

Association between Attachment Prototypes and Schizotypy Dimensions in Two Independent Non-clinical Samples of Spanish and American Young Adults

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Abstract:

Attachment theory offers a powerful theoretical framework for elucidating the developmental pathway through which childhood interpersonal trauma confers vulnerability to psychosis. In the present study, the association between attachment and schizotypy was explored in two independent non-clinical samples of Spanish ($n=547$) and American ($n=1425$) young adults. Participants completed the Relationship Questionnaire and the Wisconsin Schizotypy Scales. Following attachment theory and cognitive accounts of psychosis, it was hypothesized that preoccupied attachment would be associated with positive schizotypy, dismissing attachment with negative schizotypy, and fearful attachment with both schizotypy dimensions. Results confirmed these predictions, thus supporting the theoretical frameworks invoked. Also, the associations found in these non-clinical samples are consistent with those in clinical psychosis, supporting the continuum model of schizotypy and schizophrenia. Finally, there was cross-cultural consistency of these associations. Overall, the findings support the application of attachment theory for furthering our understanding of whether different insecure styles, characterized by different self and other representations and affect regulation strategies, play a role in the pathways to positive and negative symptoms.

Keywords: Attachment styles | Positive schizotypy | Negative schizotypy | Psychosis | Cross-cultural

Article:

1. Introduction

There is presently considerable interest in understanding the role that psychosocial environmental factors play in the vulnerability, onset, expression, and course of psychosis (Garety et al., 2001 and van Os et al., 2010). In particular, increasing attention has been devoted to elucidating the mechanisms through which childhood interpersonal trauma exacerbates the risk for developing psychosis (Read et al., 2005, Fisher et al., 2012 and Read and Bentall, 2012). Attachment theory provides a powerful theoretical framework to understand the impact of distressing or traumatic early interpersonal relationships through the distortion of mental schemas, affective dysregulation, and altered interpersonal patterns (Platts et al., 2002, Berry et al., 2007 and Read and Gumley, 2008). Demonstrating that insecure forms of attachment are meaningfully associated with the subclinical psychosis phenotype is an important intermediate step towards examining whether they play a role in the developmental pathway from early relational adversity to psychosis.

Attachment theory was proposed by Bowlby (e.g., 1988), who conceptualized attachment as the “propensity to make intimate emotional bonds to particular individuals as a basic component of human nature” (pp. 120–121). The theory suggests that early experiences with caregivers become internalized in the form of cognitive-affective representations or internal working models of the self and others; these models serve as templates for future relationships and are thought to be the mechanism of continuity of attachment dynamics across the life course (Collins and Read, 1990 and Bifulco and Thomas, 2013).

Bartholomew (1990) developed a model of individual differences in adult attachment that defines four attachment prototypes on the basis of two underlying dimensions – model of self (also termed attachment anxiety) and model of others (also termed attachment avoidance). The negative model of self, or high anxiety, is characterized by a judgment of the self as unworthy of support, an excessive desire for closeness and approval, as well as a fear of being rejected by significant others. The negative model of others, or high avoidance, is characterized by a judgment of others as unavailable and unsupportive, a strong preference for self-reliance, and discomfort with interpersonal closeness (Bartholomew and Horowitz, 1991, Griffin and Bartholomew, 1994a, Griffin and Bartholomew, 1994b and Brennan et al., 1998). The intersection of these two dimensions results in four prototypical attachment patterns: secure (positive self/positive others), preoccupied (negative self/positive others), dismissing (positive self/negative others), and fearful (negative self/negative others).

A parsimonious approach to examine the association between attachment and psychosis is to focus on schizotypy in non-clinical populations; this makes it possible to avoid the confounding factors associated with clinical status, such as symptom severity, medication, hospitalization, and social stigma. The fully dimensional view of psychosis suggests that schizotypy traits constitute the non-pathological endpoint of the phenomenological and etiological spectrum that culminates with clinical schizophrenia, with quantitative variation and qualitative changes accounting for the wide phenotypic variation (Claridge and Beech, 1995 and Kwapil and Barrantes-Vidal, 2012).

Consistent with the dimensional conceptualization, research has found a comparable dimensional structure between schizotypy and schizophrenia. Although the exact number of factors is yet unclear, epidemiological and clinical studies have provided strong support for the construct validity of the positive and negative schizotypy dimensions (Peralta et al., 1992, Kwapil et al., 2008 and Barrantes-Vidal et al., 2013). Positive schizotypy is characterized by unusual perceptual experiences, odd thinking, and negative affect, whereas negative schizotypy is characterized by social disinterest, affective flattening, anhedonia, and diminution of cognitive functioning (Kwapil and Barrantes-Vidal, 2012).

A key component of attachment theory is that it delineates the distress regulation strategies that characterize each insecure attachment style. Therefore, this information should be useful for predicting how attachment relates to positive and negative schizotypy. People with high anxiety (i.e., preoccupied attachment) employ hyperactivating strategies that lead to an impaired ability to regulate negative emotions as well as a tendency to detect threats and exaggerate distress (Mikulincer and Shaver, 2007 and Mikulincer and Shaver, 2008). Accordingly, preoccupied attachment is expected to be associated with positive schizotypy and schizophrenia. Research indicates that the positive dimension is associated with high emotional reactivity and affective dysregulation (Lewandowski et al., 2006, Myin-Germeys and van Os, 2007 and Barrantes-Vidal et al., 2009). By contrast, individuals with high avoidance (i.e., dismissing attachment) engage in deactivating strategies that lead to the dismissal of potential threats, a tendency to block conscious access to emotions, and the maintenance of psychological distance from others (Mikulincer and Shaver, 2007 and Mikulincer and Shaver, 2008). Hence, dismissing attachment is expected to be associated with negative schizotypy and schizophrenia. Research suggests that the negative dimension is associated with diminished affective experiences (Kerns, 2006) and interpersonal withdrawal (Kwapil et al., 2012a). Finally, fearful attachment, which is characterized by an oscillation between hyperactivating and deactivating tendencies and thus lacks a coherent strategy of affect regulation (Simpson and Rholes, 2002 and Mikulincer and Shaver, 2007), would be expected to relate to both schizotypy dimensions.

The majority of empirical studies on the link between attachment and psychosis report that patients with schizophrenia-spectrum disorders tend to have insecure attachment styles (Dozier and Lee, 1995 and Mickelson et al., 1997); however, there have been conflicting findings regarding the differential association between attachment and symptom profiles. For example, in a sample of patients with clinical psychosis, Ponizovsky et al. (2007) reported associations between avoidant attachment and both symptom dimensions, as well as between anxious attachment and positive symptoms. Berry et al. (2008) found that avoidance was related to positive and negative symptoms, while anxiety did not yield significant results. In contrast, Ponizovsky et al. (2013) found preoccupied and fearful attachment to be related to positive symptoms, while no associations were found with the dismissing style.

In studies carried out with non-clinical samples, results have been equally mixed. Wilson and Costanzo (1996) found a relation between anxious attachment and positive schizotypy, and

between avoidant attachment and both schizotypy dimensions. Berry et al. (2006) reported that anxiety was most strongly associated with positive schizotypy and avoidance with negative schizotypy. Meins et al. (2008) found that anxiety predicted suspiciousness/paranoia, whereas both anxiety and avoidance predicted negative schizotypal traits. Moreover, Tiliopoulos and Goodall (2009) found avoidance to be related only to negative schizotypy, while anxiety was associated with both dimensions.

It should be noted that several studies were conducted with relatively small sample sizes (e.g., $N = 154$ in Meins et al., 2008; $N = 161$ in Tiliopoulos and Goodall, 2009) and used different instruments to measure attachment and schizotypy, which probably accounts for the disparity in the findings. With respect to schizotypy, the questionnaires have varied in regards to the particular features that comprise the positive and negative dimensions. For example, for the assessment of negative schizotypy, Wilson and Costanzo (1996) used a shortened version of the Survey of Attitudes and Experiences (Venables et al., 1990), Berry et al. (2006) employed the Revised Social Anhedonia Scale (Eckblad et al., 1982), and both Meins et al. (2008) and Tiliopoulos and Goodall (2009) used the Schizotypal Personality Questionnaire (Raine et al., 1991). In regards to attachment, the instruments used in both clinical and non-clinical samples have differed in terms of measurement approach (continuous or categorical) and in the number of insecure styles assessed. Further, most studies conducted with continuous attachment measures considered the anxiety and avoidance dimensions independently, and thus did not investigate the characteristics associated with being simultaneously high on both (i.e., fearful prototype). Although taxometric research suggested that individual differences in adult attachment are best conceptualized in dimensional terms (Fraley and Waller, 1998), the prototypes might add interpretational power because each one is associated with a unique profile of affective and interpersonal functioning (Griffin and Bartholomew, 1994a). Moreover, typological approaches may be more useful for identifying and differentiating people who are at heightened risk for psychopathology (Bifulco et al., 2003).

The aim of the present study was to explore the association between adult attachment prototypes and schizotypy dimensions in two independent large non-clinical samples of Spanish and American young adults. Consistent with the reviewed theoretical formulations, it was hypothesized that preoccupied attachment (negative self/positive others) would be positively associated with positive schizotypy, dismissing attachment (positive self/negative others) with negative schizotypy, and fearful attachment (negative self/negative others) with both schizotypy dimensions. Additionally, since an individual's language and socio-cultural environment may influence the expression of psychopathology, the cross-cultural invariance of these associations was explored in order to examine whether the findings generalize across the two samples. We focused on two countries that differ in terms of language and cultural values (such as individualism-collectivism; Hofstede, 2001) and expected to find a consistent pattern across both samples.

2. Methods

2.1. Participants and procedure

A total of 1972 unselected non-clinical young adults participated voluntarily in the study, completing several self-administered questionnaires. The Spanish sample was drawn from a screening sample of 589 undergraduate students from the Universitat Autònoma de Barcelona (UAB), 42 of whom were dropped due to invalid protocols, leaving a total of 547 participants (455 female; 92 male). The mean age of the Spanish sample was 20.60 years (S.D.=4.11). The American participants were drawn from a screening sample of 1622 undergraduate students from the University of North Carolina at Greensboro (UNCG), 197 of whom were excluded due to invalid or incomplete protocols, leaving a total of 1425 participants (1090 female; 335 male). The mean age of the American sample was 19.8 years (S.D.=3.93). The UAB Ethics Committee approved the research carried out in Barcelona and the UNCG Institutional Review Board approved the research conducted in Greensboro. At both research sites the questionnaires were administered in classroom settings and participants provided written informed consent.

2.2. Measures

Attachment was measured with the Relationship Questionnaire (RQ; Bartholomew and Horowitz, 1991), which contains four statements describing each of the attachment prototypes (secure, dismissing, preoccupied, and fearful). As an example, the statement describing the preoccupied prototype is: “I want to be completely emotionally intimate with others, but I often find that others are reluctant to get as close as I would like. I am uncomfortable being without close relationships, but I sometimes worry that others don't value me as much as I value them” . Respondents were asked to score each statement on a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree) and to choose the statement that best describes how they approach close relationships. The participants in Barcelona completed the Spanish version (Schmitt et al., 2004). The RQ has been validated against interview measures and has been shown to have acceptable test-retest reliability (Griffin and Bartholomew, 1994a; Scharfe and Bartholomew, 1994). As recommended by the authors, rather than categorizing participants into one of the four attachment patterns, the continuous ratings of each attachment prototype were used for analyses.

Schizotypy was measured with the Wisconsin Schizotypy Scales, composed of the Perceptual Aberration Scale (Chapman et al., 1978) that contains 35 items tapping schizophrenic-like perceptual and bodily distortions; the Magical Ideation Scale (Eckblad and Chapman, 1983) comprised of 30 items tapping a belief in implausible or invalid causality; the Physical Anhedonia Scale (Chapman et al., 1976) that includes 61 items tapping deficits in sensory and esthetic pleasure; and the Revised Social Anhedonia Scale (Eckblad et al., 1982), which consists of 40 items tapping asociality and indifference to others. The participants in Barcelona completed the Spanish version of the scales (Ros-Morente et al., 2010). Participants were assigned positive and negative schizotypy dimensional scores based upon factor loadings derived from a sample of 6137 college students (Kwapil et al., 2008). Note that Kwapil et al.

(2012b) indicated that the factor structure of the schizotypy scales was invariant in Spanish and American student samples.

In both samples, the items on the schizotypy scales were intermixed with a 13-item Infrequency Scale (Chapman and Chapman, 1983), that was included to screen out participants who responded in a random or “fake-bad” manner (e.g., “I cannot remember a time when I talked with someone who wore glasses”). Consistent with the recommendations of Chapman and Chapman, participants who endorsed more than two infrequency items were dropped from further study. Therefore, the reported sample consists only of careful respondents.

3. Results

For the sake of completeness, Table 1 contains the descriptive statistics for each of the attachment prototypes and schizotypy dimensions in both samples. Note that the alpha level was set at 0.001 for all analyses due to the large sample size and number of analyses computed, in order to minimize Type I error and reduce the likelihood of reporting statistically significant but inconsequential findings. *T*-test comparisons indicated that secure and dismissing attachment scores and the schizotypy scores were higher in the American sample than in the Spanish sample. Following Cohen (1992), the differences in dismissing attachment and negative schizotypy represented small effect sizes, whereas the differences in secure attachment and positive schizotypy were medium-sized effects.

Table 1. Descriptive statistics for the attachment prototypes and schizotypy dimensions in the Spanish ($n=547$) and American ($n=1425$) samples.

Measure	Spanish sample			American sample			<i>t</i> -value	Cohen's <i>d</i>
	Mean	S.D.	Range	Mean	S.D.	Range		
<i>Attachment</i>								
Secure	4.2	1.5	1 to 7	4.9	1.7	1 to 7	9.19*	0.45
Dismissing	3.6	1.6	1 to 7	3.9	1.8	1 to 7	3.94*	0.19
Preoccupied	3.4	1.7	1 to 7	3.6	1.9	1 to 7	2.18	0.11
Fearful	3.5	1.8	1 to 7	3.6	2.0	1 to 7	1.21	0.06
<i>Schizotypy</i>								
Positive	-0.55	0.75	-1.7 to 3.2	-0.02	1.0	-1.7 to 4.4	12.67*	0.60
Negative	-0.18	0.86	-1.8 to 4.3	0.01	1.0	-1.8 to 5.7	4.14*	0.20

* $p < 0.001$.

Table 2 displays Pearson's correlations between the attachment prototypes and schizotypy dimensions in the two samples. The correlations among attachment prototypes are shown for descriptive purposes. Consistent with the descriptions in Bartholomew's model, in both samples the secure and fearful prototypes were negatively correlated, as were the preoccupied and dismissing prototypes. Regarding the associations between attachment and schizotypy, the secure prototype was negatively correlated with negative schizotypy in both samples and with positive schizotypy in the American sample. As expected, in both samples dismissing attachment

significantly correlated with negative schizotypy, preoccupied attachment with positive schizotypy, and fearful attachment with both schizotypy dimensions.

Table 2. Pearson correlations of schizotypy and attachment in the Spanish ($n=547$) and American ($n=1425$) samples.

	Positive Schizotypy	Negative Schizotypy	Attachment			
			Secure	Dismissing	Preoccupied	Fearful
Spanish sample						
Attachment						
Secure	0.06	-0.21*	-			
Dismissing	0.05	0.22*	-0.04	-		
Preoccupied	0.26*	0.05	-0.03	-0.16*	-	
Fearful	0.18*	0.25*	-0.17*	0.25*	0.18*	-
American sample						
Attachment						
Secure	-0.10*	-0.34*	-			
Dismissing	0.04	0.28*	-0.18*	-		
Preoccupied	0.18*	0.03	0.04	-0.12*	-	
Fearful	0.20*	0.28*	-0.36*	0.22*	0.20*	-

* $p < 0.001$ (two-tailed).

In order to examine the unique association of positive and negative schizotypy with the attachment prototypes and to test the invariance of the associations between attachment and schizotypy across the two samples, linear regressions were computed for each of the four attachment prototypes. For the sake of completeness, the positive and negative schizotypy dimensions were entered as predictors at the first step, site (Spain vs. USA) was entered at the second step, and the positive schizotypy \times site and negative schizotypy \times site interaction terms were entered at the third step (Table 3). The beta values and significance levels obtained in the first two steps (the unique contribution of positive and negative schizotypy and the effect of site over-and-above the schizotypy dimensions) yielded the same pattern of results described in Tables 1 and 2. The relation of schizotypy and insecure attachment prototypes did not differ between sites (as can be seen from the non-significant interaction terms) therefore indicating that the pattern of associations is cross-culturally comparable.¹

Table 3. Regression analyses examining main and interaction effects of the standardized schizotypy and site variables as predictors of attachment prototypes ($N=1972$).

Criterion	Step 1		Step 2	Step 3		Total R^2
				Site \times schizotypy interaction		
	Positive	Negative	Site	Positive	Negative	

	Schizotypy	Schizotypy				
	β	β	β	β	β	
Attachment						
Secure	0.01	-0.29*	0.23*	-0.07	-0.04	0.14*
Dismissing	0.03	0.27*	0.06	-0.01	0.03	0.08*
Preoccupied	0.20*	0.01	0.00	-0.06	0.00	0.04*
Fearful	0.17*	0.26*	-0.04	0.00	0.02	0.11*

* $p < 0.001$.

4. Discussion

The main purpose of the present study was to examine the association between attachment prototypes and schizotypy dimensions in two non-clinical samples of Spanish and American young adults. Results supported the hypothesized relation between preoccupied attachment and positive schizotypy, dismissing attachment with negative schizotypy, and fearful attachment with both positive and negative schizotypy. A comparable pattern of meaningful associations emerged in both samples, thus supporting the expected cross-cultural consistency of the findings.

The relation between preoccupied attachment and positive schizotypy suggests that having a negative model of the self is relevant for the endorsement of this schizotypy dimension. This finding concurs with previous studies that have reported relations between positive schizotypal traits and attachment anxiety (Wilson and Costanzo, 1996, Berry et al., 2006 and Meins et al., 2008). Moreover, this association resonates with existing empirical evidence indicating that negative self-esteem, which is a marker variable for the model of self (Griffin and Bartholomew, 1994b), is strongly related to positive symptoms in clinical and analogue samples (Krabbendam et al., 2002 and Barrowclough et al., 2003). Given that preoccupied attachment is characterized by hyperactivation of the attachment system, the findings support the notion that characteristics such as an inability to regulate negative emotions, the continuous vigilance of threat-related cues, and the amplification of distress (Mikulincer and Shaver, 2007), are associated with the features of positive schizotypy. Indeed, recent epidemiological research has shown that affective dysregulation impacts on the risk for reality distortion (van Rossum et al., 2011).

The present findings also supported the hypothesized association between negative schizotypy and dismissing attachment, which points to the relevance of a negative model of others in the endorsement of negative schizotypy. This finding is consistent with the results of previous studies that reported negative schizotypal traits were related to attachment avoidance (Berry et al., 2006 and Meins et al., 2008). This association fits with the contention that the characteristics of deactivating the attachment system, such as interpersonal disengagement and reduced emotional reactivity and expressiveness (Mikulincer and Shaver, 2008), share important similarities with negative schizotypy (i.e., affective blunting and social withdrawal) and suggest the possible contribution of these mechanisms in the ontogeny of negative features.

The present study hypothesized that the fearful prototype, characterized by simultaneous negative models of the self and others, would be associated with both schizotypy dimensions. Our findings confirmed this expectation and bolster the view that the lack of a coherent strategy of affect regulation may place fearful individuals at a greater risk of psychopathology. This result cannot be directly contrasted with research conducted in non-clinical samples because previous studies have not performed analyses relating the four attachment prototypes to schizotypy dimensions. This finding, however, is in line with cognitive models of psychosis, which suggest that negative beliefs about the self and others contribute to the vulnerability and persistence of psychotic symptoms (Garety et al., 2001).

To the best of our knowledge, only Ponizovsky et al. (2013) have used the prototypes in Bartholomew's model to examine the association between attachment and symptom profiles in a clinical sample. This study found that the preoccupied and fearful prototypes were associated with higher scores in positive symptoms, whereas they did not find any association between attachment and negative symptoms. Their findings with the preoccupied and fearful prototypes parallel the results obtained in the current study and might be interpreted to suggest that the association of attachment with schizotypy and schizophrenia is more robust for the positive dimension. Alternatively, because Ponizovsky et al. split the sample into the RQ groups in order to test the associations of attachment with positive and negative symptom items, the null findings with the dismissing prototype could be attributable to a lack of statistical power for this group (which was only composed of 10 patients).

Our results differed from previous studies that found associations between avoidant attachment and the positive symptom dimension and between anxious attachment and the negative symptom dimension. Differences in the assessment instruments employed may account for these discrepancies. For example, Tiliopoulos and Goodall (2009) used the Schizotypal Personality Questionnaire and found that attachment anxiety was associated with negative schizotypy and particularly with the social anxiety component. Research indicates that social anxiety is more strongly associated with positive rather than negative schizotypy (Brown et al., 2008). Moreover, there could be a specific association between avoidant attachment and paranoid ideation that does not apply to the unusual perceptual experiences and magical beliefs measured in the current study. Additionally, it should be noted that the two previous studies that used Hazan and Shaver's (1987) three-category attachment measure found that avoidant attachment was associated with both positive and negative schizotypy (Wilson and Costanzo, 1996) and schizophrenia (Ponizovsky et al., 2007), whereas anxious attachment was uniquely associated with the positive dimension. It has been pointed out that the avoidant style in this measure converges closely with the fearful prototype in Bartholomew's scheme (Bartholomew and Shaver, 1998 and Mikulincer and Shaver, 2007), and thus our results seem to be consistent with the findings obtained in these previous investigations.

The fact that psychometrically assessed schizotypy and attachment prototypes were associated in a theoretically predicted fashion in both samples provides increased confidence in the validity of

our findings. Note that these results are comparable to those obtained in clinical psychosis, which provides support to the continuum model of schizotypy and schizophrenia and lends further evidence to the contention that schizotypy is a promising construct for furthering our understanding of the cross-cultural expression of psychosis (Kwapil et al., 2012b).

The results of this study should be interpreted in light of its limitations. The use of university student samples with a predominance of female participants may limit the generalizability of the findings. Future work should investigate these associations in community samples with a representative distribution in terms of gender and age. Additionally, the present study used country as a proxy for culture. Further studies investigating cultural differences would benefit from including measures of cultural values and beliefs in their assessments. It is also important to take into consideration that the cross sectional design of this study limits the conclusions that can be drawn in terms of causality. It is attractive to interpret the findings from a developmental perspective in line with theoretical propositions from the attachment and psychosis fields, and because robust epidemiological findings point to a protracted interplay between psychosocial environmental factors and the development and expression of the extended psychosis phenotype. However, longitudinal designs are required to determine whether attachment plays a causal role in the pathway leading to the development of schizotypy. Note that the effect sizes were relatively small, but we think that they are noteworthy given the fact that the study found predicted associations using a non-clinical sample and using one-item measures of attachment style (resulting in a rather conservative test of the hypotheses).

In closing, the results from the present study add to the current efforts in trying to elucidate the mechanisms implicated in the expression of psychosis by showing a differential association between positive and negative schizotypy with each pattern of attachment insecurity. Our findings also point to the value of highlighting the potential protective role of secure attachment, which previous studies have found confers a form of resilience for psychopathology, even in the presence of adverse childhood experiences (Sroufe, 2005 and Bifulco and Thomas, 2013). We believe further investigation into the mechanisms underlying the relation between attachment and schizotypy may help to elucidate etiological pathways and could guide future work in tailoring psychological interventions according to attachment styles and their respective affect regulation strategies.

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