Social Anxiety in Childhood: Bridging Developmental and Clinical Perspectives

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Abstract

In this introductory chapter, guided by developmental psychopathology and developmental science as overarching integrative theoretical frameworks, the authors define three constructs related to social anxiety in childhood (behavioral inhibition, anxious solitude/withdrawal, and social anxiety disorder) and analyze commonalities and differences in the content and assessment of these constructs. They then highlight controversies between developmental and clinical approaches to the definition of these constructs, the role of biology in social anxiety, age of onset of social anxiety, information processing biases in social anxiety, heterogeneity in the social and emotional adjustment of socially anxious children, and targets of intervention for childhood social anxiety.

The study of social anxiety in childhood has been conducted from three psychological research traditions: developmental investigations of the temperamental construct behavioral inhibition (BI) and its biological substrates; developmental investigations of the affective-behavioral profile of anxious solitude/withdrawal and its parent–child and peer-relational precursors and moderators; and clinical investigations of social anxiety disorder (SAD; also known as social phobia) emphasizing diagnosis, treatment, and a variety of etiological factors. In recent years, researchers have made innovative efforts to bridge these perspectives. For instance, some of our contributing authors have examined the joint contributions of temperament and relationships in the prediction of anxious affective-behavioral patterns (Degnan, Henderson, Fox, & Rubin, 2008; Rubin, Burgess, & Hastings, 2002). Others have examined the correspondence between temperament and clinical disorder in young children (Hirshfeld-Becker et al., 2007) and the effects of treatment on both temperament and disorder (Rapee, Kennedy, Ingram, Edwards, & Sweeney, 2005). Our primary goals for this monograph were to bring together researchers who have been at the forefront of a rapprochement between developmental and clinical research, and to consider conceptual and methodological barriers to the integration of these traditions.

In this volume, we aim to identify extant evidence (and gaps therein) that permits (or impedes) researchers from the three traditions to translate their core definitional constructs in ways that would facilitate the use of one another's research. Intimately connected to this translation of constructs is a discussion of the conceptualization of core states (wariness, uncertainty, fearfulness, anxiety) and their manifestations across childhood. We also consider corresponding methodologies. Key areas of controversy in the integration of developmental and clinical approaches to the study of childhood social anxiety are highlighted, including not only the relation between constructs and methods from these traditions, but also the role of biology in social anxiety, patterns in the age of onset of social

anxiety, social information processing "biases" in social anxiety, heterogeneity in the social relations of anxious children, and targets of intervention for social anxiety. Across all of these themes, we aim to identify key issues for future research. Extant research will be analyzed from the integrative frameworks of developmental psychopathology and developmental science.

Overarching Models of Development, Etiology, and Course

Developmental psychopathology provides an overarching framework and common language for developmental and clinical researchers to approach the development, etiology, and course of social anxiety across childhood (Cicchetti & Rogosch, 1996; Rutter & Sroufe, 2000). This perspective emphasizes the importance of studying children across a broad spectrum of anxiety, including individual differences in BI and anxious solitude/withdrawal, to understand processes that lead towards and away from disorder. This perspective also conceptualizes disorders as multiply determined, according to the principles of multifinality and equifinality. According to the principle of multifinality, children with a given risk factor (e.g., BI; anxious solitude/withdrawal) demonstrate heterogeneous psychological adjustment over time (e.g., some develop SAD, whereas others do not) depending upon the organization of the system in which the risk factor operates (i.e., the manner in which co-occurring risk factors and supports interact to influence functioning). Likewise, according to the principle of equifinality, diverse pathways characterized by different combinations and timing of risk factors (e.g., BI, anxious solitude/withdrawal, and parent–child and peer relationship difficulties) may lead to the same outcome (e.g., SAD).

A compatible developmental science perspective espouses an interactionist child-by-environment model in which multilevel dynamic interaction processes between children and their environments lead to such heterogeneous adjustment over time, even among children who share certain characteristics or environments (Cairns, Elder, & Costello, 1996; Magnusson, 1988; Sameroff, 1993). For instance, parent–child relations can serve to augment or diminish *BI* (Rubin et al., 2002) and peer relations can augment or diminish anxious solitude/withdrawal (Gazelle & Ladd, 2003). These relational experiences may either reinforce pathways leading towards SAD or deflect children onto pathways in which they are able to regulate anxious tendencies well enough to form healthy relationships and productively engage in developmentally normative life activities.

Behavioral Inhibition, Anxious Solitude/Withdrawal, and Social Anxiety Disorder: Common and Contrasting Definitional Criteria, Core States, and Methods

Behavioral Inhibition

Behavioral inhibition is an early childhood temperament classification characterized by wariness in the face of unfamiliar and challenging objects, people, and situations (Kagan, 1997). Fear and uncertainty are the core states thought to motivate this behavior. Behavioral inhibition is typically identified via laboratory observation of toddlers' latency to approach and interact with unfamiliar people (usually adults) and objects and behavioral manifestations of fear in these situations (e.g., crying, freezing, clinging to their mothers, etc.). Behavioral inhibition is believed to originate, at least in part, from a low threshold for stimulation in the amygdala and connected brain structures (Kagan, Reznick, & Snidman, 1987).

Anxious Solitude/Withdrawal

Anxious solitude/withdrawal is defined by elevated rates of solitary onlooking behavior (watching peers' play without joining), shyness, social hesitancy, and verbal inhibition when children are among familiar peers (Coplan, Rubin, Fox, Calkins, & Stewart, 1994; Gazelle & Ladd, 2003). Evidence suggests that these behaviors and interaction patterns are indicative of social anxiety (Coplan et al., 1994), the core state conceptualized as motivating anxious solitude/withdrawal. Anxious solitary/withdrawn children are conceptualized as wanting to interact with their peers, but being blocked by worry that they will perform poorly and/or be poorly received by peers (social evaluative concerns) (Asendorpf, 1990a). Anxious solitude/withdrawal is typically identified by either peer nominations from classmates (e.g., Gazelle, 2008) or behavioral observations of free play (Rubin, 2001) among familiar peers at school.

Various developmental researchers use slightly different terms to refer to anxious solitary/ withdrawn children, including anxious solitary (e.g., Gazelle & Ladd, 2003), anxious withdrawn, and shy/withdrawn (e.g., Rubin, Wojslawowicz, Rose-Krasnor, Booth-LaForce, & Burgess, 2006), and reticent (Coplan et al., 1994). These terms are synonymous. We will employ the term *anxious solitude/withdrawal* because it is unambiguously descriptive in identifying target children as those who play alone at elevated rates due to social anxiety.

Linkages Between Behavioral Inhibition and Anxious Solitude/Withdrawal

Both BI and anxious solitude/withdrawal are observable behaviors. However, BI emphasizes behavioral responses to unfamiliar and challenging objects and social situations, whereas anxious solitude/withdrawal emphasizes responses to familiar social situations (although many anxious solitary children display similar behavior in unfamiliar social situations as well; Gazelle et al., 2005). Moreover, anxious solitude/withdrawal implies social cognitive awareness of both the self and social partners characteristic of early middle childhood and beyond, whereas BI involves fearful responses to the environment that require more rudimentary cognitive processing present by the toddler period. Furthermore, as a fear-based construct, BI is conceptualized as more closely linked to biological makeup.

Behavioral inhibition is believed to be a risk factor for later anxious solitude/withdrawal in early and middle childhood (Calkins & Fox, 2002). However, many behaviorally inhibited toddlers do not become anxious solitary/withdrawn children, consistent with the premise of multifinality (Fox, Henderson, Rubin, Calkins, & Schmidt, 2001; Henderson, Marshall, Fox, & Rubin, 2004; Ollendick & Hirshfeld-Becker, 2002). Understanding conditions that moderate risk for anxious solitude/withdrawal among children who display *BI* in early childhood is a focus of current research attention. Recent research indicates that maternal behavior moderates the stability of BI over time (Degnan et al., 2008; Early et al., 2002; Rubin et al., 2002; Rubin, Hastings, Stewart, Henderson, & Chen, 1997). In a similar vein, there is some evidence to suggest that not all children who display anxious solitude/ withdrawal in middle childhood experienced early childhood BI (Asendorpf, 1990b, see also Chapters 5 and 6), consistent with the premise of equifinality. However, additional empirical evidence is needed to identify multiple pathways to anxious solitude/withdrawal. Other recent work suggests that peer influences occurring in middle childhood and early adolescence impact the trajectories of children's socially anxious behavior (Gazelle & Ladd, 2003; Oh et al., 2008).

Social Anxiety Disorder

Diagnosis of social anxiety disorder in childhood according to the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (American Psychiatric Association [APA], 2000) requires that (1) when in a social situation, the child is either

afraid or worries that she or he will do something embarrassing or that others will think is stupid or will laugh at; (2) at least one specific social situation is either avoided or endured with distress; and (3) that this problem interferes with the child's life (e.g., friendships, activities at school or home, keeps child from doing things she or he wants to do) at least some of the time (Silverman & Albano, 1996). Diagnostic criteria also specify that the child must be anxious about interactions with other children, not just adults. The core state is conceptualized as marked and persistent fear. Diagnoses are typically made via clinical interview of the child and his or her parents.

Linkages Between Behavioral Inhibition and Social Anxiety Disorder

Several researchers have examined the overlap between BI and SAD as well as additional anxiety and mood disorders. Studies support a linkage between BI and disorder, although studies differ in whether they support a specific linkage with SAD only (Hirshfeld-Becker et al., 2007), or rather linkages with a broader spectrum of anxiety and mood disorders (Biederman et al., 1993, 2001; Caspi, Moffitt, Newman, & Silva, 1996; Hayward, Killen, Kraemer, & Taylor, 1998; Hirshfeld et al., 1992; Kagan et al., 1990; Muris, Meesters, & Spinder, 2003; Prior, Smart, Sanson, & Oberklaid, 2000; Schwartz, Snidman, & Kagan, 1999 Chapters 2, 3, and 4). In one intervention study that focused solely on parental coaching of inhibited toddlers, rates of SAD as determined via maternal clinical interviews declined significantly after intervention, but toddlers persisted in demonstrating inhibited behavior nonetheless (Rapee et al., 2005). Thus, BI and SAD may be differentially responsive to intervention, but greater confidence in such findings would be possible if shared method variance is avoided in future investigations (mothers were the direct target of intervention and it was only their perceptions of their child's behavior that improved, not observed child behavior).

Linkages Between Anxious Solitude/Withdrawal and Social Anxiety Disorder

Because anxious solitude/withdrawal and SAD share the core emotional state of social fear or anxiety, many researchers have assumed that anxious solitary/withdrawn children ought to be at risk for SAD (e.g., Rubin & Burgess, 2001). However, it is only recently that anxious solitude/withdrawal and SAD have been assessed within a single study because the appropriate methodologies are typically used by researchers from separate research traditions (see Chapter 5).

Although anxious solitude and SAD share the core emotional state of social anxiety, additional similarities and differences between the two constructs are relatively nuanced. The construct of anxious solitude/withdrawal emphasizes behavior. Both methods of identifying anxious solitary/withdrawn children—peer nominations and behavioral observation—require that a child demonstrate observable manifestations of social anxiety in their behavior (e.g., onlooking solitary behavior, verbal inhibition, hesitancy, etc.). The hypothetical child, who feels anxious with familiar peers but does not manifest behavioral signs, would not qualify as anxious solitary/withdrawn. Notably, self-reports of anxious solitude/withdrawal are rarely used for purposes of identification in the developmental literature, in part because although self-reports of anxious solitude/withdrawal are significantly related to information from other informants, the strength of this association is modest (Spangler & Gazelle, 2009).

In contrast, clinical diagnoses of SAD rely, in part, on subjective distress as reported by the child and/or their parent. Therefore, although anxious solitude/withdrawal and SAD converge in identifying children who experience social anxiety among peers, each construct is defined in ways that privilege certain aspects of the phenomenology of social anxiety (i.e., behavior versus subjective distress). The importance of subjective distress (and validity of

other's ratings of a child's distress) is an issue that deserves to be a subject of dialogue among developmental and clinical psychologists. Despite these differences in emphasis, there are nonetheless commonalities in the assessment of both constructs. For instance, behaviors characteristic of anxious solitude/withdrawal (e.g., solitary onlooking behavior) could be captured in the avoidance of social situations or interference criteria used in clinical diagnosis. Because children are often not at liberty to avoid social situations connected with schooling altogether, such behavior can be seen as avoidance demonstrated within the confines of an inescapable social situation. However, it is also possible that some anxious solitary/withdrawn children demonstrate the behaviors that qualify them for this developmental classification without meeting the interference criteria necessary for clinical diagnosis (see Chapter 5). In particular, anxious solitary/withdrawn children differ in the degree of impairment they experience with peer relations, with some children experiencing chronic peer mistreatment, whereas others do not experience mistreatment and enjoy normative levels of friendship and peer acceptance (Gazelle, 2008; Gazelle & Ladd, 2003).

Controversies

The most fundamental controversies in integrating developmental and clinical approaches to childhood social anxiety involve understanding connections and disconnections between the constructs employed in these disciplines and their corresponding methodology. Additionally, a number of findings from developmental and clinical investigations of childhood social anxiety are not easily reconciled with one another. We highlight some of these key issues below, including the role of biology in social anxiety, patterns in the age of onset of social anxiety, social information processing biases in social anxiety, heterogeneity in the social relations of anxious children, and targets of intervention for social anxiety.

Controversies in Defining Constructs

Although we have laid-out widely accepted definitional criteria for each construct above, there are some controversial aspects of the ways these constructs are defined and employed. Although BI was originally defined as wariness in the face of novel or challenging objects or social situations, Rubin and colleagues (1997) have provided evidence that concurrent wariness toward unfamiliar peers versus objects are not highly correlated in two-year-olds, and suggest that inhibition to peers versus object may be more predictive of anxious solitude/withdrawal. Nonetheless, some of the original work from Kagan's lab does include play with unfamiliar peers in the identification criteria for BI. Peer play was included in the identification criteria for Kagan's second cohort of BI children (recruited at 31 months), and these BI children subsequently displayed elevated rates of SAD in adolescence (Schwartz et al., 1999). Also, although peer play was not included in the identification criteria for Kagan's first cohort of BI children, they subsequently participated in peer play at 4, 5, and 7 years of age (e.g., Kagan et al., 1984). Thus, analyses that examine stability of BI in this first cohort do reflect inhibition in social situations, and this may serve to increase linkages with social anxiety/withdrawal and SAD.

An additional controversy involves using the narrowly defined construct BI (see Chapters 3 and 4) versus a broader array of constructs that collectively are referred to as "fearful temperaments" in Chapter 2. With the exception of the issue mentioned in the preceding paragraph, there is agreement about the definition of BI and that behavioral assessment of BI is the gold standard. However, there is a wider research literature in which BI and various other fearful temperament constructs are often assessed via questionnaire, most often with maternal report, but sometimes also with the retrospective reports of adolescent and adults. These temperament constructs include "slow to warm up" and "shy temperaments," among others. This literature complicates the interpretation of results in multiple ways, including variation in defining content, bias linked specifically to maternal- and self-report methods,

and inaccuracy inherent in retrospective assessment. When the results of studies of BI and fearful temperament differ, these potential confounds should be considered as contributing to the discrepancy.

The stability of fearful temperaments also raises questions about the purity of the temperamental nature of this construct. As mentioned in Chapter 2, the stability of fearful temperaments is greater in early and middle childhood than in infancy. This pattern of increasing stability with age would seem to be at odds with the widely accepted definition of temperament as early-emerging biologically based individual differences in behavior and affect. Some theorists interpret these findings as a reflection of measurement error in infancy (see Chapter 2), although this perspective is countered by the parallel between increasing experience with the environment and the increasing stability of fearful temperament with age. An alternative perspective is that as individuals age and achieve increasing autonomy, they are at increasing liberty to select their environments. Thus, increasing stability could be a reflection of preferences present from an early age.

Although the definition of SAD is clearly laid out in the *DSM* (APA, 2000), this criteria is not beyond criticism. In particular, the current definition of SAD emphasizes fear of unfamiliar social situations (see Chapter 4). From a social relations-oriented developmental perspective, this definition underestimates the importance of social fear and anxiety of familiar peers. This concern is not merely a technical detail because it has fundamental implications for the core state believed to drive SAD. If SAD were truly limited to unfamiliar social situations, SAD could be characterized as primarily involving fear driven by uncertainty. If SAD occurs in familiar social situations, this implies concerns about social competency and social reputation (social evaluative concerns). Such social evaluative concerns suggest a negative view of one's social self that one might expect to be especially apparent to familiar others.

The Role of Biology

Of those constructs covered in this monograph, BI is conceptualized as most closely tied to biology. Behavioral inhibition is thought to arise from a low threshold for stimulation in the amygdala, a brain structure involved in emotional experience (Kagan et al., 1987). Evidence also suggests additional biological correlates of BI, such as right frontal electroencephalogram (EEG) asymmetry (see Chapter 3, Fox et al., 2001). Linkages between BI and anxious solitude/withdrawal (Calkins & Fox, 2002) and SAD (Hirshfeld-Becker et al., 2007; Rapee et al., 2005) suggest that dispositional fearfulness (BI) increases risk for these conditions. However, BI does not predestine young children to ultimately exhibit anxious solitude/withdrawal or SAD. The stability of BI itself is influenced by environmental factors, most notably the quality of maternal care (Early et al., 2002; Hane, Fox, Henderson, & Marshall, 2008; Rubin et al., 1997, 2002), but also exposure to nonparental care (see Chapter 3). Further research is needed to examine whether similar environmental factors attenuate linkages between BI and anxious solitude/withdrawal and SAD. Also, because anxiety disorders are highly familial and many studies of BI do not assess parental psychopathology, it is unclear whether BI confers risk for psychopathology in children in the absence of parental psychopathology (see Chapter 4). Even if BI confers risk for child psychopathology primarily in the presence of parental psychopathology, it will be important to better identify the mechanisms of inter-generational transfer of risk. Such mechanisms may include parental modeling of anxiety, restricted familial social contacts, parenting practices that emphasize threat and reward caution, as well as shared genetic material.

It is important not only to examine the subsequent trajectories of children with early childhood BI, but also to examine diverse trajectories leading to anxious solitude/withdrawal

and SAD. Consistent with the principal of equifinality, BI may characterize the early childhood of some children who subsequently display anxious solitude/withdrawal or SAD, but there are likely to be alternate pathways as well. Behavioral inhibition may be a risk factor for anxious solitude/withdrawal and SAD, but not a necessary precursor of these conditions (for evidence of adult anxiety disorder in the absence of childhood history of BI see Joseph Biederman et al., 1990, 1993, 2001; Hirshfeld-Becker et al., 2007; McDermott et al., 2009; Reeb-Sutherland et al., 2009; Schwartz et al., 1999).

Fundamental questions about the relation between biology and behavior and environmental influence are also at issue. Why is it that only some children who display BI show the expected biological profile? And why is it that physiology is associated with the display of BI in some settings, but not others (e.g., Henderson et al., 2004; Rubin et al., 1997; Schmidt & Buss, in press)? To what extent does biology drive versus reflect emotion and behavior? Consistent with modern epigenetic models of development in which genetic propensities can be activated or silenced by environmental events (Lickliter & Honeycutt, 2003), potential environmental influences and developmental timing involved in producing or mitigating the biological profile linked with BI must also be investigated.

Age of Onset

There has been a long-standing belief among clinical researchers that the onset of SAD rises sharply in adolescence (APA, 2000). However, on balance, recent epidemiological studies do not support this adolescent increase, but rather suggest sustained rates on onset from childhood through early adulthood (Ford, Goodman, & Meltzer, 2003; Rapee, Schniering, & Hudson, 2009). Consequently, given the developmental evidence for early-emerging individual differences in BI, parent–child attachment security, and anxious solitude/ withdrawal, which shows at least modest stability over time; as well as clinical evidence for diagnoses of SAD in children as young as 2 years of age (Egger & Angold, 2004); a critical examination is needed of whether the adolescent onset of SAD represents a discontinuity in development. That is, whether social anxiety diagnosed in adolescence differs qualitatively from that which appears, emotionally, behaviorally, and cognitively, in earlier years of childhood (see Schmidt & Buss, in press).

Preexisting individual differences in anxious tendencies may become increasingly problematic (e.g., cause more life interference) for some individuals in adolescence, due to increased demands for autonomous social functioning at this time. Although it is possible that some cases of adolescent- and adult-onset SAD have origins outside of the childhood period according to a developmental science framework that emphasizes the possibility of change throughout the course of development, strong prospective evidence of events that trigger adolescent-onset generalized SAD in the absence of a childhood history of anxiety is not available. Thus, the onset of SAD in adolescence may, in large part, reflect increased life interference in individuals with childhood histories of social anxiety—in other words, developmental continuity coupled with intensification of anxiety symptoms and impairment during the adolescent period of heightened social challenges.

Information-Processing Bias

Although most theorists agree that social anxiety involves perceiving threat in the social world, clinical and developmental investigators have approached information-processing patterns in social anxiety from different vantage points. Both clinical and temperamentally oriented developmental investigations place more emphasis on unconscious processes, whereas social-relations-oriented developmental investigations place more emphasis on conscious processes and their potential experiential origins. Clinical experiments suggest that threat bias in anxious adults exists at the earliest stage of information processing in

which multimodal sensory data are processed at an unconscious level and then prioritized for conscious processing. For instance, anxious versus typical adults demonstrate more physiological and self-reported emotional responses to unconsciously presented images of angry versus neutral faces (Ohman, 1996). Recent developmental evidence from Fox and colleagues links heightened threat perception not only to BI and patterns of reactivity that are predictive of BI in early infancy, but also to specific neural mechanisms (see Chapter 3). Thus, this recent set of evidence links temperamentally rooted neural mechanisms to the emergence of attentional processes involved in hypervigilance to threat, which is hypothesized to contribute, in turn, to the emergence of symptoms of anxiety disorder. However, it is also possible that environmental factors may influence such early attentional processes involved in threat-perception and anxiety.

Other recent investigations examine environmental influences on similar phenomena, although they have not focused specifically on anxious children. Nonetheless, Pollak and Sinha (2002) have demonstrated that children with a history of physical abuse, compared to other children, detect angry facial expressions (presented so as to be perceptible to the conscious mind) more quickly with less visual information. This evidence is of theoretical significance because such information-processing patterns are often conceptualized as biases the individual child brings to the concurrent situation. However, developmental analysis suggests that such biases may accurately reflect the threatening nature of the child's environment (e.g., home). Thus, it may be more accurate to characterize such biases as realistic representations of the child's experience with specific threatening environments (e.g., home), which may then be overgeneralized to other potentially less-threatening environments (e.g., peers/school). In support of this contention, research described in Chapter 6 reveals that internal working models of insecurity in the parent–child relationship are associated with social anxiety among young adolescents (see also Duchene, McDonald, Rubin, Booth-LaForce, & Laursen, 2009).

Developmental investigations with a social-relations orientation have approached information-processing biases in socially anxious children by focusing on later phases of social problem solving. These approaches typically rely on children's responses to hypothetical social scenarios rather that assessing response times to experimental stimuli. Although information-processing biases in socially anxious children have not received a large amount of research attention in the social-relations-oriented developmental literature, there is accumulating evidence that these children demonstrate maladaptive information processing patterns. Anxious solitary/withdrawn versus typical children, when faced with hypothetical social dilemmas involving peer interaction, have demonstrated maladaptive patterns in multiple stages of conscious information processing, including self-defeating attributions for conflict situations (e.g., Rubin & Krasnor, 1986; Wichmann, Coplan, & Daniels, 2004), low efficacy for assertive strategies, restricted strategy generation (e.g., Rubin, Daniels-Beirness, & Bream, 1984); selection of passive strategies (e.g., anxious solitary/withdrawn preschoolers favor soliciting adult intervention), and avoidant goal selection (Burgess, Wojslawowicz, Rubin, Rose-Krasnor, & Booth-LaForce, 2006; Wichmann et al., 2004). Likewise, clinical work has uncovered similar patterns in children with anxiety disorders, as well as established linkages between these patterns and parental socialization (Barrett, Rapee, Dadds, & Ryan, 1996; Creswell, Schniering, & Rapee, 2005). Similarly, anxious solitary/withdrawn elementary schoolers demonstrated a relatively less mature ability to understand the social perspectives of others (LeMare & Rubin, 1987). Moreover, these difficulties with social information processing appear to be behaviorally manifested in anxious solitary/withdrawn children's limitations in solving interpersonal problems in observational work (Rubin, 1982; Stewart & Rubin, 1995). Future work is needed to (1) link early phases of unconscious processing to subsequent conscious processing in socially anxious children, (2) identify both individual and environmental

processes involved in the emergence of both unconscious and conscious processing patterns linked with anxiety, and (3) test methods of modifying such anxiety-linked processing patterns and the environments that may engender and maintain such patterns.

Heterogeneity in Social Relations and Emotional Adjustment

There is a long history in both developmental and clinical research of approaching the study of social anxiety in childhood with main-effect models. However, the modern conceptual frameworks of developmental psychopathology and developmental science described above call for emphasis on dynamic multilevel interactionist models (Cairns et al., 1996; Cicchetti & Rogosch, 1999; Magnusson, 1988; Rutter & Sroufe, 2000; Sameroff, 1993). Such models must be employed to understand diverse pathways toward and away from social anxiety, as well as the broad spectrum of social and emotional functioning demonstrated by children with social anxiety. For instance, some children with social anxiety enjoy relatively positive peer relations, whereas others are victimized and excluded by peers (Gazelle, 2008; Greenberg & Kusche, 2006). Such differences appear to be the product of diverse influences, including the quality of early parental relations (Gazelle & Spangler, 2007) and the emotional climate of the concurrent classroom environment (Gazelle, 2006). Moreover, different peer experiences may place socially anxious children on diverse emotional trajectories over time (Gazelle & Ladd, 2003; Gazelle & Rudolph, 2004). These issues are discussed further later in this volume (see Chapter 5 and Rubin, Coplan, & Bowker, 2009).

Targets of Intervention

Although this volume does not contain extensive discussion of interventions for socially anxious children, it does contain a discussion of whether treatment gains can transfer to and survive in the child's naturalistic social milieu. Developmentalists often conduct interventions at school with peers, increasing the possibility that the child will successfully employ skills in this naturalistic context, whereas clinical interventions are typically conducted in contrived contexts. Although clinical interventions typically involve "homework" designed to have children practice skills learned in the clinic in their everyday environments to promote generalization, they typically do not endeavor to change the environment itself. A fundamental and often unexamined assumption of clinical exposure treatment (treatment designed to bring children into contact with feared situations)—the exposure paradox— is that the child will have positive experiences when he or she engages in social interaction. Although some clinical treatment programs engineer situations in which the anxious child is likely to experience positive peer interaction (Beidel & Turner, 2007), many socially anxious children are habitually excluded and victimized by peers at school (Gazelle, 2008; Gazelle & Ladd, 2003) and changing such established negative dynamics presents a considerable challenge. Thus, a developmental child-by-environment approach suggests that intervention should not only target the individual child (prior to their establishing entrenched reputations when possible), but also their peer environment (see Chapter 5).

Acknowledgments

References

American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4. Washington, DC: Author; 2000.

Asendorpf JB. Beyond social withdrawal: Shyness, unsociability, and peer avoidance. Human Development. 1990a; 33:250–259.

Asendorpf JB. Development of inhibition during childhood: Evidence for situational specificity and a two-factor model. Developmental Psychology. 1990b; 26:721–730.

Barrett PM, Rapee RM, Dadds MM, Ryan SM. Family enhancement of cognitive style in anxious and aggressive children. Journal of Abnormal Child Psychology. 1996; 24:187–203. [PubMed: 8743244]

Beidel, DC.; Turner, SM. Shy children, phobic adults: Nature and treatment of social anxiety disorders. 2. Washington, DC: American Psychological Association; 2007.

Biederman J, Hirshfeld-Becker DR, Rosenbaum JF, Herot C, Friedman D, Snidman N, et al. Further evidence of association between behavioral inhibition and social anxiety in children. American Journal of Psychiatry. 2001; 158:1673–1679. [PubMed: 11579001]

Biederman J, Rosenbaum JF, Bolduc-Murphy EA, Faraone SV, Chaloff J, Hirshfeld-Becker DR, et al. A 3-year follow-up of children with and without behavioral inhibition. Journal of the American Academy of Child & Adolescent Psychiatry. 1993; 32:814–821. [PubMed: 8340303]

Biederman J, Rosenbaum JF, Hirshfeld DR, Faraone SV, Bolduc EA, Gersten M, et al. Psychiatric correlates of behavioral inhibition in young children of parents with and without psychiatric disorders. Archives of General Psychiatry. 1990; 47:21–26. [PubMed: 2294852]

Burgess KB, Wojslawowicz JC, Rubin KH, Rose-Krasnor L, Booth-LaForce C. Social information processing and coping strategies of shy/withdrawn and aggressive children: Does friendship matter? Child Development. 2006; 77:371–383. [PubMed: 16611178]

Cairns, RB.; Elder, GH., Jr; Costello, EJ., editors. Developmental science. Cambridge, UK: Cambridge University Press; 1996.

Calkins SD, Fox NA. Self-regulatory processes in early personality development: A multilevel approach to the study of childhood social withdrawal and aggression. Development & Psychopathology. 2002; 14:477–498. [PubMed: 12349870]

Caspi A, Moffitt TE, Newman DL, Silva PA. Behavioral observations at age 3 years predict adult psychiatric disorders. Archives of General Psychiatry. 1996; 53:1033–1039. [PubMed: 8911226]

Cicchetti D, Rogosch FA. Equifinality and multifinality in developmental psychopathology. Development and Psychopathology. 1996; 8:597–600.

Cicchetti, D.; Rogosch, FA. Conceptual and methodological issues in developmental psychopathology research. In: Kendall, PC.; Butcher, JN., editors. Handbook of research methods in clinical psychology. 2. New York: Wiley; 1999. p. 433-465.

Coplan RJ, Rubin KH, Fox NA, Calkins SD, Stewart SL. Being alone, playing alone, and acting alone: Distinguishing among reticence and passive and active solitude in young children. Child Development. 1994; 65:129–137. [PubMed: 8131643]

Creswell C, Schniering CA, Rapee RM. Threat interpretation in anxious children and their mothers: Comparison with nonclinical children and the effects of treatment. Behaviour Research and Therapy. 2005; 43:1375–1381. [PubMed: 16086987]

Degnan KA, Henderson HA, Fox NA, Rubin KH. Predicting social wariness in middle childhood: The moderating roles of childcare history, maternal personality and maternal behavior. Social Development. 2008; 17:471–487. [PubMed: 20463856]

Duchene, MS.; McDonald, KL.; Rubin, KH.; Booth-LaForce, C.; Laursen, B. You accept me…you accept me not: Rejection-sensitivity as a mediator between parental acceptance and adolescent adjustment. In: Sentse, M., Chair, editor. Innovative perspectives on parental acceptance and rejection and their effects on adjustment: A contextual-developmental approach; Symposium conducted at the Biennial Meeting of the Society for Research in Child Development; Denver, CO. 2009 Apr.

Early DM, Rimm-Kaufman SE, Cox MJ, Saluja G, Pianta RC, Bradley RH, et al. Maternal sensitivity and child wariness in the transition to kindergarten. Parenting: Science & Practice. 2002; 2:355–377.

Egger, HL.; Angold, A. The Preschool Age Psychiatric Assessment (PAPA): A structured parent interview for diagnosing psychiatric disorders in preschool children. In: DelCarmen-Wiggins, R.;

Carter, A., editors. Handbook of infant, toddler, and preschool mental health assessment. New York: Oxford University Press; 2004. p. 223-243.

Ford T, Goodman R, Meltzer H. The British Child and Adolescent Mental Health Survey 1999: The prevalence of DSM-IV disorders. Journal of the American Academy of Child & Adolescent Psychiatry. 2003; 42:1203–1211. [PubMed: 14560170]

Fox NA, Henderson HA, Rubin KH, Calkins SD, Schmidt LA. Continuity and discontinuity of behavioral inhibition and exuberance: Psychophysiological and behavioral influences across the first four years of life. Child Development. 2001; 72:1–21. [PubMed: 11280472]

Gazelle H. Class climate moderates peer relations and emotional adjustment in children with an early history of anxious solitude: A child x environment model. Developmental Psychology. 2006; 42:1179–1192. [PubMed: 17087551]

Gazelle H. Behavioral profiles of anxious solitary children and heterogeneity in peer relations. Developmental Psychology. 2008; 44:1604–1624. [PubMed: 18999325]

Gazelle H, Ladd GW. Anxious solitude and peer exclusion: A diathesis-stress model of internalizing trajectories in childhood. Child Development. 2003; 74:257–278. [PubMed: 12625449]

Gazelle H, Putallaz M, Li Y, Grimes CL, Kupersmidt JB, Coie JD. Anxious solitude across contexts: Girls' interactions with familiar and unfamiliar peers. Child Development. 2005; 76:227–246. [PubMed: 15693769]

Gazelle H, Rudolph KD. Moving toward and away from the world: Social approach and avoidance trajectories in anxious solitary youth. Child Development. 2004; 75:829–849. [PubMed: 15144489]

Gazelle H, Spangler T. Early childhood anxious solitude and subsequent peer relationships: Maternal and cognitive moderators. Journal of Applied Developmental Psychology. 2007; 28:515–535. [PubMed: 18496601]

Greenberg, MT.; Kusche, CA. Building social and emotional competence: The PATHS curriculum. In: Jimerson, SR.; Furlong, M., editors. Handbook of school violence and school safety: From research to practice. Mahwah, NJ: Erlbaum; 2006. p. 395-412.

Hane AA, Fox NA, Henderson HA, Marshall PJ. Behavioral reactivity and approach-withdrawal bias in infancy. Developmental Psychology. 2008; 44:1491–1496. [PubMed: 18793079]

Hayward C, Killen JD, Kraemer HC, Taylor CB. Linking self-reported childhood behavioral inhibition to adolescent social phobia. Journal of the American Academy of Child & Adolescent Psychiatry. 1998; 37:1308–1316. [PubMed: 9847504]

Henderson HA, Marshall PJ, Fox NA, Rubin KH. Psychophysiological and behavioral evidence for varying forms and functions of nonsocial behavior in preschoolers. Child Development. 2004; 75:236–250. [PubMed: 15015687]

Hirshfeld-Becker DR, Biederman J, Henin A, Faraone SV, Davis S, Harrington K, et al. Behavioral inhibition in preschool children at risk is a specific predictor of middle childhood social anxiety: A five-year follow-up. Journal of Developmental & Behavioral Pediatrics. 2007; 28:225–233. [PubMed: 17565290]

Hirshfeld DR, Rosenbaum JF, Biederman J, Bolduc EA, Faraone SV, Snidman N, et al. Stable behavioral inhibition and its association with anxiety disorder. Journal of the American Academy of Child & Adolescent Psychiatry. 1992; 31:103–111. [PubMed: 1537760]

Kagan J. Temperament and the reactions to unfamiliarity. Child Development. 1997; 68:139–143. [PubMed: 9084130]

Kagan J, Reznick JS, Clarke C, Snidman N, Garcia-Coll C. Behavioral inhibition to the unfamiliar. Child Development. 1984; 55:2212–2225.

Kagan J, Reznick JS, Snidman N. The physiology and psychology of behavioral inhibition in children. Child Development. 1987; 58:1459–1473. [PubMed: 3691195]

Kagan, J.; Reznick, JS.; Snidman, N.; Johnson, MO.; Gibbons, JL.; Gersten, M., et al. Origins of panic disorder. In: Ballenger, JC., editor. Neurobiology of panic disorder Frontiers of clinical neuroscience. Vol. 8. New York: Wiley-Liss; 1990. p. 71-87.

LeMare LJ, Rubin KH. Perspective taking and peer interaction: Structural and developmental analyses. Child Development. 1987; 58:306–315.

Lickliter R, Honeycutt H. Developmental dynamics: Toward a biologically plausible evolutionary psychology. Psychological Bulletin. 2003; 129:819–835. [PubMed: 14599279]

Magnusson, D. Individual development from an interactional perspective: A longitudinal study. Hillsdale, NJ: Erlbaum; 1988.

McDermott JM, Perez-Edgar K, Henderson HA, Chronis-Tuscano A, Pine DS, Fox NA. A history of childhood behavioral inhibition and enhanced response monitoring in adolescence are linked to clinical anxiety. Biological Psychiatry. 2009; 65:445–448. [PubMed: 19108817]

Muris P, Meesters C, Spinder M. Relationships between child- and parent-reported behavioural inhibition and symptoms of anxiety and depression in normal adolescents. Personality and Individual Differences. 2003; 34:759–771.

Oh W, Rubin KH, Bowker JC, Booth-LaForce C, Rose-Krasno L, Laursen B. Trajectories of social withdrawal from middle childhood to early adolescence. Journal of Abnormal Child Psychology. 2008; 36:553–566. [PubMed: 18193479]

Ohman, A. Preferential preattentive processing of threat in anxiety: Preparedness and attentional biases. In: Rapee, RM., editor. Current controversies in the anxiety disorders. New York: Guilford Press; 1996. p. 253-290.

Ollendick TH, Hirshfeld-Becker DR. The developmental psychopathology of social anxiety disorder. Biological Psychiatry. 2002; 51:44–58. [PubMed: 11801230]

Pollak SD, Sinha P. Effects of early experience on children's recognition of facial displays of emotion. Developmental Psychology. 2002; 38:784–791. [PubMed: 12220055]

Prior M, Smart D, Sanson A, Oberklaid F. Does shy-inhibited temperament in childhood lead to anxiety problems in adolescence? Journal of the American Academy of Child & Adolescent Psychiatry. 2000; 39:461–468. [PubMed: 10761348]

Rapee RM, Kennedy S, Ingram M, Edwards S, Sweeney L. Prevention and early intervention of anxiety disorders in inhibited preschool children. Journal of Consulting and Clinical Psychology. 2005; 73:488–497. [PubMed: 15982146]

Rapee RM, Schniering CA, Hudson JL. Anxiety disorders during childhood and adolescence: Origins and treatment. Annual Review of Clinical Psychology. 2009; 5:335–365.

Reeb-Sutherland, BC.; Helfinstein, SM.; Vanderwert, RE.; Perez-Edgar, K.; Henderson, HA.; Lissek, S., et al. Neural correlates of attention among behaviorally inhibited adolescents moderate risk for anxiety. In: Reeb-Sutherland, BC., Chair, editor. Modulation of tempermental anxiety via caregiving and cognitive mechanisms: Lessons from cross-species research; Symposium conducted at the Biennial Meeting of the Society for Research in Child Development; Denver, CO. 2009 Apr.

Rubin KH. Nonsocial play in preschoolers: Necessarily evil? Child Development. 1982; 53:651–657.

Rubin, KH. The Play Observation Scale (POS). University of Maryland; College Park, MD: 2001. Unpublished manuscript

Rubin, KH.; Burgess, KB. Social withdrawal and anxiety. In: Vasey, MW.; Dadds, MR., editors. The developmental psychopathology of anxiety. New York: Oxford University Press; 2001. p. 407-434.

Rubin KH, Burgess KB, Hastings PD. Stability and social-behavioral consequences of toddlers' inhibited temperament and parenting behaviors. Child Development. 2002; 73:483–495. [PubMed: 11949904]

Rubin KH, Coplan RJ, Bowker JC. Social withdrawal and shyness in childhood and adolescence. Annual Review of Psychology. 2009; 60:141–171.

Rubin KH, Daniels-Beirness T, Bream L. Social isolation and social problem solving: A longitudinal study. Journal of Consulting & Clinical Psychology. 1984; 52:17–25.

Rubin KH, Hastings PD, Stewart SL, Henderson HA, Chen X. The consistency and concomitants of inhibition: Some of the children, all of the time. Child Development. 1997; 68:467–483. [PubMed: 9249961]

Rubin, KH.; Krasnor, LR. Social-cognitive and social behavioral perspectives on problem solving. In: Perlmutter, M., editor. Cognitive perspectives on children's social and behavioral development. The Minnesota Symposia on Child Psychology. Vol. 18. Hillsdale, NJ: Erlbaum; 1986. p. 1-68.

Rubin KH, Wojslawowicz JC, Rose-Krasnor L, Booth-LaForce C, Burgess KB. The best friendships of shy/withdrawn children: Prevalence, stability, and relationship quality. Journal of Abnormal Child Psychology. 2006; 34:143–157. [PubMed: 16485175]

Rutter M, Sroufe L. Developmental psychopathology: Concepts and challenges. Development & Psychopathology. 2000; 12:265–296. [PubMed: 11014739]

Sameroff, AJ. Models of development and developmental risk. In: Zeanah, CHJ., editor. Handbook of infant mental health. New York: Guilford Press; 1993. p. 3-13.

Schmidt, LA.; Buss, AH. Understanding shyness: Four questions and four decades of research. In: Rubin, KH.; Coplan, RJ., editors. The development of shyness and social withdrawal. New York: Guilford Press; 2010. p. 23-41.

Schwartz CE, Snidman N, Kagan J. Adolescent social anxiety as an outcome of inhibited temperament in childhood. Journal of the American Academy of Child & Adolescent Psychiatry. 1999; 38:1008–1015. [PubMed: 10434493]

Silverman, WK.; Albano, AM. Anxiety Disorders Interview Schedule for DSM-IV: Child Version [Clinician Manual]. San Antonio, TX: The Psychological Corporation; 1996.

Spangler T, Gazelle H. Anxious solitude, unsociability, and peer exclusion in middle childhood: A multitrait-multimethod matrix. Social Development. 2009; 18:833–856.

Stewart SL, Rubin KH. The social problem-solving skills of anxious-withdrawn children. Development & Psychopathology. 1995; 7:323–336.

Wichmann C, Coplan RJ, Daniels T. The social cognitions of socially withdrawn children. Social Development. 2004; 13:377–392.