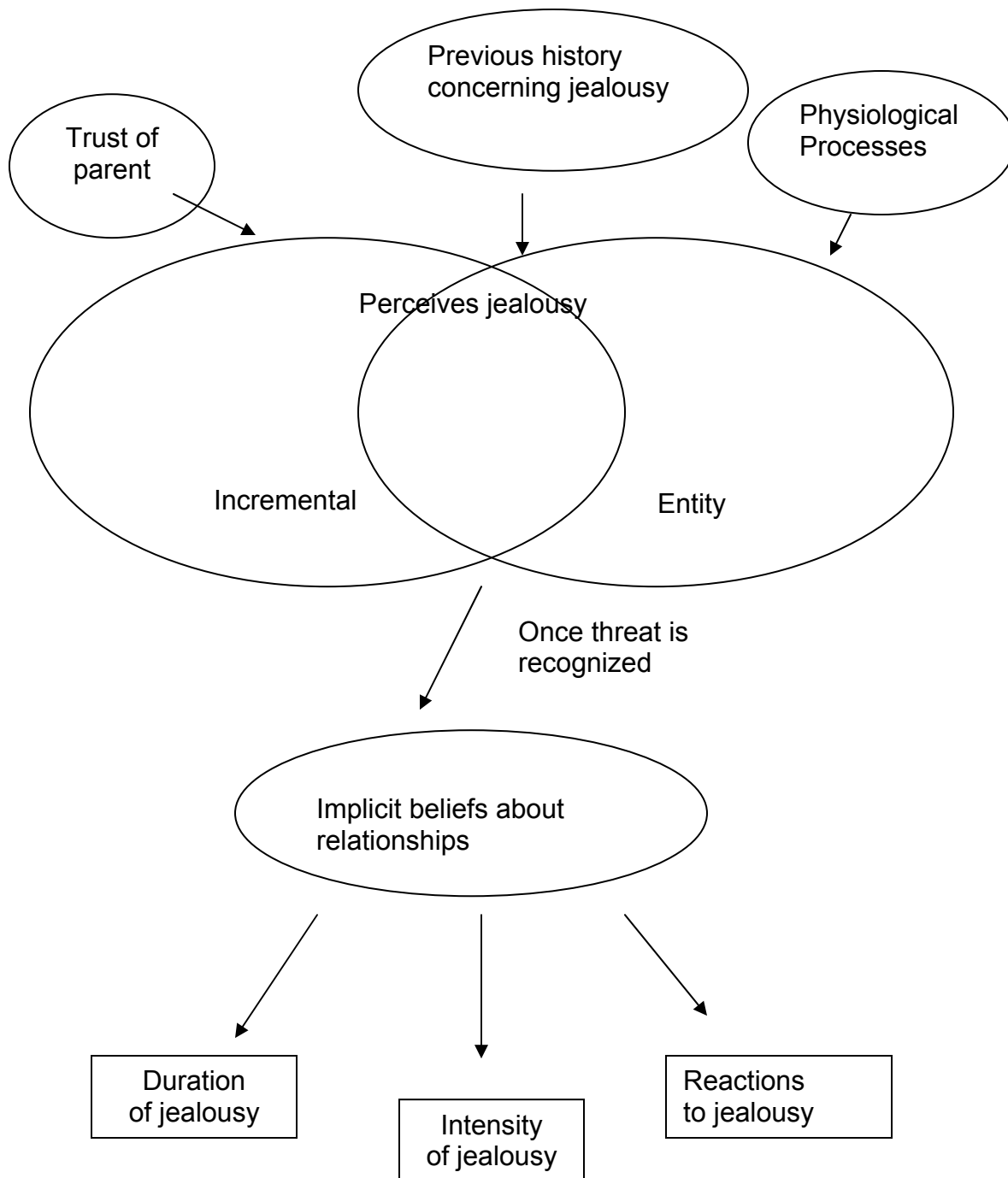
event as threatening to the relationship with the parent, for example, trust of the sibling, global relationship with the mother, physiological state, previous history of jealousy situations, etc. However, a child who sees the relationship as malleable is less apt to perceive the situation as threatening compared to a child who sees the relationship as fixed.

The assumption of the implicit personality measure is that children who see relationships with their parent and/or sibling as fixed are likely to think that, no matter what they try to do, there is nothing that can change their relationship. On the other hand, children who see the relationship with their parent and/or sibling as malleable are likely to think that they can do something to adjust their relationship and gain the parent's attention. For the present study, the child's implicit beliefs about relationships (independent variables) were indicators of the child's beliefs about the ability to change the event when there is a challenge for attention from the parent.

Hypotheses

If a child with a malleable theory about the parent-child relationship notices his/her sibling is getting praised for winning a softball game, then he/she may not see it as a threatening situation because he/she believes that it is possible to also gain attention from the parent. However, if a child with an entity theory notices that the sibling is getting praised then he/she might feel threatened because of the belief that things cannot change to gain his/her parent's attention.

Figure 1. *How Implicit Beliefs Impact the Sibling Jealousy Experience*



Thus, the interpretation of a situation as evoking jealousy may in itself be influenced by implicit theories. My first hypothesis was that children with malleable beliefs about relationships will be jealous less often than children with fixed beliefs about relationships.

Second, I predicted that because incremental theorists attempt mastery-oriented approaches, these children will understand that their relationship with their parent is malleable and will attribute their jealousy to something that they are missing now, but may eventually attain. Because they believe in the ability to change their actions to obtain attention from the parent, incrementalists are more likely to focus on self-improvement, or acceptance of self (because there is ability to change, if needed), and moving ahead to effect change compared to entity theorists. Thus, incrementalists were predicted to have a shorter duration of jealousy than entity theorists.

Third, I hypothesized that children with an incremental theory would have milder jealousy than children with an entity theory about relationships. Previous research, when examining implicit beliefs and how they influence trait ratings, found that entity theorists consistently had more extreme ratings than incremental theorists in both children and adults (Dweck, 1996; Dweck, Hong, & Chiu, 1993; Erdley et al., 1997). Because ratings for entity theorists tend to be more extreme, I predicted that intensity ratings would be higher for fixed theorists than incremental theorists. If entity theorists are more extreme in rating a trait characteristic, then it seems likely that they will extend those extreme ratings to other characteristics, such as emotion ratings. In addition, the sibling relationship's non-voluntary status creates greater intensity of emotion because there is no way to get out of the relationship, and it is seen as a fixed

situation. Children who believe that relationships are fixed are likely to experience more intensity for the same reason, in that the attention that the parent gives the sibling (due to any reason) is fixed and there is no way to change the situation.

The above hypotheses are all about the implicit beliefs about relationships. However, it could be that a child's implicit beliefs about the situation matter, thus hypotheses four through six referring to implicit beliefs about the situation paralleled the above hypotheses one through three for implicit beliefs about relationships.

The fourth hypothesis is that children with malleable beliefs about situations will be jealous less often than children with fixed beliefs about relationships. The fifth hypothesis is that children with an incremental perspective about situations would have less enduring jealousy than entity theorists. And, the sixth hypothesis is that children with an incremental theory would have milder intensity ratings for jealousy than children with an entity theory about situations.

In addition, children's value for their relationship with their parent may also influence children's jealousy, particularly regarding how independent from the parent they would like to be. Specifically, those children who value independence from their parent may not have the same jealousy experience as children who do not value independence. Because jealousy is characterized by desiring the parent's attention, children who value independence from the parent may not necessarily become jealous if a sibling has the parent's attention. Thus, I hypothesized that a child's implicit beliefs about relationships will not impact jealousy frequency, duration, or intensity if the child values independence from their parent.

Finally, according to the implicit beliefs theory, there are certain reactions that correspond with the thoughts and feelings of entity and incremental theorists. Once the child perceives the situation to be threatening, the implicit beliefs will elicit certain reactions. I predicted that because entity theorists will think that their relationships with their parent is fixed, they will react with more social withdrawal/helpless behaviors and resentment/bitter feelings to negative social situations, such as sibling jealousy compared to incremental theorists. This prediction is based on the idea that jealousy may include feelings of resentment toward the sibling rival for having something that is gaining the attention of the valued person (C. Dweck, personal communication, March 13, 2003). On the other hand, incremental theorists compared to entity theorists will react with behaviors to effect change (e.g., “I will just try harder”) and lesser feelings of bitterness/resentment (e.g., “I would feel okay”) because they believe that change can occur.

Method Overview

Three measures were utilized to test these hypotheses. One measure, called “Ideas about Relationships” (adapted from Erdley & Dweck, 1993 questionnaire “Implicit Beliefs about Personality”), assessed the child’s implicit beliefs about relationships with a parent, and was used to assess implicit beliefs and how they impact feelings, behavior, and perceptions of outcome in negative situations. This measure consists of three questions about whether one can or cannot change their relationship with one’s parent. A median split was used to identify children as either incremental theorists or entity theorists.

The second measure, called the SJI (Sibling Jealousy Interview, Halberstadt & Thompson, 2003), is an interviewing tool used to measure the dependent variables of frequency, duration, and intensity of sibling jealousy as well as childrens' reactions and perception of the outcome following a jealousy incident.

To investigate situations that are relevant to sibling jealousy, it is important to understand jealousy and how it differs from rivalry and envy. This becomes difficult because previous research suggests that "although envy may occur without jealousy, jealousy often is accompanied by envy" (Parrott & Smith, 1993). Situations that evoke jealousy also seem to evoke envy, at least to some degree. It may be impossible to describe a case of jealousy in which at least the possibility of envy is not present. To reduce obtaining situations that are primarily focused on envy, however, a definition of jealousy was presented during the interview that clearly noted the important factor of the loss of attention of the parent to the sibling to distinguish it from merely wanting something that the sibling possesses.

In addition, reports of frequency, duration, and intensity allow comparison of entity and incremental theorists' tendencies to perceive threat and experiences of jealousy. It may be that certain situations elicit high intensity (i.e. sibling going on a trip with a parent) across a large number of siblings, whereas other situations (i.e. sibling getting ice cream first) tend to be less intense. Thus, the SJI obtained descriptive data (i.e., frequency, duration, and intensity) for sibling jealousy, in addition to verifying the behavioral and feeling reactions as predicted by the child's belief system as indicated in the Ideas about Relationships measure. As suggested by Dweck and colleagues, an entity belief system might result in helpless behavior and feelings of resentment,

whereas an incremental belief system might result in making efforts to change and feelings of admiration. In addition, a question referring to one's ability to change the *situation* was asked as another way to assess implicit beliefs and their impact on sibling jealousy experiences.

Finally, a third measure, the Parent Checklist, was given to the parent to complete. The checklist allowed independent verification of the child's responses to jealousy and was intended to accomplish two main goals: The first goal was to validate the SJI reports of frequency, intensity, behavioral reaction, and emotional reaction, and to provide evidence for the predictions of implicit beliefs with parents' reports in relation to the child's beliefs about relationships. The checklist was also used to obtain the parent's perception of the jealousy experience for the child. Specifically, the parent will report the frequency of jealousy overall, in addition to the intensity of and reactions for a specific recalled sibling jealousy encounter.

Method

Participants

Participants were 63 (40 females, 23 males) 10-12 year old children (mean age = 11 years, 9 months) and one of their parents ($n = 53$ mothers, 2 fathers). The children were sixth-grade students at a public middle school in the southeastern region of the U.S. Participants reported their ethnicity as: African- American, 34%; European- American, 40%; Hispanic -American, 11%; Native-American, 2%; and 13% were of another ethnicity, or reported more than one ethnicity. Parents attended college an average of 1.26 years, and had a mean age of 31.86. Most parents of participants were married ($n = 31$) and reported their religion to be Protestant ($n = 39$).

Parents and their children were recruited to participate in a study on sibling relationships as part of a collaboration between a local middle school and researchers at North Carolina State University. The study was part of a learning experience about psychology for 6th graders. The learning experience was titled “Science Day” and was proposed by the author to the school as a way to give students an opportunity to learn about different areas of psychology, to allow the students to get a first- hand view of the process of research by being participants, and by following the aggregate data they produced from collection to analysis to interpretation.¹

Measures

Sibling Jealousy Interview

The SJI (Appendix A) is an interview measure that asks children to report the frequency, duration, and intensity of their jealousy, and their reactions to a jealousy situation. Although jealousy is likely to occur in many different contexts, the family context is of interest to the current study, and thus, jealousy will be defined in regard to parental attention (not friend attention or teacher attention). First, children were asked how frequently they experienced jealousy regarding their parent. They reported jealousy frequency on a 7-point Likert- type scale, from 1 (very rarely) to 7 (quite a lot). Then they reported how often they felt jealous of their sibling, in terms of days, weeks, or months. Next, they were asked to close their eyes and think back to a specific jealousy situation. With regard to this event, the child was asked to report the duration and intensity of their jealousy.

Duration was assessed with a 7-point Likert -type scale, from 1 (a really short time) to 7 (a really long time), and an open- ended question asking, “ How long did you

stay jealous of your sibling, in minutes, hours, or days?” Then, the children identified the intensity of jealousy during that specific event on a 7- point Likert-type scale, ranging from 1 (very mild) to 7 (very strong).

The child was then asked to report their reaction, in terms of behavior and feelings to the situation (Appendices B and C). In addition, two questions provided yes or no responses to questions concerning (a) the child’s perception of competence to change the situation (another indicator of implicit beliefs) and (b) the value of parental attention (because children on the cusp of adolescence may begin to value autonomy more so than parental attention).

Ideas about Personality Questionnaire

A six-item Implicit Beliefs Questionnaire (Erdley & Dweck, 1993) adapted and used in the pilot study was reduced to three items for the current study (Appendix D). The three items used were those that pertained to others’ personality; no items pertained to one’s own personality. Because jealousy involves more than just the participant, beliefs about others’ personality were deemed more important than the participant’s view of his/her own personality. Additionally, this questionnaire was administered for design equivalency for the current study and will not be discussed in this paper.

Ideas about Relationships Questionnaire

The three-item Implicit Beliefs Questionnaire (Erdley & Dweck, 1993; see Appendix E), was adapted into a six-item “Ideas about Relationships Questionnaire” to assess children’s implicit theories about their perceptions on the malleability of family relationships.

The first three questions assessed the child's beliefs about their relationship with their parent: "My relationship with my parent is something that I cannot really change", "Family relationships tend to stay the way they are no matter what people do", and "My actions don't have any effect on my relationship with my parents." The second three questions assessed the child's beliefs about their relationship with their sibling: "My relationship with my brother/sister (name) is something that I cannot really change," "Brother/sister relationships tend to stay the same no matter what people do," and "My actions don't have any effect on my relationship with my sibling." Thus, there were three independent variable groupings created from this questionnaire: Implicit Beliefs about Relationships with the Parent, Implicit Beliefs about Relationships with the Sibling, and a Combined Domain (includes all six items). Items were always administered in the same order.

Each child was asked to show their degree of agreement or disagreement with each item on a 6-point Likert-type scale ranging from 1 (strongly agree) to 6 (strongly disagree). Children who believe that relationships are fixed (entity theorists) should consistently endorse responses at the lower (agree) end of the scale (yielding a score in the lower half of the range of scores), whereas children who believe that the relationships are malleable (incremental theorists) should consistently endorse responses at the higher (disagree) end of the scale (yielding a score in the upper half of the range of scores).

Parent Checklist

The parent checklist (Appendix F) was completed by the parent at home and returned with the 6th grade student in a signed and sealed envelope in order to

maintain confidentiality. The checklist assessed the frequency and intensity of the child's jealousy, and the reaction of the child in a recalled jealousy event. First, parents were asked to report how often their child experienced jealousy toward a sibling on a 7-point Likert-type scale from 1 (very rarely) to 7 (quite a lot). Parents then answered an open-ended question, "About how often do you notice that your child is acting jealous of his/her sibling?" The answer was to be reported in days, weeks, or months. Next, the parent was asked to think back to a specific time when they were aware that the target child was jealous of their sibling. The parent reported the intensity for that incident on a 7-point Likert-type scale, from 1 (not at all strong) to 7 (really strong). There was also a question regarding the reactions of the child, "What was your child's reaction to the jealousy event?" The parent was asked to indicate on a checklist all behavioral and feeling reactions that were displayed in their child's behavior in the recalled jealousy situation. The reaction choices in the checklist were compiled from pilot data ($n = 15$). The reaction(s) question also allowed space for the parent to contribute any other reactions that were not on the list.

Demographics

Parents were also asked to complete a Demographics Questionnaire (Appendix G). Information requested included: mother's age, years of college, ethnicity, religion, marital status, area of the country they were born in, and ages of each of their children.

Procedure

Permission to organize a two-class module entitled "Science Day" was granted from the school's Director of Instruction, and was scheduled for six separate classes (three classes per day). 138 pre-made packets containing two informed consent forms,

a flyer about the Science Day, a Demographics questionnaire, the Parent Checklist, and an envelope with an ID number on it were sent home with students one week before the scheduled Science Day. Students were asked to have their parents look over the packet and return the forms to the school in a sealed and signed envelope (via the student) within a week. Only those students with siblings were asked to take a packet home.

A total of 69 packets was returned (50%). Five families refused to participate, and one child was not present in class during the data collection session of Science Day. Thus, 63 participants were interviewed.

The interviews took place during the first session of a two-class module Science Day. During a regular 70-min. class, the students were divided into two groups and were told that they would spend half of their class time in a “Research Center” and the other half of the class in an “Activity Center.” During their time in the Research Center, children were either interviewed for the current study (if they had a sibling and signed consent) and thus responded to the three questionnaires above, or they participated in other research activities, such as filling out questionnaires on emotion complexity and their perceptions of babies. These activities are not germane to the current research goals and will not be discussed further.

For the interview, children were asked to read and sign the Child Assent (Appendix H). Next, they responded to the Sibling Jealousy Interview and the Implicit Beliefs Questionnaires in a counter-balanced order. The two Implicit Beliefs Questionnaires (Ideas about Personality and Ideas about Relationships) were always

administered together and in counterbalanced order. All interviews were audio-taped and transcribed for analyses.

The Activity Center consisted of different activities to teach children about different areas of psychology. A graduate student conducted a series of activities to introduce the children to areas such as perception, social psychology, and cognitive psychology. For example, each student was handed a paper with five optical illusions on it and were asked to experiment with each one of them. After the children had a few minutes to try them out on their own they were given an explanation of optical illusions. Other activities, such as the Stroop Task were also shown to the class. Both the Research and Activity Centers were approximately 30-minutes long.

At the end of the class, students were brought together and informed that the researchers would be returning to share the process of collecting, coding, analyzing, and interpreting data from the research activities.

Interviewer Training

The 13 interviewers in the present study for the Research Center attended a two-hour training session conducted by the principal investigator for this study. The session began with a brief overview of the study and a discussion of the Interviewing in Behavioral Research Manual created by the author. Interviewers were then divided into groups and asked to role play both the interviewer role and the participant role using both measures, in order to understand the experience of the participant. After each mock interview, the members of each trainee's role-play group gave feedback concerning the individual's strengths and weaknesses as an interviewer during the role-play session. The training was provided to enhance interviewer consistency and

accuracy. The range of interviews completed by each interviewer during the Science Day was two to nine, with a mode of three interviews.

Coding

Regarding the analysis of the reasons for children's jealousy, two independent coders evaluated the children's reported reasons for becoming jealous and developed themes. One coder found five themes and the other found four themes. After discussion it was agreed that one of the five themes was subsumed under one of the four found by the other coder, and the coders concurred to proceed with four themes.

Regarding reactions to jealousy analyses, coding categories were created for behavior and feeling reactions to jealousy situations. The categories were developed using the pilot data ($n = 15$) by graduate students and professors who were familiar with the project. The categories distinguished between the two beliefs systems (entity and incremental) according to the implicit beliefs paradigm. During the half-hour training session for the coders, the coding categories for behaviors and feelings were introduced by the principal investigator of the study. The coders, blind to the child's implicit beliefs ratings and which child belonged to which parent coded pilot data and examples of child and parent reports of behavior reaction and feeling reaction data into two categories. For behavior, helpless/withdrawal (coded as "1" for "typical entity") vs. interactive/trying to effect change (coded "2" for "typical incremental"). For feeling, the categories were strong negative (coded "1" for "typical entity") vs. acceptance or nonnegative responses (coded "2" for "typical incremental") (See Appendices B and C). Coders were instructed to code behaviors and feelings of each child at the same time, rather than code all behavior reactions and then all feeling reaction data. The principal

investigator reviewed the coding and discussed any issues regarding incorrect coding before assigning coders to the current study's data.

Following data collection, the two coders, blind to the child's implicit relationships beliefs and which child belonged to which parent, independently coded all reported responses for child and parent (using Appendices B and C) to open-ended questions concerning behavior reactions on the sibling jealousy interview (SJI) and parent checklist and feeling reactions on the SJI and parent checklist. Cohen's kappa was calculated to measure inter-rater agreement, for feeling reactions, $\kappa = .96$, and for behavior reactions, $\kappa = .87$. Disagreements were resolved by discussion between coders.

Results

Results Overview

First, I present descriptive statistics for the two kinds of measures (Sibling Jealousy Interview and the Implicit Beliefs about Relationships) used in this study. Second, I consider results relating to the descriptive goals of the study in Aim 1 (the reasons for children's jealousy). And third, I examine the relationship between implicit beliefs and jealousy experiences (Aim 2).

Descriptive Statistics involving Jealousy Measures

The Sibling Jealousy Interview was a new measure created specifically for the current study, and so it is useful to evaluate it in terms of measurement issues. Table 1 reports the overall descriptive statistics for childrens' and parents' reports of children's jealousy, including two kinds of measures for frequency and duration. First, frequency and duration were assessed on 7-point Likert-type scale from 1 (very rarely)

to 7 (a lot) and 1 (a really short time) to 7 (a very long time). The average frequency with which children experienced jealousy was reported to be somewhat less often than “sometimes” $M (SD) = 2.69 (1.38)$ on the 7-point Likert scale. The average duration of specific jealousy events that the children reported was of short duration, between “a really short time” and “a little bit of time” $M (SD) = 2.22 (1.32)$, on the 7-point Likert scale.

Second, children answered how frequently they experienced jealousy in days, weeks, or months and for how long in minutes, hours, or days. The open-ended frequency data were transformed into proportion data such that .25 = once per month, 1 = once per week, and 7 = once per day. In addition, duration open-ended data were transformed into proportion data such that .25 = 15 minutes, 1 = one hour, 24 = one day (including sleeping hours) and so on.

However, this technique of assessing frequency and duration yielded highly skewed (4.37, 2.90) and kurtotic (21.40, 8.28) data, respectively. To resolve this problem, I ordered these responses by children’s reported frequency and duration of jealousy experiences to see how the responses naturally clustered together and whether there were natural groups and boundaries. The way I did this was simply to look at my data all lined up so that I could identify where gaps emerged. For example, in the frequency category I noticed that .08 is equivalent to once every few months, whereas .13 is one every other month indicating a relatively significant shift. Thus, .08 is part of category 1 and .13 starts the second category. Furthermore, the shift from category five to six is three times a month (.75) to once a week (1), which I also considered to be a relatively significant change in frequency and thus created another

category. Some items could have gone into either group; I just picked arbitrarily regarding the items “on the fence.”

I found seven categories for frequency (see Appendix I) and six categories for duration (see Appendix J). Thus, the categorized data for frequency yielded a range from 1 (once a year and twice a year) to 7 (at least once a day), $M (SD) = 2.58 (.58)$. For duration, the data yielded a range from 1 (one to six minutes) to 6 (five days to at least one day), $M (SD) = 3.53 (1.36)$. These scales fell within an acceptable range (less than 1) of skewness and kurtosis.

Pearson correlations between the Likert scale and the categorized open-ended data were $r (61) = .46, p < .01$ for frequency, and $r (61) = .10, p = .43$ for duration, suggesting a significant relationship across the two methods of assessing jealousy frequency, but little agreement across the two methods of assessing jealousy duration. Also, $r (61) = -.05, p = .67$ for open-ended responses to frequency and duration, suggesting little relationship between the two variables.

Intensity of jealousy was also measured, but only with a Likert-type scale ranging from 1 (not at all strong) to 7 (very strong). The average intensity of the specific event was reported to be “a little bit,” $M (SD) = 3.09 (1.32)$. The Likert scales of frequency, duration, and intensity were moderately correlated; $r_s (61)$ for frequency with duration and with intensity, = .40 and .39, $p < .01$, respectively; for duration and intensity, $r (61) = .58, p < .01$.

Parent’s Report about Child’s Jealousy

In order to increase parental participation, I only asked for two measures (frequency and intensity) of their child’s jealousy. First, frequency was assessed on 7-

point Likert-type scale from 1 (very rarely) to 7 (a lot). The average frequency with which children experienced jealousy was reported by the parents ($n = 53$) to be “sometimes” $M (SD) = 3.18 (1.90)$. Second, parents answered how frequently their child experienced jealousy in days, weeks, or months.

Table 1

Descriptive Statistics for Sibling Jealousy

| Dependent Variable | <i>M</i> | <i>SD</i> | Skewness | Kurtosis |
|---------------------------|----------|-----------|----------|----------|
| Child self-report | | | | |
| Frequency Scale | 2.69 | 1.38 | 1.03 | 1.59 |
| Duration Scale | 2.22 | 1.32 | 1.77 | 1.19 |
| Intensity Scale | 3.09 | 1.32 | 1.75 | .05 |
| Frequency Categorized | 2.58 | .58 | -1.15 | .39 |
| Duration Categorized | 1.83 | .78 | .63 | 1.29 |
| Parent report about child | | | | |
| Frequency Scale | 3.18 | 1.90 | 3.60 | .43 |
| Frequency Categorized | 2.08 | .82 | -.15 | .16 |
| Intensity Scale | 2.97 | 1.91 | 3.68 | .33 |

Note. Likert scales are from 1 (low) to 7 (high). Reports of absolute amount of time (minutes, days, etc) were recoded into “natural” categories, based on how the data were ordered. For frequency categorized, seven categories emerged, thus the range is 1 to 7. For duration categorized, six categories emerged, thus the range is 1 to 6. For Parent Frequency categorized four categories emerged, thus the range is 1 to 4. E = Entity theorists and I = Incremental theorists.

The open-ended data were transformed into proportions so that .25 = once per month, 1 = once per week, 7 = daily, and so on. Again, this technique yielded skewed (1.80) and kurtotic (2.12) data. To resolve this problem, I again ordered these frequency responses to see how they naturally clustered together and whether there were natural groups and boundaries. Four categories emerged. Thus, the categorized data for parent's report of children's frequency yielded a range from 1 (never) to 4 (daily), $M (SD) = 1.93 (1.03)$. These data fell within an acceptable range of skewness and kurtosis (less than 1).

Intensity of jealousy was also reported by parents, but only with a 7-point Likert-type scale 1 (not at all strong) to 7 (very strong) for intensity. The average intensity of the specific event was reported to be "a little bit" $M (SD) = 2.97 (1.86)$. These scales fell within an acceptable range of skewness and kurtosis, and parents used the full range of the scale.

Regarding agreement between parent and child reports, for the Likert scales, parents ($n = 53$) and children agreed about jealousy frequency, $r (51) = .44, p < .001$, but not about intensity of the experience, $r (51) = .21, p = .13$ (A duration correlation was not calculated because parents were not asked to report duration).

Descriptive Statistics Involving Measures of Implicit Theories

Implicit Beliefs about Relationship with Parents

The three items of the Ideas about Relationships Questionnaire that pertain to the child's relationships with parents were added together to create a composite score for implicit beliefs about relationships with parents ($M = 9.36, SD = 4.25$, and $Mdn = 9.00$). Children used the full range of the scale (range = 3.00 to 18.00). A slight

bimodal trend emerged, suggesting that Carol Dweck (Dweck et al., 1993) may be right that children tend toward having either fixed or malleable beliefs rather than varying in their beliefs in a traditional bell-shaped distribution (see Figure 2).

A median split was used to classify children as entity or incremental theorists. Children with summed scores over the three items lower than the median were coded as “1” for entity theorists ($n = 30$), whereas those with summed scores at or above the median were coded as “2” for incremental theorists ($n = 33$). An independent samples t -test verified that children classified as entity theorists using the median split had significantly lower scores than incremental theorists on the implicit beliefs about relationships with parents items, $t(61) = -11.20$, $p < .001$.

Implicit Beliefs about Relationships with Siblings

The same procedure explained above was used for classification of children regarding their implicit beliefs about relationships with siblings. The three items that pertain to the child's relationships with siblings were added together to create a composite score for implicit beliefs about relationships with siblings ($M = 9.13$, $SD = 4.08$, and $Mdn = 9.00$). Again, the full range was used by the children (range = 3 to 18) and a histogram revealed a multi-modal trend for this domain, again suggesting that children tend toward having either fixed or malleable beliefs (see Figure 3)

Because the median was the same for the sibling domain as the parent domain, children with composite scores lower than or equal to 8.00 were classified as “entity”

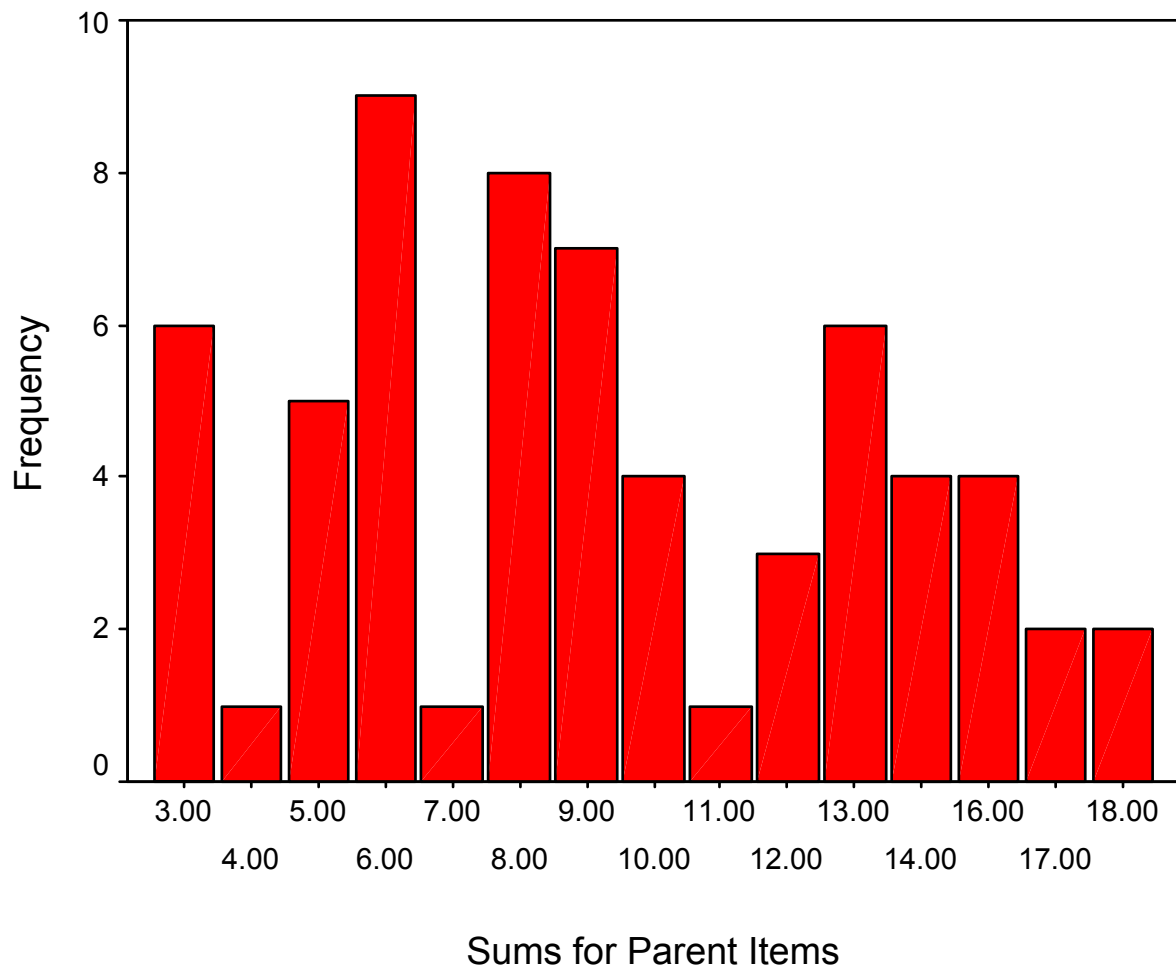


Figure 2. Frequency Distribution for Implicit Beliefs about Relationship with Parents Items

and coded as “1”, whereas children with composite scores higher than or equal to 9.00 were classified as “incremental” and coded as “2”, just as with the parent domain. An independent samples *t*-test verified that children classified as entity theorists had lower scores than incremental theorists on the implicit beliefs about relationships with siblings items, $t(61) = -10.97, p < .001$.

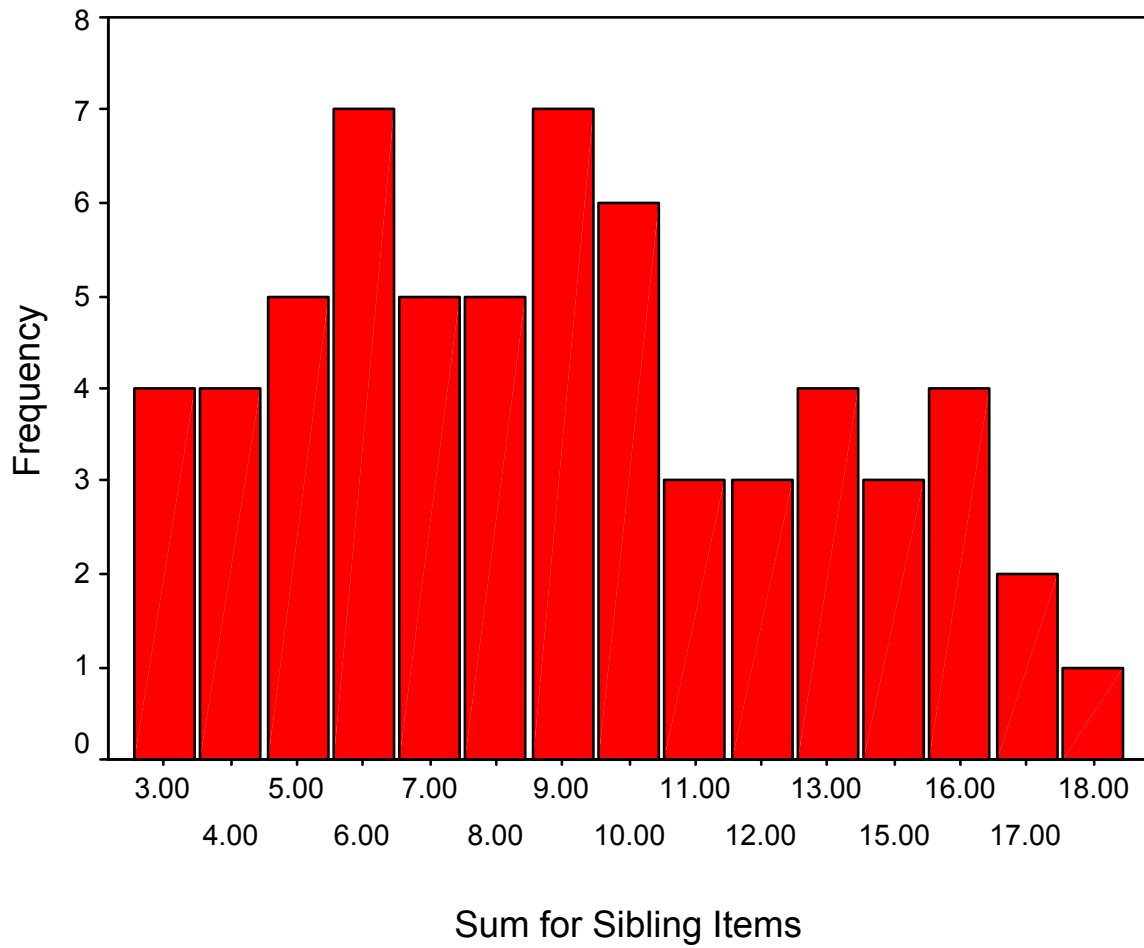


Figure 3. Frequency Distribution for Implicit Beliefs about Relationship with Siblings Items

Implicit Beliefs about Relationships-Combined

The three items about parents and the three items about siblings were summed together to create a more stable score for overall beliefs about relationships, range = 6 to 36, $M = 18.49$, $SD = 7.39$ and $Mdn = 17.00$. Children with composite scores lower than or equal to 16.00 were classified as “entity” and recoded as “1” ($n = 28$), whereas children with composite scores higher than or equal to 17.00 were classified as “incremental” and recoded as “2” ($n = 27$) (see Figure 4). An independent samples t -test verified significant differences between entity and incremental theorists scores on the combined relationships items, $t(61) = -11.14$, $p < .001$. Table 2 reports descriptive statistics for each domain of implicit beliefs about relationships. Means and standard deviations refer to the summed scores for each domain.

Comparison of Domains

Implicit beliefs measures were considered to be dichotomous, because once an individual indicates agreement with a particular theory, the degree of agreement does not provide additional information (see Dweck & Leggett, 1988). A series of chi-square tests of independence were computed to determine if children tended to hold similar or independent beliefs across the three relationship domains. Children’s implicit beliefs about parents (coded as 1 = entity and 2 = incremental according to composite scores) were related to their implicit beliefs about siblings, $X^2 = 11.50$, $p < .01$. As expected, their implicit beliefs about parents and were related to the combined score of the overall implicit beliefs about relationships, $X^2 = 26.68$, $p < .01$. And implicit beliefs about siblings were related to the overall implicit beliefs about relationships, $X^2 = 38.13$, $p < .001$.

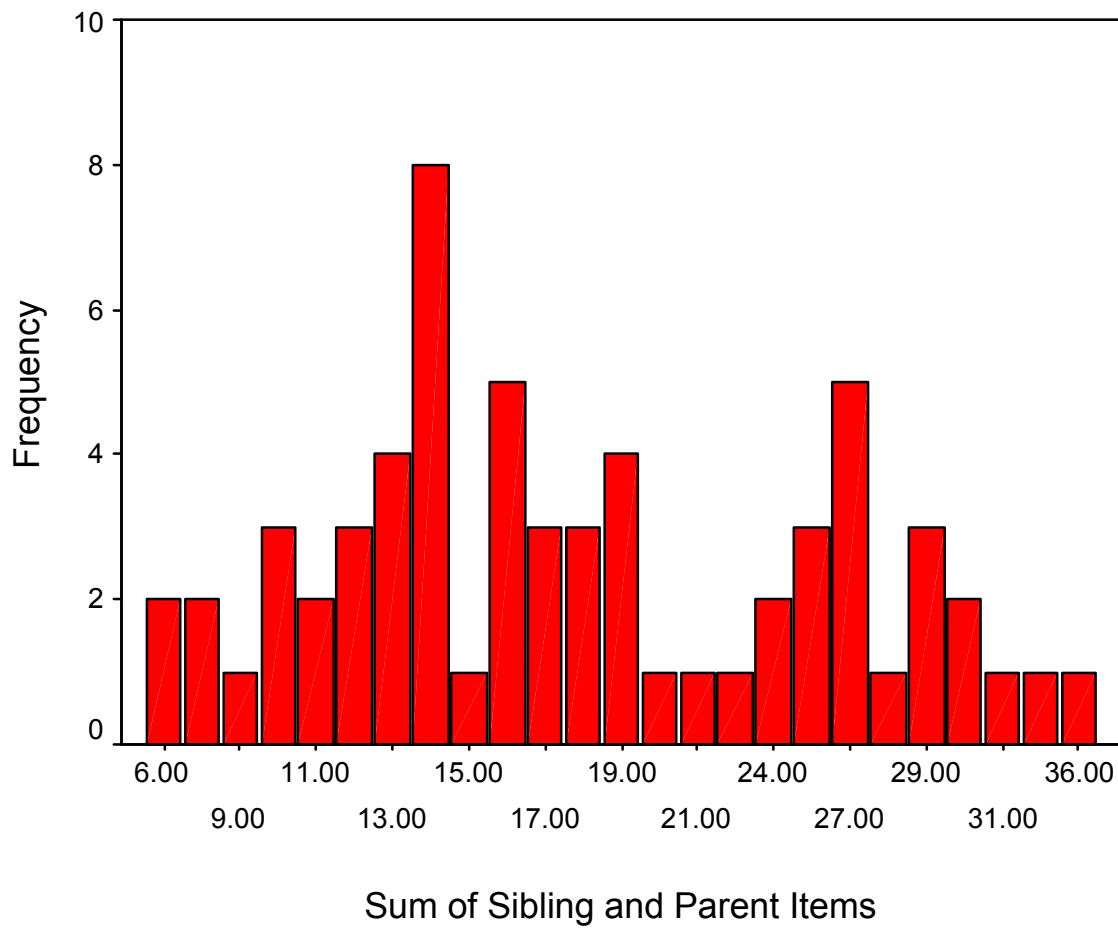


Figure 4. Frequency Distribution for Implicit Beliefs about Relationship- Combined

These results suggest that beliefs in one domain are related to beliefs in another domain of relationships. However, not all children had the same implicit beliefs across domains. Of the 63 children who participated, 18 children reported different beliefs in the parent domain and sibling domain, 11 children reported different beliefs in the parent domain compared to the combined domain, and seven children reported different beliefs in the sibling domain compared to the combined domain. Because some children have different beliefs across domains, scores may vary in their relationships with the measures of jealousy frequency, duration, and intensity. Therefore, results with the two domains of implicit beliefs about relationships (parent, sibling) and the combined score will be reported. Pearson correlations suggest that the domains are highly correlated, for parent and sibling domains, $r(61) = .58, p < .01$, for parent and combined domains, $r(61) = .89, p < .01$, and for sibling and combined domains, $r(61) = .88, p < .01$.

The parent domain items measure had moderate internal reliability (Cronbach's $\alpha = .62$), sibling domain items had fair internal reliability (Cronbach's $\alpha = .59$), and the combined domain had good internal reliability (Cronbach's $\alpha = .74$). These are similar to previous studies' strength of internal reliability, $= .60$ (see Levy & Dweck, 1999). An additional question about implicit beliefs was embedded in the SJI, and focused on the specific jealousy incident generated by the child. The child's response to "If this were to happen again, do you think you could change the situation?" was coded as a "1" if he/she answered no, indicating fixed beliefs about the situation ($n = 16$). If he/she answered "yes", the response was coded as a "2" indicating malleable beliefs about the situation ($n = 45$). Thus, a total of 61 children responded to this question.

Table 2

Descriptive Statistics for Domains of Implicit beliefs about Relationships

| Domain | Range | <i>M</i> | <i>SD</i> | Skewness | Kurtosis |
|----------|-------|----------|-----------|----------|----------|
| Parent | 3-18 | 9.36 | 4.25 | .35 | -.85 |
| Sibling | 3-18 | 9.12 | 4.08 | .45 | -.71 |
| Combined | 6-36 | 18.49 | 7.39 | .43 | -.79 |

Note. Children used the full range that was possible.

Intercorrelations between the three relationship domains (parent, sibling, and combined) and the situation domain were non-significant, $r_s(59) = -.00, -.02$, and $-.01$, respectively. Thus, it appears that children do not necessarily hold the same beliefs about relationships and situations. This is not surprising, in light of the previous research that notes that children can hold varying implicit theories across domains, for example, intelligence, moral character, and personality (e.g., Dweck, Hong, & Chiu, 1993; Erdley & Dweck, 1993).

Aim 1: What makes children jealous?

One goal of the present study was to gather the reasons that siblings experience jealousy. During the interview, children were given a definition of jealousy that suggested jealousy with the parent-child relationship. Then, the children were asked how often they became jealous of their sibling and a recent reason for sibling jealousy. Two coders blind to all of the child's data except their reason for jealousy independently coded all of the reported responses for each child into topics. Reasons for jealousy seem to coalesce around four main topics: 1) attention to the sibling by giving them gifts ("He got a Playstation and I didn't"), $n = 28$, (2) favoritism in conflict ("My sister broke a game and my mom yelled at me and not at my sister"), $n = 21$, (3) more time with sibling ("Mom took her to the movies and said it was a mother-daughter outing"), $n = 9$, and (4) attention to the sibling because of ability or talent (i.e., "My older sister gets all the attention because she is better at bowling"), $n = 6$.

Two children had an answer that contained more than one theme and one child was jealous of other children rather than with their parent. Because only two children included multiple themes and they were both relevant to parent and sibling jealousy they were included in the above list. One child was jealous of other children rather than with their parent and this child's responses were not included in the list of reasons above. All children's quantitative responses were included in the analyses below.

Children answered this question readily in that only three children did not report a reason until probed by the interviewer. A MANOVA revealed no differences between reason for jealousy and Likert reports of frequency, duration, or intensity of jealousy, Wilks' lambda = .87, $F(12, 148) = .69$, $p = .75$. A subsequent MANOVA revealed no

significant differences between reasons for jealousy and categorical frequency or duration, Wilks' lambda = .90, $F(8, 114) = .74$, $p = .66$.

The Relationship between Constellation Variables and Sibling Jealousy

To compare to other studies' examination of birth order, age differences, sex make-up of dyad, and sex of child, a series of one-way MANOVAs were conducted on the child and parent data. There were no significant findings regarding birth order, age difference, or sex make-up of dyad on reports of frequency, duration, or intensity for child nor the frequency and intensity reports for the parent. However, there were sex differences in children's reports of jealousy frequency, Wilks' lambda = .85, omnibus $F(3, 59) = 3.43$, $p < .05$. Female children reported significantly more frequent jealousy than male children regardless of sex of their sibling, $F(1, 61) = 10.40$, $p < .002$, $M(SD)s = 3.10(1.45)$ and $2.00(.95)$ on a 1 - 7 scale, respectively.

Aim 2: Implicit Beliefs and Jealousy

Tables 3, 4, and 5 illustrate descriptive statistics for sibling jealousy in each domain of implicit beliefs about relationships. Each table includes children's Likert scale and categorized data, and also parent's Likert scale and categorized data for entity theorists and incremental theorists.

Table 6 displays Pearson correlation coefficients between each implicit beliefs domain and children's reports of jealousy. For jealousy frequency, there were no significant relationships between any of the three implicit beliefs domains and children's reports of jealousy, regardless of type of measurement (Likert scale or categorized reports).

For jealousy duration, there were no significant relationships between any of the three implicit beliefs domains and children's report of jealousy when measured with a Likert scale for any of the three implicit beliefs domains. However, duration categorized was significantly related to implicit beliefs about relationships with siblings and combined, Pearson r_s (61) = .33 and .28, respectively, $p < .01$.

These effects indicate that entity theorists are jealous for a shorter period of time than incremental theorists. For jealousy intensity, implicit beliefs about relationships with parents were significantly related to children's jealousy intensity, r (61) = .38, $p < .01$. Implicit beliefs about relationships with siblings were also significantly related to intensity, r (61) = .43, $p < .01$. And for beliefs about relationships combined, implicit beliefs were significantly related to jealousy intensity, r (61) = .40, $p < .01$. In all three cases, entity theorists reported less intense jealousy than incremental theorists.

The independent variables of beliefs about parents, siblings, and combined were tested separately for a multivariate effect on the dependent variables of frequency, duration, and intensity of sibling jealousy. Thus, a series of one-way between-groups design MANOVAs with each domain of implicit beliefs about relationships as independent variables (parent, sibling, and combined) was conducted in SPSS.

Table 3

Descriptive Statistics for Sibling Jealousy by Entity and Incremental Theorists about Relationships with Parents

| Dependent Variable | <i>M</i> | | <i>SD</i> | | Skewness | | Kurtosis | |
|------------------------|----------|------|-----------|------|----------|------|----------|-------|
| | E | I | E | I | E | I | E | I |
| Child self-report | | | | | | | | |
| Frequency Scale | 2.63 | 2.75 | 1.54 | 1.27 | 1.15 | .96 | 1.29 | 1.62 |
| Duration Scale | 2.26 | 2.18 | 1.31 | 1.38 | .64 | 1.47 | -.74 | 3.07 |
| Intensity Scale | 2.73 | 3.42 | 1.25 | 1.32 | .32 | .51 | -.51 | .37 |
| Frequency Categorized | 3.73 | 4.27 | 1.63 | 1.52 | -1.47 | -.88 | 1.19 | -.16 |
| Duration Categorized | 3.43 | 3.63 | 1.35 | 1.38 | .36 | .25 | -1.13 | -.140 |
| Parent report of child | | | | | | | | |
| Frequency Scale | 2.87 | 3.44 | 1.75 | 2.01 | .52 | .63 | -.57 | -.54 |
| Frequency Categorized | 2.01 | 1.87 | 1.01 | 1.08 | .49 | -.74 | -.120 | -.90 |
| Intensity Scale | 3.09 | 2.88 | 1.93 | 1.84 | .47 | .29 | -.70 | .29 |

Note. E = Entity Theorists and I = Incremental Theorists

Table 4

Descriptive Statistics for Sibling Jealousy by Entity and Incremental Theorists about Relationships with Siblings

| Dependent Variable | <i>M</i> | | <i>SD</i> | | Skewness | | Kurtosis | |
|------------------------|----------|------|-----------|------|----------|------|----------|-------|
| | E | I | E | I | E | I | E | I |
| Child self-report | | | | | | | | |
| Frequency Scale | 2.50 | 2.87 | 1.18 | 1.56 | .84 | 1.00 | 1.44 | 1.28 |
| Duration Scale | 2.13 | 2.30 | 1.19 | 1.46 | .63 | 2.10 | -.64 | 1.72 |
| Intensity Scale | 2.50 | 3.63 | 1.10 | 1.28 | .32 | .36 | .05 | -.05 |
| Frequency Categorized | 4.06 | 3.99 | 1.55 | 1.64 | -1.02 | 1.21 | .11 | 1.21 |
| Duration Categorized | 3.06 | 3.97 | 1.20 | 1.38 | .64 | -.14 | .57 | .69 |
| Parent report of child | | | | | | | | |
| Frequency Scale | 2.86 | 3.43 | 1.45 | 2.17 | .15 | .53 | -1.39 | -.88 |
| Frequency Categorized | 1.90 | 1.96 | .92 | 1.15 | -.85 | -.21 | 1.51 | -1.64 |
| Intensity Scale | 2.69 | 3.13 | 1.42 | 2.14 | .13 | .72 | -1.29 | -.81 |

Note. E = Entity Theorists and I = Incremental Theorists

Table 5

Descriptive Statistics for Sibling Jealousy by Entity and Incremental Theorists about both Relationships Combined

| Dependent Variable | <i>M</i> | | <i>SD</i> | | Skewness | | Kurtosis | |
|------------------------|----------|------|-----------|------|----------|-------|----------|-------|
| | E | I | E | I | E | I | E | I |
| Child self-report | | | | | | | | |
| Frequency Scale | 2.41 | 2.96 | 1.49 | 1.25 | .87 | 1.11 | .87 | 1.79 |
| Duration Scale | 2.09 | 2.34 | 1.22 | 1.44 | .74 | .24 | -.61 | 1.91 |
| Intensity Scale | 2.54 | 3.62 | 1.12 | 1.31 | .25 | .39 | -.16 | -.11 |
| Frequency Categorized | 3.80 | 4.21 | 1.66 | 1.51 | -1.17 | -1.18 | .43 | .58 |
| Duration Categorized | 3.16 | 3.90 | 1.31 | 1.32 | .60 | .00 | -.97 | -1.33 |
| Parent report of child | | | | | | | | |
| Frequency Scale | 2.66 | 3.62 | 1.48 | 2.11 | .37 | .44 | -1.32 | -.85 |
| Frequency Categorized | 1.87 | 2.06 | .91 | 1.16 | .00 | -.28 | -1.59 | -1.60 |
| Intensity Scale | 2.59 | 3.29 | 1.47 | 2.10 | .31 | .64 | -1.37 | -.83 |

Note. E = Entity Theorists and I = Incremental Theorists

Table 6

Pearson Correlations between Implicit Beliefs about Relationships Domains and Dependent Variables

| Jealousy Measures | Implicit Beliefs about Relationships | | |
|---------------------------|--------------------------------------|---------|----------|
| | Parent | Sibling | Combined |
| Child Likert Scales | | | |
| Frequency | .05 | .14 | .19 |
| Duration | -.03 | .06 | .09 |
| Intensity | .38** | .43** | .40** |
| Child Categorized Reports | | | |
| Frequency | .17 | -.03 | .13 |
| Duration | .08 | .33** | .28** |
| Parent report of child | | | |
| Frequency scale | .15 | .14 | .25 |
| Frequency categorized | -.06 | .03 | .12 |
| Intensity scale | -.03 | .12 | .19 |

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

The MANOVAs analyzed children's Likert scale (frequency, duration, and intensity), and parents' Likert scale (frequency and intensity) reports. A series of one-way ANOVAs were used to analyze children's open-ended reports (categorized frequency and duration) and parents' open-ended reports (categorized frequency only).

Implicit Beliefs about Relationships with Parent

Child Likert scale measures. A multivariate effect for implicit beliefs about relationships with parent was marginally significant, Wilks' lambda = .88, omnibus $F(3, 59) = 2.66$, $p = .06$. Exploratory follow-up univariate analyses suggested that intensity was the main reason for the findings, $F(1, 59) = 4.48$, $p < .05$. Contradictory to the hypothesis, incremental theorists about parental relationships reported more intense jealousy than entity theorists, $M_s (SDs) = 3.42 (1.75)$ and $2.73 (1.25)$, respectively.

Child open-ended questions. Two separate one-way, between-groups design (using implicit beliefs about relationships with parents as the independent variable) ANOVAs were conducted using childrens' categorized frequency data and categorized duration data as the dependent variables. These analyses failed to reveal significant differences between groups, $F(1, 61) = .52$, $p = .47$ for frequency and $F(1, 61) = .27$, $p = .61$ for duration.

Parental reports of jealousy. Parent's frequency and intensity scale reports were analyzed using one-way MANOVA between-groups design. This analysis failed to reveal a significant multivariate effect for implicit beliefs about relationships with parent, Wilks' lambda = .97, $F(2, 46) = .71$, $p = .49$.

Implicit Beliefs about Relationship with Sibling

Child Likert scale measures. A multivariate effect for implicit beliefs about relationship with sibling was significant, Wilks' lambda = .76, omnibus $F(3, 59) = 6.11$, $p < .001$. Follow-up univariate analyses revealed that jealousy intensity was the primary reason for this overall effect, $F(1, 59) = 13.88$, $p < .001$. Contradictory to hypotheses, incremental theorists about sibling relationships reported more intense jealousy than entity theorists, $M(SD)s = 3.63(1.28)$ and $2.50(1.10)$, respectively.

Child open-ended questions. For the open-ended frequency question, a one-way, between-groups design (using implicit beliefs about relationships with sibling as the independent variable) ANOVA was conducted. This analysis failed to reveal significant differences between groups.

For the categorized duration data, a one-way between groups design ANOVA was conducted and revealed a significant effect of implicit beliefs about relationships with siblings, $F(1, 61) = 7.60$, $p < .01$. Again, contradictory to hypotheses, incremental theorists reported more enduring jealousy than entity theorists, $M(SD)s = 3.07(1.20)$ and $3.96(1.38)$, respectively

Parental reports of jealousy. Results were analyzed using a one-way MANOVA between-groups design. Again, this analysis failed to reveal a significant multivariate effect for the independent variable, Wilks' lambda = .95, $F(2, 46) = 1.21$, $p = .31$.

Implicit Beliefs about Relationships Combined

Child Likert scale measures. A multivariate effect for implicit beliefs about relationships overall was significant, Wilks' Lambda = .79, omnibus $F(3, 59) = 5.06$, $p < .01$. Follow-up univariate analysis revealed that the overall effect can be attributed to

the differences in jealousy intensity, $F(1, 59) = 12.21, p < .001$. Contradictory to my hypothesis, incremental theorists reported more intense jealousy than entity theorists in the combined domain, $M(SD)s = 3.62(1.31)$ and $2.54(1.12)$, respectively.²

Child open-ended questions. A one-way, between-groups design (using implicit beliefs about relationships combined as the independent variable) ANOVA was conducted using the recoded frequency data as the dependent variable. This analysis failed to reveal significant differences between groups.

Again, a one-way between groups design ANOVA (for combined) was conducted on the duration data. This analysis revealed an effect of implicit beliefs about relationships combined, $F(1, 61) = 4.98, p < .05$. This suggests that entity theorists about relationships have less enduring jealousy than incremental theorists, $M(SD)s = 3.16(1.31)$ and $3.91(1.32)$, respectively.³

Parental report of jealousy. Results were analyzed using a one-way MANOVA between-groups design. This analysis failed to reveal a significant multivariate effect for the independent variable, Wilks' lambda = .94, $F(2, 46) = 1.50, p = .23$.

Competence to Change the Situation

As another way of assessing children's implicit beliefs' but with a focus on the situation rather than the relationship, children ($n = 61$) were asked, "If this were to happen again, do you think it would be possible to change the situation?" The answer was coded as a dichotomous variable (i.e., "no = 1", and "2 = yes") and was analyzed for its effect on the dependent variables of frequency, duration, and intensity. Results were analyzed using a one-way MANOVA, between-groups design. This analysis revealed a significant multivariate effect for ability to change the situation, Wilks'

$\lambda = .79$, $F(3, 57) = 4.78$, $p < .01$. Follow-up univariate analyses indicated that children's frequency of jealousy was the primary reason for the multivariate effect, $F(1, 59) = 14.21$, $p < .001$. Children who reported malleable beliefs about the situation reported less frequent jealousy than children who reported entity beliefs about the situation; $M(SD)s = 2.34(1.05)$ and $3.75(1.77)$, respectively. Thus, a child's perception of the malleability of a situation impacts how frequently he/she becomes jealous of their sibling. As predicted, those who believe that the reported jealousy situation is changeable are less likely to feel jealousy than those who believe that the situation is fixed.

Value of Independence from Parent

One question asked "Which one of the following statements is true for you: "I value being independent from my parents OR I do not value being independent from my parents." Children were asked to report which statement was closer to what they think, and then to report whether that statement was "really true" or "somewhat true." A frequency analysis revealed that most children reported that it was really true that they valued independence ($n = 35$) or that it was really true that they did not value independence ($n = 19$), leaving only nine children to be classified into the two remaining categories. Thus, the four categories were collapsed into two categories and the question was coded as a dichotomous variable (1 = I value dependence and 2 = I do not value independence). This was to see whether or not a child's implicit beliefs about relationships would still impact children's and/or parents' reports of jealousy frequency, duration, or intensity if the child valued independence from their parent.

Children's reports. Results were analyzed using a series of two-way MANOVAs with implicit beliefs about relationships and value of independence from parent as independent variables. The results revealed no significant main effects or interaction effects for valuing independence in any of the three domains on jealousy frequency, duration, or intensity. Thus, the impact of implicit beliefs on the frequency, duration, and intensity of jealousy is not dependent on how much children value independence from their parent, at least as assessed in this study

Parents' reports. Parents' reports were similar to children's reports when taking value of independence into consideration. A two-way MANOVA was used to assess the effect of implicit beliefs and valuing independence from one's parent on parent's reports of frequency and duration. The analyses did not reveal a multivariate effect of implicit beliefs about relationships or valuing independence from the parent.

Behavioral and Feeling Reactions

I predicted that those with entity theories would react to a sibling jealousy event with behaviors of leaving or avoiding the situations ["Storm to my room"], and greater feelings of resentment ["I get mad [angry, upset] at him"] compared to children with incremental theories, who would react with behaviors of staying with the situations and working to effect change ["Try to prove that I can do it too"], and not as much resentment toward their sibling ["Not really bad or sad- just want to move on"]. This was tested with the coding of behavioral and feeling reactions to the questions on the Sibling Jealousy Interview asking, "What did you do"? (behavior reaction) and "How did you feel?" (feeling reaction). Behavioral reactions for the 59 children who answered these questions were coded as (1) for evidence of withdrawal/helpless reactions and

(2) for evidence of working to effect change reactions. Feeling reactions were coded as (1) for evidence of resentment and/or bitterness and (2) for evidence of admiration for sibling or something similar. There was a significant correlation between behavioral and feeling reactions, $r(57) = .31, p < .05$.

Chi-square tests of independence were conducted to assess the relationship between implicit beliefs classification and reactions to jealousy. For implicit beliefs about relationships with parents, the chi-square analyses failed to reject the null that the behavioral and feeling reactions are independent in the population, Fisher's exact test(s) = .73 and .19, respectively. For implicit beliefs about relationships with siblings, a chi-square analysis failed to reject the null, Fisher's exact test(s) = .73 for behavioral reactions and 1.00 for feeling reactions. For implicit beliefs about relationships combined, a chi-square analysis failed to reject the null, Fisher's exact test (s) = 1.00 for behavior reactions and .79 for feeling reactions.

These results indicate no relationship between children's implicit beliefs about relationships and their reports of behavioral and feeling reactions to sibling jealousy, at least as we coded them.

Discussion

Overview of Findings

The findings from this study suggest that implicit theories about relationships are not related to the frequency with which children report feeling jealousy. However, children who believe *situations* are fixed appear to have more frequent jealousy than children who believe that situations are malleable. This suggests that implicit beliefs in other domains besides relationships may be useful when investigating sibling conflict.

Discussion will center around the different hypotheses and the results in relation to them.

Hypothesis 1: Incremental theorists will experience jealousy less frequently than entity theorists.

There were no differences found in jealousy frequency for any of the relationship domains. Perhaps implicit beliefs do not relate to whether or not the situation is seen as a threat to attention (i.e., jealousy), but rather the behavior that happens once a child acknowledges the situation to be a jealousy situation. It appears that there are no differences between groups in how often a child interprets a situation to be jealousy inducing, rather, group differences appear after the situation has been acknowledged as a challenging situation. However, implicit beliefs about situations are related to frequency of jealousy, in the expected direction, such that those who believe that situations are malleable have less frequent sibling jealousy than those who believe that situations are fixed.

Hypothesis 2: Incremental theorists will have shorter duration of jealousy than entity theorists.

Entity and incremental theorists differed in jealousy duration in the domains of siblings and combined. In both domains, entity theorists were more likely to report their duration of jealousy to be shorter than incrementalists. This is contradictory to hypotheses. These differences in duration may tell us a great deal about the downside to the “process-orientation” of the incremental theorists.

When incremental theorists come upon a jealousy situation, they are likely to approach it with an effort to understand the process, whereas entity theorists approach

it with a focus on the outcome, not the process. Knowing this, it might be that incremental theorists continue thinking about the situation and searching for an understanding of what caused it, who caused it, and how can it be changed so that it does not happen again. This can lead to more persistent and pondering reactions and may create a longer duration of those jealousy feelings. Therefore, future research might benefit from asking “how many different things did you do or think about when you noticed that you felt jealous?” and “why did you do those things?” This would reveal whether or not the duration for incrementalists is spent trying to learn how to deal with jealousy and having motivation to understand the situation (expected reaction for incrementalists), or just moving along because the situation was what it was (unexpected reaction for incrementalists).

Hypothesis 3: Incremental theorists will have less intense jealousy than entity theorists. Entity theorists reported significantly less intense jealousy than incremental theorists, regardless of domain of interest (parent, sibling, or combined). Previous research indicates that entity theorists of personality, when faced with a challenging situation, tend to react with helpless, not mastery-oriented actions. However, it may be that those who believe that relationships are fixed, are less likely to try to change them, and thus, when jealousy occurs, they do not try to effect change, but rather, just accept the situation for what it is. They do not try to change others, because they think it is useless; no matter what they do, the relationship will not change. In a jealousy situation, an entity theorists may ask themselves, “why get upset, I can’t do anything anyways”, whereas an incremental theorists may ask themselves, “why can’t I change

this, I can't believe this is happening again...I am sick of this... it should change ." A simple follow-up probe asking "why were you a ____ on this intensity scale?" may contribute to the underlying reasons for these unexpected findings.

In this case, the belief that one can change others and somehow adjust the relationship may lead to more intense jealousy when efforts do not seem to be succeeding. Entity theorists facing failure (i.e., did not get parent's attention) tend to respond with thoughts that "failure is inevitable and unavoidable" and helplessness. Thus, when jealousy is encountered, it may be easier for an entity theorist to shrug their shoulders, and feel less intensely jealous, than an incremental theorist. One could hypothesize that children who believe that jealousy is inevitable are more likely to just shrug their shoulders at the event, rather than get upset.

Hypothesis 4: Children with malleable beliefs about situations will experience a significantly lower frequency of jealousy than children with fixed beliefs about situations.

When children were asked about the changeability of situations, results revealed that fixed and malleable theorists differed in jealousy frequency. Children with fixed beliefs did have more frequent jealousy than children with malleable beliefs about the situation. It would be easy to suggest that although beliefs about relationships do not matter, beliefs about situations do matter. However, this question involves a retrospective account of a single instance of jealousy unlike the other questions on relationships, which gather a more global report. Thus, the frequency findings could be (a) spurious, (b) real and due to domain difference, or (c) real and due to the way a child examines events retrospectively. In the future, it may be helpful to gather

information on more than one jealousy incident to see if the differences between groups remain over numerous situations, to see if the effect is due to single retrospective accounts or remains in a more global analysis of jealousy situations. It would strengthen these findings if children were asked to recall more than one jealousy event, and a stable relationship between seeing the situation as fixed and reporting a higher frequency of jealousy was found.

Hypothesis 5: I hypothesized that children with malleable beliefs about the situation will have less enduring jealousy than children with fixed beliefs about the situation.

Children's retrospective views of a sibling jealousy situation as fixed or malleable were not related to jealousy duration for that event, whereas the frequency questions ask about jealousy in multiple situations, the duration question was about the specific event described. Thus, children may have had time to deal with it (or not deal with it).

Hypothesis 6: Children with entity beliefs will have more intense jealousy than children with malleable beliefs about the situation.

Again, because the children are reporting retrospectively, it is likely that time has impacted the relationship between intensity and implicit beliefs about the situation, thus, erasing differences that might be present during the situation.

Hypothesis 7: It was hypothesized that a child's implicit beliefs about relationships will not impact jealousy frequency, duration, or intensity if the child values independence from their parent.

When value of independence from the parent was taken into consideration, differences between entity and incremental theorists were reduced to nonsignificance.

This suggests that children who value independence from their parent do not necessarily hold malleable or fixed view about relationships, thus, jealousy is related to more than just valuing attention from the parent, but may also include perceptions of the sibling, the situation, and themselves. There are several reasons for these findings.

First, the variable for valuing independence was dichotomous, and thus may not include important information about the differences that may be found on a more continuous scale. Second, the way we tested this hypothesis may have been too simple. Third, the question was set-up in a rather socially desirable manner, thus leading to the findings that most children reported valuing independence. Fourth, only one question was used for this variable. Perhaps a separate scale to assess value of independence from parent is needed, rather than just one question. And fifth, a larger sample may help to even out the number of children that do and do not value independence, which may lead to a better analysis. The current study had 45 students who reported valuing independence and only 16 who reported not valuing independence from their parent.

Hypothesis 8: Incremental theorists respond to jealousy with fewer withdrawal reactions and feelings of resentment toward their sibling compared to entity theorist.

There was no relationship between implicit beliefs about relationships and feeling and action reactions to jealousy. However, it could be that the incident that the children reported during the interview was not indicative of their usual reaction(s) to jealousy.. If this effect exists it may be subtle and collective reactions to several jealousy events may be needed to provide a more stable score per child. Also, the lack of results might be due to our simple coding scheme, although coders were highly

reliable and followed the coding rules carefully. Our coding scheme may be oversimplified and there may be other distinctions that will help distinguish between the types of theorists (e.g., positive or negative behavior, passive or active behavior, positive or negative emotions, engaging (anger) or disengaging (sad) feelings. And finally, the children's responses may not have provided sufficient information to ensure proper coding. In addition to the open-ended questions about reactions, future studies may want to probe with specific questions about affect and behavior or offer children a checklist of behaviors and a checklist of feelings and ask them to check the choices that fit their experience.

Study Limitations

Although the alpha levels for the implicit beliefs about relationships items were satisfactory and similar to previous studies' internal reliability levels, the intercorrelations between the items were rather low. Thus, re-wording the questions may help to create a more cohesive measure of implicit beliefs. Regarding the outcome variables, this study relied solely on reports of jealousy behavior by the parent and child, which may be affected by recall biases. Even so, the reasons for jealousy are more variable within this age group than in younger groups, with approximately four different reasons being noted in this study, and only two in the pilot study involving younger children.

It may be useful in the future to create a jealousy paradigm in an experimental setting to see if these differences in intensity and duration remain. Also, inquiring about typical jealousy events, rather than a specific jealousy event, may result in more similarity between parent and child reports. Parents and children did not necessarily

report about the same jealousy event, and thus, validation of child's report by mother was difficult to ascertain. Although a clear definition of sibling jealousy was given at the beginning of the interview, it is still not clear how children determined the difference between envy of their sibling and jealousy of their sibling. Thus, future studies may want to incorporate vignettes or scenarios that are specifically jealousy inducing, and go beyond envy of the sibling. The vignettes may also contend with the issue of the few children who reported peer jealousy, which is another interesting area of jealousy, but is beyond the interest of the current study, which is to describe and explain sibling jealousy in the specific context of parental attention. Furthermore, physiological measures may assist in objectively measuring children's intensity and duration of jealousy in a real-life jealousy inducing paradigm.

Another measurement issue was the children's understanding and interpretation of the word "independence." Although most of the children responded with no problem to the question about independence, two children queried for a definition or example of the word "independence" during the interview. The results regarding independence from the parent did not impact the overall effect of implicit beliefs on sibling jealousy, however, a follow-up study might consider inclusion of a more comprehensive and in-depth assessment of the child's value of independence from the parent.

The sample was also restricted to children in one middle-school in one city in the southeastern region of the U.S, and this may limit the generalizability of the findings. However, the sample is from a public school, included diverse representative of different ethnic groups, and the median income (\$39,990) falls in the lower part of the middle-class for the Southern part of the United States, which makes it more

generalizable than a single ethnicity or a primarily middle to upper-middle class sample. Nevertheless, a cross-validation of these findings with another sample would be welcome. Overall, the results suggest that alternative hypotheses may be useful in constructing a full explanation of why some children are jealous more often than others. The gender difference in frequency of sibling jealousy may indicate a socialization component, in that female children are socialized to be more focused on emotion whereas male children are socialized to avoid emotions (Adams, Kuebli, Boyle, & Fivush, 1995; Dunn, Bretherton, & Munn, 1987). This focus on emotion for females from a young age may lead them to acknowledge emotions more readily than males, thus resulting in higher frequency reports.

Perhaps a social comparison mechanism is activated when the child feels that the sibling is gaining attention that is taking away from their own attention. Thus, it is not whether or not they think that the relationship can change, but rather, jealousy is based on how similar a child feels they are to their sibling. We could predict that children who perceive themselves to be similar to their sibling, or have a possible self that is similar to the sibling, would have less frequent jealousy than children who perceive themselves to be very different from their sibling. If the child is different from the sibling, then how will they get attention from the parent? In addition, the concepts of intelligence and moral beliefs that are investigated in the previous literature regarding implicit beliefs are more generally thought of as “trait-like” or dispositional phenomena, as opposed to jealousy, which is described in the literature (Parrott & Smith, 1993) as situationally-governed. Hence, the application of implicit beliefs may be different for dispositional and situational characteristics.

Regarding the design of the measures, it has been found that asking about sensitive issues (e.g., delinquent behavior, previous abuse) using interviewing techniques yields less accurate information than using a computer assisted survey interview (CASI). Interviewing may lead to socially desirable reports of feelings toward and reactions to jealousy, because of the stigmatic view of jealousy. Participants are more willing to share honest answers with a computer, perhaps because there is no threat of social judgment, as there might be with an interviewer. In addition, recent work in the area of self-report instruments has discovered that there are many factors that influence the report of behaviors and attitudes, including questions wording, format, and context (Schwarz, 1999). Thus, in the future I plan on implementing the suggestions in the literature for improved questionnaire design.

In addition, it appears that the domain of interest for implicit beliefs may impact the results. For example, implicit beliefs about situations were found to impact the sibling jealousy frequency in the predicted direction, whereas implicit beliefs about relationships were found to impact sibling jealousy intensity and duration, but not in the expected direction. Thus, a n experimental follow-up study to verify the findings regarding implicit beliefs and sibling jealousy is necessary to validate the current findings. I would expect that a child with malleable beliefs about relationships would result in more enduring and more intense jealousy than a child with entity beliefs about relationships.

Future Directions

Regarding theoretical perspectives, future research should examine how conflict in general and certain aspects of conflict, such as jealousy are related. For example, if siblings are high in number of conflicts, are they also high in number of jealousy events or does jealousy have no relation to overall sibling conflict occurrence? Another study might investigate whether or not jealousy is the cause for a large proportion of conflicts between siblings.

Other studies might examine how jealousy events between sibling impacts each sibling, rather than just one sibling, as in the current study. It could be that over time, one sibling has an influence on the other, and thus, the reactions to jealousy would begin to converge over time, thereby overriding implicit beliefs. It is also likely that cumulative jealousy events will affect the quality of the relationship between siblings, although it is not predicted in which direction. It could also be that less frequent jealousy is a result of both siblings' feelings that the parent is not purposely giving more attention to the other sibling, and thus the relationship quality is high.

Furthermore, simply asking the children whether or not these jealousy situations are typical or problematic can help researchers gain valuable information on children's perception of the relative impact of these situations. Similarly, the parents' perceptions of jealousy events are also important in understanding their approach to solving the event. If parents think it is a teachable moment, they might react differently than parents who believe that the jealousy event is a sign of dysfunctionality in the family. Future studies are encouraged to gather children's and parent's views of these

situations and what they mean to the overall quality of the sibling and parent-child relationships.

Overall, these findings encourage subsequent studies regarding the relationship between implicit beliefs and experiences in the family, especially for children in middle- to late-childhood. Previous research indicates that a child's implicit beliefs become cohesive around age ten, and thus, studies examining the shift in cognitive structure (pre- and post-implicit beliefs development) may lead to a better understanding of the social cognitive developmental progression from early to middle-childhood. In addition, if a sound structure of implicit beliefs occurs around age nine or ten, then will entity and incremental theorists display divergence of behaviors over time? Do we see changes in behaviors during this developmental period that would indicate the need for interventions because of these cognitive shifts? These questions and many more are important in grasping the developmental implications of implicit beliefs and behaviors in the family setting.

In sum, the current study's findings were contrary to predictions but still contribute to the understanding of the impact of implicit beliefs. It has been suggested that studies of entity and incremental theorists repeatedly imply that entity theorists consistently have negative outcomes. However, this research has found a "good" side to holding entity beliefs about relationships.

These findings suggest that children who believe that relationships with others are fixed, are less likely to mull over situations, and worry about "effecting change" and thus seem to pull through situations of sibling jealousy more quickly and with less intensity than children with malleable beliefs about relationships. Perhaps this study is

the commencement of a journey in discovering the benefits of entity beliefs. The upside to entity theory is that children get over the jealousy experience quickly. The downside might be that children do not try to change the relationship/situation and so it happens over and over again.

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Footnotes

¹As always, no individuals had access to their own or any other individual's data.

²In previous studies only children with unambiguous beliefs about personality were used in the analyses (Dweck & Leggett, 1988; Erdley & Dweck, 1993; Heyman & Dweck, 1998; Hong et al., 1995); that is, those children who scored in the middle (i.e., average score for three items were higher than 3.0 and lower than 4.0) were eliminated from the analyses. Children with average scores lower than or equal to 3.0 were classified as entity theorists, whereas those with average scores higher than or equal to 4.0 were classified as incremental theorists. Those whose average score fell between 3.0 and 4.0 have given mixed answers across items and were viewed indeterminate in their beliefs about personality. However, the current study used a median split for analyses in order to preserve the total number of participants ($n = 63$). When data were analyzed using the Dweck classification system there were no significant findings for frequency, duration, nor intensity.

³Another analysis was also suggested involving the frequency and duration open-ended data. Regarding frequency, the open-ended question was calculated into a proportion, such that 1 = one time per week, 7 = once a day, and .25 = once a month, and so on. The proportion frequency data were also recoded into categories such that 3 = references to daily jealousy, 2 = references to weekly jealousy, and 1 = references to monthly (or less) jealousy. The calculated proportions scores were then regressed onto the categorical proportion frequency data and the residuals from the regression were saved as a new dependent variable. A regression was then conducted using the residuals as the dependent variable, and the implicit beliefs about relationships as the

independent variable. The same procedure was performed for the duration open-ended data. It was calculated into proportions such that .50 = thirty minutes, 1 = hour, and 24 = one day. In addition, the open-ended answers were placed into categories, with 1 = references to duration of minutes, 2 = references to duration of hours, and 3 = reference to duration of days. Again, the calculated scores were regressed onto the categorical scores and the residuals were saved and used as the new dependent variable. Results from these tests failed to find differences between entity and incremental theorists on frequency or duration.

Appendix A

Sibling Jealousy Interview (SJI)

Thank you for talking with me today. I want to learn more about how you and your sister/brother get along and how you are together.

I'm going to ask you some questions. Remember to let me know if I ask you something that you don't want to talk about or if you want to stop.

1. *First, I want to know about you. When is your birthday?*
2. *What do you like to do when you are not in school?*
3. *Now tell me about your sibling (s). Do you have brothers and/or sisters? How old are they? Who is the sibling that is closest in age to you? Can you give me his/her initials? What is his/her birthday? Does your sibling that is closest in age like to do any of those activities that you like to do?*
4. *Now let's talk about jealousy for a little bit. And just so we all share the same idea about what jealousy is, because even the researchers sometimes vary in what they mean, by jealous I mean that you feel like your mom is giving your sibling attention that is taking away from the attention that she is giving you.*

5. *How often do you become jealous of your sibling?*

| | | | | | | |
|-------------|---|-----------|---|--------------|---|-------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| very rarely | | sometimes | | pretty often | | a lot |

6. *Now, just to make sure I understand what you mean by (answer they have chosen) can you tell me about how often in days, weeks, or months?*

7. *Now, I am going to ask you to think back to a specific time when you might have felt jealous of your sibling. Sometimes it helps people to close their eyes when they try to remember back to an event. If this helps, I'd like you to close your eyes with me and try to remember a time when you felt jealous of your sister/brother.*

a. *Can you tell me what it was?*

b. *Is there anything else you remember?*

8. *What did you do when this happened?*

If they answer (a) with an action, ask:

a. How did you feel?

If they answer (a) with a feeling, ask:

b. What did you do?

9. *How long did you stay jealous of your sibling?*

| | | | | | | |
|------------------------|---|-------------------------|---|-----------------------|---|---------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| a really short time | | a little bit of time | | a pretty long time | | a very long time |

10. *And again, just to make sure I understand what that means, can you tell me in minutes, hours, or days how long you stayed jealous?*

11. *How intense (strong) was your jealousy?*

| | | | | | | |
|----------------------|---|--------------|---|--------------|---|-------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| not at all strong | | a little bit | | quite strong | | very strong |

12. *If this were to happen again, do you think it would be possible to change the situation?*

| | | | |
|----|--------------|--------------|-----|
| No | Probably not | Probably yes | Yes |
|----|--------------|--------------|-----|

If no or probably not, ask why don't you think so?

If yes, or probably yes, ask what would you do the next time?

13. *To answer this next question I want you to pick one of the following two sentences that fit your personality better.*

I value being independent of my parents OR I do not value being independent of my parent.

Now, is this somewhat true for you or really true for you?

Somewhat true for me OR really true for me.

Okay! You're doing a great job- we are almost done!

Now I want to ask you about conflict...

14. *When you and your brother/sister get into an argument or fight, who usually starts the arguments?*

I do___

My brother or sister does___

We start them together ___

15. *When you end a conflict what is usually the outcome for you and your sibling:*

My outcome:

I get what I wanted___

I compromise on what I wanted___

I don't get what I wanted___

My brother's or sister's outcome:

They get what they wanted___

They compromise___

They don't get what they wanted___

16. *Why do you think this tends to be the outcome for you?*

17. *Why do you think this tends to be the outcome for your brother or sister?*

18. *How satisfied are you with the usual outcome?*

| | | | | | | |
|------------|---|--------------------|---|-----------------|---|------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| not at all | | a little satisfied | | quite satisfied | | really satisfied |
| satisfied | | | | | | |

19. *Why are you (repeat child's answer)?*

Thank you! I have learned a lot today from you....

Do you have any questions for me?

Appendix B

| Reaction Coding - Behavioral | |
|---|--|
| Typical Entity | Typical Incremental |
| Entity theorists react with actions of helpless orientation and withdrawal. Their actions do not indicate any motivation to change the situation. | Incremental theorists react with actions of effort to change or actions that reveal that change is possible. |
| Examples: | Examples: |
| " Stick out my tongue" | " Try to prove that I can do it too" |
| "Storm to my room" | "I try to switch what I do to see if that works" |
| "Just sit there" | "Let my parents know that I want to get that too" |
| "I don't say anything, its not going to change so why try" | " Try to compromise with my parent so they let me have a turn too" |

Appendix C

| Reaction Coding - Feeling | |
|---|--|
| Typical Entity | Typical Incremental |
| Entity theorists react with feelings of resentment and bitterness toward their sibling. | Incremental theorists react with feelings of high regard for their sibling and feelings of capability. |
| Examples: | Examples: |
| "I feel like wasting her time so she won't be able to do it" | "Okay, it will be over soon" |
| "I get annoyed whenever he talks about it" | "Not really bad or sad- just want to move on" |
| "I try to make him feel bad since I do" | "Good, because I am getting things out in the open" |
| "I get mad (angry, upset) at him" | "I just wish I had her awesome sense of humor" |

Appendix D

Ideas about Personality

I'd like to ask you some questions about **personality**. Please tell me how much you agree or disagree with the following ideas with 1 being strongly agree and 6 being strongly disagree.

1. You have a certain personality and it is something you can't do much about.

| | | | | | |
|----------------|---|---|---|---|-------------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| strongly agree | | | | | strongly disagree |

2. Your personality is something about you that you can't change very much.

| | | | | | |
|----------------|---|---|---|---|-------------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| strongly agree | | | | | strongly disagree |

3. Either you have a good personality or you don't and there is really very little you can do about it.

| | | | | | |
|----------------|---|---|---|---|-------------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| strongly agree | | | | | strongly disagree |

Appendix E

Ideas about Relationships

I'd like to ask you some questions about **your relationship with members of your family**. Please tell me how much you agree or disagree with the following ideas about relationships with 1 being strongly agree and 6 being strongly disagree.

1. My relationship with my parent is something that I cannot really change.

| | | | | | |
|-------------------|---|---|---|---|----------------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Strongly agree | | | | | Strongly disagree |

2. Family relationships tend to stay the way they are no matter what people do.

| | | | | | |
|-------------------|---|---|---|---|----------------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Strongly agree | | | | | Strongly disagree |

3. My actions don't have any effect on my relationship with my parents.

| | | | | | |
|-------------------|---|---|---|---|----------------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Strongly agree | | | | | Strongly disagree |

4. My relationship with my brother/sister (name) is something that I cannot really change.

| | | | | | |
|-------------------|---|---|---|---|----------------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Strongly agree | | | | | Strongly disagree |

5. Brother/sister relationships tend to stay the same no matter what people do.

| | | | | | |
|-------------------|---|---|---|---|----------------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Strongly agree | | | | | Strongly disagree |

6. My actions don't have any effect on my relationship with my sibling.

| | | | | | |
|-------------------|---|---|---|---|----------------------|
| 1 | 2 | 3 | 4 | 5 | 6 |
| Strongly agree | | | | | Strongly disagree |

Appendix F

Parent Checklist

Please indicate the answer that best fits your child concerning jealousy (your child feels like you are giving the sibling attention that they want).

1. About how often do you notice that your child is feeling/acting jealous of his/her sibling (Please answer these questions for the sibling that is **closest in age** to your 6th grader).

| | | | | | | |
|-------------|---|-----------|---|-------|---|------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| very rarely | | sometimes | | often | | very often |

2. Just to make sure I understand what you mean, can you tell me how often in days, weeks, or months? _____

3. Now, try to think back to a specific time when you noticed that your child was jealous of their sibling. Write down a brief description of this situation:

Please answer the following questions in regard to that specific incident.

4. About how intense (strong) was the jealousy?

| | | | | | | |
|-----------|---|---|---------------|---|---|-------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| very mild | | | medium amount | | | very strong |

5. What was your child's reaction? Tell us about feelings and actions...(Check all that apply)

- _____ removed themselves from the situation
- _____ said that they are jealous but don't really work to solve it
- _____ started another activity
- _____ asked if they could try to do what the sibling is doing
- _____ talked to you or someone about the jealousy and how to solve it
- _____ sat there and did not say anything
- _____ whined and fussed
- _____ got angry
- _____ got upset

_____ other (please specify):

Please answer the following questions regarding conflict.....

6. When your children get into an argument or fight, who usually starts the arguments?

The child in the study ("target child") starts it__

The sibling starts it__

They start them together ____

7. When the children end a conflict what is usually the outcome for the target child and the sibling. **Please mark an outcome for each child.**

Target child outcome:

They get what they wanted_____

They compromise ____

They don't get what they wanted_____

Sibling's outcome:

They get what they wanted_____

They compromise ____

They don't get what they wanted_____

8. How satisfied is the target child with the usual outcome?

| | | | | | | |
|------------|---|--------------|---|-----------------|---|------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| not at all | | a little bit | | quite satisfied | | really satisfied |

9. How satisfied is the sibling with the usual outcome?

| | | | | | | |
|------------|---|--------------|---|-----------------|---|------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| not at all | | a little bit | | quite satisfied | | really satisfied |

10. Please put the birthdate of the sibling you were thinking of when you answered these questions.

We are **very interested** in hearing parent's opinions about conflict situations. If there is anything else you would like to share with us, specifically considering jealousy situations, please write it in the space below.

Appendix G

Demographics – Parent

We hope to have a diverse set of children and parents. Please tell us about your family.

Mother Age? _____

Mother Years of college? _____

How would you describe your ethnic background? (check as many as apply):

African-American _____

Hispanic-American _____

Asian-American _____

Native American _____

European-American _____

Other _____

What is your marital status? Single Married Divorced Separated Widow Co-Habit

What, if any, religion are you affiliated with? _____

Where did you grow up? _____

What kind of area are you from? Rural Urban Suburban Other (Please specify) _____

Please list the age and sex of all of the children in your family.

| | Age | Sex |
|----------|-------|-------|
| Child 1: | _____ | _____ |
| Child 2: | _____ | _____ |
| Child 3: | _____ | _____ |
| Child 4: | _____ | _____ |
| Child 5: | _____ | _____ |
| Child 6: | _____ | _____ |

What is the birthdate of the sibling closest in age to your 6th grader?

Appendix H

Child Assent

Dear _____,

We invite you to participate in a study about you and your brother/sister. We are interested in finding out what you think and feel in certain situations with your sibling.

Here's what we'll do:

We are going to ask you some questions about feeling jealous of your brother/sister. All of these questions are about what you think and how you feel- there are no "right" or "wrong" answers. Everything you say will be treated with confidentiality. That is, we will not share your answers with anyone, including your mom and dad, and we will fully respect your right to privacy. We would like to audiotape our conversation with you but we will put a number on the tape so not even the person who is transcribing the tape will know whose answers these are.

There are no foreseeable risks to you in this research study. However, sometimes thinking about how you feel about things can be challenging. If you feel uncomfortable or don't want to continue the study at any time, it is okay to quit and not participate anymore. This study is about one half hour and we will give you a certificate as a "thank you" for helping us out!

If you have any questions please ask us!

CONSENT

I have read and understand the information in this consent. I have received a copy of this form. I agree to participate in the study.

Participant's Signature _____

Participant's Birthday _____

Date _____

Investigator's Signature _____

Date _____

Appendix I

Frequency Categorization

| Proportion | Open ended answer | Category |
|------------|-----------------------------|----------|
| 0.02 | once a year | 1 |
| 0.02 | once a year | 1 |
| 0.02 | once a year | 1 |
| 0.07 | once every four months | 1 |
| 0.08 | every few months | 1 |
| 0.13 | every other month | 2 |
| 0.13 | every other month | 2 |
| 0.17 | once every month and a half | 2 |
| 0.17 | once every month and a half | 2 |
| 0.25 | once a month | 3 |
| 0.25 | once a month | 3 |
| 0.25 | once a month | 3 |
| 0.25 | once a month | 3 |
| 0.25 | once a month | 3 |
| 0.25 | once a month | 3 |
| 0.25 | once a month | 3 |
| 0.25 | once a month | 3 |
| 0.25 | every month (once) | 3 |
| 0.25 | once a month | 3 |
| 0.25 | once a month | 3 |
| 0.25 | once a month | 3 |
| 0.25 | once a month | 3 |
| 0.25 | once a month | 3 |
| 0.25 | once a month | 3 |
| 0.25 | one time per month | 3 |
| 0.38 | once or twice a month | 3 |
| 0.5 | two times per month | 4 |
| 0.5 | two times per month | 4 |
| 0.5 | 2 times/month | 4 |
| 0.5 | two times per month | 4 |
| 0.5 | couple times per month | 4 |
| 0.5 | two time per month | 4 |
| 0.5 | every 2 weeks | 4 |
| 0.5 | two time per month | 4 |
| 0.5 | twice a month | 4 |
| 0.5 | 2 times per month | 4 |
| 0.5 | twice a month | 4 |
| 0.5 | couple times per month | 4 |
| 0.75 | 3 times a month | 4 |
| 0.75 | three times a month | 4 |

Appendix I

Frequency Categorization

| Proportion | Open ended answer | Category |
|------------|----------------------|----------|
| 1 | once a week | 5 |
| 1 | once a week | 5 |
| 1 | once per week | 5 |
| 1 | once a week | 5 |
| 1 | once a week | 5 |
| 1 | once a week | 5 |
| 1 | once a week | 5 |
| 1 | once a week | 5 |
| 1 | once a week | 5 |
| 1.25 | five times per month | 5 |
| 1.5 | 1 or 2 times a week | 5 |
| 2 | 2 days a week | 6 |
| 2 | twice a week | 6 |
| 2 | two times a week | 6 |
| 2.5 | 2 to 3 days a week | 6 |
| 3 | 3 days a week | 6 |
| 3 | three times per week | 6 |
| 3.5 | every other day | 6 |
| 4 | 4 times per week | 6 |
| 7 | once a day | 7 |
| 7 | every day | 7 |
| 14 | twice a day | 7 |
| 21 | daily- three times | 7 |

Appendix J
Duration Categorization

| Proportion | Open ended answer | Category |
|------------|---------------------------|----------|
| 0.02 | one minute | 1 |
| 0.05 | a few minutes | 1 |
| 0.08 | five minutes | 1 |
| 0.08 | five minutes | 1 |
| 0.08 | five minutes | 1 |
| 0.12 | 5-10 minutes | 2 |
| 0.17 | ten minutes | 2 |
| 0.17 | ten minutes | 2 |
| 0.17 | ten minutes | 2 |
| 0.17 | 10 minutes | 2 |
| 0.17 | ten minutes | 2 |
| 0.2 | 10-15 minutes | 2 |
| 0.25 | 15 minutes | 2 |
| 0.25 | fifteen minutes | 2 |
| 0.25 | fifteen minutes | 2 |
| 0.25 | about fifteen minutes | 2 |
| 0.3 | fifteen to twenty minutes | 2 |
| 0.5 | 30 minutes | 3 |
| 0.5 | 40 to 30 minutes | 3 |
| 0.5 | thirty minutes | 3 |
| 0.5 | 30 minutes | 3 |
| 0.5 | thirty some minutes | 3 |
| 0.5 | 30 minutes | 3 |
| 0.5 | 30 minutes | 3 |
| 0.5 | thirty minutes | 3 |
| 0.83 | 50 minutes | 3 |

Appendix J
Duration Categorization

| Proportion | Open Ended Answer | Category |
|------------|-------------------|----------|
| 1 | one hour | 4 |
| 1 | one hour | 4 |
| 1 | one hour | 4 |
| 1 | one hour | 4 |
| 1 | one hour | 4 |
| 1 | one hour | 4 |
| 1.5 | an hour or two | 4 |
| 2 | a couple of hours | 4 |
| 2 | couple of hours | 4 |
| 2 | two hours | 4 |
| 2 | Couple of hours | 4 |
| 2 | every two hours | 4 |
| 3 | maybe three hours | 4 |
| 3 | few hours | 4 |
| 3 | three hours | 4 |
| 3 | 3 hours | 4 |
| 3 | 3 hours | 4 |
| 3.5 | 3 or 4 hours | 4 |
| 3.5 | 3 or 4 hours | 4 |
| 4 | four hours | 4 |
| 4 | four hours | 4 |
| 24 | one day | 5 |
| 24 | a whole day | 5 |
| 24 | one day | 5 |
| 36 | one day or two | 5 |
| 48 | two days | 5 |
| 48 | 2 days | 5 |
| 72 | maybe three days | 5 |
| 72 | three days or so | 5 |
| 120 | 5 days | 6 |
| 168 | a week | 6 |
| 168 | about a week | 6 |
| 168 | one week | 6 |