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PARENTAL BONDING AND PERSONALITY DISORDER: THE MEDIATING ROLE OF ALEXITHYMIA

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This study explored whether alexithymic features mediate the effect of perceived adverse parenting during childhood on being diagnosed with a PD in adulthood. Two hundred sixty-five psychiatric outpatients were evaluated with the Toronto Alexithymia Scale (TAS-20), the Parental Bonding Instrument (PBI), the Structured Interview for DSM-IV Personality, the Structured Clinical Interview for DSM-IV Axis I Disorders, the Clinical Global Impression scale, and the Global Assessment of Functioning scale. The statistical model for mediation proposed by Baron and Kenny (1986) was employed to detect whether the TAS scores account for the relation between PBI scores and a PD diagnosis. The results indicated that although altered parental bonding (and specifically, excessive maternal protection) may enhance the risk of PD, its effect is completely mediated by the alexithymic feature Difficulty Describing Feelings to Others (DDF), after controlling for gender, age, educational level, type, severity and age of onset of Axis I disorders. Therefore, this study suggests that the presence of DDF accounts for the effect of maternal overprotection as a risk factor for PD.

Over the last decades, a considerable body of research has empirically documented an association between early adverse parenting and personality disorders (PD) in adulthood (Cassidy & Mohr, 2002; Russ, Heim, & Westen, 2003; Carter, Joyce, Mulder, & Luty, 2001; Zweig-Frank & Paris, 1991; Nordahl & Stiles, 1997; Nickell, Waudby, & Trull, 2002; Paris, 2001). However, little is known about the mechanisms by which an altered parental upbringing behavior may contribute to later PD. One hypothesis could be that adverse parenting contributes to the development of PD in adulthood by influencing the emergence or the expression of other factors that in turn increase vulnerability to such disturbances (Bartholomew, Kwong, & Hart, 2001; Paris, 2001).

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A psychological construct which may potentially play such a mediating role in the relation between abnormal parent-child interactions and clinical PD in adulthood is alexithymia.

Alexithymia is conceptualized as a deficit in the ability to identify and describe emotions, but not to experience them, coupled with a tendency to externally oriented and concrete thinking (Taylor, Bagby, & Parker, 1997). Two main findings suggest that alexithymia is involved in the association between altered parenting and PD. First, experiences of caregivers who are emotionally unavailable, or who repeatedly expose the child to inconsistent or misleading affective responses, are thought to lead to abnormalities in affect regulation later in life (Taylor et al., 1997, pp. 26–45; Lumley, Mader, Gramzow, & Papineau, 1996). In this regard, several studies supported a link between alexithymia and childhood adversity (i.e., abuse, insecure attachment, disturbed emotional atmosphere of the family; Taylor & Bagby, 2004; Honkalampi et al., 2004; Fukunishi, Sei, Morita, & Rahe, 1999; Picardi, Toni, & Caroppo, 2005). Second, although research pertaining to alexithymia has until now mainly focused on its association with Axis I disturbances, some data indicate that alexithymia is also related to PD (Bach, de Zwaan, Ackard, Nutzinger, & Mitchell, 1994; Berenbaum, 1996; Guttman & Laporte, 2002), as well as to several dimensions which are clinically relevant to a diagnosis of PD (Grabe, Spitzer, & Freyberger, 2001; Picardi et al., 2005; De Gucht, Fontaine, & Fishler, 2004).

Overall, these findings indicate that alexithymia is related both to early adverse parental practices and to adult PD. Nevertheless, there is a surprising scarcity of empirical research about the potential mediating role of alexithymic features in the relation between early adverse experiences and PDs in adulthood. To our knowledge, only two studies have investigated the association between childhood adversity, alexithymia, and PDs in a clinical sample of psychiatric outpatients (Berenbaum, 1996; Guttman & Laporte, 2002). The authors found that childhood abuse, alexithymia, and PD (specifically Borderline PD in the latter study) were related to each other. In particular, one investigator (Berenbaum, 1996) suggested that one of the ways in which childhood abuse contributes to undesirable mental health outcomes is via alexithymia. However, in that study the hypothesis that alexithymia could account for the observed relation between childhood adversities and PD was only supported by simple associations between variables (i.e., abuse history and PD, abuse history and alexithymia, alexithymia and PD), whereas a specific mediation analysis (Bennett, 2000; Rose, Holmbeck, Coakley, & Franks, 2004; Preacher & Hayes, 2004) was not performed for this purpose. Furthermore, both studies focused only on childhood abuse, without providing more general information about the parental rearing environment.

In light of the above considerations, the present study was performed to explore the potential mediating role of alexithymic features in the association between perceived early parenting and a PD diagnosis in adulthood

in a clinical sample of subjects seeking psychiatric treatment. A widely used and reliable statistical procedure to estimate mediation effects was adopted for this purpose (Baron & Kenny, 1986). The study hypothesis was that adverse parenting is associated with an alexithymic cognitive-affective style, which in turn is related to the development of a PD.

METHODS

SAMPLE RECRUITMENT AND PROCEDURE

The study sample consisted of 265 outpatients (172 females, 93 males) who consecutively sought treatment at the Psychiatry Unit of Parma University Hospital (Parma, Italy) between March, 2004 and April, 2005. None of the included subjects met the following exclusion criteria for study participation: (1) age <18, >60 years; (2) cognitive impairment which interferes with the ability to reliably respond to diagnostic interviews or questionnaires; (3) a diagnosis of Schizophrenia or other psychotic disorders according to DSM-IV (American Psychiatric Association, 1994) diagnostic criteria.

After giving informed consent, all participants underwent a comprehensive psychopathological examination including the assessment of Axis I and II disorders, alexithymia, and early parenting.

MEASURES

Axis I Pathology Assessment. The presence of psychiatric disorders was assessed with the Structured Clinical Interview for DSM-IV Axis I disorders (SCID-I/P; First, Spitzer, Gibbon, & Williams, 1995). Age at onset of Axis I disorders, clinical global severity (measured with the Clinical Global Impression scale, CGI; Guy, 1976) and level of functioning (measured by the Global Assessment of Functioning scale, GAF; American Psychiatric Association, 1994) were noted for all subjects.

Axis II Pathology Assessment. The presence of personality disorders (PD) was assessed using the Structured Interview for DSM-IV Personality (SIDP-IV; Pfohl, Blum, & Zimmerman, 1995).

Alexithymia Assessment. All subjects completed the Italian version of the twenty-item Toronto Alexithymia Scale (TAS-20; Bagby, Parker, & Taylor, 1994a, 1994b; Bressi et al., 1996). A total score is calculated by summing all items so that a higher score reflects a greater level of alexithymia. A score of ≥ 61 indicates the presence of clinical alexithymia. This version of the TAS uses a three factor analytic solution; the three factors are: (1) Difficulty identifying feelings and bodily sensations (DIF), (2) Difficulty describing and expressing feelings to others (DDF), and (3) Externally oriented thinking (EOT).

Early Parenting Assessment. Parental rearing experiences were examined using the Italian version of the Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979; Scinto, Marinangeli, Kalyvoka, Danel-

uzzo, & Rossi, 1999), which is a 25-item questionnaire designed to measure parental behavior as perceived by the offspring. The PBI uses a Likert rating scale for each item: subjects are asked to score each parent as the parent is remembered during the subject's first 16 years of life. Items refer to two bipolar dimensions of parental behavior related to later difficulties, the dimensions of Care (parental warmth and affection versus rejection; 12 items) and Protection (parental promotion of psychological autonomy versus psychological control; 13 items). The questionnaire generates two scores for each parent: maternal care and overprotection, and paternal care and overprotection.

STATISTICAL ANALYSES

To establish whether alexithymic features played a mediating role between perceived parental bonding and a PD diagnosis, a series of regression analyses were performed, in accordance with the model for mediation proposed by Baron and Kenny (Baron & Kenny, 1986; Kenny, 2006). A mediational model is supported when four statistical criteria are met: (1) the predictor variable (in this study parental bonding) is significantly associated with the outcome variable (PD diagnosis); (2) the predictor variable is significantly associated with the mediator (alexithymic features); (3) the mediator is significantly associated with the outcome variable, even after controlling for the predictor; and (4) the previously significant predictor → outcome relationship is no longer significant when effects of the mediator are controlled. If all these conditions are met, the data are consistent with the hypothesis that the intervening variable (in this study alexithymic features) completely mediates the predictor → outcome relationship; if only the first three conditions are met but not condition 4, a partial mediation is demonstrated.

This model was tested in the present study using the three following regression analyses (with conditions 3 and 4 being tested with a single regression equation; Figure 1). First, logistic stepwise regression analysis was conducted to determine the predictive power of the PBI scores (independent variables) on the presence of a PD diagnosis (dependent variable)

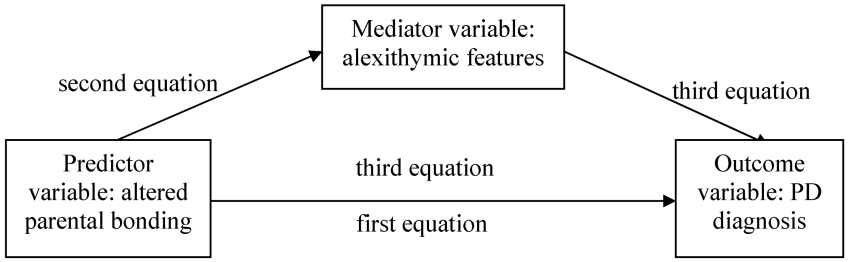

FIGURE 1. Model to be tested showing parental bonding-DP links and the alexithymia mediator effect.

(condition 1). Second, linear regression analyses were performed to explore whether PBI scores (independent variables) are related to any of the proposed mediators (TAS total score, and DIF, DDF, EOT scores, entered as dependent variables in four different stepwise multiple regression analyses) (condition 2). Third, in a logistic stepwise regression analysis both PBI and TAS scores were entered simultaneously as independent variables, and PD diagnosis was the dependent variable. This analysis was applied to examine whether the TAS scores would be predictive of a PD diagnosis after controlling for the effect of PBI scores (condition 3) and to explore whether PBI still predicts PD, even after controlling for TAS scores effect (condition 4). A mediational model would be supported if the TAS scores predict PD, even after controlling for PBI scores effect. Perfect mediation is indicated if the relationship between PBI scores and DP is no longer significant after controlling the effect of TAS scores; imperfect mediation is indicated if this relationship remains but is weakened.

In order to avoid specification errors arising from the confounding effects of omitted variables, in all the regression equations gender, age, and educational level were entered as independent variables. In the second and third regression equations type and age of onset of Axis I disorders, CGI, and GAF scores were also entered as independent variables, because of the well-known association of alexithymia with general psychological distress and numerous psychiatric disorders, poor education, increasing age, and gender (Taylor et al., 1997; Bankier, Aigner, & Bach, 2001; Taylor & Bagby, 2004; Wise, Mann, Mitchell, Hryvniak, & Hill, 1990; Mattila, Salminen, Nummi, & Joukamaa, 2006). The Goodman test was applied to compute post-hoc probing of significant mediational effect (Goodman, 1960; Preacher & Leonardelli, 2006).

The same set of analyses was also applied entering as outcome variables the diagnoses of specific PD clusters (A, B, or C), to evaluate if parental bonding and alexithymic features were differently related to each PD cluster.

Statistical analyses were performed using SPSS for Windows, version 12.0.

RESULTS

SAMPLE CHARACTERISTICS

The mean age of the study participants was 35.1 ± 11.8 years (range 18–60). Sixty-seven subjects (25.3%) had a low educational level (primary or secondary school), and the remaining 198 (74.7%) had a high educational level (high school or university); mean educational level was 12.7 years of education.

The rates of Axis I and Axis II disorders, mean age of onset of Axis I disorders, CGI, GAF, PBI, and TAS scores of the study sample are depicted in Tables 1–3. Specifically, 148 patients (55.8% of the whole group) were

TABLE 1. Summary of Axis I Disorders Rates in the Study Sample (n = 265) According to SCID-I/P Results

Type of Axis I disorder	*n*	%
Mood Disorders	60	22.6
Anxiety Disorders	83	31.3
Eating Disorders	34	12.8
Somatoform Disorders	11	4.2
Adjustment Disorders	46	17.4
No Axis I Disorder	31	11.7

Note. Mean age of onset of Axis I disorders was 28.33 ± 11.5 years.

diagnosed with at least one PD, while the remaining 117 (44.2%) were not. Among the former, 59 subjects (22.3% of the whole sample) received only one PD diagnosis, 45 (17%) received two PD diagnoses, 23 (8.7%) received three PD diagnoses, and 21 (7.9%) presented with more than three PD diagnoses.

CONDITION 1: PARENTAL BONDING FACTORS PREDICTING PD DIAGNOSES (FIGURE 2: FIRST EQUATION)

Among PBI factors, only high maternal overprotection was predictive of a PD diagnosis in general ($B = .034$, $p = .037$, $OR = 1.035$; CI 95% 1.002–1.069; $SE = 0.16$). No effect was observed for any PBI factor on the presence of specific PD clusters (A, B, and C). Thus, condition 1 was not met

TABLE 2. Summary of Axis II Disorders Rates in the Study Sample (n = 265) According to SIDP-IV Results

Type of Axis II Disorder	*n*	%
Any PD diagnosis	148	55.8
Any Cluster A PD diagnosis	34	12.8
Paranoid PD	28	10.6
Schizoid PD	5	1.9
Schizotypal PD	8	3.0
Any Cluster B PD diagnosis	59	22.3
Histrionic PD	27	10.2
Narcissistic PD	22	8.3
Borderline PD	38	14.3
Antisocial PD	2	0.8
Any Cluster C PD diagnosis	104	39.2
Avoidant PD	41	15.5
Dependent PD	28	10.6
Obsessive-Compulsive PD	69	26.0
Other PD diagnoses	64	24.2
Self-defeating PD	10	3.8
Depressive PD	39	14.7
Negativistic PD	15	5.7
No PD diagnoses	117	44.2

Note. The cumulative proportion of individual Axis II diagnoses exceeded the proportion of any Axis II diagnosis because of multiple Axis II diagnoses (see text for details).

TABLE 3. CGI, GAF, PBI, and TAS-20 Scores of the Study Sample (n = 265)

Variable	Mean	SD
CGI scores	3.64	0.96
GAF scores	57.10	6.99
PBI scores		
Paternal care	20.72	9.81
Maternal care	23.07	9.37
Paternal overprotection	15.74	7.92
Maternal overprotection	17.68	8.32
TAS-20 scores		
TAS total score*	52.26	14.81
Difficulty identifying feelings (DIF)	20.23	7.03
Difficulty communicating feelings (DCF)	13.08	4.82
Externally oriented thinking (EOT)	18.98	6.52

Note. *Alexithymia rate (TAS-20 ≥ 61) = 31.9%

for any PD cluster diagnosis, and the second and third set of regressions were not performed.

CONDITION 2: PARENTAL BONDING FACTORS PREDICTING TAS FEATURES (FIGURE 2: SECOND EQUATION)

Having found that maternal overprotection is predictive of a PD diagnosis, such a parental bonding style needs to be shown to be related to the proposed mediators (alexithymic features; condition 2). Among the TAS-20 factors, only the DDF score was significantly predicted by maternal overprotection (B = .136, SE = 0.055; β = .248; t = 2.5; p = .01).

CONDITION 3: TAS SCORES PREDICTING PD, AFTER CONTROLLING FOR PBI (FIGURE 2: THIRD EQUATION)

Having found that, among PBI factors, only maternal overprotection predicted both a PD diagnosis and a higher TAS-DDF score, maternal overprotection was entered simultaneously with TAS scores in a final logistic

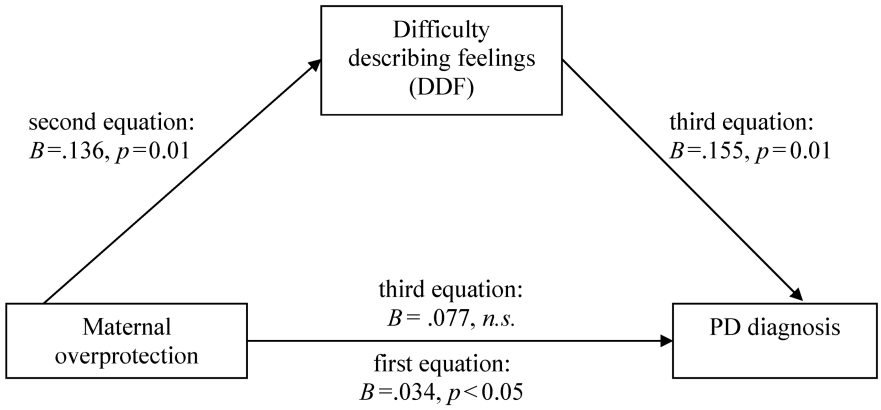

FIGURE 2. Model showing that DDF fully mediates the relationship between maternal overprotection and PD diagnosis.

stepwise regression analysis to determine whether the maternal overprotection → PD relationship was mediated by DDF. Only DDF was found to be a risk factor for the presence of PD ($B = .155$; $SE = 0.052$; $p = .003$; $OR = 1.168$; 95% CI 1.054–1.294; condition 3).

CONDITION 4: PBI SCORES NO LONGER PREDICTING PD, AFTER CONTROLLING FOR TAS SCORES (FIGURE 2, THIRD EQUATION)

The previously significant relationship (first equation) between maternal overprotection and DP lost significance ($B = .077$; $p = .78$) after controlling for the effect of TAS scores (Figure 2, third equation). The Goodman test confirmed that the effect of maternal overprotection on a PD diagnosis was completely explained by the effect of DDF on a PD diagnosis (perfect mediation) (z = 1.96992821; $p = .049$; condition 4).

DISCUSSION

The present study explored whether, in a clinical sample of psychiatric outpatients, alexithymic features mediate the effect of perceived adverse parenting during childhood and adolescence on being diagnosed with a PD in adulthood. The results indicate that although altered parental bonding (and specifically, excessive maternal protection) may enhance the risk of PD, its effect is completely mediated by the alexithymic feature "difficulty describing feelings to others" (DDF). These findings remained significant even after controlling for the effect of gender, age, educational level, type, severity, and age of onset of Axis I disorders. Thus, DDF acts as a perfect mediator in the relation between maternal overprotection and a PD diagnosis.

These results suggest that maternal intrusiveness in childhood may lead to an impairment in regulation of affect (alexithymic features), which in turn constitutes a risk factor for the emergence of a dysfunctional personality style.

In this study, altered parental bonding was not found to be predictive of any specific PD cluster. Indeed, although differences in attachment styles and parental bonding have been reported between cluster A, B, and C PDs (Bartholomew et al., 2001; Nordahl & Stiles, 1997), there is strong evidence that altered parent-child interactions are general, rather than specific, risk factors for psychopathology, including Axis II disorders (Fossati, 2001; Paris, 2001). However, it could also be the case that the sample of patients in each PD cluster was not large enough to detect differences between clusters. In fact, further studies employing larger case series are needed to address this issue.

Our data confirm previous associations (Taylor et al., 1997, p. 41; Goldberg, Mac-Kay-Soroka, & Rochester, 1994) of perceived maternal misattunement during childhood and adolescence with later impairment in emotional expression of both positive and negative affects and the related

inability to employ interpersonal behavior to help regulate affect. In our study a perceived overcontrolling maternal behavior is specifically related to the inability in describing one's own emotional states to others (DDF). Indeed, maternal behavioral restrictiveness, denial of psychological autonomy and prevention of independence could be particularly associated with later difficulties in sharing and freely communicating feelings to others. Furthermore, DDF predicts a PD diagnosis in adulthood. In a previous study (Picardi et al., 2005), DDF was found to be related to personality traits denoting a difficulty to be warm, sensitive, and sociable as well as in identifying with others and cooperating with them. Interestingly, the maladaptive traits that typically define PD patients usually manifest themselves in their interpersonal relationships (Ruiz-Sancho, Smith, & Gunderson, 2001), and the failure to form adaptive interpersonal systems is considered a common core deficit of all PDs (American Psychiatric Association, 1994; Livesley, 2001). Furthermore, the alexithymic communicative mode has been linked to impaired interpersonal relationships (Taylor et al., 1997, p. 45). Therefore, it is conceivable that DDF increases the risk of developing a PD by contributing to the emergence of a maladaptive interpersonal style and chronic interpersonal problems, which are general features central to a PD diagnosis. Accordingly, the alexithymic features DIF and EOT were not found to be predictors of PD in the current study, possibly because they may not be directly involved in problems in the interpersonal sphere.

Some theoretical and clinical implications may follow from these results.

From a theoretical perspective, these data are consistent with former reports showing that a perceived poor quality of the relations between parents and child could affect the quality of adult relationships (e.g., Westen, 1991), thus shaping the interpersonal contexts in which PD develop and are maintained (Bartholomew et al., 2001). In this regard, the results suggest that one of the ways in which early adverse parenting influences the development of PD is by contributing to later impairment in successful affect regulation in the interpersonal realm. Specifically, the impairment in emotional communication related to perceived maternal intrusiveness in childhood and adolescence may be maintained in adulthood as an alexithymic deficit in social communication (DDF). This cognitive-affective style, in turn, may influence one's social interactions throughout life causing difficulty in tolerating closeness and intimacy. In addition it may impede the formation of collaborative and cooperative relationships, as evidenced by the pervasive pattern of chronic interpersonal difficulties generally observed in PD patients.

From a clinical perspective, these conclusions may have implications for the treatment of patients with PD. If altered parental bonding in childhood and adolescence increases the risk of PD by its effect on the emergence of alexithymic features, then psychotherapies that only rely on the uncovering and elaboration of childhood adversities are unlikely to be sufficient. On the contrary, interventions aimed at reducing the inability to express

and communicate feelings to others may be more useful in improving patients' present levels of functioning, at least in the affect regulation and interpersonal domains. Such interventions can be based on several approaches, as a part of an integrated treatment for PD (Livesley, 2001). For instance, supportive and validating strategies could be adopted to offer new experiences to counter the consequences of a perceived intrusive parental rearing. Psychoeducational techniques could be employed to help patients acquire coping behaviors and attitudes to deal with everyday deficits in emotional communication. Medications could also be considered in the case of concurrent depressive or anxious psychopathology, which could worsen the alexithymia state.

This study has several limitations.

First, the cross-sectional design does not allow for an accurate identification of causative links, but only an assessment of relationships between variables (maternal overprotection, DDF, and PD). Second, the current investigation used retrospective data which are subject to all the problems inherent in retrospective recall, since a self-report questionnaire (PBI) was used to measure parenting retrospectively. It is clear that only prospective research can overcome this problem by determining whether the development of alexithymia constitutes a sine qua non condition in which altered parental bonding increases the risk for PD. Nonetheless, the primary type of data employed in most studies about childhood experiences and adult psychopathology is retrospective (Figueroa & Silk, 1997). Specifically, the PBI fully examines childhood experiences with parents, and such perceptions have been shown to be reliable, i.e., stable over time (Parker et al., 1979; Wilhelm & Parker, 1990) and valid because they seem to reflect actual parenting styles (Parker, 1986; Rey & Plapp, 1990; Parker 1989). Third, the study sample included patients with a relevant Axis I comorbidity, including anxiety and mood disorders, and it is well known that alexithymia is at least partly a state-dependent phenomenon, associated with anxiety and depression (Saarijarvi, Salminen, & Toikka, 2006; Honkalampi, Hintikka, Saarinen, Lehetonen, & Viinamaki, 2000, 2001; Marchesi, Brusamonti, & Maggini, 2000; Luminet, Bagby, & Taylor, 2001). Although the mediation analyses were performed controlling for the effect of Axis I symptomatology by employing general measures of psychiatric impairment (i.e., SCID diagnoses; CGI and GAF scores), no specific assessment of anxious and depressive psychopathology was carried out. Thus, we cannot exclude that the concurrent anxiety and mood psychopathology can affect the PBI and TAS scores reported by the study participants. However, this study was not designed to inquire into the absolute or relative stability of the alexithymia construct, but rather to investigate whether the presence of alexithymic features in a heterogeneous psychiatric clinical sample may constitute a risk factor for PD, possibly mediating the effect of altered parental bonding. Future studies could clarify this point by exploring the relationship between parental bonding, alexithymia, and PD in patients who have remitted from their Axis I conditions.

In conclusion, the results of this study indicate that one of the processes through which altered parental bonding (specifically, a perceived overcontrolling maternal behavior in childhood and adolescence) impacts on PD development, could involve a disorder in affect regulation (alexithymia) and, in particular, an impairment in communicating one's own inner affective states to others.

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