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## RESEARCH

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# Disorganized Attachment Promotes Mystical Experiences via a Propensity for Alterations in Consciousness (Absorption)

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In this article, the authors argue that mystical experiences are linked to disorganized attachment via a proposed mediator—the propensity to enter altered states of consciousness (absorption). Using a sample of predominantly religious/spiritual participants ( $N = 62$ ), they report that disorganized attachment, as identified with the Adult Attachment Interview, predicted lifetime occurrence of mystical experiences and that this link was mediated by absorption. Alternative mediational models received less conclusive support. Also, more conventional aspects of religion (theistic beliefs and degree of general religiousness) were not related to disorganized attachment or absorption, supporting the discriminant validity of the mediational model. In the discussion, the authors argue that mystical experiences represent a nonpathological and potentially self-reparative “outcome” of disorganized attachment and the related propensity to experience alterations in consciousness.

Experiences named “mystical” have played a conspicuous role at almost every level of culture; and yet, despite the vast literature devoted to them, the subject has remained . . . as dark as it is fascinating. . . . Mysticism has suffered as much at the hands of its admirers as at the hands of its materialistic enemies. If the latter have been unable to see anything else than aberrations and abnormalities, the former have gone to the other and equally fatal extreme; no descriptive adjective short of “sublime,” “infinite,” “divine” has seemed to them at all sufficient.

—Leuba, 1925, p. ix

Disorganized attachment has been found to foreshadow dissociative mental processes, such as a propensity to experience alterations in states of consciousness (“absorption”; e.g., Hesse & van IJzendoorn, 1999). Mystical experiences, which are characterized by markedly altered states, may represent an expression of absorption that is immediately relevant to the psychology of religion and spirituality. Thus, it has been speculated that “disorganization is overrepresented in members of traditional religions who undergo mind-altering experiences (e.g., mystical or ‘trance’ states), and that dissociation-absorption mediates . . . this presumed link” (Granqvist, Ivarsson, Broberg, & Hagekull, 2007, p. 598). Empirical support for a similar mediational model has recently accrued in relation to another domain of spirituality that is associated with various altered states, namely, New Age spirituality (Granqvist, Fransson, & Hagekull, 2009). In this article, we tested whether the mediational model is applicable also to mystical experiences. In addition, to study the discriminant validity of the model, we tested if it was inapplicable to more conventional aspects of religion that are presumably not associated with altered states.

Next we delineate the theoretical relation between the mystical experience outcome and disorganized attachment predictor. We then describe the relation between mystical experiences and the proposed absorption mediator. The final link in the mediational model (i.e., between the disorganized attachment predictor and absorption mediator) is firmly established and described elsewhere in the literature (e.g., Bowlby, 1980; Granqvist et al., 2009; Hesse & van IJzendoorn, 1999; Liotti, 2006; Main & Morgan, 1996).

## MYSTICAL EXPERIENCES AND DISORGANIZED ATTACHMENT

Mystical experiences are often perceived as ineffable, and therefore difficult to define. Nevertheless, the literature has suggested several distinctions between different forms of mystical experience. Stace (1960) proposed a phenomenological distinction between introvertive and extrovertive states. Introvertive states refer to a pure, content-free consciousness, where perceptual objects “disappear,” often resulting in an experience of “nothingness.” Extrovertive states are characterized by a sense of all objects being unified into a perception of totality or oneness with all things. This unity is often described as “God” by religious mystics across the world. However, mystical experiences do not require religious interpretations. Pending the operation of secular schemas, the unity experience may well be interpreted as unity with “nature” (i.e., nature mysticism), with “cosmos” (common among “New Agers”), or with “ultimate reality” not further specified. Regardless of type and interpretation, mystical experiences are naturally characterized by markedly altered states.

In line with the opening quotation (Leuba, 1925), mystical experiences may be evaluated as “aberrations and abnormalities” (p. ix) by skeptics or as the very work of “the divine” or “the Real” by believers. Although considerable time has elapsed since Leuba’s remarks, nothing much has changed, as illustrated by the writings of contemporary skeptics (e.g., Persinger, 2002) and believers (e.g., Newberg, D’Aquili, & Rause, 2002). We therefore emphasize that it is beyond our scope to disentangle the veracity of any metaphysical interpretation of mystical experiences. Thus, viewing such an experience as an expression of absorption/dissociation or as linked to attachment disorganization can not be taken as a dismissal—let alone an affirmation—of any metaphysical interpretation of that experience (cf. James, 1902). To do so would be to fall prey to a genetic fallacy. In other words, the unity experienced may or may not be the unity of reality.

Empirical research indicates that mystical experiences are relatively common. Averaging across samples, nations, and methods, Hood, Hill, and Spilka (2009) estimated their lifetime prevalence in the normal population to roughly 35%. Hence, mystical experiences are not abnormalities in a statistical sense. Further, mystical experiences are linked to religiosity, affluence, high education, and psychological health and well-being (Hood et al., 2009).

Moreover, mystical experiences are multifactorially determined in terms of physical and psychological causation. Research indicates a diverse set of triggers, such as unexpected stress (i.e., set-setting incongruity), religious priming, psychedelic drugs, prayer, meditation, solitude (especially in nature settings), sensory deprivation, sex, and music (for a review, see Hood et al., 2009). Thus, any single determinant should not be expected to explain the lion’s share of variance in lifetime occurrence of mystical experiences.

We are aware of no previous research documenting developmental precursors of mystical experiences. Freud (1930/1961) speculated that the “oceanic feeling” associated with such experiences represents regression to an infantile state of unity with the mother. However, apart from being difficult to test, this analysis is based on an outdated view of the infant–mother relationship as symbiotic (cf. Rochat & Hespos, 1997) as well as an erroneous understanding of mystical experiences as regressive (Hood, 1976).

We argue that disorganized attachment may be one developmental precursor (among others) of mystical experiences. Disorganized attachment represents a breakdown in attachment-related patterning during stress (Main & Morgan, 1996). Using the strange situation (Ainsworth, Blehar, Waters, & Wall, 1978), infant disorganized attachment is identified in behavioral expressions, displayed in the presence of the caregiver, such as prolonged freezing with a trancelike facial expression and simultaneous or sequential displays of opposing behaviors (e.g., approaching the caregiver with one part of the body while moving away with another part; Main & Solomon, 1990).

In adulthood, disorganized attachment status typically refers to a failure to mentally resolve traumatic events. This is typically captured as unresolved/disorganized (U/d) speech surrounding loss and/or abuse in the Adult Attachment Interview system (AAI; Main, Goldwyn, & Hesse, 2003) and is present among 18% of the worldwide normal meta-analytic sample (Bakermans-Kranenburg & van IJzendoorn, 2009). Indices of U/d discourse are seen in various linguistic breakdowns. Examples include speech implying that a person lost through death would have input into the speaker’s present-day life, excessive details and invasion of the trauma into other topics, visual-sensory intrusion of the trauma, and psychologically confused statements implying that the trauma could be undone by mind manipulations (Hesse, 2008). Such “linguistic trips” occur specifically regarding trauma-related discussions and are not a

characteristic of the individual's discussion of other interview topics (Main et al., 2003). Supporting its convergent validity, U/d status in parents is highly overrepresented (43%) across various clinical populations (Bakermans-Kranenburg & van IJzendoorn, 2009) and has repeatedly predicted anomalous (e.g., frightened/frightening, dissociative) caregiving as well as disorganized attachment in their infants (Madigan et al., 2006; van IJzendoorn, 1995).

Regardless of age, disorganized attachment is conceptually linked to Bowlby's (1973, 1980) idea of segregated systems. Such segregation might occur within the child's relationship with caregivers because of the behavioral paradox in which children find themselves when their caregivers are simultaneously the *source* of alarm (e.g., due to being frightening) and the only possible *solution* to it (i.e., because the offspring is "preprogrammed" to turn to the attachment figure to deal with alarming events; Hesse & Main, 2006). Thus, the more alarmed the child is, the more likely he or she should be to turn to the attachment figure (the *solution* to alarm), but the closer the child gets, the more likely he or she should be to flee from this figure (the *source* of alarm). Hence, a positive feedback loop is created behaviorally, with a fear without solution as a likely psychological outcome (Hesse & Main, 2006).

Our argument that disorganized attachment may be a developmental precursor of mystical experiences primarily rests on previously documented phenotypic and empirical associations between disorganized attachment and absorption on one hand (e.g., Granqvist et al., 2009; Hesse & van IJzendoorn, 1999; Liotti, 2006) and between absorption and mystical experiences (discussed next) on the other. Notably, though, Geels (2003) similarly suggested that parental loss is an important theme in the psychological study of mystics. Also, Otto's (1923) characterization of the trembling terror ("tremendum") of some (though potentially rare) mystical experiences may suggest a direct phenotypic link between such mystical experiences and the behavioral paradox/irresolvable fear thought to characterize disorganized attachment. Like a disorganized infant who loses his or her behavioral organization and enters a dissociated state when trapped in an approach-avoidance conflict with a frightening attachment figure, an adult undergoing a religious mystical experience of the kind described by Otto (1923) is similarly both intensely fascinated and fearful of "the Holy" attachment figure. As the holy is perceived as terrifying, there would be no approach. Yet, as the holy is also perceived as fascinating (as well as omnipresent and omnipotent), there would be no escape. Such an approach-avoidance conflict might trigger a mildly dissociated "mystical" state, marked by the sense of self as dissolved and unified with the perceived source of the conflict.

The suggestion of such a phenotypic link does not require a regression interpretation; as illustrated by Bowlby (1969/1982; 1980), the attachment system operates throughout life. However, the argument does rest on the assumption that some forms of mystical experiences (i.e., those marked by "tremendum") are particularly likely to occur for individuals who have repeatedly experienced approach-avoidance conflicts and other unresolved traumas and losses, who harbor generalized working models of others as frightening, and who have developed a propensity to enter dissociated states when faced with stress.

## MYSTICAL EXPERIENCES AND ABSORPTION/DISSOCIATION

As noted, dissociative inclinations have been proposed as an explanatory candidate for the presumed link between disorganized attachment and mystical experiences (Granqvist et al.,

2007). Dissociation is multifaceted, referring to various disruptions in the usually integrated functions of consciousness, memory, identity, and perception (American Psychiatric Association, 2000). Examples of dissociation range from ordinary dream sleep, via somewhat less common states of absorption, hypnosis, and trance, to highly pathological states of derealization, depersonalization, and selective amnesia (e.g., Waller, Putnam, & Carlson, 1996).

The term *absorption* was coined by Tellegen and Atkinson (1974) and refers to individual differences in “the disposition for having episodes of ‘total’ attention that fully engage one’s representational (i.e., perceptual, enactive, imaginative, and ideational) resources” (p. 268). Absorption is fairly normally distributed in the general population (Tellegen & Atkinson, 1974). In fact, whether absorption truly is an example or merely a correlate of dissociation is debated among dissociation scholars (e.g., Dell, 2009). Although absorption is empirically related to other aspects of dissociation as well as weakly to moderately linked with psychopathology, it is not part of the dissociative “taxon” that has been established in the literature as a hallmark of some serious forms of psychopathology (Waller et al., 1996). Moreover, unlike other forms of dissociation, absorption is also associated with “positive” outcomes such as heightened creativity (Manmiller, Kumar, & Pekala, 2005).

Individuals high in absorption are prone to having their attentional systems fully absorbed by whatever mental process that is under execution, whether it be their own imagination or some external stimulus. Naturally, such states of absorption represent an altered state of consciousness (Manmiller et al., 2005). In addition, when all/most processing resources are occupied, the usual meta-cognitive monitoring of one’s perceptions and thoughts is likely counteracted (Manmiller et al., 2005). Consequently, absorption is a reliable predictor of suggestibility in general and hypnotizability in particular (e.g., Roche & McConkey, 1990). To illustrate, among study participants who had been primed with spiritual and religious content, high absorption scorers reported an elevated occurrence of mystical experiences during a brief sensory deprivation session (Granqvist et al., 2005; Granqvist & Larsson, 2006).

Phenotypically, mystical experiences may represent examples of highly absorbed states. As noted by Hood and colleagues (2009),

the wide diversity of triggers or conditions facilitating mystical experiences ... may have in common the fact that an individual fascinated by any given trigger experiences a momentary loss of sense of self, being “absorbed” or “fascinated” by his or her object of perception. (pp. 354–355)

Extrovertive mysticism in particular is prototypical for a state of “total attention.” Consequently, familiarity with mystical experiences is directly referenced in one item on the Tellegen and Atkinson (1974) absorption scale, whereas some other items reference states that may or may not occur during a mystical experience (see Footnote 1).

However, absorption and mystical experiences are by no means conceptually synonymous. Whereas many mystical experiences are characterized by mind expansion, or a widening of attention and a subjective sense of fully perceiving all that there is, many examples of absorption are marked by a narrowing of attention, as when an individual inhibits task-irrelevant information and remains absorbed by task-central information (e.g., DePrince & Freyd, 1999). Trauma-induced “tunnel states” (e.g., following natural disasters such as an earthquake) exemplifies this latter kind of absorption (Cardena & Spiegel, 1993).

Empirical research indicates that, unlike conventional aspects of religion, mystical experiences are moderately positively associated with absorption and hypnotizability (Granqvist et al., 2005; Granqvist & Larsson, 2006; Spanos & Moretti, 1988). However, mystical experiences are not related to other aspects of dissociation (Kroll, Fiszdon, & Crosby, 1996). This is expectable, in that mystical states are experienced as unusually “real” whereas dissociation is often marked by derealization. This also resonates with the conclusion (previously) that mystical experiences are generally not markers of psychopathology.

## THE PRESENT STUDY

Virtually all treatises of disorganized attachment view it as a risk factor in development (e.g., van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). Hence, there is a major gap in the literature on potential nonpathological sequelae of disorganized attachment and the associated propensity to enter altered states (absorption). However, this should not blind us to the possibility that disorganized attachment and absorption may also be linked to certain nonpathological outcomes such as a capacity for mystical experiences.

We predicted that disorganized attachment would be linked to mystical experiences and that this link would be mediated by absorption. To examine the discriminant validity of this model, we also tested whether disorganized attachment and absorption are unrelated, as expected, to more conventional aspects of religiosity (in this case, theistic beliefs and level of religiousness). Finally, we examined two alternative mediational models, testing whether mystical experiences mediate the relation between disorganized attachment and absorption and whether New Age spirituality, as a potential third variable, mediates the relation between disorganized attachment and mystical experiences. We relied on a prospective longitudinal follow-up of a previous study (Granqvist et al., 2007; see also Granqvist et al., 2009) to test these predictions and models.

## METHOD

### Participants and Procedure

At the first measurement occasion (Time 1), the sample consisted of 84 participants interested in religion/spirituality in Uppsala, Sweden. Participants were visited at and recruited from religion/spirituality-relevant group gatherings, including Uppsala University theology classes; a Pentecostal Movement student gathering; a Pentecostal Movement prayer meeting for former drug and alcohol addicts; a Bible study group, held by the Swedish Lutheran Church; and a student seminar on the relation between therapy and pastoral care. Finally, to get participants who were not involved in organized religion but held an interest in spirituality, participants were recruited via a news advertisement asking for participants for a study about spirituality and human relationships; the same information was given to the other groups. Participants were contacted by phone, and interview appointments scheduled. Attachment interviews (see next) were individually administered at a university department by the first author.

At Time 1, the mean age of the 62 individuals (74% of the original sample) who partook in the longitudinal follow-up (i.e., the present sample) was 29.33 years ( $SD = 10.05$ ; range = 20–50). Thirty-five percent of participants were male.

Three years later (at Time 2), participants were contacted by phone and asked to participate in a follow-up. According to *t* tests and chi-square tests, there were no differences on sex, age, or disorganized attachment at Time 1 between participants who dropped out from the Time 2 assessments and those who remained in the study (all *ps* > .10).

Following the phone call, a questionnaire including the absorption, mysticism, and religion variables (see next) was sent to the remaining participants. They were instructed to fill out the questionnaire and bring it to a scheduled laboratory visit (including tasks not used in the present study). Hence, no reminders were needed. (For additional sample and procedural details, see Granqvist et al., 2009; Granqvist et al., 2007).

### Instruments and Constructs

*U/d attachment.* The AAI (Main et al., 2003) was used to assess disorganized attachment. The AAI is a semistructured interview containing 20 questions with specific guidelines for follow-up probes. The participants are asked to describe and evaluate their childhood through attachment-specific memories. The interviews normally vary in length between 45 and 90 min and are transcribed verbatim for subsequent coding. For purposes of the present study, the most important questions concern loss through death and experiences of abuse.

The AAIs were coded according to Main et al.'s (2003) scoring and classification system. The transcripts were coded on three types of 9-point scales: probable experiences, organized states of mind, and U/d attachment. Participants were then classified into one of five categories based on his or her state of mind and U/d scores (for a detailed description of these scales and categories, see Granqvist et al., 2007; Hesse, 2008). These classifications were then further collapsed to facilitate the disorganized versus organized attachment comparisons.

Participants were assigned to an Unresolved/disorganized Attachment category ( $n = 8$ ) when there were marked linguistic breakdowns in discussions of potentially traumatic memories. A U/d classification was assigned when at least one of the following discourse characteristics appeared at pronounced levels (i.e., a continuous U/d score >5) during the discussion of loss of important persons through death and/or sexual or physical abuse experiences: (a) lapses in the monitoring of reasoning (e.g., as implied in statements indicating that a dead person remains alive in the physical sense), (b) lapses in the monitoring of discourse (e.g., visual-sensory images related to the trauma intrude discourse), and (c) extreme-lingering behavioral reactions to the traumatic event (e.g., the interviewee is suicidal and explicitly attributes this to the loss of a loved one). The U/d category is held to indicate "local" or trauma-specific disorganization (Main et al., 2003).

Although rare in normal populations, some interviewees ( $n = 2$  in this sample) provide discourse that does not fit the linguistic patterning associated with organized attachment (next) and are therefore assigned to a Cannot Classify (CC) category. CC status is held to indicate "global" attachment disorganization (Main et al., 2003). However, both participants assigned this classification were also judged unresolved/disorganized.

Participants were assigned to an overall Organized Attachment category ( $n = 54$ ) when their discourse was judged to fit the linguistic patterning of secure/autonomous (F), insecure/dismissing (Ds), or insecure/preoccupied (E) discourse, without breaking down in potential discussions of loss or abuse. Interviewees assigned an F classification provide discourse marked by high coherence of transcript: The participant is collaborative, and the transcript provides a

credible, internally consistent, and free-flowing picture of the participant's experiences, feelings, and viewpoints regarding attachment. Participants assigned a Ds classification provide discourse marked by high idealization, insistence on lack of memory, and/or contemptuous derogation of attachment. Individuals assigned an E classification provide discourse characterized by high involving anger or passivity of thought processes in relation to attachment.

Interviews were coded by two certified coders who were blind to all other data, except sex and age. The principal coder was the first author, but interviews were also coded by the third author, a certified AAI trainer. The psychometric properties of the AAI in general and disorganized attachment considerations in particular are well established (Hesse, 2008). In this study, the interrater reliability across 46 cases was 76% for four categories (combining U and CC;  $k = .62$ ,  $p < .001$ ). As adequate validity theoretically requires adequate reliability, the coders discussed and resolved their disagreements in an active effort to obtain higher validity. Remaining disagreements were resolved using a third coder, Anders G. Broberg, who is also a certified AAI trainer.

**Absorption.** Tellegen and Atkinson's (1974) absorption scale was used to assess the disposition for having episodes of "total" attention that fully engage one's representational resources. This scale includes 34 items, scored on a 6-point response scale, from 1 (*strongly disagree*) to 6 (*strongly agree*), ( $M = 3.47$ ,  $SD = 0.82$ ). Sample items include, "Different colors have distinctive and special meanings for me" and "My thoughts often don't occur as words but as visual images." The psychometric properties of this instrument are well established. For example, as theoretically expected, scale scores predict susceptibility to hypnotic induction (e.g., Roche & McConkey, 1990; Tellegen & Atkinson, 1974). The internal consistency was high in the present study ( $\alpha = .94$ ).

**Mystical experiences.** The Mystical Experiences scale ("M-scale"; Hood, 1975), as translated and adapted to a 30-item Swedish version (Holm, 1982), was used to tap lifetime occurrence of mystical experiences. The M-scale is the most frequently used empirical measure of mystical experiences (Hood et al., 2009). Sample items include, "I have had an experience in which ultimate reality was revealed to me" and "I have had an experience in which I realized the oneness of myself with all things." Items were scored on a 6-point scale, ranging 1 (*strongly disagree*) to 6 (*strongly agree*), and summed to create average scores ( $M = 3.89$ ,  $SD = .92$ ). The reliability and validity of the M-scale are well established, for example, in adequate internal consistency and relations to other assessments of mystical experiences (Hood et al., 2009). The internal consistency was high also in the present study ( $\alpha = .93$ ).

**Theistic beliefs.** Theistic beliefs were tapped by a single item. Respondents indicated on a 6-point scale, ranging 1 (*strongly disagree*) to 6 (*strongly agree*), the extent to which they agreed with the statement "God is a living, personal being who is interested and involved in human lives and affairs" (Granqvist & Hagekull, 2003; cf. Kirkpatrick, 1998;  $M = 4.90$ ,  $SD = 1.69$ ). This measure has shown adequate stability (Granqvist & Hagekull, 2003; Kirkpatrick, 1998).



*Level of religiousness.* Strength of religiousness was tapped by the six-item Level of Religiousness scale (Granqvist & Hagekull, 2003). Sample items include, "I regularly pray to God" and "Religion is important to me in my everyday life." Items were scored on a 6-point scale, ranging 1 (*strongly disagree*) to 6 (*strongly agree*), and summed to create average scores ( $M = 4.58$ ,  $SD = 1.55$ ). Previous studies indicate high stability and internal consistency (e.g., Granqvist & Hagekull, 2003). Internal consistency was high also in the present study ( $\alpha = .95$ ).

### Statistical Analyses

To assess whether the conditions for testing a mediational model were met (Baron & Kenny, 1986), bivariate relations between study variables were first tested using Pearson correlations and *t* tests. Second, mediation was first assessed using multiple regression analyses, where a full mediational model is descriptively supported when the mediating variable explains virtually all shared variance between a predictor and an outcome. However, in some cases, mediation is only partial. Therefore, we relied also on the *Sobel Z* test to formally test mediation (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002), where a significant *Z* value demonstrates at least partial mediation.

One-tailed tests were used to test hypothesized bivariate relations and mediation (i.e., links between disorganized attachment, absorption, and mystical experiences). First, on theoretical and empirical grounds, we had made a priori predictions about the directions of such associations. Second, we expected modest relations between disorganized attachment and the other phenomena. Using a limited sample size and two-tailed tests would thus risk producing Type II errors.

## RESULTS

### Preliminary Analyses and Bivariate Relations

To warrant aggregation of the organized state of mind classification groups (i.e., F, Ds, E), we tested whether these groups (disregarding disorganization considerations) differed on the absorption and mystical experiences scale. They did not,  $F_s(2, 57) = .42$  and  $2.33$ , *ns*, respectively. Thus, aggregation was warranted in relation to both variables.

To examine whether participants classified as disorganized differed from those classified as organized on the mysticism and religion variables (i.e., outcomes) and on absorption (i.e., the presumed mediator), *t* tests were performed. Results from these comparisons are presented in Table 1. As expected, results showed disorganized participants to score significantly higher both on absorption (cf. Granqvist et al., 2009) and on mystical experiences. The strength of these differences was large and medium, respectively. As also predicted, there were no differences between these groups on theistic beliefs or level of religiousness.

We also ran Pearson correlations between the presumed absorption mediator and each of the outcome variables, which are also displayed in Table 1. These analyses showed that absorption was strongly positively related to mystical experiences but unrelated to both theistic beliefs and level of religiousness.

TABLE 1  
Means, Standard Deviations, Standardized Effect Sizes, and Results from *t* Tests of Mean Differences Between Disorganized (*n* = 8) and Organized (*n* = 54) Attachment Groups on Absorption and the Outcome Variables + Correlations Between Absorption and the Outcome Variables

	<i>Disorganized Attachment</i> <i>M (SD)</i>	<i>Organized Attachment</i> <i>M (SD)</i>	<i>t</i> ( <i>60</i> )	<i>d</i>	<i>r With Absorption</i>
Absorption	4.15 (0.90)	3.36 (0.76)	2.65**	1.02	—
Mystical experiences	4.45 (1.05)	3.81 (0.88)	1.87*	.71	.71**
Theistic beliefs	4.75 (2.05)	4.93 (1.65)	-.27	-.11	.06
Level of religiousness	4.69 (1.85)	4.60 (1.52)	.21	.06	.13

Note. *d*s were calculated with pooled *SD*s.

\**p* < .05. \*\**p* < .01; one-tailed.

The bivariate relations among disorganized attachment, absorption, and mystical experiences warranted a formal test of mediation (Baron & Kenny, 1986). Notably, the conditions were not met for testing a mediational model with theistic beliefs or level of religiousness as outcomes.

### Tests of Mediation

First, results from a multiple regression analysis descriptively supported the mediational model in that the bivariate relation ( $\beta = .23$ ,  $p < .05$ ), between disorganized attachment (dummy-coded; disorganized attachment = 1, organized attachment = 0) and mystical experiences entirely disappeared ( $\beta = .00$ , partial  $r = .01$ , *ns*), following the inclusion of absorption. The mediating absorption variable was in turn strongly related to mystical experiences ( $\beta = .71$ ,  $p < .001$ ). Results for the full regression model were  $F(2, 59) = 30.55$ ,  $p < .001$ , Adj.  $R^2 = .49$ . Second, the formal test of mediation yielded a significant result (Sobel  $Z = 2.44$ ,  $p < .01$ ). These findings are illustrated in Figure 1.

### Tests of Alternative Mediational Models

Regarding alternative mediational models, it is generally advisable to test whether alternative models are equally applicable as the mediational models hypothesized in any given study (e.g., Judd & Kenny, 1981). Although the alternative models were in this case not motivated by theoretical considerations, we tested the statistical applicability of two additional models to our

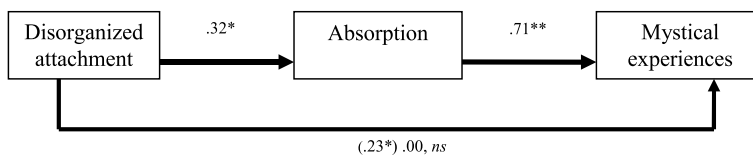


FIGURE 1 Mediational model linking disorganized attachment, absorption, and mystical experiences. Note. Sobel  $Z = 2.44$ \*\* ,  $p < .05$ . \*\* $p < .01$ ; one-tailed.

data. First, we tested whether mystical experiences mediated the relation between disorganized attachment and absorption. The Sobel test yielded only a marginally significant result ( $Z = 1.81, p = .07$ ). Also, the relation between disorganized attachment and absorption remained significant when controlling for mystical experiences (partial  $r = .23, p < .05$ ).

Second, given our previously reported results linking disorganized attachment to absorption and New Age spirituality (Granqvist et al., 2009), we tested whether New Age spirituality acted as a third variable, mediating the relation between disorganized attachment and mystical experiences. Although New Age spirituality was robustly positively related to mystical experiences ( $\beta = .45, p < .01$ ), it did not act as a mediator (Sobel  $Z = 1.17, ns$ ). Moreover, the relation between disorganized attachment and mystical experiences remained marginally significant when controlling for New Age spirituality (partial  $r = .18, p = .08$ ). In sum, the alternative mediational models received less conclusive support than the hypothesized model.

### Supplementary Analyses

We performed four sets of supplementary analyses. First, given the proposed distinction between introvertive, extrovertive, and religious interpretation dimensions of mystical experiences (Hood, Morris, & Watson, 1993), we performed supplemental analyses using these subdimensions of the M-scale. Although bivariate results were somewhat stronger for the total scale (previously), they were very similar across the introvertive, extrovertive, and religious interpretation dimensions:  $r$ s with disorganized classifications were .21 ( $p < .05$ ), .17, and .19 ( $p$ s  $< .10$ ). The partial  $r$ s when controlling for absorption were in all cases nonsignificant: .04,  $-.08$ , and .06,  $ns$ , respectively. Moreover, across dimensions, results supported the hypothesized mediational model: Sobel  $Z$ s = 2.36, 2.49 ( $p$ s  $< .01$ ), and 2.11 ( $p < .05$ ), respectively.

Second, the bivariate link ( $r = .71$ ) between absorption and mystical experiences was surprisingly strong in this sample (cf. the more moderate correlations in Granqvist et al., 2005,  $r = .38$  [data not shown]; Spanos & Moretti, 1988,  $r = .53$ ). This is likely, at least in part, to reflect shared method variance (i.e., both constructs were tapped by self-reports) and some degree of semantic overlap (see the introduction section). Therefore, we recalculated the main correlations and regressions with those items excluded from the absorption scale.<sup>1</sup> Results remained virtually identical. Absorption was still robustly and positively correlated with mystical experiences,  $r(60) = .69, p < .001$ . Also, the hypothesized mediational model was descriptively supported by the Baron and Kenny (1986) criteria in a regression analysis: The bivariate relation between disorganized attachment and mystical experiences dropped to nonsignificance ( $\beta = .04$ , partial  $r = .05, ns$ ), following the inclusion of absorption, which was strongly related to mystical experiences ( $\beta = .68, p < .001$ ). Results for the full regression

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<sup>1</sup>The following six items were excluded from the absorption scale (resemblances with mystical experiences noted in parentheses): "I think I really know what some people mean when they talk about mystical experiences" (personal familiarity with mystical experiences); "Sometimes I feel as if my mind could envelop the whole world" (cf. perception of totality) and "I sometimes 'step outside' my usual self and experience an entirely different state of being" (mystical experiences exemplify altered self-states); "Sometimes I experience things as if they were doubly real" (mystical experiences include a profound sense of heightened reality); "It is sometimes possible for me to be completely immersed in nature or in art and to feel as if my whole state of consciousness has somehow been temporarily altered" (cf. nature mysticism); and "At times I somehow feel the presence of someone who is not physically there" (mystical experiences may involve perceptions of the divine).

model were,  $F(2, 59) = 26.76, p < .001, \text{Adj. } R^2 = .46$ . In addition, the formal test of mediation yielded a significant result (Sobel  $Z = 2.20, p = .01$ ). Finally, the alternative mediational model with absorption as outcome (previously) did not receive more conclusive support when analyzed with mysticism-resembling items excluded from the absorption variable.

Third, as disorganized attachment was categorical, we ran two supplemental analyses of covariance (Baron & Kenny, 1986) with mystical experiences as outcome and absorption as covariate; one with and one without mysticism-resembling items included in the absorption variable. These analyses confirmed the regression results: The effects of disorganized attachment were nonsignificant when absorption was included as a covariate,  $F_s(1, 59) = .00$  and  $.15, ns$ , whereas the effects of absorption were highly significant,  $F_s(1, 59) = 69.16$  and  $57.92, ps < .001$ .

Finally, an obvious limitation in this sample is that only eight participants met the criteria for a disorganized attachment classification. Therefore, to retain disorganization-relevant variation for all 62 study participants, we ran supplemental analyses using the continuous U/d scale scores (for more details on these scores, see Granqvist et al., 2009). The bivariate link between U/d scores and mystical experiences was only marginally significant ( $r = .20, p = .056$ ). Nevertheless, this modest relation disappeared almost entirely when absorption was controlled (partial  $r_s = .04$  and  $.05, ns$ ), with mysticism-resembling items included and excluded from the absorption variable, respectively. Consequently, Sobel  $Z$  tests showed that the marginal association between continuous U/d scores and mystical experiences was also mediated by absorption ( $Z_s = 1.93$  and  $1.89, ps < .05$ , respectively). Thus, although results were stronger when using disorganized classifications, results based on continuous disorganization scores clearly pointed in the same direction and did support the hypothesized mediational model.

## DISCUSSION

To the best of our knowledge, this is the first study to indicate a link between a developmental construct (i.e., disorganized attachment) and mystical experiences. This finding extends the previously documented relation between disorganized attachment and New Age spirituality (Granqvist et al., 2009; Granqvist et al., 2007). The results also supported the idea that absorption serves as a mediating link for the association between disorganized attachment and mystical experiences. Notably, these conclusions applied across all three dimensions of the mystical experiences scale.

Moreover, the two alternative mediational models tested received less conclusive support than the hypothesized model (i.e., the relation between disorganized attachment and absorption was not fully mediated by mystical experiences; the relation between disorganized attachment and mystical experiences was not mediated by New Age spirituality). In addition, although results were somewhat weaker in analyses based on continuous disorganization scores, they clearly pointed in the same direction as the classification-based analyses, and they did support the hypothesized mediational model. Also, these conclusions held after excluding items from the absorption scale that resembled items on the mystical experiences scale.

In contrast, and supporting the discriminant validity of the mediational model, it was not applicable to more conventional aspects of religion, which were unrelated both to disorganized attachment (cf. Granqvist et al., 2007) and absorption (cf. Granqvist & Larsson, 2006). In other

words, the study findings suggest that failed resolution of trauma and the associated propensity for experiencing altered states of consciousness may express themselves in the religious and spiritual domain in a proclivity specifically for mystical experiences.

We did not expect disorganized attachment to be a strong predictor of mystical experiences. Only roughly 5% of the scale variance was statistically explained by the disorganized attachment predictor. Thus, our results are in line with a multifactorial understanding of mystical experiences. Many important pathways to mystical experiences are indeed likely to be independent of disorganized attachment, as is also evident in some of its extraneous correlates (e.g., high education, affluence; Hood et al., 2009). This should effectively temper any temptation to view disorganized attachment as the only developmental construct of relevance for mystical experiences.

Notably, regardless of developmental considerations, Hood and colleagues (2009) may well be right that the reason why a particular (though diverse) set of facilitators (e.g., psychedelic drugs, unanticipated stress, religious settings) trigger mystical experiences may be that they readily produce alterations in consciousness (e.g., momentary dissolution of the sense of self) while lending themselves as likely targets of fascination (or absorption). If so, absorption would be the “grand mediator” of mystical experiences. Our findings, indicating a strong link between absorption and mystical experiences, also when semantic overlap between the two had been reduced substantially ( $r = .69$ ), are consistent with such an interpretation. Needless to say, though, this speculation requires additional research.

We realize that the theoretical model proposed and the supportive empirical findings obtained in this study, which demonstrate that mystical experiences are linked with the most serious form of insecure attachment as well as with mild dissociative inclinations, may appear discouraging to many individuals who have experienced personally meaningful and potentially life-changing mystical experiences. However, appearances should always be treated with caution. Nevertheless, based on our findings, some scholars could be tempted to argue that as absorption is part of the larger dissociation construct, and both dissociation and disorganized attachment are linked to psychopathology and mystical experiences, which in themselves take the form of mildly dissociated states, it follows that mystical experiences are inherently pathological. Apart from faulty logic, there are several problems associated with such a conclusion.

First, whether absorption is a true example of dissociation is debated (e.g., Dell, 2009). Our own understanding is that it is, but that it represents a mild example, which is not strongly related to psychopathology (cf. Waller & Ross, 1997). As an analogy, dream sleep is inherently dissociative, but far from pathological. Second, mystical experiences are not associated with pathological aspects of dissociation (Kroll et al., 1996). Third, the lifetime prevalence of mystical experiences (about 35%; Hood et al., 2009) is about 10 times higher than dissociative psychopathology (roughly 3% belong to the dissociative taxon; Waller & Ross, 1997), indicating that mystical experiences are far more “normal” in the statistical sense. A high prevalence of mystical experiences was certainly confirmed also in this predominantly religious/spiritual sample: 52% ( $n = 32$ ) of the full sample had a mean score above partial agreement on the M-scale.<sup>2</sup> Fourth, and relatedly, mystical experiences have, in fact, not been positively related

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<sup>2</sup>For purposes of comparison, 75% (six of eight) of participants assigned a disorganized classification scored above partial agreement, compared with 48% (26 of 54) of participants assigned an organized classification (odds ratio = 3.23).

to psychopathology in the research literature (Hood et al., 2009). Our own study confirms this as well: Mystical experiences were not associated with any of the psychological adjustment outcomes included in this study (i.e., trait anxiety, current depressive symptomatology, self-esteem, loneliness;  $r_s < \pm .12$ , *ns*).

Finally, that disorganized attachment is a risk factor for maladaptive development in general (a valid inductive conclusion) does not imply that everything related to disorganized attachment is inevitably maladaptive (an invalid deductive conclusion). Psychologists, and attachment researchers in particular, should also entertain the possibility that disorganized attachment may confer some advantages, to some individuals, in some contexts. Although itself an unfortunate form of adaptation, most children who were judged disorganized in infancy have in fact found an organized way of relating to their previously disorganizing caregiver already by 6 years of age (i.e., through controlling caregiving or punitive behaviors; Main & Cassidy, 1988). As these individuals mature and gain autonomy, however, some may well ultimately find self-reparative activities and strategies outside the constraints of their parental relationships.

As has been argued in the attachment and religion literature (e.g., Granqvist & Kirkpatrick, 2008; Granqvist, Mikulincer, & Shaver, 2010), the religious arena, which offers an all-loving and all-nurturant attachment figure (i.e., God), may be especially helpful in this regard (cf. Kennedy, Davis, & Taylor, 1998; Reinert & Smith, 1997). In the context of religion, the disorganized individual's propensity for alterations in consciousness may in fact turn out as advantageous in that it may promote the occurrence of a religiously interpreted unity experience (i.e., mystical experience), which may in turn represent a life-changing point following intense turmoil and other unsuccessful attempts at self-regulation (e.g., through drugs or sexual promiscuity). Thus, rather than viewing mystical experiences as inherently psychopathological, they may well represent a rare example of experiences that help some individuals with disorganized attachment and dissociative inclinations to stay off a path leading to psychopathology. This speculation should be addressed in future research. It is notable, too, that this line of reasoning echoes James's (1902) century-old ideas of self-surrender at the peak of some "sick souls'" sudden religious conversion experiences, which are supposedly succeeded by a unification of their previously divided selves.

Naturally, outside the context of religion, mystical experiences (e.g., nature mysticism, unification with cosmos, psychedelic trips) may also represent emotionally profound and personally meaningful experiences with potentially long-lasting positive consequences (cf. Griffiths, Richards, Johnson, McCann, & Jesse, 2008; Griffiths, Richards, McCann, & Jesse, 2006). However, we speculate that in the presence of attributions to an all-loving, all-nurturing attachment figure as the source of the unity experienced, and in the presence of an organized corpus of teachings to which the experience may be attached and understood, mystical experiences are even more likely to be life-altering and self-reparative.

Of course, the possibility of self-reparative functions of mystical experiences does not rule out the possibility that such experiences may also have destructive effects on some individuals in some contexts. Like the effects of psychedelic drugs (Griffiths et al., 2006), mystical experiences may involve a temporary or lingering state of anxiety (cf. Otto's, 1923, "tremendum"). This may be particularly likely for troubled individuals (e.g., in the context of psychosis or personality disorder) who have suffered severe/repeated abuse from attachment figures and who consequently harbor generalizing working models of others as frightening.

Besides in the context of religion, disorganized attachment and the associated propensity for absorption may also play themselves out positively in other life domains. For example, as absorption facilitates the inhibition of task-irrelevant information, it may promote unusual forms of creativity that require “total attention” to a given topic. Given the strong link between absorption and mystical experiences, such experiences may also be linked with higher creativity. As previously speculated (Granqvist et al., 2009), even disorganized attachment (e.g., unresolved loss) may similarly promote unusual forms of creativity in some individuals.

### Methodological Considerations and Additional Future Directions

Several methodological characteristics with implications for future studies should be noted. To begin with, in this study we could not take full advantage of the longitudinal design employed so as to enable us to study change on the relevant parameters over time because we did not include these particular study variables at both assessment points (see also Granqvist et al., 2009). Therefore, although the disorganized attachment assessment preceded the absorption and mystical experience assessments by 3 years and the results supported the process direction of the hypothesized rather than the alternative mediational models, conclusions about process direction should best be viewed as tentative. Relatedly, items on the mysticism scale concern life-time occurrence of mystical experiences, some of which may well have been experienced prior to the first assessment point in this study.

Regarding further considerations of mystical experiences, the M-scale may be criticized as biased in the direction of positive experiences, as it does not tap mystical experiences associated with fear or terror. Despite this, Spanos and Moretti (1988) found scores on the M-scale to be positively related to “diabolical” experiences. Nevertheless, this bias may have attenuated the strength of the relation between disorganization and mystical experiences observed in this study.

Besides mystical experiences, religions may foster other experiences associated with alterations in consciousness to which the current findings may or may not generalize and which should be investigated in their own right. We encourage research, for example, on glossolalia and healing during Pentecostal services, trance experiences following chanting, and ideas of spirit possession. Although evidence thus far suggests that at least among mainline Christians, disorganized attachment is not overrepresented but—if anything—underrepresented compared to the general population (Cassibba, Granqvist, Constantini, & Gatto, 2008; Granqvist et al., 2007), it may well be that disorganized attachment is associated with an elevated propensity for such experiences. Perhaps, for example, the people who most readily speak in tongues tend to be the denominational members with disorganized attachment, whereas other members may have to struggle more to receive the “holy spirit.”

Researchers attempting to test this mediational model in relation to anomalous religious/spiritual states (e.g., ideas of being possessed by evil spirits among Westerners, or of being Jesus or Lucifer as one among other personages in dissociative identity disorder) are advised to include assessments of other dimensions of dissociation than absorption. Such dimensions may be tapped by the Dissociative Experiences Scale (Bernstein & Putnam, 1986).

The sample used in this study was a convenience sample of participants drawn from different religious/spiritual groups, making population inferences uncertain. Therefore, future studies should recruit participants from more precisely demarcated religious/spiritual contexts and

compare them with matched participants drawn from other contexts (cf. Cassibba et al., 2008). In addition, our sample size was limited in general ( $N = 62$ ), including only eight participants assigned to a disorganized attachment classification in particular. Although results from analyses using disorganization scores pointed in the same direction and supported the hypothesized mediational model, they were weaker than results from the main, classification-based analyses, possibly due to a threshold effect (e.g., chance variation within the nondisorganized [1–5] scale range may have attenuated the true disorganization effect). In future studies researchers should use larger samples or screen for disorganized attachment. Finally, in this study we only have data on disorganization as identified via the AAI. It is an open question whether disorganization, as identified via other measures, is also related to mystical experiences.

## CONCLUSIONS

In this article, we have proposed that disorganized attachment is linked to mystical experiences, and we have provided initial theoretical and empirical support for this proposal. We have also reported that this link is mediated by a propensity to enter altered states of consciousness. Finally, we have illustrated that the mediating model is not applicable to more conventional aspects of religion. We encourage future researchers to further test, elaborate, and refine this mediational model.

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