

The failed repressor: EEG asymmetry as a moderator of the relation between defensiveness and depressive symptoms

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Abstract

This study assessed the joint effects of defensiveness and frontal asymmetry in predicting symptoms of depression and anxiety. Depression symptoms were measured with the Beck Depression Inventory (BDI) and anxiety symptoms with the Taylor Manifest Anxiety Scale (TMAS). Defensiveness was assessed with both the Marlowe Crowne Social Desirability Scale (MCSD) and the Eysenck Personality Questionnaire L scale (EPQL). Participants completed two EEG recording sessions 3 weeks apart. Six baselines, three eyes open and three eyes closed, were recorded in each session. Alpha power (8–13 Hz) was computed and log transformed. *R–L* asymmetry was computed at eight pairs of homologous sites for aggregated data. Defensiveness (EPQL and MCSD scores) and depression symptoms (BDI) were assessed at the beginning of the first session. *L* and MCSD correlated positively with anterior *R–L* asymmetries. For both scales, the highest correlations were observed at F8–F7. *L* interacted with F8–F7 asymmetry to predict depressive symptoms. Among left frontally active individuals, there was trend toward a negative correlation between *L* and BDI. Among the right frontally active individuals, the correlation between *L* and the BDI was positive. MCSD did not moderate the relation between F8–F7 asymmetry and BDI. The results are consistent with the hypothesis that defensiveness protects against symptoms of depression in the context of left frontal activity, and serves as a diathesis for depression in the context of right frontal activity. High-defensive individuals who are right frontally active may represent “failed repressors,” i.e. individuals for whom defensiveness does not protect against depression, and may even exacerbate it.

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1. Introduction

Repressive and defensive styles have attracted substantial clinical and research attention. Defined by a tendency to over-report positive but unlikely self-attributes while denying likely but negative ones, it is typically expected that defensiveness will serve the purpose of diminishing reports of distress, and as such, measures of distress and defensiveness should correlate slightly to moderately negatively. Defensiveness is thought to lead to low levels of overt distress, but high levels of covert distress that manifest in physiological dysregulation and disease

(Schwartz, 1990; Schwartz and Kline, 1995; Weinberger et al., 1979).

1.1. Conceptualization and measurement

Repressive style is typically defined by the combination of measures of defensiveness and psychological distress (e.g. anxiety, depression). The combination of categorical classifications of high and low distress with high and low defensiveness can be represented in a four-fold table (Weinberger et al., 1979). Individuals scoring high on defensiveness, but low on self-reported distress, are typically referred to as “repressors.”

Inherent in the “repressiveness” construct is the idea that defensiveness serves to mask the overt expression of distress, but allows for its expression through subtle behavior and physiology (Derakshan and Eysenck, 1997, 2001; Weinberger

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et al., 1979). Substantial research has been offered in support of this position (Kiecolt-Glaser and Greenberg, 1983; Weinberger et al., 1979; Newton and Contrada, 1992; Brown et al., 1996).

Individuals scoring low on both distress and defensiveness have been classified as “true low-anxious” or “true low-depressed.” Individuals scoring high on measures of distress and low on measures of defensiveness have been classified as “true high anxious” or “true high depressed.” Again, there is support for the construct validity of true high distress, in that the self-reported distress is often found to be concordant with physiological and behavioral measures (Weinberger, 1990).

1.2. *The paradox of elevated defensiveness and distress*

The fourth possibility, i.e. scoring in the high ranges on both defensiveness and distress, is often neglected in the literature on repressive/defensive style. These individuals pose something of a paradox: On the one hand, they tend to claim strong character traits and deny minor faults, but on the other hand, report high levels of distress and psychopathological symptoms that are inconsistent with their general motive to gain social approval and avoid social disapproval (Davis, 1987; Hansen and Hansen, 1988; Weinberger et al., 1979). Bonanno and Singer (1990) have referred to these individuals as “failed would-be repressors,” and hypothesized that high-defensive individuals would vacillate between a repressor style and a helpless–hopeless pattern. This hypothesis has significant implications for theories of psychopathology, in that it suggests that defensiveness may, under some circumstances, lead to increased rather than decreased reports of anxiety and/or depression. When defenses fail to function, those who rely on them most heavily might be expected to be more aware of and/or more willing to admit their distress. In these situations, defensiveness may correlate *positively*, rather than negatively, with self-report measures of psychological distress.

1.3. *Relative left frontal brain activity, defensiveness, and decreased distress*

Tomarken and Davidson (1994) posited that defensiveness and resting asymmetrical activity in the frontal electroencephalogram (EEG) index a common protective factor against depression and other forms of psychological distress. Consistent with this hypothesis, it has been reported that defensiveness and psychopathology are inversely related in self-reports as well as ratings by family members (Colvin et al., 1995; Lane et al., 1990). Frontal EEG patterns where left-sided activity is greater than right-sided activity, hereafter referred to as “relative left frontal activity,” have also been associated with decreased depression symptoms (Allen et al., 1993; Bell et al., 1998; Gotlib et al., 1998; Henriques and Davidson, 1991; Roemer et al., 1992). Increased defensiveness has been robustly related to increased relative left frontal activity in a number of studies (see Blackhart and Kline, 2005; Kline et al., 2001; Pauls et al., 2005; Tomarken and Davidson, 1994).

The findings linking frontal EEG asymmetries to defensiveness, anxiety, and depression are certainly not without their

caveats, qualifiers, and inconsistencies. Indeed, several studies have failed to replicate the link between depression and EEG asymmetries (e.g. Reid et al., 1998; Vuga et al., 2006). Furthermore, although apparently robust, the link between defensiveness and frontal asymmetry appears to depend partly on the gender of the participant (Kline et al., 1998b, 1999) and to some extent on the social context of the interaction of the participant and the experimenter (Kline et al., 2002).

Regulation of behavior within a social context is one of the more central functions of the frontal lobes. Frontal lobe lesions tend to impair social behavior, making victims more prone to social blunders. The laterality of lesions may make a difference as well, with right frontal lesions leading to more inappropriate errors of commission, and increased verbalization, including verbalization of inappropriate content. Left frontal lobe lesions tend to decrease spontaneous verbal behavior, lead to social withdrawal, and in some instances, lead to a “catastrophic reaction” resembling depression (Kolb and Whishaw, 1996; Kolb and Taylor, 2000).

EEG asymmetries have also been linked to variables that are of direct social relevance. Infants showing relative left frontal activity are less distressed during maternal separation than are their right frontally active counterparts (Davidson and Fox, 1989). In adults, self-reported sociability, especially in the absence of self-reported shyness, has been shown to correlate with left frontal activity, whereas shyness, especially in the absence of self-reported sociability, has been shown to correlate with right frontal activity (Schmidt, 1999). Excessive reassurance seeking, which has been tied to both depression and social rejection, has been found to moderate the relation between EEG asymmetry and self-reported depression in clinical outpatients (Minnix et al., 2004).

Studies of the relations among EEG asymmetries, defensiveness, and symptoms of depression have left substantial unexplained variance. As such, in any given study where defensiveness significantly correlates with relative left frontal activity, there have been plenty of individuals who are high on defensiveness yet relatively right frontally active. This raises intriguing possibilities for the role of left frontal circuits in the implementation of defensive strategies. If relative left frontal activity is involved in the defensive denial of distress, then it might also serve to moderate the relation between defensiveness and self-reports of anxiety and/or depression.

The present study assessed defensiveness, resting EEG asymmetries, and self-reported anxiety and depression symptoms. It was hypothesized that as relative left frontal activity increased, the direction of the association between defensiveness and distress would be negative. Conversely, it was hypothesized that as relative right frontal activity increased, the direction of the association between defensiveness and distress would be positive.

2. Method

2.1. *Participants*

Seventy-one right-handed participants (50 women, 21 males) 17–25 years of age (mean = 18.9, SD = 1.53) volunteered to

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