

Early Relational Trauma and Self Representations: Misattributing Externally Derived Representations as Internally Generated

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Objective: Early relational trauma has been posited to be responsible for dysfunctional self schema as negative feedback derived from abusive close others may influence the development of self-evaluation. However, the association between early relational trauma and negative self-evaluation has proven inconsistent. In addition to the evaluative aspect, early relational trauma may impact on the procedural aspect of self schema, with a difficulty in differentiating mental representations derived from others from those generated internally by the self. **Method:** To test this hypothesis, the authors adopted a source attribution paradigm tapping on the distinction between mental representations generated by the self or derived from another person in a nonclinical sample, together with scales measuring self-evaluation and early relational experiences. **Results:** The results showed that individuals with early relational trauma tended to attribute the representations externally derived as internally generated, although there were no associations between early relational trauma and self-evaluation. Importantly, early relational trauma had unique contribution to source misattribution independent from common covariates including early nonrelational trauma, parental dysfunction, general memory function, and negative affect states. **Conclusions:** Erroneously identifying information derived from other people as self-generated may be a specific sociocognitive propensity linked to early relational trauma and may impact upon the development of self schema.

Keywords: child abuse, self-esteem, shame, source monitoring, trauma

Self schema, the inner organization of the experience, evaluation, and knowledge pertinent to the self, is a critical determinant of mental health and psychological life in adulthood (Kim, Thibodeau, & Jorgensen, 2011; Sowislo & Orth, 2013). This inner structure of self-related mental representations is considered to be shaped by feedback from other people about the self, especially through dyadic interactions with close others, such as caregivers,

at the early developmental stage (Fonagy & Target, 1997). Unfortunately, early adverse relational experiences are common in the general population (Edwards, Holden, Felitti, & Anda, 2003), including those that elicit extreme stress and cannot be readily assimilated by ordinary experience, such as emotional, physical, or sexual maltreatment (Terr, 1991; Van der Kolk & van der Hart, 1989). The humiliation and other negative messages from abusive caregivers may be incorporated into the representation of the self, leading to a dysfunctional self schema. Early relational trauma hence may impact upon the formation of self schema and increase the susceptibility to mental illness (Follette, Polusny, Bechtle, & Naugle, 1996).

The relationship between early relational trauma, dysfunctional self schema, and mental illness has been vigorously investigated in individuals with a history of childhood maltreatment. Results, however, have been inconsistent. Some studies reported that early relational trauma was associated with the evaluation of self schema, including lower self-esteem (e.g., Bolger, Patterson, & Kuipersmidt, 1998; Briere & Runtz, 1990; Fergusson, McLeod, & Horwood, 2013; Silvern et al., 1995; Turner, Finkelhor, & Ormrod, 2010; Wong et al., 2009), a tendency to blame oneself for being the target of abuse or to attribute the cause of a negative event to the self (e.g., Alessandri & Lewis, 1996; Andrews, 1995; Andrews, Brewin, Rose, & Kirk, 2000; Feiring, Cleland, & Simon, 2009; Filipas & Ullman, 2006; Gold, 1986; Kim, Talbot, & Cicchetti, 2009; Negrao, Bonanno, Noll, Putnam, & Trickett, 2005),

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and a propensity to associate the self with negatively valenced words (van Harmelen, de Jong, et al., 2010). Dysfunctional self schema in terms of elevated abuse-related shame (Feiring, Taska, & Chen, 2002) mediated the link between early relational trauma and psychiatric symptoms. In contrast, others did not find that early relational trauma correlated reliably with self-esteem (e.g., Brayden, Deitrich-MacLean, Dietrich, Sherrod, & Altemeier, 1995; Feiring et al., 2009), the dispositional tendency to experience shame (i.e., shame proneness; Feiring, Taska, & Lewis, 2002; Feiring et al., 2009), and the propensity to associate the self with negative words (Rüsch et al., 2011). Early relational trauma may not be necessarily linked to negative self-evaluation, at least in the nonclinical population (see, for reviews, Jumper, 1995; Rind, Tromovitch, & Bauserman, 1998).

Several methodological problems can be noted in these studies. First, victim-abuser relationship was not specified at times. Abuse perpetrated by trusted people is expected to be more impactful than abuse inflicted by nonclose others on the development of self schema (Cole & Putnam, 1992; Freyd, 1994; Terr, 1991). The inconsistent association between self-evaluation and early relational trauma may arise because of inclusion of maltreatment inflicted by nonclose others such as extrafamilial people. Second, covariates were frequently ignored. Early relational trauma was found to correlate with anxiety and depression (Spinoven et al., 2010), which can bias information processing (Dagleish & Watts, 1990) and may distort the appraisal of early experience and the self in clinical patients. This may account for the absence of the link between early relational trauma and negative self-evaluation in nonclinical populations (Jumper, 1995; Rind et al., 1998). Furthermore, maltreating caregivers were found to be less sensitive and responsive to their offspring (Bousha & Twentyman, 1984). However, parental dysfunction has usually been neglected in the study of early relational trauma (Kagan, 2013). This neglect introduces difficulty to partial out the putative confounding effect of the low sensitivity and responsibility due to parental dysfunction.

In addition to the evaluative aspect of the self (e.g., I am to blame and I am not worthy of any love), the impact of early relational trauma may also be observed on the procedural aspect of the self, the cognitive processing of mental representations pertinent to the self. An ability to differentiate the source of representations between those derived from other people and those generated by the self appears to be critical, as from the social feedback in early close relationships, children start to develop the sense of self and build up their own views toward the self (Cole & Putnam, 1992). Indeed, some evidence suggests that effective source attribution emerges early (Lindsay, Johnson, & Kwon, 1991) and it can already be observed in 6-year-old children (Foley, Johnson, & Raye, 1983). We postulate that the development of this cognitive ability may be hindered by early relational trauma. This source misattribution tendency may render individuals with early relational trauma susceptible to the internalization of externally derived information, including those negative and humiliating appraisals toward the self from abusive close others (Schoore, 2002). Clinical studies have shown that patients with several trauma-related disorders have a tendency to confuse the source of self-related representations and other representations derived from other people, including patients with posttraumatic stress disorder (Golier, Harvey, Steiner, & Yehuda, 1997) and pathological dis-

sociation (Chiu et al., 2016). This is also found in a subgroup of patients with schizophrenic spectrum disorders (Fisher, McCoy, Poole, & Vinogradov, 2008; Keefe, Arnold, Bayen, McEvoy, & Wilson, 2002; Vinogradov et al., 1997; Vinogradov, Luks, Schulman, & Simpson, 2008). It remains unclear, however, whether the findings in these patients result from early relational trauma or other factors pertinent to psychopathology.

Findings from neuro-cognitive studies also suggest that there may be a link between source misattribution and early relational trauma. Laboratory studies have indicated that the cortical midline structure (CMS; Northoff & Bermpohl, 2004), a neural substrate responsible for the processing of self-related information including the discrimination between representations derived internally by the self or externally from others (Allen et al., 2005; Simons, Henson, Gilbert, & Fletcher, 2008; Wang, Metzack, & Woodward, 2011), has been associated with early relational trauma. That is, structurally, a volume reduction in the CMS has been observed in individuals with early relational trauma (right medial prefrontal cortex in Tomoda et al., 2009; dorsomedial prefrontal cortex in van Harmelen, van Tol, et al., 2010). Functionally, child emotional abuse correlated with the reactivity in dorsomedial prefrontal cortex at an interpersonally stressful situation (van Harmelen, Hauber, et al., 2014) and was associated with CMS hypoactivation during encoding and recognition of emotional words (van Harmelen, van Tol, et al., 2014). These neuro-cognitive findings implied that there may be a link between early relational trauma and dysfunctional processing of self-related representations, which could lead to the misattribution of the source of information.

This study aimed to fill the gaps in the literature regarding the relationship between self schema and early relational trauma. First, to address the multidimensionality of self schema, both the evaluative aspect (self-esteem and shame proneness) and the procedural aspect (the discrimination of self- and nonself representations) were assessed. Second, two types of traumatizing events were differentiated. Relational trauma denotes abuse inflicted by trusted people (e.g., caregivers), which may impose conflict in forming stable attachment to them; nonrelational trauma denotes other traumatic experience including abuse inflicted by nonclose others or other extremely stressful events, which involve less interpersonal nature such as traffic accidents or natural disasters (Freyd, 1994). Finally, the potential confounding effects of negative affect states and parental dysfunction were addressed. A nonclinical sample was used to exclude the potential effect of psychiatric status.

We hypothesized that there would be an association between self schema and early relational trauma. This association, however, may not emerge on both of the evaluative and procedural aspects of the self. We predicted an association between early relational trauma and a deficit in the procedural aspect of the self due to the structural or functional changes in the neuro-cognitive underpinnings responsible for self-referential processing. In contrast, we did not expect that early relational trauma would correlate with the evaluative aspect of self schema. The associations with the evaluative aspect, if any, may be small and possibly be explained by the confounding variables, as the associations in the nonclinical populations have appeared unreliable (Jumper, 1995; Rind et al., 1998).

Method

Participants

This study was part of a larger research project investigating the relationships between early relational experience, sociocognitive functioning, and psychosocial well-being. The research project was approved by the research ethics committee at the Faculty of Social Science, The Chinese University of Hong Kong. A total of 159 college students were recruited from the campus. Participants were eligible if they are Cantonese native speaker and able to read traditional Chinese. The average age of this sample was 20.9 years old ($SD = 1.3$, ranging from 18–24) and 43% were male. A compensation of HKD 70 (per hour) was remunerated after their participation.

Instruments

Evaluative aspect of self schema. Two scales were used to assess self-esteem and self-conscious emotions (e.g., shame and guilt proneness). The Rosenberg Self-Esteem Scale (Rosenberg, 1965), a 10-item instrument, was used to assess self-esteem. Participants were instructed to indicate their agreement with each statement on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The total score indicates the level of self-esteem. This scale has been adopted in a Chinese population and demonstrated good reliability (Martin, Thompson, & Chan, 2006). The Test of Self-Conscious Affect (TOSCA; Tangney, Wagner, & Gramzow, 1989) is used to measure shame and guilt proneness. The TOSCA consists of 15 daily life scenarios. Each scenario is followed with reaction styles pertinent to self-conscious emotions, including shame and guilt proneness, on a 5-point scale. Shame and guilt can be distinguished by their focus of self-evaluation, guilt focuses on specific behavior and shame focuses on the entire self (Lewis, 1971). Shame, rather than guilt proneness, has been found to relate to psychopathology (Tangney, Wagner, & Gramzow, 1992). The Chinese version of TOSCA has been developed and showed acceptable reliability (Gao, Qin, Qian, & Liu, 2013).

Early adversities. The Brief Betrayal Trauma Survey (BBTS; Goldberg & Freyd, 2006) was used to assess early relational and nonrelational trauma. The BBTS covers various potentially traumatizing events in childhood including five items for those imposing threat to attachment (e.g., emotional, physical, or sexual assaults by close people) and another five items for those without the relational feature (e.g., physical and sexual assaults by non-close people, accidents, natural disasters). Each item is scored on a 3-point scale ranging from 1 (*never*) to 3 (*more than two times*) and the scores are converted into a dichotomous scale for analysis (0 = *no*, 1 = *yes*). We deployed two scoring schemes for early relational trauma. First, we divided participants into two groups according to the presence of at least one type of early relational trauma. Second, a total score (from 0 to 5) was calculated as the measures of cumulated early relational and nonrelational trauma, respectively. The Measure of Parenting Style (Parker et al., 1997) was applied to assess the perceived parenting style of both parents before the age of 16. Two types of parental dysfunction, insufficient parental care and strict discipline, were assessed by 10 items, with a 4-point scale ranging from 0 (*not true at all*) to 3 (*extremely*

true). The two subscale scores were used respectively to represent parental indifference and overcontrol in the analysis.

Negative affect states. The levels of anxiety and depression experienced in the last week were assessed by the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983). The scale consisted of seven items for each of the two subscales, anxiety and depression. Participants were required to choose the description which describes their mood state the best (scores ranging from 0 to 3).

Procedure and Design

Source monitoring paradigm. Following the design of self-versus-other source monitoring tasks (Chiu et al., 2016; Fisher et al., 2008; Mitchell & Johnson, 2009) and participants' feedback from a pilot test, we developed a computerized version of the source monitoring task. Test materials were simple sentences composed of a subject, a verb, and an object. Two categories of sentences were prepared, one pertinent to occupations and the other to animals. Some examples of the test materials were "Postmen deliver letters," "Students read textbooks," "Monkeys eat bananas," and "Bees collect nectar." All of the sentences fitted the common knowledge for Hong Kong residents and the linguistic features of Cantonese. The sentences were randomly divided into three sets for the experimenter-provided condition, the participant-generated condition, and new items for a recognition test.

In the study phase, the sentences of the first two sets were displayed one by one on the screen, and participants were asked to read the sentences aloud. In the experimenter-provided condition, the full sentence with the subject, verb, and object were presented (10 items for each category). Participants merely repeated the sentence. In the participant-generated condition, an incomplete subject with the first character and blank grids indicating the number of characters were presented together with the verb and object. Participants were asked to give a meaningful sentence by self-generating the subject according to the cues (10 items for each category). The two categories of sentences were presented separately in two blocks and the order of the two blocks were randomized across participants. The two conditions appeared intermittently within one category.

In the test phase, the verb and the object of each sentence were displayed on the screen, but the subject was missing. Participants were asked first whether the sentence had been studied in the study phase. Subsequently, participants were asked about the source of the sentence when they had answered that it had been learnt in the study phase. Again, the two categories of sentences were presented in two separate blocks and the order was randomized across participants. Within each category, the three types of sentences were presented randomly (for each category, 10 experimenter-provided items, 10 participant-generated items, and 20 new items). Five indices were formed by calculating the accuracy rates of item recognition of the three experimental conditions (experimenter-provided, self-generated, and new) and the accuracy rates of source attribution of the two experimental conditions (experimenter-provided and self-generated).

A preliminary analysis was conducted to examine the validity of this task. The results showed a higher accuracy rate for item recognition of self-generated items than items provided by the experimenter in the full sample ($M = .28$, $SD = .15$, paired $t =$

23.99, $p < .0001$), which is a standard self-generation effect on item-recognition (Bertsch, Pesta, Wiscott, & McDaniel, 2007). The result lent support for the success of our experimental manipulation.

Procedure

Participants were assessed individually in our laboratory. Upon arrival, the study was explained, and the written informed consent was obtained. Then, behavioral experiments including the source monitoring task were administered. Participants performed the study phase first. After a distractions phase with irrelevant perceptual tasks for 25 min, the memory task assessing item recognition and source attribution was given. Finally, the self-report scales were administered. Participants were debriefed after their participation.

Results

Early Relational Trauma, Nonrelational Trauma, and Parental Dysfunction

On the basis of the retrospective report of trauma history, participants were divided into two groups, one reporting early relational trauma ($n = 45$) and the other without early relational trauma ($n = 111$).¹ This prevalence rate (28.8%) is comparable to the rate found in a recent review (ranged from 8.7% to 26.6%) in Chinese nonclinical population (Fang et al., 2015). We tested whether the two groups showed differences in other early adversities including nonrelational trauma and parental dysfunction. Indeed, significant differences were found in the scores of early nonrelational trauma, $F(1, 154) = 25.51$, $p < .001$, $\eta_p^2 = .14$; parental indifference, $F(1, 154) = 56.30$, $p < .001$, $\eta_p^2 = .27$; and parental overcontrol, $F(1, 154) = 14.94$, $p < .001$, $\eta_p^2 = .09$ (see Table 1). The significant between-groups differences reflected the positive correlations of the measures for other early adversities with the scale of cumulated relational trauma; for nonrelational trauma, parental indifference, and parental overcontrol, $r_{(n = 156)}^s = .48$, $.56$, and $.28$, $ps < .001$, and $ds = 1.09$, 1.35 , and 0.58 .

Early Relational Trauma and Self Schema

The descriptive statistics of the measures for self schema were also summarized in Table 1. First, with respect to the evaluative aspect of self schema, the two groups did not differ significantly in terms of self-esteem and levels of shame and guilt proneness ($ps > .4$). Thus, nonclinical individuals with early relational trauma did not report low self-esteem and elevated shame and guilt proneness.²

Regarding the procedural aspect of self schema, a significant between-groups difference was found in source attribution for experimenter-provided items, $F(1, 154) = 10.34$, $p = .002$, $\eta_p^2 = .06$, but not for self-generated items, $F(1, 154) = 0.03$, $p = .85$, $\eta_p^2 = .0002$. Individuals with early relational trauma made more errors on attributing the source of experimenter-provided items in comparison with individuals without this history. The between-groups difference could not be accounted for by general memory function as the two groups performed equally well on item recognition for self-generated and experimenter-provided items ($ps >$

.11). Also the two groups did not differ in the rate of successful rejection of new items ($p > .60$).

Covariate Analysis

To eliminate the potential confounding effects from the common covariates on the association between early relational trauma and source misattribution, a hierarchical regression model was constructed (Neter, Kutner, Nachtsheim, & Wasserman, 1999). The accuracy rate of source attribution for experimenter-provided items served as the dependent variable. Predictors including gender and negative affect states (state depression and anxiety), general memory function (item recognition for self-generated and experimenter-provided items), other early adversities (nonrelational trauma and parental dysfunction), and early relational trauma were incorporated into the model step by step. The increase of the coefficient of determination between a current model and its preceding model was used to index the unique contribution of the new variable(s) in the current model. The results of the regression analysis were summarized in Table 2.

At the baseline model, we placed gender, anxiety, and depression into the model. The model was not significant and none of these three variables reached significance. Second, we added two indicators of item recognition to control for the effects of general memory function. Adding these indicators led to a significant increase in coefficient of determination, $F(2, 153) = 3.71$, $p = .03$, $\Delta R^2 = .05$. The accuracy rate of item recognition for experimenter-provided items was the variable which contributed to the significant effect. Third, we included nonrelational trauma and parental dysfunction in the model. The increase of coefficient of determination did not reach significance, $F(6, 147) = 1.07$, $p = .38$, $\Delta R^2 = .03$, and none of the three variables reached significance. Finally, we put early relational trauma into the model. A significant effect was reported, $F(1, 146) = 8.18$, $p = .005$, $\Delta R^2 = .05$, suggesting the effect of early relational trauma accounted for 5% of variance in source misattribution over and above the covariates.³ The power of the result was .82 ($\alpha = .05$; Faul, Erdfelder, Lang, & Buchner, 2007). Figure 1 illustrated the relationship between the c of early relational trauma and source misattribution for experimenter-provided items, indicating that the number of

¹ Eight participants reported that they had a history of early nonrelational trauma but not early relational trauma. Because of the small sample size, we combined them with those without a history of early relational trauma. Similar between-subject differences were found when using this sample that included the eight participants and another sample without them.

² A similar pattern of correlation has been demonstrated between negative self-evaluation and negative affect states across the two groups. Low self-esteem ($rs = -.34$ to $-.60$, $ds = 0.72$ to 1.50) and high shame proneness ($rs = .26$ to $.33$, $ds = 0.54$ to 0.70) were associated with anxiety and depression in both of the groups, as documented (Tangney et al., 1992; Zeigler-Hill, 2011).

³ A supplementary five-item subscale, abuse, is included in the The Measure of Parenting Style and used to measure parental maltreatment, which is expected to be related to parental dysfunction. A positive correlation was also found between the parental abuse subscale and source misattribution for experimenter-provided items ($r = .23$, $p < .01$). Because of a potential problem of multicollinearity from the high correlation between this subscale and early relational trauma ($r = .59$, $p < .0001$), we did not put this abuse subscale and early relational trauma together into one model.

Table 1

The Means, Standard Deviations, and 95% Confidence Intervals of Measures for the Evaluative and Procedural Aspects of Self Schema, Early Adversities, and Negative Affect States in Individuals With and Without Early Relational Trauma (ERT)

Measures	Without ERT (<i>n</i> = 111)					With ERT (<i>n</i> = 45)				
	<i>M</i>	<i>SD</i>	95% CI			<i>M</i>	<i>SD</i>	95% CI		
Potential traumatizing events in childhood										
Relational trauma	0	0	—	—	—	1.78	1.02	1.47	—	2.08
Nonrelational trauma	.07	.26	.02	—	.12	.47	.73	.25	—	.69
Parental dysfunction										
Indifference	14.09	3.16	13.50	—	14.68	20.02	6.72	18.00	—	22.04
Overcontrol	14.20	4.41	13.37	—	15.03	17.31	4.92	15.83	—	18.79
Self-evaluation										
Self-esteem	33.54	5.36	32.53	—	34.55	34.24	6.47	32.30	—	36.19
Guilt	61.94	6.98	60.62	—	63.25	61.64	6.22	59.78	—	63.51
Shame	48.92	9.02	47.22	—	50.61	47.76	9.32	44.95	—	50.56
Performance on the source monitoring task										
New item	.97	.04	.96	—	.98	.97	.06	.95	—	.98
Item: Other-offered	.60	.16	.57	—	.63	.60	.15	.56	—	.65
Item: Self-generated	.87	.11	.85	—	.89	.90	.08	.87	—	.92
Source: Experimenter-provided	.84	.14	.81	—	.87	.75	.22	.68	—	.81
Source: Self-generated	.77	.21	.73	—	.81	.78	.18	.73	—	.83
Negative affect states										
Anxiety	7.53	3.14	6.94	—	8.12	8.51	3.56	7.44	—	9.58
Depression	5.74	2.91	5.19	—	6.29	6.33	4.17	5.08	—	7.59

early relational trauma was associated with poorer performance on source attribution.

Discussion

The current study aimed at clarifying the relationship between early relational trauma and self schema. We focused on the impact of potentially traumatizing events inflicted by an abuser who had a close relationship with the victim upon two aspects of the self, including the way people evaluate the self (shame proneness and self-esteem) and distinguish the mental representations of the self from those of others (source attribution). Our results showed that early relational trauma was not associated directly with low self-esteem or elevated shame proneness. However, individuals with

early relational trauma tended to misattribute representations that were externally derived as internally generated. Though early relational trauma positively correlated with other early adversities including nonrelational trauma and parental dysfunction, the link between early relational trauma and source misattribution remained significant when these covariates were statistically controlled for.

The observed confusion in the source of mental representations echoes the neural-cognitive findings in individuals with early relational trauma, as both structural and functional changes in the brain regions responsible for the processing of representations pertinent to self or other people have been shown in this group (Tomoda et al., 2009; van Harmelen, Hauber, et al., 2014; van Harmelen, van Tol, et al., 2010, 2014). Though no reliable link was observed between early relational trauma and the evaluative

Table 2

Coefficients of Determination and Regression Coefficients of Hierarchical Regression Analysis for the Impact of Early Relational Trauma on Source Attribution for Experimenter-Provided Items

Step and predictor	<i>F</i>	<i>p</i>	<i>R</i> ²	β	<i>SE</i>	<i>T</i>
I. Demographics and affect states	.70	.55	.01			
Gender				-.03	.08	-.39
Anxiety				-.06	.10	-.63
Depression				-.07	.10	-.71
II. General memory function	1.92	.09	.06			
Experimenter-provided item				.21	.09	2.50*
Self-generated item				.004	.09	.05
III. Other early adversities	1.79	.08	.09			
Parental indifference				-.12	.09	-1.45
Parental overcontrol				-.06	.08	-.71
Nonrelational trauma				-.04	.08	-.49
IV. Early relational trauma	2.58	.01	.14			
Early relational trauma				-.30	.11	-2.86**

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

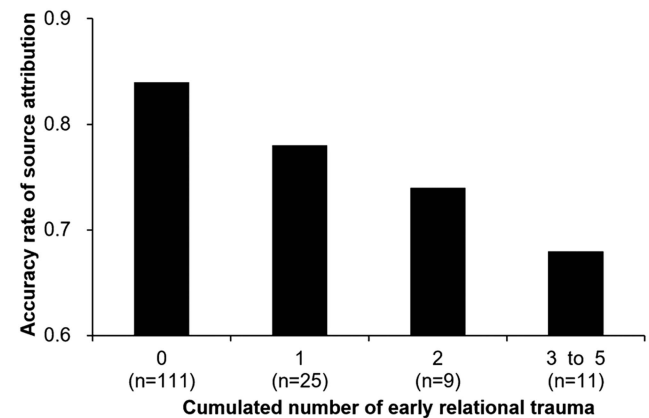


Figure 1. The accuracy rate of source attribution for experimenter-provided items as a function of increasing number of early relational trauma.

aspect of self schema, a sociocognitive propensity of source misattribution for the representations derived from others was noted. A vital implication of deficient source attribution is that individuals with early relational trauma may be more susceptible to evaluations from others. The momentary perception of the self can be influenced by the evaluative feedback from others (Leary, Haupt, Strausser, & Chokel, 1998). With this source attribution bias, individuals with early relational trauma may confuse feedback derived externally as self-views held internally. This might lead to marked fluctuations in state self-evaluation in a relational context.

Consistent with previous findings (Alexander & Lupfer, 1987; Green et al., 2000), individuals with early relational trauma also experienced more parental dysfunction and nonrelational trauma in childhood. Caregivers who maltreated their children tended to treat their children with insufficient care and overcontrol, as was shown before (Bousha & Twentyman, 1984). This maladaptive family environment may impede the acquisition of skills and knowledge for healthy relationships and security judgments, predisposing survivors of early relational trauma to be exposed to potentially traumatizing events in other contexts (Finkelhor & Browne, 1985). This intertwined relationship between early relational trauma, nonrelational trauma, and parental dysfunction may raise the concern whether the effect of early relational trauma on source misattribution for externally derived representations is attributable to these covariates. Our results refute this possibility by showing that the association between early relational trauma and source misattribution remained significant when the two covariates were statistically controlled for. Beyond global family atmosphere and nonrelational trauma, the current finding highlighted the specific effect of early relational trauma.

Some people may doubt the external validity of the findings from a nonclinical sample about the impact of traumatic experience. It might be argued that the lack of a significant effect of early relational trauma on the evaluative aspect of self schema resulted from the less severe traumatic experience in nonclinical individuals, although psychopathology may confound the effects on self-appraisal. We cannot exclude this possibility and it is still an open question whether the findings can be generalized to the clinical population. However, the results indicate that early relational trauma may not necessarily lead to negative self-evaluation. There is still room to develop an adaptive and healthy construal of the self for individuals exposed to an aversive early environment, even with the propensity to misidentify feedback from others as constructed by the self.

Longitudinal studies have documented that early traumatic stress does not necessarily lead to pathological outcomes in adulthood (Dutra, Bureau, Holmes, Lyubchik, & Lyons-Ruth, 2009; Ogawa, Sroufe, Weinfield, Carlson, & Egeland, 1997; Trickett, Noll, & Putnam, 2011). Distinct developmental trajectories exist in adaptation to early stressful experiences (Masten, 2001). Source misattribution may interact with other risk factors, such as a cognitive tendency to bind negatively valenced representations and the self, resulting in negative self-evaluation observed in clinical clients. Alternatively, there may exist protective factors which can counter the impacts of early aversive environment, such as supportive extrafamilial environment. Incorporating positive feedback from other authority figures such as school teachers, or peers such as friends and school mates may help reorganize the preexisting

self schema. It is vital to clarify other key players that may moderate the impacts of source misattribution.

For clinical implications, the link between early relational trauma and source misattribution is congruent with the psychodynamic view that the internalization of externally derived negative appraisal toward the self may be a crucial mechanism to understand the psychopathology pertaining to early relational trauma (Schore, 2002). The view toward the self in early relational trauma survivors hence may fluctuate, depending upon relational environment and external feedback. The results imply that fostering a stable sense of the self in relation to other people may be a critical issue for individuals with a history of early relational trauma (Davies & Frawley, 1992). Having said that, a direct generalization of these results to clinical patients with a complex profile of psychopathology and low self-esteem should be cautious, as, obviously, our data did not find a relation between early relational trauma and self-esteem. Moreover, some clinical studies have suggested that adult relational environment also plays a crucial role in maintaining or exaggerating the effect of early traumatic stress (Chiu et al., 2015; Lipschitz, Kaplan, Sorkenn, Chorney, & Asnis, 1996). The interplay between early relational trauma, source misattribution, and aversive adult relational environment in trauma-related mental disorders should be clarified in the future studies.

Several limitations of the study should be noted. First, the cross-sectional nature of the study prevents any inference about the causal relationship between early relational trauma and source misattribution. It may be the traumatic stress from early relational trauma that arrests the normal social or neural development. Alternatively, it is possible that abnormal attribution tendency affects the perception or interpretation of interpersonal interaction, resulting in conflict with close others or a distorted view toward early relational experience. Future studies should clarify this issue. Second, the hierarchy of self-related information processing is still under debate. It has been suggested that the self in different levels of mental processing may involve heterogeneous components (Gillihan & Farah, 2005; Legrand & Ruby, 2009). It is unclear whether the tendency to misattribute externally derived representations as internally generated reflects a difficulty in discriminating self and nonself information or a specific deficit in source monitoring. Future studies should systematically investigate the various levels of mental operations involving self-referential representations (Northoff et al., 2006). Third, college students were recruited in the current studies. Therefore, it is intriguing whether the young age of our participants (early adulthood), higher education level and intellectual ability, or relative sufficient assets in terms of socioeconomic resources may confounded with the result. In addition, though the null correlation between early relational trauma and negative self-evaluation is consistent with the results from studies among western participants (Jumper, 1995; Rind et al., 1998), the generalizability of the link between early relational trauma and deficient source attribution of Chinese participants to other cultures remains unknown. This issue may be crucial as the self-construal in eastern and western countries is disparate (Oyserman, Coon, & Kemmelmeier, 2002). Future studies with participants from different cultural backgrounds studies should be conducted to verify these generalizability issues.

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