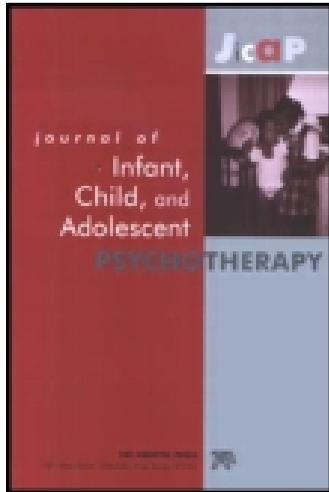


This article was downloaded by: [Texas A&M University Libraries]

On: 17 April 2015, At: 13:31

Publisher: Routledge

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



Journal of Infant, Child, and Adolescent Psychotherapy

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/hicp20>

Hypermentalizing in Borderline Personality Disorder: A Model and Data

Carla Sharp & Salome Vanwoerden

Published online: 17 Mar 2015.



CrossMark

[Click for updates](#)

To cite this article: Carla Sharp & Salome Vanwoerden (2015) Hypermentalizing in Borderline Personality Disorder: A Model and Data, *Journal of Infant, Child, and Adolescent Psychotherapy*, 14:1, 33-45, DOI: [10.1080/15289168.2015.1004890](https://doi.org/10.1080/15289168.2015.1004890)

To link to this article: <http://dx.doi.org/10.1080/15289168.2015.1004890>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms &

Conditions of access and use can be found at <http://www.tandfonline.com/page/terms-and-conditions>

Hypermentalizing in Borderline Personality Disorder: A Model and Data

Carla Sharp
Salome Vanwoerden

Interpersonal difficulties are a widely accepted characteristic of borderline personality disorder (BPD). However, the results of empirical findings of deficits in social-cognitive abilities that may underlie interpersonal difficulties in this population have been mixed. In this paper, we review the literature on social-cognitive impairment in BPD by organizing studies based on patterns of positive and negative findings. We provide a new model of mentalizing impairment in BPD by integrating findings into one framework that suggests hypermentalizing as the core feature of social-cognitive impairment in BPD. We review data in support of a hypermentalizing model of BPD and situate this data in the broader context of current work on hypermentalizing.

Borderline personality disorder (BPD) is characterized by impairment in four domains: emotion (e.g., anger, affective instability), interpersonal (e.g., unstable relationships and abandonment fears), cognitive (e.g., dissociation), and behavioral (e.g., impulsivity, self-harm). While research in the interpersonal domain of the disorder has lagged behind that in other domains (emotion and behavior), there has been an increased interest in recent years to better understand the interpersonal problems suffered by those with BPD. To this end, there has been an insurgence of research in the last decade examining the social-cognitive deficits of BPD that may underlie interpersonal difficulties (see Sharp & Sieswerda, 2013; Sharp, 2014, for reviews). The social-cognitive approach to understanding BPD is justified when considering the behavioral phenotype of the disorder, which we discuss next.

Prominent difficulties in social behavior characterize BPD (Skodol et al., 2002; Hill et al., 2008). For instance, research shows that adults with BPD experience a greater number of breakups and conflicts within romantic relationships (Labonete & Paris, 1993); higher frequencies of conflicts with parents, friends, and siblings (Skodol et al.); and lower marital satisfaction,

Carla Sharp, PhD, is an Associate Professor, Director of Clinical Training and Director of the Developmental Psychopathology Lab at the University of Houston. She also directs the research program of the Adolescent Treatment Program of the Menninger Clinic.

Salome Vanwoerden is a doctoral student in clinical psychology at the University of Houston. Her research interests include self and other processes in adolescents with a focus on social cognition. She is also interested in family dynamics and attachment processes.

Correspondence should be addressed to Carla Sharp, PhD, Department of Psychology, University of Houston, Houston, TX 77204. E-mail: Csharp2@central.uh.edu

more demand/withdraw communication problems, and higher levels of violence in romantic relationships (Bouchard & Sabourin, 2009; Bouchard, Sabourin, Lussier, & Villeneuve, 2009). This pattern of disrupted interpersonal relationships is also evident in literature on children and adolescents with borderline features. This includes greater number of breakups and conflicts within romantic relationships (Daley, Burge, & Hammen, 2000), lower levels of intimacy (Crawford, Cohen, Johnson, Sneed, & Brook, 2004), and associations with teen dating violence (Reuter, Sharp, Temple, & Babcock, in press). Problems in the interpersonal domain during childhood also appear to be a potentially important precursor to the development of later borderline symptoms. For instance, in an innovative study by Lyons-Ruth, Bureau, Holmes, Easterbrooks, and Brooks (2013), it was found that among children who displayed combinations of disorganized and controlling behavior toward their mothers in a laboratory setting at age 8 (punitive, caregiving/parentification, disorganized), 43.5% displayed borderline traits in adolescence compared with 15.3% of those elevated on only one scale, and none of those with low scores on all three scales. These findings are also consistent with studies suggesting a central role for attachment insecurity in the development of BPD. Empirical evidence has supported the link between insecure attachment and BPD cross-sectionally and retrospectively in adults (see Levy, 2005; Levy, Meehan, Weber, Reynoso, & Clarkin, 2005, for reviews). Moreover, two prospective longitudinal studies have shown that attachment disturbance in infancy and adolescence predicted BPD symptoms in adulthood (Bezirgianian, Cohen, & Brook, 1993; Carlson, Egeland, & Sroufe, 2009). In sum, research demonstrates that deficits in the interpersonal domain are a hallmark feature of BPD across the lifespan.

It is therefore not surprising that the behavioral phenotype of disrupted interpersonal relationships in BPD is reflected in seven of the nine *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR)* criteria (American Psychiatric Association, 2000). Two criteria explicitly cover problems in interpersonal relationships: criteria number 1 (frantic efforts to avoid real or imagined abandonment) and number 2 (a pattern of unstable and intense interpersonal relationships characterized by alternating between extremes of idealization and devaluations). Descriptions of criteria 3, 4, 5, 6, and 8 clearly evidence problems in the interpersonal domain as well. All of these criteria are described as being precipitated by or manifesting within the context of interpersonal situations or conflicts.

Given the centrality of interpersonal dysfunction in individuals with BPD, it is important to study the social-cognitive characteristics relevant to BPD in order to explain and elaborate on these deficits. Previous research examining the social-cognitive deficits related to BPD has resulted in mixed findings. However, these studies have often failed to recognize the multidimensionality of various social-cognitive constructs. Tasks used have been characterized by varying levels of complexity tapping different levels of cognition. In this article, we aim to show that variant findings are due to the lack of a coherent framework for social cognition in BPD. We suggest that it is possible to make sense of disparate findings when the multicomponent nature of social cognition is taken into account. We will review the literature based on patterns of findings and conclude the article by suggesting a recursive social-information processing model culminating in hypermentalizing associated with BPD. Finally, we will provide suggestions for future research, which will require the integration of previous theoretical approaches to the disorder.

FINDINGS OF SOCIAL COGNITIVE IMPAIRMENTS ASSOCIATED WITH BPD

Fonagy and colleagues (Fonagy, 1989, 1991; Fonagy, Gergely, Jurist, & Target, 2002; Fonagy & Luyten, 2009; Sharp & Fonagy, 2008) have proposed a mentalization-based theory of BPD that posits that a vulnerability to failures or misinterpretations of actions in terms of underpinning mental states may account for core features of BPD. They have argued that a child's attachment relationship plays an important role in acquiring social-cognitive capacities so that disruptions of early attachment experiences (as well as later traumas) can lead to altered development of mentalizing capacities (see Fonagy & Luyten, 2009, for a comprehensive description). In line with this hypothesis, many studies have found that individuals with BPD are more likely to have insecure attachment styles characterized as unresolved, preoccupied, and fearful (Agrawal, Gunderson, Holmes, & Lyons-Ruth, 2004).

Empirical studies have indeed found mentalizing deficits associated with BPD. When examining these studies in more detail, we see that these deficits are represented in tasks with specific characteristics. For example, among facial emotion recognition studies, individuals with BPD are less accurate than controls in recognizing emotional expressions when displayed at full intensity (Daros, Zakzanis, & Ruocco, 2013; Domes, Schulze, & Herpertz, 2009). Emotion recognition represents an initial processing stage of social cognition, which culminates in the perception of intentions and dispositions of others (Brothers, 1990) so success in this domain is crucial to later, more complex stages of social processing. Additionally, when emotional facial expressions were merged with prosodic information, individuals with BPD performed worse than controls in recognizing emotions (Minzenberg, 2006). This increase in task complexity may account for the deficits ultimately found as the BPD group performed comparably to the control group in previous tasks requiring the processing of facial expressions and prosodic information presented in isolation (Minzenberg, 2006).

Other more complex social-cognitive tasks have also elicited impaired performance in groups with BPD. In one study by Priessler, Dziobek, Ritter, Heekeren, and Roepke (2012), a naturalistic, movie-based assessment of ToM (Movie for the Assessment of Social Cognition, or MASC; Dziobek et al., 2006) was used to show that adult females with BPD were impaired, relative to controls, in assessing emotions, thoughts, and intentions of the movie characters. Sharp and colleagues (Sharp et al., 2011) used the same task in an inpatient sample of adolescents and found that borderline features were associated with performance on this task. The movie-based assessment in these studies requires integration between two subsystems of mentalizing, described by (Fonagy & Luyten, 2009) as existing on a polarity from higher-order, controlled processing to automatic, implicit processing in order to assess internal features of others. Fonagy and Luyten (in press) suggest that individuals with BPD struggle to match performance along this dimension with the specific environmental demands placed upon them by complex social interactions. In other words, in circumstances that require gut-level, automatic, implicit, and unreflective mentalizing (e.g., when interacting with an attachment figure) a person with BPD may rely too much on controlled processing. In contrast, in circumstances that require controlled and reflective mentalizing (e.g., figuring out why someone might be angry at you), the borderline individual may rely on gut-level, automatic processing and act before clarification was sought about what might truly be going on in the situation. This lack of integration between these types of mentalizing is suggested to be especially prominent when emotional arousal is high. This may

explain results found by emotion recognition studies described previously. At full intensity, emotions may elicit greater arousal for individuals with BPD which subsequently inhibits their ability to use higher-order, reflective mentalizing.

In an innovative study by Mier et al. (2012), fMRI data were gathered during a task that required emotion recognition, affective theory of mind, and intention recognition in succession in order to measure performance on tasks that increased in complexity and in their focus on cognitive mentalizing. They found that while there were no behavioral differences between BPD and healthy control groups, the BPD group showed amygdala hyperactivity during all tasks. Additionally, there was a hypoactivation in the thalamus and inferior prefrontal gyrus, areas associated with conscious representation of intentions, in the BPD group. This difference between groups actually increased as the task complexity increased, which shows that individuals with BPD utilize a more rigid affect dominated processing, which is not adaptive to the specific requirements of the task at hand.

The lack of integration between higher-order, controlled processing and automatic, implicit processing when assessing the minds of others (and the self) can also be displayed in studies utilizing various other complex social cognitive tasks. For example, Jennings, Hulbert, Jackson, and Chanen (2012) utilized the Interpersonal Negotiation Strategies Interview and found that individuals with BPD compared to psychiatric controls had lower social perspective coordination. In two studies utilizing the Interpersonal Reactivity Index (Guttman & Laporte, 2000; Harari, Shamay-Tsoory, Ravid, & Levkovitz, 2010), individuals with BPD showed impaired perspective taking. In a study by von Ceumern-Lindenstjerna et al. (2010), individuals with BPD had more trouble disengaging their attention from negative facial expressions of emotion when they were in a negative mood state. In another study by Dixon-Gordon, Chapman, Lovasz, and Walters (2011), college students with high BPD traits had trouble generating relevant solutions to social problems, which was mediated by increases in negative emotion as a response to social rejection. Similarly, adding a time limit for response increased error rates in BPD (Dyck et al., 2009). Deficits shown in these studies confirms that there is an inability of the controlled mentalizing system to modulate the automatic, implicit system impaired performance on high arousal, complex social cognitive paradigms.

In sum, individuals with BPD show deficits on a range of social-cognitive modalities. However, these studies utilize tasks with specific characteristics of high complexity and eliciting higher arousal. While Fonagy and Luyten's (2009, in press) suggestion of a lack of integration between higher-order, controlled processing and automatic, implicit processing makes a lot of sense, the process remains rather nebulous, and it is unclear exactly how the lack of integration occurs. Moreover, the findings in support of social-cognitive impairment in BPD stand in contrast to other studies that were unable to show deficits or rather found enhanced performance on social-cognitive tasks in BPD groups. In the following section we will review these findings and explore possibilities as to why differential results are shown.

NEGATIVE FINDINGS OF SOCIAL COGNITIVE IMPAIRMENTS ASSOCIATED WITH BPD

In a review of studies on empathy deficits associated with BPD, Dinsdale and Crespi (2013) highlighted a number of findings that demonstrated equal or superior performance on various

social-cognitive paradigms. This inconsistency was explained by enhanced attention to social stimuli in individuals with BPD. Linehan's (1993) biosocial theory attributes interpersonal problems associated with BPD to a greater vigilance for social stimuli, social rejection, and social threat. In laboratory tasks, this may actually manifest as a superior ability in identifying and recognizing social cues of other people. Studies that use tasks of facial emotion morphing show that individuals with BPD have a lower threshold for detecting emotions compared to controls (Lynch et al., 2006; Domes et al., 2008)—in other words, they are quicker to detect change in facial emotion expression. Ghiassi, Dimaggio, and Brune (2010) used cartoon vignettes about social interactions as a test of cognitive mentalizing and found that BPD and healthy controls performed comparably. Additionally, Arntz, Bernstein, Oorschot, and Schobre (2009) used Happé's (1994) Advanced Test of ToM to find that patients with BPD actually performed better than healthy controls. They posited that this finding was due to the low arousal elicited by the task for the BPD group. Other simple, low-arousal tasks, such as the Reading the Mind in the Eyes Test (Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001), have not shown impaired performance in patients with BPD (Schilling et al., 2012; Fertuck et al., 2009). Interestingly, in the study by Schilling and colleagues (2012), while patients with BPD did not perform worse than healthy controls, they reported higher confidence in their responses, reflecting a potential rigidity (rather than deficit) in the social-cognitive style of BPD patients.

All of these studies that failed to show deficits were described by Dinsdale and Crespi (2013) as requiring attribution from passive stimuli or reflecting an increased sensitivity to negative emotional stimuli present in BPD. Additionally, some of these tasks elicited low levels of arousal, allowing individuals with BPD to maintain optimal levels of mentalizing.

While certain tasks may not elicit deficits in performance of individuals with BPD, it is not clear whether this is due to a failure of certain tasks to maintain a level of ecological validity or whether it is due to other methodological aspects, such as failure to account for co-occurring sample characteristics that may affect social cognitive abilities. For example, mood and anxiety disorders have also been associated with specific social-cognitive characteristics as well as the use of psychotropic medications (Glaser, Van Os, Thewissen, & Myin-Germeys, 2010; Hooley, 2010; Lieb, Zanarini, Schmahl, Linehan, & Bohus, 2004). As BPD highly co-occurs with mood and anxiety disorders and individuals with BPD are often treated with psychotropic medications, it is likely that when going unmeasured, these confounds may affect results of empirical studies of social cognition. Further, as shown by the study by Mier and colleagues (2012), while behavioral differences may not always be present, neurological evidence still points to alterations in processing of social-emotional information. Further research should continue to utilize biological measures of reactivity and functioning to elucidate behavioral measures and other methodological variance.

In this paper, we suggest that the failure of simple, single modality, low ecological validity tasks to elicit social-cognitive impairment in BPD may be because social-cognitive impairment is most prominent at a different level of cognitive processing than these tasks elicit, but when combined with higher-level or high arousal processing demands, impairment emerges thereby setting up the individual with BPD for a pattern of hypermentalizing. In the following section, we lay out in more detail this model.

HYPERMENTALIZING IN BPD: A MODEL

In our review of the literature, it is clear that a pattern of findings emerges that suggest impaired functioning in social cognition associated with BPD in studies utilizing complex measures and emotionally charged stimuli. This suggests that a task's complexity or ecological validity may require a certain threshold in order for a clear deficit or impairment related to BPD to emerge. Additionally, when looking closer at the pattern of incorrect responses on the MASC (Dziobek et al., 2006), Sharp and colleagues (2011) showed that BPD patients were more likely to hypermentalizing or overattribute extreme mental states to others. That a tendency to hypermentalizing was the only type of incorrect mentalizing associated with BPD in contrast to hypomentalizing or no mentalizing, provides strong evidence that hypermentalizing is the most likely social-cognitive correlate of BPD. Thus, when a task (such as the MASC; Dziobek et al., 2006) includes mutually exclusive response options for no mentalizing, undermentalizing, hypermentalizing, and accurate mentalizing, we see that borderline features do not associate with deficits (or lack of) in mentalizing, but rather an *altered* style of mentalizing in the form of hypermentalizing (Sharp et al., 2013; Sharp et al., 2011). Hypermentalizing, also referred to as *excessive theory of mind* (Dziobek et al., 2006), is defined as a social-cognitive process that involves making assumptions about other people's mental states that go so far beyond observable data that others may struggle to see how they are justified (Sharp et al., 2013). Similarly, Fonagy & Luyten (in press) described this as "making excessively convoluted inferences on the basis of others' social cues" (p. 15). For example (Sharp, 2014; Sharp et al., 2013), person A invites person B to dinner, but B replies quickly that she is unavailable because of a previously scheduled engagement. A then assumes that B does not wish to spend time with her because of a misunderstanding that she recalls from several years ago, in which A did not attend B's birthday party. A then generates a complex narrative about B being "overly sensitive" and "unable to forgive." This is referred to as hypermentalizing because although A was using mental states to explain B's actions, these mental states were overattributed and unlikely to be real. Rather, they reflected A's own mental states at the time of the original misunderstanding.

In taking a social-information processing approach to how hypermentalizing arises in BPD, we propose the model displayed in Figure 1. To recap, social cognitive impairment occurs in situations eliciting higher arousal in which integration across different cognitive modalities are required. Individuals with BPD will tend to rely on either controlled-explicit or automatic-implicit social-cognitive reasoning in isolation instead of integrating across this polarity. We present this as a recursive model in which the aforementioned characteristics are precursors to the ultimate endpoint of hypermentalizing, which becomes iterative with escalating emotion dysregulation. This model explains why in some studies that utilize tasks relying on one social-cognitive system in isolation, BPD may display equal or enhanced performance compared with controls. Applied here is a multiplicative approach to social-cognitive vulnerabilities in line with recent work in the field of cognitive vulnerability, which suggests that various factors interact to potentiate the borderline reaction within interpersonal interactions, especially attachment-related contexts. Because it is unlikely that each vulnerability theory presents a distinct etiological pathway leading to the development of psychopathology (Abela & Hankin, 2008), this approach, which consider patterns of vulnerabilities acting together will provide a more comprehensive understanding of social-cognitive patterns associated with BPD.

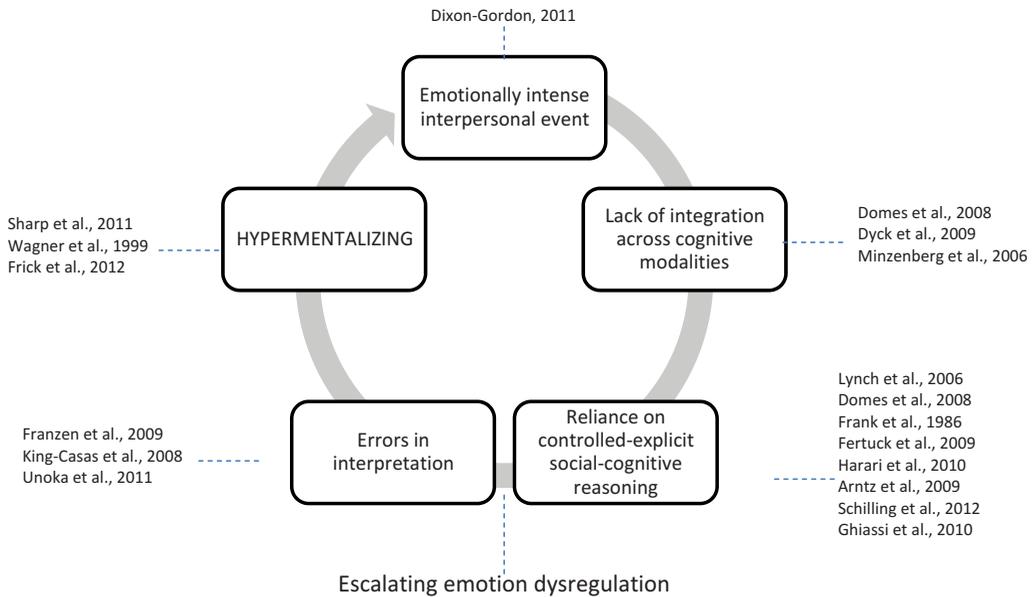


FIGURE 1 The hypermentalizing theory of BPD (reproduced from Sharp, 2014).

HYPERMENTALIZING IN BPD: SOME DATA

In support of the above model, we discuss findings from social-cognitive studies in BPD that have demonstrated what we would consider a hypermentalizing style. The clearest evidence in support of hypermentalizing impairment in BPD comes from the Sharp et al. (2011, 2013) studies where a measure, explicitly designed to assess hypermentalizing (or excessive theory of mind) was used.

Additional support for hypermentalizing impairment in BPD comes from studies that demonstrate heightened sensitivity to social stimuli in various paradigms. Specifically, individuals with BPD tend to be attuned to information that may reflect a social threat, suggesting overattribution of mental states to others in the form of misattributions of malevolence or negative attributes. In a series of studies (Westen, Lohr, Silk, Gold, & Kerber, 1990a; Westen, Ludolph, Block, Wixom, & Wiss, 1990b; Westen, Ludolph, Lerner, Ruffins, & Wiss, 1990c; Segal, Westen, Lohr, Silk, & Cohen, 1992; Segal, Westen, Lohr, & Silk, 1993), findings showed that individuals with BPD expressed more malevolent representations of others' actions compared with psychiatric and healthy controls. For instance, using projective assessment techniques, it was shown that borderline adolescents demonstrated a malevolent object world, a relative incapacity to invest in others in a non-need-gratifying way, and a tendency to attribute motivation to others in simple, illogical, and idiosyncratic ways. Consistent with these findings, other, more recent studies have shown higher rates of sensitivity to rejection associated with BPD, both when excluded and when not excluded from social interactions (Staebler et al., 2011; Gunderson, 2007). Finally, in appraising neutral emotional stimuli, individuals are more likely to assign negative valence (Arntz & Veen 2001; Daros et al., 2013).

In line with this hypervigilance to social stimuli associated with BPD, neurobiological studies have demonstrated enhanced amygdala response coupled with regulatory deficits of the orbital and prefrontal cortices with the presentation of emotional stimuli (Domes et al., 2009; Frick et al., 2012; Donegan et al., 2003; Minzenberg, Fan, New, Tang, & Siever, 2007), even in the absence of behavioral differences between BPD and control groups (Mier et al., 2012). These accounts of enhanced amygdala response to social and emotional stimuli may explain the greater arousal elicited by social and emotional stimuli in BPD. Without the regulation afforded by frontal activation in these contexts, individuals with BPD may be unable to modulate emotional response, which is often colored by mistrust and negative attributes.

Another emerging area of the social-cognitive basis of BPD that supports a hypermentalizing model of BPD centers on the construct of trust. In the experimental approach taken in these studies (which relies on behavioral and neuroeconomic paradigms), trust is defined as an exchange between two players in which cooperation and defection can be parametrically encoded as the amount of money sent to the partner. This research further sheds light on social-cognitive processes in BPD by empirically stimulating emotionally charged interpersonal situations.

In an initial trust experiment of BPD, King-Casas et al. (2008) used a 10-round, iterated version of the trust task with adults with and without BPD. They found that when cooperation faltered within pairs, normal controls responded with increased hemodynamic activity in the anterior insular cortex, which was associated with behavioral attempts to coax cooperation from partners by signaling increased trust. The BPD group, however, showed a relative insensitivity of the insula, which was associated with a failure to coax partners back into the game. While this study did not directly assess social cognition associated with the inability of borderline patients to elicit cooperation within social interactions, it does suggest some misattribution of mental states to others may be at play (e.g., “How dare she give me a low offer when I have been giving her strong offers—she must be out to get me”; or “That’s it! She is clearly not respecting my offer. I’m not putting any further effort into this exchange”).

Franzen et al. (2011) also used a multiround trust task with several virtual partners—fairness and facial expressions of partners were manipulated across rounds. Findings showed that although both the BPD and comparison groups were similar in how social norms and trust were perceived during the task, those with BPD were able to ignore behavior-incongruent facial expressions when offers were low. Franzen explained this superior use of theory of mind as a reliance on explicit-controlled processing whereas control subjects utilized automatic processing to guide their decision-making. This finding is consistent with Fonagy and Luyten’s (2009, in press) position of context-dependent lack of integration between higher-order, controlled processing and automatic, implicit processing when assessing the minds of others.

Even more relevant for the thesis that we are advancing here was the finding in Franzen et al.’s (2011) study that borderline and healthy control groups also differed in the assessment of their own behavior when partners acted unfairly. Specifically, BPD subjects judged themselves to be more unfair than controls did. This suggests that there is a merging of self and other in situations that the other presents with ambiguous social cues—within this situation, an unfair identity was projected onto the self. This conclusion provides the first clue as to what may lie underneath hypermentalizing and is potentially consistent with what object relation theorists termed “projective identification.” Projective identification was introduced by Melanie Klein and is broadly defined as the process whereby in a close relationship (e.g., often an attachment relationship or a relationship between a therapist and patient), parts of the self may in unconscious

fantasy be thought of as being forced into the other person (Casement, 1990). Important to understand is that projective identification serves an important defensive function for the individual. Specifically, feelings which cannot be consciously accessed are defensively projected into another person in order *to evoke* the thoughts or feelings projected (Jacobs, 2006). In the context of the Franzen et al. (2011) experiment, we see patients with BPD rating *themselves* as more unfair than healthy controls when *their partners* acted unfairly, which may be interpreted as a defensive action against integrating the notion that others have been unfair – perhaps then, an inverse projective identification.

Consistent with the ideas of confusion between self-and-other mental states, Frick et al. (2012) similarly found that in the context of an emotion recognition paradigm, while BPD patients had superior facial emotion recognition, they also had associated increased activity in the left inferior frontal gyrus. This brain region is believed to be a part of the mirror neuron system associated with the understanding of motor events and their intentions. This suggests a greater resonance with the others' mental states in BPD, in contrast to healthy controls who showed greater activation in the insula and superior temporal gyri; areas typically associated with mental state discrimination (Baron-Cohen et al., 1999). This merging of self and other in BPD is described by Fonagy and Luyten (2009) as a lack of agency associated with BPD and a subsequent overidentification with the mental states of others. Additionally, individuals with BPD are unable to inhibit their own reactions when thinking about the minds of others. This reflects another polarity of mentalizing: inferring attributes about the self vs. the other in which those with BPD are unable to integrate along (Fonagy & Luyten, in press) and most probably lie at the basis of the tendency to hypermentalize. Crucial therefore for BPD intervention, is consideration of the self and its boundaries within the context of attachment and other relationships.

RECOMMENDATIONS FOR FUTURE RESEARCH

The psychological processes we discussed in this paper (attachment, social cognition self-other processing and identity development) and which are relevant to the hypermentalizing model of BPD advanced here, are all highly developmentally sensitive. Infancy and toddlerhood are developmental periods with obvious relevance. So is adolescence, especially given the consensus that BPD emerges during adolescence (Chanen & Kaess, 2012). Indeed, adolescence is well-documented as a developmental stage in which social reorientation takes place (Crone & Dahl, 2012; Nelson, Leibenluft, McClure, & Pine, 2005; van den Bos, 2013) and attachment relationships change shape (Kobak, Cassidy, Lyons-Ruth, & Ziv, 2006). Moreover, while the brain network subserving social cognition appears to be similarly recruited across age groups, preliminary evidence has accumulated in support of more subtle developmental changes in social-cognitive processing, with greater recruitment of more posterior regions as children age through adolescence (Blakemore, 2008). Clearly, adolescence is an important developmental period to study if we aim to understand processes involved the development of BPD. Yet most research on the social-cognitive basis of BPD has been carried out in adults. Little is known about the age that the psychological processes described here emerge in relation to BPD and how they develop over time. Further, when studying the developmental trajectory of social-cognitive characteristics of BPD, it is important to consider interactions with developmental transitions. As theory of mind capacity only comes fully on line around the age of four, there may only be a weak

relation between individual differences and BPD in childhood. However, once this capacity is fully matured in late adolescence and early adulthood, individual differences in social-cognitive strategies may have stronger associations with BPD.

Another important goal in studying social cognition across the lifespan is to determine whether there is continuity in social-cognitive processes. If atypical social-cognitive processes represent vulnerability for BPD, they should show temporal stability. While some social-cognitive processes (e.g., social referencing) are expected to manifest similarly at different developmental points, others, such as ToM may manifest differently. Here, the interaction with environmental stressors such as family dynamics or trauma may increase the risk for BPD. Thus, future research should follow a developmental psychopathology approach in order to fill the gap of knowledge about stability of social-cognitive processes across typical development while using multiple units of analysis.

Finally, in general, more empirical work is needed if a hypermentalizing model of BPD is to be successfully translated into clinical practice. Mentalization-based treatment manuals do not include specific techniques for addressing hypermentalizing, beyond general techniques at increasing mentalizing capacity by, for instance, addressing pseudo-mentalizing or the pretend mode. In order to advance the translation of empirical findings supporting a hypermentalizing model in BPD, it would be necessary to more fully understand how related processes (projective identification, self-other processing, emotion regulation and other attachment-related processes) overlap and differentiate from hypermentalizing. While much work is left to be done, the work presented in this paper and elsewhere (Sharp et al., 2011, 2013; Sharp, 2014) on a hypermentalizing model of BPD is useful in potentially providing an integrated model of social-cognitive function specific to BPD.

REFERENCES

- Abela, J. R. Z., & Hankin, B. L. (2008). Cognitive vulnerability to depression in children and adolescents: A developmental psychopathology perspective. In J. R. Z. Abela & B. L. Hankin (Eds.), *Handbook of depression in children and adolescents* (pp. 35–78). New York, NY: The Guilford Press.
- Agrawal, H. R., Gunderson, J., Holmes, B. M., & Lyons-Ruth, K. (2004). Attachment studies with borderline patients: A review. *Harvard Review of Psychiatry*, 12(2), 94–104.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.
- Arntz, A., Bernstein, D., Oorschot, M., & Schobre, P. (2009). Theory of mind in borderline and cluster-c personality disorder. *Journal of Nervous and Mental Disease*, 197(11), 801–807. doi:10.1097/Nmd.0b013e3181be78fb
- Arntz, A., & Veen, G. (2001). Evaluations of others by borderline patients. *Journal of Nervous and Mental Disease*, 189(8), 513–521.
- Baron-Cohen, S., Ring, H. A., Wheelwright, S., Bullmore, E. T., Brammer, M. J., Simmons, A., & Williams, S. C. (1999). Social intelligence in the normal and autistic brain: An fMRI study. *European Journal of Neuroscience*, 11(6), 1891–1898.
- Baron-Cohen, S., Wheelwright, S., Hill, J., Raste, Y., & Plumb, I. (2001). The “Reading the Mind in the Eyes” test revised version: A study with normal adults, and adults with Asperger syndrome or high-functioning autism. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 42(2), 241–251.
- Bezircanian, S., Cohen, P., & Brook, J. S. (1993). The impact of mother-child interaction on the development of borderline personality disorder. *American Journal of Psychiatry*, 150(12), 1836–1842.
- Blakemore, S. J. (2008). The social brain in adolescence. *Nature Reviews Neuroscience*, 9, 267–277.
- Bouchard, S., & Sabourin, S. (2009). Borderline personality disorder and couple dysfunctions. *Current Psychiatry Reports*, 11(1), 55–62.

- Bouchard, S., Sabourin, S., Lussier, Y., & Villeneuve, E. (2009). Relationship quality and stability in couples when one partner suffers from borderline personality disorder. *Journal of Marital and Family Therapy*, 35(4), 446–455. doi:10.1111/j.1752-0606.2009.00151.x
- Brothers, L. (1990). The social brain: A project for integrating primate behavior and neurophysiology in a new domain. *Concepts in Neuroscience*, 1(1), 27–51.
- Carlson, E. A., Egeland, B., & Sroufe, L. A. (2009). A prospective investigation of the development of borderline personality symptoms. *Development & Psychopathology*, 21(4), 1311–1334.
- Casement, P. (1990). *Further learning from the patient*. London, England: Routledge.
- Chanen, A. M., & Kaess, M. (2012). Developmental pathways to borderline personality disorder. *Current Psychiatry Reports*, 14, 45–53. doi:10.1007/s11920-011-0242-y
- Crawford, T. N., Cohen, P., Johnson, J. G., Sneed, J. R., & Brook, J. S. (2004). The course and psychosocial correlates of personality disorder symptoms in adolescence: Erikson's developmental theory revisited. *Journal of Youth and Adolescence*, 33(5), 373–387.
- Crone, E. A., & Dahl, R. E. (2012). Understanding adolescence as a period of social-affective engagement and goal flexibility. *Nature Reviews Neuroscience*, 13(9), 636–650. doi:10.1038/nrn3313
- Daley, S. E., Burge, D., & Hammen, C. (2000). Borderline personality disorder symptoms as predictors of 4-year romantic relationship dysfunction in young women: Addressing issues of specificity. *Journal of Abnormal Psychology*, 109(3), 451–460. doi:10.1037//0021-843x.109.3.451
- Daros, A. R., Zakzanis, K. K., & Ruocco, A. C. (2013). Facial emotion recognition in borderline personality disorder. *Psychological Medicine*, 43, 1953–1963.
- Dinsdale, N., & Crespi, B. J. (2013). The borderline empathy paradox: Evidence and conceptual models for empathic enhancements in borderline personality disorder. *Journal of Personality Disorders*, 27(2), 172–195.
- Dixon-Gordon, K. L., Chapman, A. L., Lovasz, N., & Walters, K. (2011). Too upset to think: The interplay of borderline personality features, negative emotions, and social problem solving in the laboratory. *Personality Disorders: Theory, Research, and Treatment*, 2(4), 243–260. doi:10.1037/a0021799
- Domes, G., Czeschnek, D., Weidler, F., Berger, C., Fast, K., & Herpertz, S. C. (2008). Recognition of facial affect in borderline personality disorder. *Journal of Personality Disorders*, 22(2), 135–147.
- Domes, G., Schulze, L., & Herpertz, S. C. (2009). Emotion recognition in borderline personality disorder—A review of the literature. *Journal of Personality Disorders*, 23(1), 6–19.
- Donegan, N. H., Sanislow, C. A., Blumberg, H. P., Fulbright, R. K., Lacadie, C., Skudlarski, P., . . . Wexler, B. E. (2003). Amygdala hyperreactivity in borderline personality disorder: Implications for emotional dysregulation. *Biological Psychiatry*, 54(11), 1284–1293. doi:S000632230300636X[pii]
- Dyck, M., Habel, U., Slodczyk, J., Schlummer, J., Backes, V., Schneider, F., & Reske, M. (2009). Negative bias in fast emotion discrimination in borderline personality disorder. *Psychological Medicine*, 39(5), 855–864. doi:10.1017/S0033291708004273
- Dziobek, I., Fleck, S., Kalbe, E., Rogers, K., Hassenstab, J., Brand, M., . . . Convit, A. (2006). Introducing MASC: A movie for the assessment of social cognition. *Journal of Autism and Developmental Disorders*, 36(5), 623–636. doi:10.1007/s10803-006-0107-0
- Fertuck, E. A., Jekal, A., Song, I., Wyman, B., Morris, M. C., Wilson, S. T., . . . Stanley, B. (2009). Enhanced 'reading the mind in the eyes' in borderline personality disorder compared to healthy controls. *Psychological Medicine*, 39(12), 1979–1988. doi:S003329170900600X[pii]10.1017/S003329170900600X
- Fonagy, P. (1989). On tolerating mental states: Theory of mind in borderline patients. *Bulletin of the Anna Freud Centre*, 12, 91–115.
- Fonagy, P. (1991). Thinking about thinking: Some clinical and theoretical considerations in the treatment of a borderline patient. *International Journal of Psycho-Analysis*, 72, 1–18.
- Fonagy, P., Gergely, G., Jurist, E., & Target, M. (2002). *Affect regulation, mentalization and the development of the self*. New York, NY: Other Press.
- Fonagy, P., & Luyten, P. (2009). A developmental, mentalization-based approach to the understanding and treatment of borderline personality disorder. *Developmental Psychopathology*, 21(4), 1355–1381.
- Fonagy, P., & Luyten, P. (in press). Translation: Mentalizing as treatment target in BPD. *Personality Disorders: Theory, Research and Treatment*.
- Franzen, N., Hagenhoff, M., Baer, N., Schmidt, A., Mier, D., Sammer, G., . . . Lis, S. (2011). Superior 'theory of mind' in borderline personality disorder: An analysis of interaction behavior in a virtual trust game. *Psychiatry Research*, 187(1–2), 224–233. doi:10.1016/j.psychres.2010.11.012

- Frick, C., Lang, S., Kotchoubey, B., Sieswerda, S., Dinu-Biringer, R., Berger, M., . . . Barnow, S. (2012). Hypersensitivity in borderline personality disorder during mindreading. *Plos One*, *7*(8). doi:[ARTNe41650DOI10.1371/journal.pone.0041650](https://doi.org/10.1371/journal.pone.0041650)
- Ghiassi, V., Dimaggio, G., & Brune, M. (2010). Dysfunctions in understanding other minds in borderline personality disorder: A study using cartoon picture stories. *Psychotherapy Research*, *20*(6), 657–667. doi:[Pii926177654Doi10.1080/10503307.2010.501040](https://doi.org/10.1080/10503307.2010.501040)
- Glaser, J. P., Van Os, J., Thewissen, V., & Myin-Germeys, I. (2010). Psychotic reactivity in borderline personality disorder. *Acta Psychiatrica Scandinavica*, *121*, 125–134.
- Gunderson, J. (2007). Disturbed relationships as a phenotype for borderline personality disorder. *American Journal of Psychiatry*, *164*(11), 1637–1640.
- Guttman, H. A., & Laporte, L. (2000). Empathy in families of women with borderline personality disorder, anorexia nervosa, and a control group. *Family Process*, *39*(3), 345–358.
- Happé, F. G. E. (1994). An advanced test of theory of mind: Understanding of story characters' thoughts and feelings by able autistic, mentally handicapped, and normal children and adults. *Journal of Autism and Developmental Disorders*, *24*(2), 129–154.
- Harari, H., Shamay-Tsoory, S. G., Ravid, M., & Levkovitz, Y. (2010). Double dissociation between cognitive and affective empathy in borderline personality disorder. *Psychiatry Research*, *175*(3), 277–279. doi:[10.1016/j.psychres.2009.03.002](https://doi.org/10.1016/j.psychres.2009.03.002)
- Hill, J., Pilkonis, P., Morse, J., Feske, U., Reynolds, S., Hope, H., . . . Broyden, N. (2008). Social domain dysfunction and disorganization in borderline personality disorder. *Psychological Medicine*, *38*(1), 135–146.
- Hooley, J. M. (2010). Social factors in schizophrenia. *Current Directions in Psychological Science*, *19*, 238–242.
- Jacobs, M. (2006). *Psychodynamic counselling in action*. London, England: Sage.
- Jennings, T. C., Hulbert, C. A., Jackson, H. J., & Chanen, A. M. (2012). Social perspective coordination in youth with borderline personality pathology. *Journal of Personality Disorders*, *26*(1), 126–140.
- King-Casas, B., Sharp, C., Lomax-Bream, L., Lohrenz, T., Fonagy, P., & Montague, P. R. (2008). The rupture and repair of cooperation in borderline personality disorder. *Science*, *321*(5890), 806–810.
- Kobak, R., Cassidy, J., Lyons-Ruth, K., & Ziv, Y. (2006). Attachment, stress, and psychopathology: A developmental pathways model. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology, Vol. 1: Theory and method* (2nd ed.; pp. 333–369). Hoboken, NJ: Wiley & Sons.
- Labonte, E., & Paris, J. (1993). Life events in borderline personality disorder. *Canadian Journal of Psychiatry [Revue Canadienne De Psychiatrie]*, *38*(10), 638–640.
- Levy, K. N. (2005). The implications of attachment theory and research for understanding borderline personality disorder. *Development and Psychopathology*, *17*(4), 959–986. doi:[10.1017/S0954579405050455](https://doi.org/10.1017/S0954579405050455)
- Levy, K. N., Meehan, K. B., Weber, M., Reynoso, J., & Clarkin, J. F. (2005). Attachment and borderline personality disorder: Implications for psychotherapy. *Psychopathology*, *38*(2), 64–74. doi:[10.1159/000084813](https://doi.org/10.1159/000084813)
- Lieb, K., Zanarini, M. C., Schmahl, C., Linehan, M. M., & Bohus, M. (2004). Borderline personality disorder. *Lancet*, *364*, 453–461.
- Linehan, M. (1993). *Cognitive-behavioral treatment of borderline personality disorder*. New York, NY: Guilford Press.
- Lynch, T. R., Rosenthal, M. Z., Kosson, D. S., Cheavens, J. S., Lejuez, C. W., & Blair, R. J. (2006). Heightened sensitivity to facial expressions of emotion in borderline personality disorder. *Emotion*, *6*(4), 647–655. doi:[2006-21788-010\[pii\]10.1037/1528-3542.6.4.647](https://doi.org/10.1037/1528-3542.6.4.647)
- Lyons-Ruth, K., Bureau, J. F., Holmes, B., Easterbrooks, A., & Brooks, N. H. (2013). Borderline symptoms and suicidality/self-injury in late adolescence: prospectively observed relationship correlates in infancy and childhood. [Research Support, N.I.H., Extramural Research Support, Non-U.S. Government]. *Psychiatry Research*, *206*(2–3), 273–281. doi:[10.1016/j.psychres.2012.09.030](https://doi.org/10.1016/j.psychres.2012.09.030)
- Mier, D., Lis, S., Esslinger, C., Sauer, C., Hagenhoff, M., Ulferts, J., . . . Kirsch, P. (2012). Neuronal correlates of social cognition in borderline personality disorder. *Scan*, *8*, 531–537.
- Minzenberg, M. J., Fan, J., New, A. S., Tang, C. Y., & Siever, L. J. (2007). Fronto-limbic dysfunction in response to facial emotion in borderline personality disorder: An event-related fMRI study. *Psychiatry Research-Neuroimaging*, *155*(3), 231–243. doi:[10.1016/j.pseychresns.2007.03.006](https://doi.org/10.1016/j.pseychresns.2007.03.006)
- Minzenberg, M. J., Poole, J. H., & Vinogradov, S. (2006). Social-emotion recognition in borderline personality disorder. *Comprehensive Psychiatry*, *47*, 468–474.
- Nelson, E. E., Leibenluft, E., McClure, E., & Pine, D. S. (2005). The social re-orientation of adolescence: A neuroscience perspective on the process and its relation to psychopathology. *Psychological Medicine*, *35*(2), 163–174. doi:[10.1017/S0033291704003915](https://doi.org/10.1017/S0033291704003915)

- Preißler, S., Dziobek, I., Ritter, K., Heekeren, H. R., & Roepke, S. (2012). Social cognition in borderline personality disorder: Evidence for disturbed recognition of the emotions, thoughts, and intentions of others. *Frontiers in Behavioral Neuroscience*, 4, 1–8.
- Reuter, T. R., Sharp, C., Temple, J. R., & Babcock, J. (in press). The relation between borderline personality disorder features and teen dating violence. *Psychology of Violence*.
- Schilling, L., Wingenfeld, K., Lowe, B., Moritz, S., Terfehr, K., Kother, U., & Spitzer, C. (2012). Normal mind-reading capacity but higher response confidence in borderline personality disorder patients. *Psychiatry and Clinical Neurosciences*, 66(4), 322–327. doi:10.1111/j.1440-1819.2012.02334.x
- Segal, H. G., Westen, D., Lohr, N. E., & Silk, K. R. (1993). Clinical assessment of object relations and social cognition using stories told to the picture arrangement subtest of the WAIS-R. *Journal of Personality Assessment*, 61(1), 58–80.
- Segal, H. G., Westen, D., Lohr, N. E., R. Silk, K., & Cohen, R. (1992). Assessing object relations and social cognition in borderline personality disorders from stories told to the picture arrangement subtest of the WAIS-R. *Journal of Personality Disorders*, 6(4), 458–470.
- Sharp, C. (2012). The use of neuroeconomic games to examine social decision making in child and adolescent externalizing disorder. *Current Directions in Psychological Science*, 21(3), 183–188.
- Sharp, C. (2014). The social-cognitive basis of BPD: A theory of hypermentalizing. In C. Sharp & J. Tackett (Eds.), *Handbook of borderline personality disorder in children and adolescents* (pp. 211–228). New York, NY: Springer.
- Sharp, C., & Fonagy, P. (2008). Social cognition and attachment-related disorders. In C. Sharp, P. Fonagy, & I. M. Goodyer (Eds.), *Social cognition and developmental psychopathology* (pp. 271–304). Oxford, England: Oxford University Press.
- Sharp, C., Ha, C., Carbone, C., Kim, S., Perry, K., Williams, L., & Fonagy, P. (2013). Hypermentalizing in adolescent inpatients: Treatment effects and association with borderline traits. *Journal of Personality Disorders*, 27(1), 3–18.
- Sharp, C., & Kalpakci, A. (under review). The social-cognitive basis of BPD: Towards a theory of hypermentalizing. *Clinical Psychology Review*.
- Sharp, C., Pane, H., Ha, C., Venta, A., Patel, A. B., & Fonagy, P. (2011). Theory of mind and emotion regulation difficulties in adolescents with borderline traits. *Journal of the American Academy of Child and Adolescent Psychiatry*, 50(6), 563–573.
- Sharp, C., & Sieswerda, S. (2013). The social-cognitive basis of borderline and antisocial personality disorder. *Journal of Personality Disorders*, 27(1), 1–2.
- Skodol, A. E., Gunderson, J. G., McGlashan, T. H., Dyck, I. R., Stout, R. L., Bender, D. S., . . . Oldham, J. M. (2002). Functional impairment in patients with schizotypal, borderline, avoidant, or obsessive-compulsive personality disorder. *American Journal of Psychiatry*, 159(2), 276–283.
- Staebler, K., Renneberg, B., Stopsack, M., Fiedler, P., Weiler, M., & Roepke, S. (2011). Facial emotional expression in reaction to social exclusion in borderline personality disorder. *Psychological Medicine*, 41(9), 1929–1938. doi:10.1017/S0033291711000080
- van den Bos, W. (2013). Neural mechanisms of social reorientation across adolescence. *The Journal of Neuroscience*, 33(34), 13581–13582.
- von Ceumern-Lindenstjerna, I. A., Brunner, R., Parzer, P., Mundt, C., Fiedler, P., & Resch, F. (2010). Initial orienting to emotional faces in female adolescents with borderline personality disorder. *Psychopathology*, 43(2), 79–87. doi:000274176[pjii]10.1159/000274176
- Westen, D., Lohr, N., Silk, K., Gold, L., & Kerber, K. (1990a). Object relations and social cognition in borderlines, major depressives, and normals: A TAT analysis. *Psychological Assessment: A Journal of Consulting and Clinical Psychology*, 2, 355–364.
- Westen, D., Ludolph, P., Block, M. J., Wixom, J., & Wiss, F. C. (1990b). Developmental history and object relations in psychiatrically disturbed adolescent girls. *American Journal of Psychiatry*, 147, 1061–1068.
- Westen, D., Ludolph, P., Lerner, H., Ruffins, S., & Wiss, F. C. (1990c). Object relations in borderline adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, 29, 338–348.