

## What Is Missing in the Study of the Development of Jealousy?

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This commentary will emphasize some aspects of the development of jealousy that the previous chapters did not cover, viz., a more complete consideration of the development of jealousy from infancy to adulthood. It takes as a starting point that recent studies are sufficiently convincing in demonstrating the *existence* of a form of jealousy, perhaps manifested in a very rudimentary way, by the middle of the first year of life, but that this discovery, important as it is, leaves many important issues uncovered. For instance, the discovery has little bearing on the distinction between "basic" and "non-basic" emotions. Moreover, these important findings on early manifestations of jealousy must be extended to the study of development of jealousy into older ages, and to the more complex ways by which jealousy can be manifested. We agree with the various authors that jealousy takes place in a triadic interaction involving a target person (e.g., a young infant), a partner (e.g., a mother), and a rival (e.g., a sibling or another child), but that the identification of structural differences in the social organization of events that result in jealousy does not go far enough to explain the generation of the emotion or the ways by which the emotion is manifested. This commentary accepts the assumption that infants must have a cognitive understanding of social relationships, without which they cannot show jealousy; however, to understand the role of cognition in jealousy, we must also understand the development of different behavioral strategies that are used in jealousy encounters, and how cognition plays into those strategies. In sum, this commentary is designed to supplement, rather than to reiterate or criticize, the chapters on which it is based.

Two questions form the heart of our comments on jealousy: (1) What are the roles and functions of jealousy in the social relationships of the young child? (2) Are these functions at all similar to the functions of jealousy in adults?

We will maintain that jealousy does not serve the same set of functions at each point in life. Furthermore, even if jealousy in a young child plays some of the roles that adult jealousy plays, we cannot assume that a child can exhibit the full range of behaviors associated with jealousy in adults. In what follows, we will

elaborate on some of the major ways in which jealousy can be expressed—the different *behavioral modes* of jealousy, as we will call them. Clearly, these behavioral modes of jealousy do not all develop simultaneously, nor are they present from birth. Indeed, there is a need for very important research documenting in what sequence, if any, these behavioral modes become manifest, and how factors related to age, experience, and socialization help bring these behavioral modes online. In laying out these behavioral modes, we also highlight useful, but often neglected, principles of emotion. One is the *goal relevance* of emotions and their manifestation; that is, emotions always follow from a person's goals, and cannot be inferred independently of these goals. A second principle is that of *intentionality*; emotions are always *targeted* toward something—they have an “object,” which in the case of jealousy is a social one. In concluding, we will argue that only when one considers which among the many manifestations of jealousy are shown at a given point in development can one begin to theorize more precisely about the cognitive prerequisites for jealousy.

### **Emotional Development: A Principle to Keep in Mind**

Emotional development is often conceptualized inadequately. A major misconstrual, seen in the literature on jealousy and elsewhere, relates to the tendency to differentiate a “true” emotion from a “proto-emotion.” A classic instance of this misconstrual is in the otherwise-excellent article on the development of disgust by Rozin and Fallon (1987). They delineated a series of steps a child goes through with development to manifest disgust. These steps proceed from the neonate's facial reactions and aversive movements to bitter and sour tastes, continue through avoidance at later ages of ingestion of a fluid within which a child can see floating pieces of plastic feces, and terminate with the child's avoidance of ingestion of a fluid into which the pieces of plastic feces were inserted, but then removed. Although each of these steps produced clear negative reactions in children, Rozin and Fallon stressed that only in the last-described step, at about 7 years of age, is the child's reaction “true” disgust. The authors, in brief, set up an arbitrary criterion—the prior but no longer evident contamination of a foodstuff—to discriminate “proto-disgust” from “true” disgust. A similar categorical division was made by Arnold Buss and colleagues (Buss, Iscoe, & Buss, 1979), who argued that a child could not show “true” embarrassment until the age of 5, because only then did the child have a sense of self sufficiently developed to warrant the attribution of that emotion. Such arbitrary divisions lead investigators to focus on the later-manifested (i.e., “true”) emotion to the neglect of the study of developmental antecedents, or to study the developmentally prior manifestations, without considering linkages to later manifestations. We shall note both tendencies in the review of the jealousy literature that follows.

How should we more appropriately view the development of emotion? We view emotional development using Wittgenstein's (1958) metaphor of a rope. There need be no continuity between one end of a rope and the other, yet the rope is a single entity. The overlapping strands of the rope, proceeding systematically along its length, unify it. Similarly, the early manifestations in the development of an emotion need have no similarity with its adult manifestation. However, each step in development overlaps sufficiently with the preceding and the subsequent ones to provide unity. The major proponents of this view of emotional development have been Mascolo and Fischer (e.g., 1995), along with Barrett and Campos (1987).

### What Is Jealousy and What Is Its Importance?

It is tempting to skip definitions, and indeed, some of the preceding chapters do so. For us, jealousy is the emotion evoked when we perceive that a significant relationship is challenged by a third person. Jealousy is distinguished from envy on the basis of the social structure of the interaction. In envy, there is a person who wishes for what another has, and the person who has that which is wished-for; there need be no third party. In both jealousy and envy, the principle of goal relevance comes into play, insofar as there is in both cases something that another has and that the first person wants. To see how pervasive jealousy is in our adult relationships, and how it depends on the personal goal relevance of the interactions involved, we should consider the circumstances in which we do *not* feel jealous. For example, no jealousy can arise in a relationship where the attention and affection of the partner are entirely unimportant to us (thus attesting to the motivational principle mentioned above). The audience watching Shakespeare's *Othello* is not jealous of Cassio were it to think that he had an affair with Desdemona, though Desdemona's husband would be. We might be *envious* of Brad Pitt because he is seeing Angelina Jolie, but we are not *jealous* of him (unless Angelina is a former girlfriend of ours). Neither would we have envy if for whatever reason we did not value Angelina's charms. (We will leave it for a later section of this commentary to elaborate on how critical the principle of intentionality, described above, is for a fuller understanding of jealousy.)

Jealousy is important for many reasons. It is a universal experience, a bitter one, and a potentially violent one as well. The phenomenon is universal because we enter numerous relationships that to a lesser or greater extent are significant to us. In fact, the greater the relevance the relationship has for oneself, the more intense (and hence, the more dangerous) the manifestation of jealousy. For instance, participants reporting greater dependency on their partners also thought they would react more strongly to seeing their partner flirting with someone of the

opposite sex (Rydell & Bringle, 2007). Furthermore, it is unavoidable that we sometimes compete for the attention and affection of those we love, even when they do love us in return. An illustrative case in point is the jealousy young siblings exhibit when fighting for their mother's attention (Miller, Volling, & McElwain, 2000).

Jealousy is important also for its relevance to the evolution of human psychology. From an evolutionary perspective, situations evoking jealousy are more than unpleasant; they constitute threats to the passing on of our genes. Accordingly, Buss and Haselton (2005) characterize jealousy as "an emotion designed to alert an individual to threats to a valued relationship" (p. 506). It is easy to imagine how naïve, unjealous, males were wiped out of the evolutionary tournament by our more watchful ancestors, because the former unknowingly helped raise the offspring of the latter. To secure the survival of one's genes (and not those of another), it was (and continues to be) essential to keep one's female partner for oneself. David Buss and his colleagues (Buss, Larsen, Westen, & Semmelroth, 1992; Shackelford et al., 2004) have provided support for this idea by finding that men were likely to be most upset by imagining their partner engaging in the reproductive act of sexual intercourse with another person. In contrast, women responded that they felt more distress when imagining their partner forming a deep emotional attachment to someone else; for women there was never any doubt that the child was their own offspring and their major concern was the loss of the mate's commitment and protection to another female.

In brief, jealousy has a large impact on our adult lives. The role and the importance of jealousy in young children's social relationships is less obvious—and is even less so in infants. This subtlety accounts, in part, for the neglect of the study of jealousy in early development; yet, the functions of jealousy in early development, different as they are in many ways from those of adults, may nevertheless be extraordinarily important. Surely, jealousy must have enduring consequences, both for child–parent attachment, as well as sibling–peer relationships. The question is worth posing in the context of this handbook: How similar, then, are the functions of jealousy in childhood to jealousy in adulthood, and what role do they play in the organization of the later social relationships of the child?

### **The Apparent Paradox of Early Jealousy**

There is a paradox about the presence of jealousy in the middle of the first year of life, a presence now confirmed by Draghi-Lorenz (this volume, Chapter 11), Hart (this volume, Chapter 4), and Legerstee, Ellenbogen, Neinhuis, and Marsh (this volume, Chapter 9). The paradox is that jealousy should not exist in the first year of life, yet it evidently does.

### Reasons for neglecting the study of early jealousy

There are at least two reasons why it had been thought that jealousy should not exist in the first year. First of all, some influential writers on jealousy, such as White and Mullen (1989), do not talk about jealousy in infancy and childhood, preferring to refer to *developmental antecedents* of jealousy, such as sibling rivalry. Presumably, White and Mullen would consider the experimental operations used by those who investigate jealousy in the first year of life to be too rudimentary to infer jealousy, in the manner that Rozin and Fallon (1987) dismissed distaste in infancy as an indicator of disgust, and Buss et al. (1979) dismissed early embarrassment. The second reason is the widespread distinction in emotional development between basic and non-basic emotions (the basic emotions being joy, fear, sadness, anger, distaste, surprise, and possibly others including pride and shame; see Tracy, Robins, & Tangney, 2007). The second reason has as a corollary the belief that basic emotions should be observable in the first year of life but the non-basic ones only after 15–18 months (Lewis, 2000), despite reports of early manifestations of jealousy by Gesell (1906). Both of these objections have had the undesirable consequence of discouraging investigations into jealousy in the first year of life, or worse, implying that jealousy should not be observable in early infancy at all.

There is reason for not putting too much stock in either basis for believing that jealousy should not be observable in the first year of life. We have already addressed the problems with the first issue, that of developmental antecedents, believing that the approach of Mascolo and Fischer (1995) avoids categorical thinking that discourages investigations of phenomena that are not the full-blown manifestation of an emotion. The groundbreaking work by Hart, Draghi-Lorenz, Legerstee, and others has clearly established that emotions meeting the criteria of jealousy are observable by the beginning of the second half-year of life, and possibly even earlier. Infant jealousy is definitely part of the family of emotions designated as jealousy.

The second basis for the neglect of investigations of jealousy in the first year of life—that based on the distinction between basic and non-basic emotions—is harder to deal with. There are many misconceptions about what a basic emotion is and is not. When properly understood, the conceptualizations of two categories of emotion—basic vs. non-basic—in no way should preclude the observation of jealousy in the first year of life. However, in another sense, what are called basic emotions may indeed condition at what age the manifestation of jealousy is evident in the first year of life. If we are correct in making this assertion, the criticism of basic emotions that is both implicit and explicit in the infant jealousy literature is not apt.

### Clarifying the distinction between basic and non-basic emotions

To clarify the misconceptualizations about basic emotions and jealousy, we will deal here with some of the inclusion and exclusion criteria that define basic and

non-basic emotions, to ascertain (a) why the basic vs. non-basic distinction should not have delayed the study of infant jealousy, and (b) why there are good ontological reasons for dividing emotions into two rather different sets. We make the second distinction because at times it appears as if research on jealousy blurs a distinction we consider both valid and very relevant for understanding how jealousy is manifest. The inclusion and exclusion criteria we apply to basic emotions are as follows:

- 1 Basic emotions refer to that subset of emotions that (a) show cross-cultural universality in the recognition of their expression; (b) have cross-modal specification (i.e., can be identified in face and voice, and possibly touch and gesture as well); (c) may be evident in phylogenesis, at least among higher primates (Plutchik, 1982); and (d) can be directed to both physical objects and social ones (whereas the non-basic emotions apply only to social encounters, except when used metaphorically). It is clear that there are some emotions that meet these criteria, as well as some that do not; the latter are the so-called non-basic emotions, with jealousy one such non-basic emotion.
- 2 The concept of basic emotions was never intended to imply their emergence in the first year of life, and the emergence of the non-basic only after the first year and a half of age. In fact, the emotion of contempt is a basic emotion (Boucher & Brant, 1981), but contempt has not been reported in the first year of life and may not be evident until the late preschool years or afterward. A simplistic equation of basic with emergence in the first year and non-basic at later ages is not warranted.
- 3 The term basic emotion does not imply that such an emotion is *constitutive* of other emotions, in the fashion that a Mendeleev chemical element is constitutive of a chemical mixture (as hydrogen, together with oxygen, is constitutive of water). Because they are not constitutive, emotions like fear, joy, anger, sadness, etc., are not necessary to generate jealousy.
- 4 Basic emotions *do* enter into emotion blends, by which we mean combinations of emotional responses to a situation. These blends can be sequential or simultaneous. Thus, one can express both fear and anger in close temporal proximity in response to the same transaction. Similarly, joy and contempt go together (e.g., in smugness), as well as surprise with any one or more of the other basic emotions. Scrutiny of the responses cited when young infants are said to be jealous leads us to consider jealousy to be a blended emotion (Hart, this volume; Hobson, this volume, Chapter 13; Legerstee et al., this volume; Rydell & Bringle, 2007). When feeling jealous, a person can simultaneously experience several emotions, like sadness, anger, and shame.

In sum, this examination of what constitutes basic and non-basic emotions leads us to conclude that (1) the term "basic" has unfortunate and erroneous connotations of being constitutive of more complex emotions, (2) that the distinction

between two different classes of emotions is real, though the distinction requires redesignation to eliminate undesirable implications of the terms basic and non-basic, and (3) that for jealousy to be manifest, the responses of what are currently designated as the basic emotions must be available to the child. If we conceptualize jealousy as a shifting between or among various emotional states, some of them "basic," it becomes less paradoxical that jealousy appears to emerge during the first year of life but yet is somehow secondary to the manifestation of simpler (i.e., basic) emotions. We thus caution against the use of findings on early jealousy to challenge a valid distinction between two classes of emotions.

### The Behavioral Modes of Jealousy

The goals, feelings, and behaviors of the jealous person will change drastically as his or her appraisal of the jealousy-evoking situation changes. It is this multifarious character of jealousy that prompted Marcel Proust to say: "jealousy is never a single continuous and indivisible passion. It is composed out of an infinity [...] of different jealousies" (Proust, 1989, p. 404). Though Proust's description of an infinite number of jealousies is a bit of poetic license, we do believe that there are multiple and distinct ways by which jealousy can be manifested.

Inspired by Bryson's (1991) notion of "response modes," we define a *behavioral mode* of an emotion as a distinct way in which the emotion is targeted and acted out with the goal of coping with the appraised situation.<sup>1</sup> Importantly, children can show one of the behavioral modes of jealousy without being able to show another. In fact, we argue that the development of jealousy involves describing the developmental order by which the child starts acting out more modes of jealousy and shows a more flexible response to the potentially jealousy-evoking situation (see Masciuch & Kienapple, 1993).

The emphasis on behavioral modes is fruitful in two respects. First, it provides a conceptual framework for studying jealousy in early childhood. Though interesting, we do not find the question of *when* jealousy first emerges to be the most pressing research question. In our view, the answer depends too much on how a particular researcher probes for jealousy, and operationalizes the infant's response as jealous or not. For an incremental science, it is more fruitful to ask in what way jealousy is manifested at different points in development.

Second, knowing the development of behavioral modes in jealousy puts us in a better position for theorizing about the cognitive and emotional capacities present at the different ages. Consider the study by Hobson and his colleagues involving parental reports of a range of emotions in school-aged children with and without autism (Hobson, this volume). For jealousy, but not for other emotions like pity, concern, and guilt, an equal proportion of parents of autistic and non-autistic children reported seeing clear signs of the emotion. All the other social emotions appeared to occur less frequently in children with autism than in

other children of similar age. However, it is hard to know from these data alone exactly what kind of jealous behavior the autistic children exhibited, and therefore we do not know precisely what kinds of behavior we are finding the cognitive prerequisites for.

We now turn to highlighting some of the core behavioral modes of jealousy, and the extent to which they have been noted or ignored in research on early childhood jealousy. In delineating these modes, we take into account two essential issues for the evocation of any emotion: First, what is the goal of the behavior expressing the emotion? Is it to reestablish or to sever the relationship with the beloved other? Second, toward whom is the emotion directed? Is it toward the beloved or the rival? A consideration of these two questions as they pertain to the emotion of jealousy leads to the following five core modes: (1) attempts to restore the relationship with the beloved, (2) hostility toward the beloved, (3) thwarting the rival, (4) hostility toward the rival, and (5) fear, sadness and despair in the face of perceived loss of a valued relationship.

#### (1) Restorative behaviors toward the beloved

One of the earliest responses infants display in jealous contexts is the attempt to reestablish social interaction with the loved one. It is important to separate such behaviors from hostility directed toward the beloved or rival. Though hostile behaviors may have the overarching goal of restoring the lost or threatened relationship, restorative behaviors as we define them are attempts to confirm or reestablish the threatened relationship with the beloved through non-hostile means.

Masciuch and Kienapple (1993) provide longitudinal data on the progressive nature of infant attempts at restoring the threatened social relationship. Early infant attempts to reestablish the social relationship with the parent are quite primitive, relying mainly on distress cries or reaching toward the parent. Anecdotal evidence of these restorative behaviors may be taking place in Bradley's (this volume, Chapter 10) reports on infant-peer trios, where games of "footsie" and vocalizations are prevalent in the effort of orienting or maintaining the attention of a sought-after partner while in competition with a rival infant.

Empirical findings of increased infant displays of sadness in jealousy-evoking situations may be indicative of the infant's attempt to restore the relationship by creating a situation that is likely to elicit caregiving behaviors by the attachment figure, especially when these sad displays are associated with infant gaze to the caregiver (Hart, Carrington, Tronick, & Carroll, 2004). The gaze of the infant is particularly significant here, as it demonstrates the directedness of the emotional display and distinguishes it from the withdrawn sadness associated with the fifth behavioral mode of despair. Additionally, Volling, Kennedy, and Jackey (this volume, Chapter 17) report that younger infants are more likely than older infants to seek comfort from mothers in jealousy-evoking situations.



These behaviors may be the best available response the child has to regain the affection of the caregiver, particularly at the younger ages at which they are primarily reported.

Although infant crying in these contexts may be expressions of jealousy, crying can also demonstrate any number of other negative emotional states. For infant distress behaviors to be interpreted as jealousy they should co-occur with other goal-directed behaviors indicative of jealousy, as well as be present in jealousy-evoking contexts. One paradigm to investigate the co-occurrence of distress with other behaviors indicative of jealousy is to have the infant become distressed at observing the mother attend to a rival, the mother respond to the infant with a reassuring expression, but then refocus on the rival as before. If the infant calms down, it would help affirm that the distress was in response to the disrupted relationship, rather than merely the disrupted attention itself, and the goal of the distress was to confirm that the dyadic relationship between mother and infant was still intact.

## (2) Hostility toward the beloved

Very few reports of hostility directed toward the significant other are reported in the developmental literature. This may indicate either a lack of specificity in coding such behaviors, or a later onset for the response to appear. Based on anecdotal reports, it is difficult to determine which case it is. For example, in Bauminger's (this volume, Chapter 12) report of 4-year-old Yuval's response to his mother's reading a book to a rival child, Yuval yelled "No! Me!" and then threw the book to the floor. Young infants may also show hostile-like behavior. In his parental interview study, Draghi-Lorenz (this volume) reported that at 9 months of age, research participant Daisy growled upon seeing her father lift up older sister Alison. Such responses may be indicative of anger toward the beloved. However, even in these instances, it is difficult to tell whether such vocalizations and actions are in fact angry or hostile, or instead are a more general distress reaction on the part of the infant. Behaviors of hitting, pinching, or tugging a loved one would be more demonstrative of jealous hostility. Many studies report that infants touch their parent more in jealous contexts (Hart, Field, del Valle, & Letourneau, 1998a; Hart, Field, Letourneau, & del Valle, 1998b). However, these studies do not describe and differentiate what type of touching this is, as a gentle tug on the mother's blouse is very different from striking out at her arm.

Many covert aggressive behaviors become evident later in development. Infants have been reported to ignore the competing relationship, complain to the parent, ask for time with the rival child, ask to leave, or even pretend to dial someone on a toy phone to report the parent's undesirable behavior (Masciuch & Kienapple, 1993). Furthermore, more general infant distress reactions at being ignored by a significant other (Legerstee et al., this volume; Bradley, this volume) may also indicate hostile verbalizations (such as a jealous adult yelling profanity at

a loved one). However, as discussed with the previous mode evaluating restorative behaviors, such conclusions are entirely speculative without converging evidence for the directedness and goals of such distress displays. Examples of hostile behavior toward the beloved, be they overt or covert, are of great relevance when considering the drastic consequences such behaviors can take in adults, in the forms of spousal abuse or murder.

Hostility directed toward the beloved may also be observed after the rival is removed. The child may demonstrate continued hostility through decreases in warmth, helping behavior, or empathic responding when later interacting with the significant other. We are unaware of any studies that have investigated the lingering impact of jealousy-evoking situations on the child's interactions with the beloved. Considerations from attachment theory suggest that these carryover effects may well result in insecure attachment behaviors.

### (3) Hostility toward the rival

In mature jealousy the rival is an equally natural target as the beloved for the anger of a jealous person. Intentionally or not, the rival poses a threat to the person's goal of having a stable and lasting relationship with the beloved. Compared to instances of hostility toward the beloved, instances of hostility toward the rival are relatively frequent in the maternal reports presented in this volume. Draghi-Lorenz (this volume) gives the example of a 6-month-old girl who had seen her mother pick up the family's kitten and cuddle it. The mother says that this had made the girl start crying, and when the girl was picked up, she was brutal to a kitten she had otherwise loved to play with.

Experimental studies have found increased anger in young children when they are in jealousy-evoking situations (Hart, this volume; Hart et al., 2004). However, most studies looking at infants' reactions in these situations do not report toward whom the child's anger is directed. When Volling, McElwain, and Miller (2002) observed toddlers' reactions to seeing a parent play with their older sibling, they coded negativity toward parent, negativity toward a sibling, and rough play all in the same category as "disruptive behavior." In another study, Hart and her colleagues (Hart et al., 2004) compared 6-month-olds' responses to three different conditions. In one the mother was instructed to interact naturally with her child, in another she was instructed to pose a still-face, and in a third she was instructed to ignore her child and engage in a lively conversation with an infant-size doll (jealousy condition). The infants showed more anger in the still-face and jealousy conditions than in the natural condition, but there was no significant difference in anger between the two former conditions. However, in the jealousy-evoking situation there were two possible targets of the hostility, the mother and the rival doll, whereas the still-face condition only contained one. Hence, there is no way of knowing whether the children in the jealousy condition were angry at the mother or the baby doll.

As Draghi-Lorenz (this volume) notes, the target of aggression should become more visible when the child's range of action increases through motoric development and the acquisition of independent locomotion. Consistent with this idea, Hart et al. (1998a) mention that some 12-month-olds aggressed toward the rival doll to whom the mother was exclusively attending. Nevertheless, infants' anger has been shown to have directedness from 4 months of age and perhaps even earlier (Sternberg & Campos, 1990), demonstrating that it may be possible to determine the target of jealous anger in the first third of a year of life.

Also, as said above in the section on hostility toward the beloved, it appears possible to study lingering anger in children after the jealousy-evoking situation has ended. The question can then be whether the child acts with more hostility toward an experimenter who has just challenged the child's relationship to his or her mother. An additional way of studying anger toward the rival is inspired by Masciuch and Kienapple's (1993) report that some children play with the rival's toys when being ignored by their parent. It would be interesting to investigate whether the jealous child would also engage with the rival's parent in response to being ignored by the beloved. Such behaviors would demonstrate intentional elicitation of jealousy in the rival as a means for the child to express anger at the rival, and perhaps even its own, unfaithful, parent. In sum, we encourage researchers to pay closer attention to the directedness of jealous anger, and even to develop paradigms designed specifically to elicit the behavioral mode of showing hostility toward the rival.

#### (4) Thwarting the rival

Attempts to hinder the rival, be it a sibling or a Don Juan, are easily confounded with aggression toward the rival. Yet, the distinction between them is crucial. Though thwarting may co-occur with anger, the former does not imply the latter, either in cases of jealousy or otherwise. An adult instantiation of the behavioral mode of thwarting would be interrupting the conversation between one's partner and an attractive rival, and gently suggesting that you and the partner go home because you need to get up early the next day. Hobson (this volume) provides a charming story reported by a mother demonstrating non-hostile thwarting of a rival. On one occasion, the mother was hugging her partner while her autistic 2-year-old boy was sitting next to them on the couch. In response to this exclusion, the boy eventually took the partner's hand, led him out of the room and shut the door. By at least temporarily hindering the rival from having access to his mother, the boy was apparently hoping to secure his threatened place in the mother's heart.

Draghi-Lorenz (this volume) presents rich data on similar sibling interactions from an interview study with mothers of 9 infants less than a year old. Parental reports revealed that infants as young as 8.5 months may try to push their sibling away from their mother. These reports need corroboration by more direct

measures of behavior to determine whether such actions are examples of thwarting or open hostility toward the rival, but suggest that jealous thwarting does occur in the first year of life. A commonly investigated setting for jealousy early in life is sibling competition for parental attention. Volling et al. (2002) found that jealousy-related distress in 16-month-olds correlated with attempts to interrupt play between a parent and the older sibling. Volling and her colleagues argue that the toddlers' distress was due primarily to jealousy because it was directed at the parent-sibling interaction.

Notably, there also seems to be development in the ways in which the jealous individual thwarts his or her rival. Volling et al. (this volume) found that preschoolers engaged in both attention seeking at a distance and physical intrusion into the play between the mother and the sibling. The 2-year-old siblings, however, were found to engage in interference behavior but not attention seeking. These distal and proximal forms of interfering in the interaction between the rival and the beloved are representative of the behavioral mode of thwarting. Whether they are also expressions of hostility on the part of the jealous child toward the mother or rival child has not yet been studied in sufficient detail. Based on the present research, we see a need to distinguish between the three modes in question, as well as studying the development of each.

#### (5) Negative emotions over losing a relationship

The fluctuation between sadness and fear at the prospect of losing a significant relationship is one of the most dominant parts of the subjective experience of jealousy (Mullen, 1990). Needless to say, little is more detrimental to one's well-being than having one's bonds with a loved one severed or permanently damaged. If in a given situation one perceives a threat but is unable to remove it, withdrawal and introversion signify the beginning of the grieving process. This withdrawn sadness should be kept apart from the distress discussed as part of the jealous person's attempts to restore the relationship with the beloved. Whereas a person hoping to achieve reunion can do so by seeking compassion from the loved one, a person who does not believe that the relationship can be saved will instead seek to be away from the loved one.

Seemingly, jealous despair has been extensively studied in infancy. Studies consistently report increased distress and sadness by infants in situations where the mother is paying attention to a rival while ignoring her child (e.g. Hart & Carrington, 2002; Hart et al., 2004). Indeed, in a study by Hart et al. (2004), heightened sadness was what most clearly differentiated between the 5-month-olds' emotional reactions to their mother talking to a rival doll and their reactions to the mother posing a still-face. Furthermore, Hart et al. (1998a) describe 12-month-olds who display "disorganized behaviors (such as stilling), evidence of anxiety (such as rocking, pacing, self-clinging, propitiatory smiling, and numerous self-comforting and avoidance responses). . ." (p. 60).

To ensure that infants' negative reactions were not merely due to mothers behaving in an unusual way, Legerstee et al. (this volume) investigated the effects of specific characteristics of the conversation with the rival by contrasting a "monologue" with a "dialogue" condition in an experiment with 3- and 6-month-olds. In both conditions, the experimenter was about to communicate with the infant, when the mother interrupted. In the monologue condition, the experimenter explained to the mother, with only a few interruptions, what the goal of the experiment was. In the dialogue condition, the experimenter engaged the mother in a lively conversation about her child. The authors concluded that "(t)he finding that infants reacted negatively in the dialogue, but not in the monologue condition, suggests that the infants perceived the third party as a rival" (p. 182). The results from Legerstee and her colleagues are highly interesting, and we look forward to learning more about the differences between 3- and 6-month-olds.

Elegant as these studies are, they cannot remove one's doubts as to whether a young child can understand what it means to lose a significant relationship. The ability to think of relationships as something that can be wholly or partially lost, and be lost to someone else, would seem more cognitively advanced than merely being sad about one's mother being unusually inattentive. Bowlby describes a horrifying case of such a realization in his studies of children separated from their mothers and placed in nurseries (Bowlby, 1973; Robertson & Bowlby, 1952). According to Bowlby, over the span of prolonged separation from their mothers these children go through stages of protest, despair, and, finally, detachment. Studies of children subjected to protracted experiences of jealousy might reveal an analogue of Bowlby's three stages or reaction following separations.

Experiencing the loss of maternal love and attention obviously cannot be induced experimentally. However, even if a threat to the relationship with the mother is likely to be the strongest elicitor of jealousy and jealous despair, this should not lead researchers to exclude the possibility that infants can feel jealous if their relationship to someone else is threatened. On the contrary, it seems that allowing for this possibility when designing further studies opens up the road to a new and informative line of research. As shown in Bradley's studies of infant-peer trios (Bradley, this volume; Selby & Bradley, 2003), relationships that appear sufficiently strong to evoke jealousy may be established within a lab setting. Moreover, it might be possible to test how the child reacts to the experience of losing a relationship to a friendly adult experimenter, and how this affects the child's interpretation of future interactions with adults in a similar setting.

### **Implications for Empirical Investigations of the Prerequisites for Jealousy**

From the above outline of five modes of jealousy, it should be clear that the cognitive and motoric prerequisites of one behavioral mode are different from

the prerequisites of another behavioral mode. These behaviors, though partially evident in some infants in some contexts at 7–8 months, are not coordinated with the actions and perceptions of more complete displays of jealousy evident at 12–18 months (Masciuch & Kienapple, 1993). Such discrepancies in behavioral responding by infants may be the result of undeveloped motoric abilities, social understanding, or both. Legerstee and her colleagues (Legerstee et al., this volume) lay out some candidate prerequisites for jealousy early in life with admirable clarity. What we request in addition is greater attention to the range of jealous behavior for which we are postulating cognitive prerequisites. The case of jealousy in autistic spectrum disorder (ASD) illustrates why it is necessary to specify the range of behavioral modes one is trying to explain.

Several authors in this handbook (Bauminger, this volume; Hobson, this volume) argue that the research on jealousy in children with ASD may be helpful in highlighting what capacities are necessary for experiencing jealousy. Children with ASD typically have emotional deficits, but only minor cognitive impairment, leading researchers to think that this population may tell us to what extent cognitive abilities are necessary for a given emotional behavior.

A caveat against drawing too strong conclusions from findings with autistic children is the broad range of characteristics encompassed by this diagnostic label. Not all autistic children are merely normal children with some emotionality subtracted; in fact one may wonder if such a simplistic description fits any children with ASD. For this reason, when we use diagnostic status as a classificatory or blocking variable, we will not know exactly what factors are co-varying with it. Note, for instance, that when Bauminger, Chomsky-Smolkin, Orbach-Caspi, Zachor, and Levy-Shiff (2008) attempted to match normal and autistic preschoolers on mental age, as assessed by the Mullen scales (Mullen, 1997), they ended up with an ASD sample whose average chronological age was 14 months higher than the normal sample (46 vs. 32 months). In this situation, it is hard to say what causes the differences in jealousy manifestation—autism or the child's age.

We strongly agree with Bauminger's (this volume) suggestion that future studies will need to differentiate between subgroups within the autistic spectrum. To understand jealousy in autistic children, we then need to know what modes of jealous behavior the different subgroups of autistic children exhibit. In Bauminger's studies (Bauminger, 2004; Bauminger, this volume; Bauminger et al., 2008), interesting differences emerged between the autistic group and the normative group for both preadolescent and preschool samples. For example, preadolescents with ASD looked less at a rival and parent interacting, but engaged in more attention-seeking and involvement behavior. Yet, only when we know to what extent this pattern is observable in all subgroupings of the autistic spectrum will we be better able to explain the jealous behavior. Hence, we maintain that general conclusions about jealousy based on research with autistic children seem premature.

In uncovering the emergence of jealousy early in life, be it in normal or clinical populations, researchers face a theoretical dilemma (Legerstee et al., this volume). They can either see jealousy as the harbinger of a certain cognitive change, for example interpersonal awareness (Bradley, this volume; Hobson, this volume), or as precluded on logical grounds because the presumed necessary cognitive capacities are not yet in place. If we stop seeing jealousy as an all-or-none phenomenon, but rather as something that takes different forms throughout development, we can also stop seeing these cognitive capacities as all-or-none phenomena. As Hobson argues, it is conceivable, and indeed likely, that only some forms of interpersonal awareness are necessary for experiencing jealousy.

The experience of jealousy should not be assumed to be the same across all stages of development. Nor is jealousy ever an invariant state, be it in the infant or the mature adult. Rather, as Shakespeare may well have understood, the feeling of being jealous is largely determined by the goals of the jealous person and the directedness of the emotion. Like Desdemona's husband Othello, we may feel betrayed by our beloved, we may be angry at and humiliated by our rival, and we may experience fear and even sadness over the prospects of losing a significant other. Each of Othello's possible modes of responding is in the effort at coping with the jealous situation. However, Othello's killing of Desdemona will seem at odds with his great love for her only if one fails to take into account the target and goal of the jealous response. More than anything else, it is this multifarious collection of partly contradicting goals that makes jealousy a complex emotion.

### **Acknowledgments**

The preparation of this paper was made possible by grant HD-39925 from the National Institute of Child Health and Human Development to the first author, and another grant, from the Amini Foundation, to the first and second authors.

### **Note**

- 1 The notion of behavioral modes is related to, but not identical with, Frijda's term "action tendency." For Frijda, an "action tendency is readiness for different actions having the same intent" (Frijda, 1986, p. 70). In jealousy, the ultimate goal is to cope with the unpleasant state of being jealous, hence all jealousy behavior can be seen as expressing the same action tendency. At the same time, achieving this goal will involve the achievement of one or more sub-goals, for example either breaking up with one's girlfriend or reestablishing one's exclusive position as the one and only boyfriend. In the terminology we are proposing, the action tendency of jealousy can be expressed through multiple behavioral modes.

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