Psychophysiological Evidence for Defensive Discourse in Attachment Interviews: Generalizability Across Sex and Ethnicity

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Abstract

Trained judges reliably apply a classification of "dismissing" to adults who appear to defensively distance themselves from the emotional content of the Adult Attachment Interview (AAI) by idealizing and/or downplaying the importance of their childhood relationships with parents. One way to confirm whether those who use such "deactivating" discourse strategies are actually avoiding discussion of malevolent early experiences, as is assumed by attachment researchers, is by seeking convergent evidence that such individuals show subtle signs of emotional distress when recounting childhood memories. This paper reports relevant data from a cross-cultural extension of research by Dozier and Kobak (1992) demonstrating a link between deactivating discourse in the AAI and electrodermal response, a specific physiological indicator of covert arousal. More specifically, results of physiological change-score and growth curve analyses in the current study suggest that deactivation in the AAI is discriminantly associated with concurrent electrodermal (but not cardiovascular) reactivity both across sex and within Chinese and European American samples.

Psychophysiological Evidence for Defensive Discourse in Attachment Interviews: Generalizability Across Sex and Ethnicity

"The mind commands the body and the body obeys. The mind commands itself and finds resistance." – St. Augustine (354-430)

Although attachment theorists have long argued that individuals' childhood experiences with primary caregivers form an important basis for their adult relationships (Bowlby, 1969/1982; Waters & Cummings, 2000), there are paradoxically few simple ways of testing this seemingly straightforward assertion. The most intuitive approach, of course, is to conduct longitudinal studies that follow children into adulthood (Masten, Hubbard, Gest, Tellegen, Garmezy, & Ramirez, 1999; Beckwith, Cohen, & Hamilton, 1999; Waters, Hamilton, & Weinfield, 2000; Roisman, Madsen, Hennighausen, Sroufe, & Collins, 2001). Unfortunately, such studies require time and labor that few researchers have. An alternative method involves asking individuals to describe their childhood experiences, analyzing the narratives produced in this context, and then relating such information to indicators of current functioning in salient adult relationships. While this method has the advantage of requiring fewer resources, one clear concern is whether accurate inferences can be drawn about individuals' earlier experiences based on clinically informed analyses of their retrospective reports (Yarrow, Campbell, & Burton, 1970; Henry, Moffit, Caspi, Lanley, & Silva, 1994; Roisman, Padrón, Sroufe, & Egeland, in press). This paper, a cross-cultural extension of work by Dozier and Kobak (1992), was designed to provide a demonstration of how cross-sectional, psychophysiological data can be applied toward validating interview-based methods of assessing the nature of early experience.

One rather well-developed example of a retrospective yet developmentally informed strategy for studying childhood relationship experiences is available in the research tradition that has grown up around the Adult Attachment Interview (AAI), a semi-structured protocol about early experiences with parents (George, Kaplan, and Main, 1985; see Hesse, 1999, for an excellent review). Harnessing the theoretical insights of John Bowlby (1969/1982, 1973, 1980), the early methodological strides of Mary Ainsworth and her students (Ainsworth, Blehar, Waters, & Wall, 1978), as well as the accumulated longitudinal evidence available on the importance of early attachments (e.g., Sroufe, 1979, 1983; Carlson, 1998; Thompson, 2000), numerous developmental researchers are now actively exploring the antecedents, concomitants, and sequelae of individual differences in the ways in which adults have come to think about and emotionally process their childhood experiences with the AAI. Moreover, although the interview was originally developed with a targeted focus, that of predicting the quality of parent-child attachments in the next generation (see van IJzendoorn, 1995), its application has found far-reaching utility in exploring diverse but related domains of childrens' general adaptation (Crowell & Feldman, 1988; Cowan, Cohn, Cowan, & Pearson, 1996), adults' romantic relationships (Cohn, Silver, Cowan, Cowan, & Pearson, 1992; Paley, Cox, Burchinal, & Payne, 1999; Roisman, et al., 2001), as well as the development of psychopathology (van IJzendoorn & Bakermans-Kranenburg, 1996; Main, 1996).

All AAI studies rely critically on the theoretical rationale for the adult attachment classification system as developed by Main and Goldwyn (1998). Based on content analyses of individuals' discourse, Main and her colleagues originally described (and made auxiliary inferences regarding) three principal ways in which emotions and cognitions are regulated with respect to parents and early experiences during the AAI (Main, Kaplan, & Cassidy, 1985).

Perhaps unsurprisingly, the majority of interviewees can be classified as secure/autonomous, telling a coherent narrative about their early experiences, whether described as good or ill. A growing body of literature has shown that individuals with autonomous states of mind are likely to parent securely attached infants (van IJzendoorn, 1995) and enjoy high quality romantic relationships with adult partners (e.g., Roisman, et al., 2001). Recent longitudinal evidence suggests also that such individuals are likely to have actually encountered a supportive relationship with a primary caregiver in their childhood, a finding critical to the notion that past experiences are represented veridically in the quality (though not necessarily content) of adults' discourse (Beckwith, et al., 1999; Waters, et al., 2000; Roisman, et al., in press; but see Lewis, Feiring, & Rosenthal, 2000).

The second classification described by Main & Goldwyn (1998) is described as preoccupied and is marked by discourse revealing either angry or passive enmeshment in past relationship experiences. Such individuals articulate answers to AAI probes that are characteristically hyperactivated, angry, and unrestrained or alternatively seem passive and confused. Although relatively little is known about its unique correlates, participants so classified self-report relatively high levels of psychopathological distress (e.g., on the Minnesota Multiphasic Personality Inventory; Pianta, Adam, & Egeland, 1996) and have been observed to parent their adolescent offspring in an anxious and intrusive manner (Kobak, Ferenz-Gillies, Everhart, & Seabrook, 1994). Although relevant evidence is limited, preoccupied states of mind also seem to be predictable outcomes of social experiences, foreshadowed by negative childhood life events, including parental divorce (Beckwith, et al., 1999)

In striking contrast to the first two classifications, the last group of individuals described by Main and Goldwyn (1998) seem to defensively distance themselves from the emotional

content of the AAI, minimizing the importance of attachment relationships and/or presenting idealized depictions of their childhood experiences. These interviewees, categorized as dismissing, can be cool, removed, and sometimes hostile. In addition, they are oftentimes reluctant to elaborate upon early memories and, when they do, normalize seemingly harsh childhood experiences (Main & Goldwyn, 1998). Presaged by almost a century of psychoanalytic theorizing regarding such defensive presentations of interpersonal experience (Freud, 1936), it has been demonstrated convincingly in the last decade that this kind of repressive reporting style is by no means benign, being associated with emotionally explosive interactions with parents in adolescence (Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993) and with less effective parenting in adulthood (Lutz & Hock, 1995). Again, key to the supposition that adult narratives can provide reasonably accurate windows on the true nature of past experiences, several recent longitudinal studies have now shown that dismissing states of mind in adulthood are anteceded both by insecurity in infancy (Hamilton, 2000; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000) as well as chronically insensitive caregiving in the first year of life (Beckwith, et al., 1999).

Obviously, careful appraisal of the soundness of the inferences made with respect to the measurement of AAI individual differences as explicated above is crucial for extracting meaningful conclusions from the adult attachment literature. While psychometric work on the protocol has indeed been rigorous with respect to its reliability, convergent, and discriminant validity (Beckwith et al., 1999; Bakermans-Kranenburg & van IJzendoorn, 1993; Crowell, Waters, Treboux, O'Connor, Colon-Downs, Golby, & Posada, 1996; De Haas, Bakermans-Kranenburg, & van IJzendoorn, 1994; Sagi, van IJzendoorn, Scharf, Koren-Karie, Joels, & Mayseless, 1994), precious little empirical evidence testifies directly to the cross-cultural

generalizability and validity of the AAI's classification system per se, especially as regards the heavily inference laden judgements required to classify individuals as dismissing. This paper seeks to help redress this error of emphasis, reporting data from a cross-cultural extension of a key study conducted by Mary Dozier and Roger Kobak (1992). Specifically, concurrent psychophysiological assessment was undertaken during the AAI in the present study to more broadly validate the dismissing classification's use within and across Western and Eastern cultural contexts.

The dismissing classification.

Dozier and Kobak (1992) point out that perhaps the single greatest inferential leap in coding the AAI is the dismissing classification for narratives containing seemingly idealized descriptions of relationships with parents, limited recall of childhood experiences, and in which the significance of attachment relationships appears minimized. Following Main (1990), these researchers referred collectively to such discourse that seems to serve the purpose of limiting attention to attachment relevant topics as evidence of a deactivating strategy, a defensive posture putatively organized in response to the failure of species-normative attachment behaviors (e.g., distress-related vocalizations) to elicit sensitive, contingent, and timely caregiving in times of distress. Attachment researchers have long speculated that, over time, persistent dismissal of one's tender needs by caregivers results in a blunting of one's motivation and perhaps even ability to effectively signal distress in relationships (Main, 1981; Cassidy, 1994; Case, 1996; Cassidy & Kobak, 1998).

Irrespective of the strength of the theoretical rationale that undergirds the dismissing classification, it must be emphasized that when trained AAI judges apply it to adult narratives (in the absence of confirmatory data regarding a client or participants' actual developmental history)

they are making a clinical inference, not a direct assessment, that such deactivating discourse represents a strategy for minimizing attention to emotionally painful childhood experiences. Clearly, convergent evidence must be obtained that this kind of discourse is associated with (likely subtle) signs of emotional conflict or distress during the AAI.

Psychophysiological rationale.

To be sure, associations between adult attachment representations and individuals' emotional experiences are hard to assess, however, because the dismissing classification is characterized by defensive processes resulting in the repressive reporting of affective states (Pianta, Egeland, & Adam, 1996). Fortunately, alternatives to self-reports exist that are far less biased by the subjective-interpretative and mood-related distortions endemic to such instruments. In particular, psychophysiological methods using noninvasive surface sensors have great promise in this regard due to the relatively objective and non-intrusive nature of their assessment.

Surprisingly, only a single published report has exploited this promise, presenting data on the physiological correlates of individual differences inferred from the AAI (Dozier & Kobak, 1992; but see papers from Roisman, 2001). Specifically, Dozier and Kobak (1992) determined that deactivating discourse in the AAI, as assessed using a Q-sort approach to measuring attachment-related individual differences, was associated with rises in skin conductance from baseline, especially during AAI probes referencing separation, rejection, and other potentially threatening childhood experiences. Dozier and Kobak's (1992) study was especially convincing to many in the field because it found that such increases in electrodermal activity were discriminantly associated with deactivation, being unrelated more broadly to insecurity generally (e.g., preoccupation).

Citing the theoretical work of Fowles (1980) and the empirical studies by Pennebaker and his colleagues on the physiological correlates of deception (e.g., Pennebaker & Chew, 1985), Dozier and Kobak (1992) interpreted their results as convergent evidence for the validity of the dismissing classification of the AAI in that deactivation was linked in their study to a physiological correlate believed to specifically index intrapsychic conflict and response inhibition. Framing this analysis is Gray's widely cited two-process theory offering that electrodermal activity may be thought of as a reliable physiological marker of the effortful inhibition of behavior while cardiovascular measures in contrast more broadly tap behavioral activation (Gray, 1975).

Using Gray's (1975) theoretical framework as a point of departure, Dozier and Kobak (1992) went on to speculate (though they did not empirically test the hypothesis) that their electrodermal findings would not generalize to measures of cardiovascular arousal (e.g., heart rate). It should be emphasized that this discriminant prediction, if borne out, is important theoretically: it suggests that dismissing individuals may be partially able to suppress aspects of overt emotional distress (e.g., by modulating cardiovascular arousal) yet physiological signs remain that they have not fully resolved early negative attachment experiences (e.g., they experience electrodermal affective "leakage" when confronted by a task that unrelentingly directs attention toward potentially unpleasant memories).

At least two issues remain unaddressed. First, Dozier and Kobak's (1992) study was limited with regard to the demographics of its sample, which was predominantly Caucasian and female. It thus remains unknown if the deactivation-skin conductance linkage generalizes to other ethnic groups and to men. Second, Dozier and Kobak (1992) only measured participants' electrodermal response during the administration of the AAI. Therefore, it remains quite

speculative whether deactivating discourse is uniquely associated with electrodermal reactivity, being unrelated more broadly to physiological measures of cardiovascular arousal, for example.

In order to explicitly address both of the foregoing issues empirically, this paper reports data from a systematic replication and extension of Dozier and Kobak's (1992) original study using a cross-cultural, gender balanced sample capable of identifying demographic variables that could theoretically moderate associations observed between deactivation in the AAI and measures of physiological change during the interview. In addition to the assessment of electrodermal activity (skin conductance levels), several indicators of cardiovascular arousal (cardiac inter-beat interval, finger pulse transmission time to the finger, and finger pulse transmission time to the ear) were also sampled second-by-second during the administration of the AAI to Chinese and Chinese American as well as European American college students.

Cross-cultural rationale.

Chinese and Chinese Americans were sampled because this group provides for a particularly severe test of the cross-cultural generalizability of the central hypothesis of this study that deactivating, defensively organized discourse during the AAI should be associated with electrodermal response. Chinese are often described in ethnographic reports as emphasizing social relationships and the maintenance of interpersonal connections (as contrasted with European Americans, who are depicted as stressing individual uniqueness and the differentiation of one's self from others) (Markus & Kitayama, 1991). As a result, members of Asian cultures in general and Chinese in particular have been described as moderating and controlling of negative emotions that may disrupt interpersonal harmony (Tsai & Levenson, 1997). From an attachment perspective, these Chinese cultural imperatives may result in systematic differences in their articulation of early childhood experiences in a way superficially similar to those associated with

the dismissing classification, potentially rendering individual differences inferred from the AAI fundamentally confounded with aspects of cultural presentation.

Attachment theory supports a view that attachment needs are universal, suggesting that their expression and psychological meaning are not restricted to any particular cultural context (van IJzendoorn & Sagi, 1999). Nonetheless, as stated earlier, relatively little is known about the cross-cultural validity of the AAI's classification scheme, and this is especially true regarding its utility in Asian cultural contexts (see Rothbaum, Weisz, Pott, Miyake, & Morelli, 2000). Of note, one very recent study conducted in Japan found that individuals with secure states of mind regarding their past experiences are likely to parent securely attached infants, a finding consistent with results described earlier based on American and European samples (Kazui, Endo, Tanaka, Sakagami, & Suganuma, 2000; van IJzendoorn, 1995). Still, that deactivation in the AAI should be associated with covert signs of emotional reactivity across ethnicity remains a particularly important test of the cross-cultural comparability of the AAI experience because, as outlined earlier, it bears directly on the putative meaning of the individual differences inferred from the interview. More generally, this pattern of results would also suggest that clinically informed analyses of adults' discourse can indeed provide a window on childhood experiences in a way that may transcend the methodological challenges associated with ethnicity and gender.

Method

Participants

Sixty young adults (30 Chinese/Chinese American, 30 European American; 28 male) were recruited for this study from the undergraduate and graduate student population of a large Midwestern university. All participants completed a comprehensive assessment battery including (1) a mental health and cultural identity screener by phone, (2) a packet of developmentally

appropriate, self-report personality inventories, symptom measures, and demographic questionnaires completed before arriving at the lab, and (3) the Adult Attachment Interview while being videotaped and physiologically monitored. Inclusion criteria included an age restriction of 18-30 years. Due to the moderately stressful nature of the laboratory interview, participants were also screened for signs of depression, anxiety, and psychotic thinking. Participants who passed through the screening process and subsequently completed the entire protocol described above received a $20.00 honorarium.

Cultural criteria for inclusion in the Chinese/Chinese American sample were as follows: (1) maternal and paternal grandparents were born in Mainland China, Taiwan, or Hong Kong, (2) parents were Chinese or first generation Americans of Chinese ancestry, (3) had Chinese/Chinese American friends in adolescence and/or childhood, (4) spoke a Chinese dialect (e.g., Mandarin, Cantonese) and/or grew up in a bilingual household, and (5) self-identified as Chinese/Chinese American. European American participants all had maternal and paternal grandparents from Europe or of European American ancestry and their parents were at least first generation Americans, born in the United States. In addition, all participants were required to be fluent in English as all interviews were conducted in this language.

Few significant demographic differences were observed between the two cultural sub-samples. As expected, however, the Chinese American group reported having spent less time in the United States (C/CA $\underline{M}$ = 10.6 years; EA $\underline{M}$ = 20.4 years) and indicated significantly less English fluency on a scale of one (not at all fluent) to five (extremely fluent); In addition, the European American group was marginally younger (C/CA $\underline{M}$ = 22; EA $\underline{M}$ = 21) and reported a marginally higher mean household income in childhood (also rated on a five point scale).[1]

Apparatus

Audiovisual. Remotely controlled, high-resolution color video cameras recorded the participants' and interviewers' facial behavior during the study. Cameras were hidden from participants' view behind a darkened glass on a bookshelf. Lavaliere microphones clipped on participants' clothing were used to record their verbal responses to the AAI, which were subsequently transcribed verbatim.

Physiological. A system consisting of a Dell Pentium computer, HPVEE software, and Coulbourn Lab Link V bioamplifiers was used to obtain continuous recordings of participants' physiological responses.

Procedure

Upon arrival to the laboratory, a female interviewer greeted each participant. Female interviewers were selected to help participants feel at ease during sensor attachment and the AAI. In addition, participants were matched with interviewers of the same ethnicity to increase their level of comfort in the research setting (Bradley, Snyder, & Katahan, 1972). Importantly, interviewers underwent extensive training (supervised by the author, a certified AAI coder) and followed a standardized, semi-structured interview script. Note that a total of four research assistants conducted all sessions. While no participant requested that the protocol be curtailed, interviewers were provided with a list of on- and off-campus mental health resources should they be requested. In addition, all interviews were monitored closely either by the first author or a licensed clinical psychologist.

Assessment of Physiology. Surface sensors measuring skin conductance levels and cardiovascular activity were adhered to participants' lower ribs, ears, and fingers by research assistants and physiological channels were subsequently monitored second-by-second from an

adjoining room during the semi-structured attachment interviews as well as a three-minute rest period that preceded their administration. During this pre-interview period, participants were instructed to be silent and relax for three minutes to obtain baseline measures of physiological responding. An "X" was placed at eye level in front of the participants to facilitate relaxation during this rest period and participants were asked to look at this target and empty their minds of all thoughts, feelings, and memories. Interviewers were not present during this rest period. Next, participants' physiological responses were continuously monitored during the AAI. Ultimately, changes in mean levels of physiology from baseline were calculated by interview question.[2]

Adult Attachment Interview. The AAI is a semi-clinical, semi-structured interview used to characterize individuals' current state of mind with respect to past parent-child experiences (George, Kaplan & Main, 1985). This approximately hour-long protocol requires participants to describe their early relationships with their parents, revisit salient separation episodes, explore instances of perceived childhood rejection, recall encounters with loss, and describe aspects of their current relationship with parents, discussing salient changes that may have occurred from childhood to maturity (see Hesse, 1999). According to established protocol, AAI's were transcribed verbatim and all personally identifying information was removed before transcripts were Q-sorted by pairs of three judges trained through and reliable with the lab of Dr. Mary Main (all coders had achieved ≥ .80 reliability with a training set of 32 cases on both three-way [secure, dismissing, preoccupied] as well as four-way [secure, dismissing, preoccupied, unresolved] AAI classification before data reduction commenced in the present study).

Measures

The Adult Attachment Interview Q-set. The Adult Attachment Interview Q-set (Kobak, 1993) consists of 100 descriptive cards that are sorted into a forced normal distribution across

nine piles from least to most characteristic (5, 8, 12, 16, 20, 16, 12, 8, and 5 cards per column, respectively). Sixty-six percent (40/60) of the AAI transcripts from this study were double-sorted and reliability of .6 or greater (Spearman-Brown prophecy formula) was achieved for 80% of these transcripts.[3] A third coder rated transcripts for which initial coders were discrepant and sorts that were most highly correlated were ultimately averaged (reliabilities of composited sorts ranged from .73 - .93, M = .82). In the final step of data reduction, Pearson correlations were computed between each of the composited sorts and both a prototypic "secure/insecure" and a "deactivation/hyperactivation" sort developed by Roger Kobak and his colleagues (see Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993, for details). Based on this analysis, participants were assigned continuous scores ranging from -1.00 to 1.00 on each construct, with higher scores indicating greater resemblance to a prototypically secure and deactivating individual, respectively. Attachment scores were subsequently standardized for all correlational analyses.

Physiology. Second-by-second measures of physiological responding were sampled from participants' electrodermal and cardiovascular systems during the baseline period and AAI. Electrodermal response was measured by skin conductance level (SCL). A constant-voltage device was used to pass a small voltage between electrodes attached to the palmar surface of the middle phalanxes of the first and third fingers of the non-dominant hand. SCL was measured in microohms. The specific cardiovascular measures obtained were: (1) cardiac inter-beat interval (IBI). Beckman miniature electrodes with Redux paste were placed in a bipolar configuration on opposite sides of each participant's chest. IBI was measured as time in milliseconds between successive R waves of the electrocardiogram (EKG), (2) pulse transmission time to the finger (FPT) was calculated by measuring time in milliseconds between the EKG R wave and the arrival of the pulse pressure at the finger, and (3) pulse transmission time to the ear (EPT). A

photoplethysmograph was attached to the ear lobe on the participant's non-dominant side to measure the volume of blood in the ear. EPT was calculated in milliseconds by measuring time between the EKG R wave and the arrival of the pulse pressure at the ear.[4]

Results

The principal analyses for this study focused on two multifaceted issues: (1) Is deactivating discourse discriminantly and uniquely associated with electrodermal response in the AAI? and, if so, (2) Does ethnicity or sex moderate this linkage? Given Dozier and Kobak's (1992) hypothesis that deactivation should be unrelated to cardiovascular response, each dimension of cardiovascular change was examined separately, minimizing the potential for Type II error. In addition, as electrodermal (but not cardiovascular) measures proved to be significantly non-normally distributed (significant Kolmagorov-Smirnov tests obtained on these variables), nonparametric Spearman correlations are presented in all analyses focused on electrodermal response. Analysis began, however, by addressing several fundamental questions regarding potential cultural as well as sex differences on key constructs.

Cultural and sex differences on key constructs

Independent samples t-tests (see Table 1) were run to determine whether mean-level cultural or sex differences obtained for the Q-sort measures (security, deactivation). Although no sex difference was observed on either attachment variable, a cultural difference obtained for security (but not deactivation), with the Chinese/Chinese American group receiving a lower mean security score than did European Americans. This mean level difference should be understood with respect to absolute within-culture levels, however. More specifically, as the Chinese mean on security is consistent with previously published results from primarily Caucasian samples (e.g., Dozier & Kobak, 1992), an accurate interpretation of the cultural

difference is that security may be somewhat over-represented among European Americans in this sample.

Is deactivating discourse *discriminantly* associated with electrodermal response in the AAI?

Spearman correlations presented in Table 2 demonstrated striking consistency with Dozier and Kobak's (1992) original findings. Specifically, deactivation was robustly related to rises in skin conductance from baseline to each question of the AAI. Moreover, as in Dozier and Kobak's (1992) analysis, skin conductance was found to be discriminantly related to deactivation, as rises in skin conductance from baseline were not significantly associated with security/insecurity (see Table 2).

Is deactivating discourse *uniquely* associated with electrodermal response in the AAI?

Follow-up analyses revealed that deactivating discourse shared a unique association with electrodermal activity in that deactivation was unrelated to indices of cardiovascular activation during the AAI (see Table 3 for illustrative cardiac inter-beat interval data). Neither deactivation nor security/insecurity predicted changes in mean levels of cardiovascular response for any physiological channel for which relevant data were collected (cardiac inter-beat interval, finger pulse transmission time to the ear and finger).

Does ethnicity or sex moderate associations observed between deactivation and electrodermal response?

Follow-up regressions using ethnicity X deactivation and sex X deactivation interaction terms were used to test for moderating effects of culture and sex on the associations observed between deactivation and electrodermal response. In short, these analyses provided no evidence that ethnicity or sex conditioned the deactivation-electrodemal linkage (all p values were

nonsignificant, suggesting that effects were similar by culture and sex). The comparability of effects observed by ethnicity and sex is clarified in Table 4, which illustrates that findings replicated within culture and gender using split samples.[5]

Confirmatory analyses: Growth curve modeling

Given longstanding concerns regarding the use of change scores in psychological research (Cronbach & Furby, 1970), supplementary growth curve analyses were conducted next to test whether convergent statistical evidence could be obtained that deactivation in the AAI is associated with electrodermal response. More specifically, a series of growth curve analyses were run using Bryk and Raudenbush's (1992) HLM software. Essentially, HLM makes use of a two-step regression procedure: First, individual linear growth trajectories (or slopes) can be estimated in a set of Level I regressions. Next, a second (Level II) regression equation is estimated to explain individual differences in these slopes. In the current study, growth in mean levels of electrodermal response in each AAI question was modeled within participants at Level I to produce a set of slopes (representing linear electrodermal growth). Next, attachment-related individual differences (as well as demographic "dummy" codes) were entered as independent variables at Level II to predict variation in electrodermal growth.

Findings using growth curve models were consistent with results from the change score analysis: controlling for sex (0 = Female, 1 = Male) and ethnicity (0 = Chinese/Chinese American, 1 = European American), deactivation predicted growth in electrodermal activity across the AAI ($p < .05$, see Table 5). Moreover, sex X deactivation and ethnicity X deactivation interactions were not significant in follow-up moderator analyses. As expected, results of additional analyses revealed that security/insecurity was not associated with growth in electrodermal activity across the AAI.

Discussion

This study replicated the results of Dozier and Kobak's (1992) important demonstration of convergent psychophysiological evidence for the validity of the dismissing classification of the Adult Attachment Interview (AAI). In the current study, as in Dozier and Kobak's seminal work, discourse judged by trained coders to be defensive regarding earlier attachment experiences was discriminantly linked to electrodermal response, a physiological marker of emotional conflict. Extending earlier research, this study went on to show evidence of this linkage both within and across two cultural sub-samples as well as gender. Importantly, these effects proved robust not only across ethnicity and sex, but statistically— apparent also when considering within-individual change in electrodermal activity across the AAI using growth curve analyses. Moreover, as predicted by Dozier and Kobak (1992), no evidence was found in this study for a similar linkage of deactivation to cardiovascular reactivity during the AAI.

The dismissing classification revisited.

The results of this study confirm that a dismissing state of mind regarding earlier attachment experiences represents an incomplete attempt to segregate negative memories from consciousness. Although dismissing participants offer few overt signs of their distress in the AAI, consistent with theory embedded in Main and Goldwyn's (1998) coding manual, such individuals nonetheless emit covert indications (in the form of electrodermal response) that the tasks associated with the protocol are emotionally dysregulating.

Although only a few such subtle indications of prior negative relationship experiences may remain in adults who rely on deactivating strategies, contradictions associated with this classification marked by a defensive organization of cognition and affect are actually quite pervasive. Perhaps the most telling of these discrepancies is revealed in a small but growing AAI

literature on the lack of convergence between self- versus other-reports of psychological well-being (Kobak & Sceery, 1988; Dozier & Lee, 1995; see also Shedler, Mayman, & Manis, 1993).

As alluded to earlier, and consistent with the defining features of the individual difference, those who rely on deactivating strategies have been consistently found to self-report relatively low levels of emotional distress on so-called "objective" measures of psychopathology (Kobak & Sceery, 1988; Dozier, 1990; Pianta, Egeland, & Adam, 1996). Despite this rosy-colored self-portrayal, however, dismissing individuals are nonetheless viewed by others who know them well, including sensitive clinicians and peers, as poorly adjusted (Kobak & Sceery, 1988; Dozier & Lee, 1995). In one rather compelling report, for instance, individuals who relied on deactivating strategies in a sample of severely impaired psychiatric patients at once self-reported the lowest levels of anxiety, hostility, psychoticism, and the like, and yet were rated by expert clinicians as among the most disturbed with regard to some of these very same aspects of psychopathology (Dozier & Lee, 1995).

Perhaps not surprisingly, empirical evidence suggests also that a reliance on deactivating strategies is likely to prevent individuals from eliciting the kind of corrective experiences in relationships necessary to the break the intergenerational cycle (Kobak & Sceery, 1988). This literature suggests at least two reasons why dismissing adults may be difficult to treat in clinical settings, though much of what has been discerned likely applies to the potentially therapeutic opportunities available in other adult relationships as well (see, e.g., Dozier, Stevenson, Lee, & Velligan, 1991; Dozier, Lomax, Tyrell, & Lee, 2001).

First, such individuals are unlikely to engage psychotherapeutic contexts effectively. More specifically, several independent research groups have concluded that dismissing adults are less likely than others to be emotionally engaged in preventative interventions focused on

attachment-related parenting issues (Korfmacher, Adam, Ogawa, & Egeland, 1997) and are likely to reject treatment (and treatment providers) in individual therapy (Dozier, 1990). Second, and perhaps more worrisome, is that insensitive (e.g., insecure) or simply overworked clinicians seem all too ready to endorse dismissing individuals' self-reports of wellness, particularly in the context of dealing with their overtly distressed, hyperactivating counterparts (Dozier, Cue, & Barnett, 1994; Tyrrell, Dozier, Teague, & Fallot, 1999). The present study helps explain why deactivating strategies may be so difficult to identify and treat— specifically that, owing to the fact that engaging an early malevolent history is inherently psychophysiologically arousing for those who rely on dismissing strategies, related activities are actively avoided. Indeed, as discussed earlier, the minimization of attachment-related distress may be the primary reason for the development of their defensive posture in the first place.

Clearly, much needs to be learned about the nature of deactivation in adulthood. We are just beginning to understand the developmental origins of defense (e.g., Beckwith, et al., 1999; Waters, Hamilton, & Weinfield, 2000), but know relatively little about its long-term implications for adult relationships and adaptation generally. Of some relevance to the current study, Pennebaker and his colleagues (e.g., Pennebaker & Chew, 1985) began the line of research described earlier on the physiological correlates of deception in order to understand the potential long-term costs associated with failing to share distress related to traumatic experiences (e.g., loss and abuse). Pennebaker's early experimental work indicated that such inhibition of behavior is (a) necessarily effortful, suggesting at least some conscious awareness and (b) associated with chronic physiological activation of the sort that may put individuals at increased risk for morbidity and mortality (Pennebaker & Chew, 1985; Pennebaker, 1997). Interestingly, this same

pattern of covert arousal observed among individuals engaged in deception is now a replicated description of the dismissing adult.

What, then, might we speculate are the long-term consequences of this organization of experience? In line with Pennebaker and Chew's (1985) analysis, these data suggest that the defense processes captured in the AAI represent an effortful intrapsychic activity, involving potentially chronic physiological activation in attachment-relevant contexts. As applicable situations are ubiquitous in our adult lives (e.g., conflicts with parents, partners, children, and so forth), perhaps one of the most critical and concerning hypotheses regarding these phenomena is that dismissing strategies may be increasingly associated with disease and other health-related problems as individuals age. Very little adult attachment research has been done with older adults (see, e.g., Benoit, & Parker, 1994; Bradley & Cafferty, 2001), and this could be a guiding question for such work. Clearly, psychophysiological methods will be an invaluable asset in our search for answers.

Retrospective reports: Limitations and strengths.

Despite obvious limitations to the generalizability of the results of this study, including especially the nature of the student population sampled, it should be emphasized that these data provide an example of how our field can use cross-sectional data to bolster evidence as to what we can (and cannot) divine about individuals' earlier experiences on the basis of their discourse in adulthood. In a previous study, my colleagues and I questioned whether the AAI can provide evidence regarding positive change in attachments across time (Roisman, et al., in press), concluding that operational definitions of "earned-security" that rely heavily on self-reports of malevolent childhood experiences are vulnerable to depression-related distortions and thus may be inherently unreliable (see, e.g., Pearson, Cohn, Cowan, & Cowan, 1994; Phelps, Belsky, &

Crnic, 1997; Paley, et al., 1999). Using prospectively gathered, longitudinal data, we went on to provide direct evidence that young adults can nonetheless provide retrospective information that offers a summary snapshot of their earlier encounters with malevolence and support. Central to success in this endeavor, we argued, is that attention is paid to the quality, not content, of the discourse adults produce about their childhood experiences (see also Allen & Hauser, 1996; Roisman, et al., 2000).

Data from the current study once again suggest that theoretically informed attention paid to how adults' talk about their early relationships may be useful in providing a window on their past, despite the ineluctable fact that memories are reconstructed. Said another way, while the content of retrospective self-reports often falls far short of the mark of reality (Yarrow, et al., 1970; Henry, et al., 1994), as memories seem to be systematically and lawfully distorted by antecedent encounters with malevolence and support, we can apply relevant clinical insights to adults' discourse to ultimately infer a more veridical understanding of their actual experiences in childhood.

For example, while many of the individuals who produced deactivating discourse in the current study provided idealized depictions of their childhood experiences, it would be a mistake to assume that their relationship histories were indeed completely (or even primarily) benign. Using Main and Goldwyn's (1998) insights, clinically informed judges were able to discern that the generalized descriptions of parent-child experiences provided by such participants were not supported by specific examples, a discrepancy suggesting that these individuals were not accurately reporting about the quality of their childhood relationships. In the current study, of course, such respondents' psychophysiological profiles convergently aligned with the inferences made by trained and reliable AAI judges, thus further belying participants' self-reports.

Cross-cultural issues.

Another overarching issue that this study sought to address is the cross-cultural utility of the AAI. While this study provides initial evidence of the cross-cultural comparability of the meaning of discourse that serves the function of avoiding discussion of negative childhood experiences in the AAI, data gathered within and across an array of cultural contexts are still necessary in further elaborating on adult attachment methods and theory (Rothbaum, et al., 2000). To be sure, however, culturally informed research on attachment must be guided by a deep understanding of the theory itself as well as specific and testable hypotheses regarding the putative moderating role of culture.

Given the wonderful array of cultural variability around the globe, armchair debates regarding the role cultural differences may play in undermining the predictions inherent in attachment theory are extremely easy to fabricate. More difficult (and yet far more informative) is the strict empirical examination of the critical hypotheses of attachment theory across a variety of ethnic contexts. Interestingly, when relevant tests have been aggregated, the field has observed striking cross-cultural consistency in affirming attachment theory's core propositions, at least as they apply to infants (see van IJzendoorn & Sagi, 1999). As cross-cultural research on the AAI is far more limited, the present goal should be to add to this database.

Importantly, however, the cross-cultural validity of attachment theory does not rest on any particular measure such as the AAI or the Strange Situation. Theories live and die as a result of the falsification of their nomological networks, composed of constructs that must be operationally defined in a way not necessarily literally equivalent across cultural contexts but rather comparable in terms of psychological meaning. Said simply, identical measures may not be subjectively experienced as identical across cultures.

One approach to this clearly thorny problem is to apply indigenous insights to the development of locally sensitive operationalizations of core constructs, which may be in turn used to test both convergent and discriminant predictions inherent in one's theory. As we have seen in this study, however, it is not always necessary to modify measures dramatically for use in other cultural contexts— it appears that several measures derived from attachment theory, for example, are in many ways cross-culturally robust when properly administered and coded (Hesse, 1999; van IJzendoorn & Sagi, 1999). The bottom line here is that assumptions regarding cross-cultural equivalency should be systematically and thoughtfully tested, not merely debated.

Concluding remarks.

So far, much of what has been discussed about deactivating strategies suggests a rather grim picture indeed regarding its correlates as well as the potential for change. There is little doubt that by cutting themselves off from opportunities to either more fully digest prior experiences, individuals who rely on deactivating strategies unwittingly reinforce a vicious cycle. According to one account of defense, "keeping oneself unaware of what one feels prevents dissipation of the feeling, keeps related cognitions active, and hence maintains the potential for unconscious priming of aversive arousal" (Westen, 1998, p. 342).

All of this notwithstanding, it should be emphasized that the very fact that dismissing adults are physiologically aroused when dealing with issues related to their past history may represent a rather significant entrée for therapy. Unlike the prototypic sociopath, fully dissociated from distress, the data presented herein suggest that dismissing adults may be at least somewhat aware of the contradictions that typify the way in which they selectively engage and experience their social environments. Thus, interventions that require such individuals to directly face harsh early experiences, for example by writing about them, may be especially effective by causing

dismissing adults to reflect upon and work through an untoward past (Hughes, Uhlmann, & Pennebaker, 1994; Pennebaker, 1997).

Let us not be naïve, however. Such simple interventions are unlikely to be completely successful outside of the context of corrective relationships that help individuals recognize and reorganize their social expectancies (Bowlby, 1988). Of some note, the few truly prospective, longitudinal studies that exist regarding those who rise above malevolent early experiences suggest that high quality relationships play an important role in overcoming such adversity (Masten, et al., 1999; Roisman, et al., in press). Perhaps the most emphatic support for this notion comes from a high-risk longitudinal cohort studied extensively by Byron Egeland, Alan Sroufe, and Andy Collins. One of their reports revealed that the three most salient correlates of discontinuity in terms of the intergenerational transmission of abuse included (1) the experience of emotional support from a non-abusive adult during childhood, (2) long-term therapy of more than six months, and (3) a satisfying, emotionally supportive relationship with an adult partner (Egeland, Jacobvitz, & Sroufe, 1988).

Cumulatively, the ideas explored in this report argue for a psychodynamically informed developmental science, one that has come to terms with the real limitations of self-report methods in a world where a large minority of the participants we study systematically misrepresent reality (Westen, 1998). Importantly, this problem is not limited to those who "fake good," as has been implied (Shedler, Mayman, & Manis, 1993), but includes related concerns about mood-linked negative biases in recall (such as those associated with depression) as well (see Roisman, et al., in press). Obviously, those who suffer silently as a function of their childhood experiences should be of great concern to developmental and clinical psychologists.

To truly understand the unique struggles of such individuals, so long overlooked, would represent a major advance in our field.

Acknowledgements

Special thanks are offered to the exceptional team of undergraduate research assistants without whom this research would not be possible, including Renata Batuner, Sing Hang Cheung, Sylvia Chiang, Brett Haberstick, Debra Huang, Olga Kavun-Wozniak, Cindy Liu, Yukiko Maeda, Alice Ng, Jennifer Northrop, as well as the many dedicated students at the University of Minnesota and Stanford University who served as AAI transcribers. This study is based on the first author's dissertation completed at the Institute of Child Development, University of Minnesota. Accordingly, he wishes to thank his committee members for inspiring and supporting this research as well as Roger Kobak for his efforts on behalf of this study.

This study was sponsored by an NIMH National Research Service Award (MH19893-04) to the first author as well Undergraduate Research Opportunity grants from the University of Minnesota to Debra Huang and Cindy Liu.

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Footnotes

[1] For an exhaustive discussion of cross-cultural differences observed in this study, please see Tsai, Roisman, Chiang, and Liu (under review).

[2] Note that these change scores were not used in follow-up growth curve analyses. Rather, growth in mean levels of physiological response during each question was modeled within participant across the AAI.

[3] To the author's knowledge, this is the first time that Kobak's (1993) Q-sort has been applied with raters all of whom had been trained and certified as reliable by Mary Main in AAI classification-based coding prior to data reduction. As such, not all transcripts were sorted twice, as has become typical out of necessity in laboratories applying the AAI Q-sort limited to one (e.g., Kobak, et al., 1993) or no (Lewis, et al., 2000) trained and reliable AAI coders. Establishing sample-specific inter-rater reliability on a sub-sample of AAI Q-sorts is not without precedent, however, as Mary Dozier has made use of this approach as well (see Dozier, Cue, & Barnett 1994; Dozier & Lee, 1995). Moreover, this is standard practice in virtually all AAI studies using Main and Goldwyn's (1998) classification approach to coding.

[4] Three additional channels of physiology were collected: finger temperature (FT), finger pulse amplitude (FPA), and respiratory intercycle interval (ICI). FT and FPA are indicators of vasoconstriction and respiration is generally regarded as a distinct element of physiological response. As no specific hypotheses regarding these variables were articulated a priori, however, no analyses relevant to these channels of physiological response are reported here (see Tsai, Roisman, Chiang, & Liu, under review).

[5] As we anticipated that acculturation (rather than ethnicity per se) might be a more relevant moderator of the effects observed, all participants self-reported their cultural orientation

to American values and all Chinese/Chinese Americans in the sample self-reported the degree to which they accepted and their behavior was guided by traditional Chinese values using Tsai, Ying, and Lee's (2000) General Ethnicity Questionnaire (GEQ; American and Chinese versions). Neither orientation to American or Chinese values moderated the associations observed between deactivation and electrodermal response.

Table 1

Means and t-tests for Analyses of Cultural and Sex Differences on Security and Deactivation (n = 30 C/CA, n = 30 EA; n = 32 F, n = 28 M)

Outcome	M (SD)		t	df	p
	C/CA	EA			
Security	.17 (.49)	.42 (.48)	2.02	(1,58)	.05
Deactivation	.02 (.25)	.03 (.31)	0.23	(1,58)	.82
	F	M			
Security	.30 (.53)	.27 (.47)	0.27	(1,58)	.79
Deactivation	-.03 (.25)	.09 (.30)	1.60	(1,58)	.12

Note. C/CA = Chinese/Chinese American, EA = European American; F = Female, M = Male

Table 2

Spearman Correlations Between Attachment Dimensions and Increases in Skin Conductance from Baseline to Questions in the Adult Attachment Interview (full sample, N = 60)

Interview Question	Attachment Dimensions: Deactivation/ Hyperactivation	Attachment Dimensions: Security/ Insecurity
1. Background……	.27*	.05
2. Describe Relationships……..	.32*	-.06
3. Five Adjectives (and Memories) for Mother…….	.35**	-.06
4. Five Adjectives (and Memories) for Father……...	.42***	-.11
5. Which Parent did you Feel Closest…….…….....	.41**	-.12
6. Upset……...	.36**	-.04
7. Separated…….	.33*	-.10
8. Rejected……...	.36**	-.08
9. Threatened……...	.35**	-.08
10. How Experiences Affected Personality…….……..	.38**	-.13
11. Why Parents Behaved as they Did……...……	.43***	-.11
12. Other Adults with Whom You Were Close.……...…..	.47***	-.14
13. Loss.....…….	.44***	-.18
14. Trauma…….....	.43***	-.16
15. Changes in Relationship……...	.36**	-.15
16. Current Relationship with Parents.....	.37**	-.14

Note. *p < .05,**p <.01, ***p < .001 (two-tailed)

Table 3

Pearson Correlations Between Attachment Dimensions and Increases in Cardiac Inter-Beat Interval From Baseline in the Adult Attachment Interview (full sample, N = 60)

Interview Question	Attachment Dimensions	
	Deactivation/ Hyperactivation	Security/ Insecurity
1. Background……	.09	-.12
2. Describe Relationships……..	.11	-.03
3. Five Adjectives (and Memories) for Mother…….	.12	-.11
4. Five Adjectives (and Memories) for Father……...	.07	-.07
5. Which Parent did you Feel Closest…….…….....	.07	-.06
6. Upset……...	.11	-.09
7. Separated…….	.07	-.14
8. Rejected……...	-.03	.08
9. Threatened……...	.16	-.14
10. How Experiences Affected Personality…….……..	.11	-.14
11. Why Parents Behaved as they Did……...……	.12	-.12
12. Other Adults with Whom You Were Close.……...…..	-.08	.08
13. Loss.....……	.05	-.04
14. Trauma…….....	-.04	-.03
15. Changes in Relationship……...	.17	-.13
16. Current Relationship with Parents.....	.08	-.07

Note. All correlations are non-significant. As security/insecurity variable was significantly non-normally distributed, nonparametric analyses (Spearman correlations) were run also as a check. The pattern of nonsignificant findings remained the same.

Table 4

Spearman Correlations Between Deactivation and Increases in Skin Conductance From Baseline to Each Question in the Adult Attachment Interview within Ethnicity (n = 30 each) and Sex (n = 32 Female, n = 28 Male)

Interview Question	Ethnicity		Sex	
	Chinese American	European American	Female	Male
1. Background……	.23	.39*	.31†	.29
2. Describe Relationships……..	.29	.41*	.41*	.28
3. Five Adjectives (and Memories) for Mother…….	.37*	.35†	.42*	.38*
4. Five Adjectives (and Memories) for Father……...	.43*	.42*	.51**	.45*
5. Which Parent did you Feel Closest…….…….....	.40*	.44*	.52**	.46*
6. Upset……...	.38*	.40*	.43*	.43*
7. Separated……	.40*	.29	.40*	.37†
8. Rejected……...	.42*	.33†	.48**	.37†
9. Threatened……...	.41*	.34†	.48**	.37†
10. How Experiences Affected Personality…….……..	.40*	.39*	.43*	.43*
11. Why Parents Behaved as they Did……...……	.48**	.41*	.53**	.48**
12. Other Adults with Whom You Were Close.……...…..	.52**	.43*	.52**	.56**
13. Loss.....…….	.50**	.42*	.44*	.52**
14. Trauma…….....	.46**	.44*	.50**	.48**
15. Changes in Relationship……...	.36*	.41*	.39*	.47*
16. Current Relationship with Parents.....	.35†	.42*	.37*	.52**

Note. †p<.10, *p < .05, **p <.01 (two-tailed).

Table 5

Level II HLM Model Predicting Growth in Electrodermal Activity Across the Adult Attachment Interview

Fixed Effect	Standard Coefficient	Error	Approx. T-ratio	df	p
Intercept	0.0345	0.0129	2.67	56	.01
Sex	-0.0105	0.0050	2.09	56	.04
Ethnicity	-0.0122	0.0048	2.56	56	.01
Deactivation	0.0053	0.0023	2.37	56	.02

Note. p-values are two-tailed. Data are derived from final estimation model using robust standard errors.