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Broadening the Scope of Research on Emotion Regulation Strategies and Psychopathology

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Broadening the Scope of Research on Emotion Regulation Strategies and Psychopathology

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Abstract. Despite the increasing interest in the study of emotion regulation strategies and psychopathology, researchers have predominantly focused on covert emotion regulation strategies—that is, those strategies that occur within the individual (e.g., cognitive reappraisal, suppression). Conversely, less attention has been devoted to the examination of the relationship between psychopathology and overt emotion regulation strategies (e.g., drinking alcohol, seeking advice). This has resulted in a limited understanding of the complex repertoire of emotion regulation strategies that individuals possess, and how patterns in the use of strategies might relate to psychopathology. We asked 218 undergraduates to report on their habitual use of 15 covert and overt emotion regulation strategies and symptoms of seven different mental disorders. Overt strategies were associated with symptoms and, at times, they predicted psychopathology above and beyond the more frequently studied covert strategies. These findings have implications for developing a more sophisticated understanding of patterns of adaptive and maladaptive emotion regulation. Key words: emotion regulation; strategies; psychopathology; repertoire

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Introduction

The past two decades have witnessed a growing interest in understanding how deficits in emotion regulation relate to the onset, maintenance, and treatment of mental disorders (e.g., Kring & Sloan, 2010). A number of investigations have focused on the delineation of relationships between the use of strategies that seek to regulate affect and the presence of symptoms of various psychological disorders (for a meta-analytic review, see Aldao, Nolen-Hoeksema, & Schweizer, 2010). Certain emotion regulation strategies (e.g., acceptance, cognitive reappraisal, problem solving) have been found to have negative associations with psychopathology and have consequently been considered adaptive. Conversely, other strategies (e.g., avoidance, suppression, worry, rumination) have consistently demonstrated positive associations with symptoms and have therefore been deemed maladaptive (e.g., Aldao & Nolen-Hoeksema, 2012; Aldao et al., 2010).

Although this approach to the study of emotion regulation has constituted an important first step in our understanding of the affective disturbances that characterize psychopathology, it has remained relatively narrow in its scope. Specifically, it has focused on a limited subset of strategies, namely those that by definition regulate affect, such as reappraisal, rumination, or acceptance. This has come at the expense of the study of additional behaviors, such as drinking alcohol or seeking advice from others, which may, at times, also be enacted with the intention to regulate emotions—and consequently function as emotion regulation strategies. Such an omission in the current literature is particularly noteworthy given prior work suggesting that these behaviors constitute an important part of people’s repertoire of emotion regulation strategies (e.g., Gross, 1998; Koole, 2009;
We contend that this disconnect between the frameworks that delineate a rich repertoire of emotion regulation strategies and the empirical approach that has frequently studied only a handful of strategies at a time has resulted in a limited understanding of the affective disturbances that characterize psychopathology (for a review, see Aldao, 2013). In particular, it has yet to be determined whether such overt behavioral strategies are associated with psychopathology after accounting for the relatively well-established relationships between the more frequently studied regulation strategies (e.g., reappraisal, suppression, rumination) and symptoms of mental disorders (e.g., Aldao et al., 2010). More broadly, in light of a growing interest in a transdiagnostic approach to psychopathology that seeks to differentiate what aspects of dysfunction are shared among disorders versus which ones are specific to a given condition (e.g., Aldao, 2013; Harvey, Watkins, Mansell, & Shafran, 2004; Kring & Sloan, 2010), it becomes extremely important that the study of emotion regulation strategies in psychopathology incorporate the simultaneous examination of multiple symptom profiles. Thus, the goal of this brief report is to constitute a first step in bridging this gap by examining the relationship between a series of behaviors enacted with the intention of regulating affective states and symptoms of a variety of mental disorders.

Covert and overt emotion regulation strategies

The bulk of the empirical work on emotion regulation strategies has focused on the study of a limited subset of strategies that by definition seek to regulate affect (see Aldao et al., 2010; Webb, Miles, & Sheeran, 2012). For example, acceptance always entails allowing an affective state, cognitive reappraisal always consists of thinking of a situation differently in order to alter its emotional impact, and suppression always pertains to the inhibition of an ongoing emotional state. The target of this type of strategies is invariably an affective experience. Furthermore, these strategies are intrapersonal in nature; they regulate emotions from within the organism and, as such, constitute a closed system in which the experience and regulation of emotions are intrapsychic phenomena that can easily go unnoticed by others. For these reasons, they can be conceptualized as covert emotion regulation strategies.

However, these strategies do not constitute the sole means by which people seek to influence their emotions: there are a myriad of additional overt behaviors that can, under various circumstances, serve emotion regulation functions. Indeed, such behaviors have been described in various accounts of the structure of the repertoire of emotion regulation strategies. For example, Gross' process model of emotion regulation describes the selection and modification of situations as regulatory processes that can alter the characteristics of emotional experiences early on in their elicitation (Gross, 1998). In a recent conceptualization of emotion regulation strategies, Koole (2009) has proposed a classification matrix based on the target (i.e., attention, knowledge, body) and function (i.e., need, goal, person oriented) of strategies. germane to this investigation, a substantial part of this matrix is devoted to regulation strategies that primarily entail overt behaviors, such as stress-induced eating, venting, and controlled breathing. Similarly, a number of years ago, Parkinson and Totterdell (1999) conducted hierarchical cluster analyses to differentiate between cognitive (e.g., “think rationally about the problem,” “try to think of nothing”) and behavioral (e.g., exercise, seek reassurance, sleep) emotion regulation strategies.

Importantly, these overt behaviors do not function as emotion regulation strategies across all contexts; that is, they are characterized by multifunctionality. For example, people drink alcohol for a number of reasons, ranging from socializing to enhancing mood and coping (e.g., Cooper, 1994). Similarly, people might eat because they are hungry or because they are seeking to avoid unpleasant feelings (e.g., Macht, 2008). Thus, unlike the covert emotion regulation strategies, these overt behaviors do not have a one-to-one correspondence between their enactment and the goal of regulating an emotion: at times they might serve an emotion regulation function, and, at other times, they might not. Although overt behaviors may serve multiple functions, for the purposes of this investigation, we are concerned with behaviors that
serve emotion regulation functions. As such, we will refer to these as overt emotion regulation strategies. Of note, we have chosen to utilize the distinction between overt/covert rather than the perhaps more intuitive differentiation between cognitive/behavioral strategies because a broad perspective on behaviorism suggests that cognitive processes also constitute a form of behavior (e.g., Hayes, Strosahl, & Wilson, 1999; Skinner, 1974).

Covert and overt emotion regulation strategies and psychopathology

In parallel with the frameworks described above, there has been a growing interest in understanding the relationship between overt emotion regulation strategies and psychopathology. For example, investigators have delineated the emotion regulation functions of behaviors such as eating food (e.g., Macht, 2008), drinking alcohol (e.g., Cooper, 1994), and injuring oneself (e.g., Nock, 2009). Yet, despite this growing enthusiasm for overt emotion regulation strategies, relatively little attention has been devoted to studying them in conjunction with the covert strategies. Perhaps the most salient exception comes from Selby’s emotional cascade model of borderline personality disorder (borderline personality disorder; e.g., Selby & Joiner, 2009). According to this model, covert emotion regulation strategies, such as rumination, intensify negative affect, which, in turn, increases the probability that a person will resort to an (dysfunctional) act of overt emotion regulation, such as binge eating or excessive alcohol consumption. Similarly, among obese adolescents, rumination about negative affect and daily hassles has been found to predict emotional eating (Kubiak, Vogele, Siering, Schiel, & Weber, 2008).

Although this work constitutes a much needed first step in the examination of both covert and overt forms of emotion regulation strategies and their relationship to psychopathology, it has remained fairly limited in scope, in that it has primarily examined relatively few emotion regulation strategies, particularly of the covert type (e.g., rumination). Importantly, investigations have rarely assessed the extent to which overt strategies were enacted with the actual intention to regulate emotion. For example, Selby, Anestis, and Joiner (2008) created a latent factor of dysregulated behavior, including measures of bulimic symptoms, reassurance-seeking, urgency (i.e., impulsivity in the face of negative affect), and drinking. Only the former two explicitly required the presence of an emotion regulation intention. Thus, we propose that, in order to develop a more nuanced understanding of the extent to which various behaviors can serve an emotion regulation function, it becomes essential that we assess participants’ motivations when enacting overt strategies.

Similarly, this growing body of research on covert and overt emotion regulation strategies and psychopathology has, to date, predominantly focused on one or two disorders at the time (e.g., borderline personality disorder; Selby et al., 2008; Weiss, Tull, Viana, Anestis, & Gratz, 2012). This limitation is problematic because it has precluded the testing of whether certain emotion regulation strategies account for dysfunction across multiple forms of psychopathology or are rather specific to a given disorder. As such, the extent to which the use of different overt emotion regulation strategies can be conceptualized as transdiagnostic remains to be tested. Doing so is extremely important given the growing interest in a transdiagnostic approach to the study of mental disorders (e.g., Harvey et al., 2004; Kring & Sloan, 2010; see the National Institutes of Mental Health’s Research Domain Criteria, Insel et al., 2010).

Present study

The purpose of this brief report is twofold: (1) to broaden the scope of research on emotion regulation strategies and psychopathology by examining a large number (15) of empirically and theoretically relevant covert and overt emotion regulation strategies and (2) to study such strategies within a transdiagnostic framework by assessing symptom types (e.g., Kring & Sloan, 2010). Given the central role ascribed to overt regulation strategies in frameworks delineating the structure of the repertoire (e.g., Gross, 1998; Koole, 2009; Parkinson & Totterdell, 1999), we hypothesized that such strategies would be associated with symptoms of psychopathology above and beyond the covert emotion regulation strategies. Yet, the direction of such relationships remained exploratory. In other words, some overt
emotion regulation strategies might resemble the specific putatively adaptive covert strategies (i.e., those with negative associations with psychopathology; e.g., acceptance, reappraisal), whereas others might look like the specific putatively maladaptive covert strategies (i.e., those with positive associations with psychopathology; e.g., worry, rumination).

**Methods**

**Participants**
Participants were 218 undergraduate students (70% female) who completed an online survey for research credit at a large Midwestern university. The mean age of the sample was 18.67 (SD = 1.46, range 18–32) and most of the participants (75%) were identified as Caucasian (4.4% identified as African American, 7.6% as Asian American, 2.8% as Hispanic/Latino, 0.4% as Native American, and the rest identified as “other”).

**Emotion regulation assessment**
Participants were asked to read instructional materials about emotion regulation. Such materials explained that we all experience emotions and sometimes we engage in behaviors in order to modify—or regulate—how we feel. Participants were then asked to rate the extent to which they habitually use each of the following strategies in order to regulate their emotions. Each strategy was rated on a 4-point scale, ranging from 0 “not at all” to 3 “a lot.”

**Covert emotion regulation.** These included acceptance (“allow or accept your feelings”), cognitive reappraisal (“think of the situation differently in order to change how you feel”), problem solving (“come up with ideas to change the situation or fix the problem”), experiential suppression (“push down your feelings or put them out of your mind”), expressive suppression (“hide your feelings from others”), self-criticism (“criticize yourself for your feelings”), thought avoidance (“avoid thinking about it”), and worry/rumination (“worry or ruminate about the situation”). These particular items have demonstrated associations with psychopathology in past work (for a meta analytic review, see Aldao et al., 2010).

**Overt emotion regulation.** These consisted of arguing with others (“argue with others”), avoiding situations (“avoid the situation altogether”), drinking alcohol (“drink alcohol”), eating (“eat food”), exercising (“exercise”), seeking advice (“seek advice from others”), and watching television or taking a nap (“watch TV/take a nap”). Of note, the number of overt behaviors that people use to regulate their emotions is presumably infinite. Thus, we selected a subset of specific behaviors in order to highlight the importance of examining overt regulation strategies in the context of psychopathology. We guided our decision-making process on conceptual and empirical grounds. Conceptually, the list of strategies is consistent with existing classifications of overt strategies (e.g., Parkinson & Totterdell, 1999). Further, we included interpersonal strategies (e.g., seeking reassurance, arguing with others), given the growing interest in interpersonal emotion regulation in adults (e.g., Marroquín, 2011; Niven, Totterdell, & Holman, 2009). From an empirical standpoint, pilot work from our laboratory suggested that undergraduate participants endorsed some of these strategies frequently (e.g., exercise, watch TV/take a nap).

**Psychopathology questionnaires**

**Depression and anxious arousal symptoms.** The Mood and Anxiety Symptoms Questionnaire Short Form (MASQ-SF): Anxious Arousal (AA) and Anhedonic Depression (AD) subscales (Watson et al., 1995) were used to assess depression and anxiety symptoms. The AA subscale consists of 17 items that assess anxiety-specific symptoms and the AD subscale includes 22 items that assess symptoms specific to depression. The item assessing suicidal ideation was not included, per Internal Review Board (IRB) guidelines. This measure evidenced good internal reliability (in this sample, for AA, \( \alpha = .86 \), and for AD, \( \alpha = .94 \)).

**Social anxiety symptoms**

**Brief Fear of Negative Evaluation (BFNE).** The BFNE (Leary, 1983) is a 12-item self-report inventory that assesses symptoms of social anxiety disorder, particularly in relation to anxiety about other people’s evaluations of the self. Given recent psychometric work suggesting that the straightforward and
reverse scored items constitute different factors and that the straightforward items have better convergent validity (Weeks et al., 2005), only the eight straightforward items were included (in this sample, $\alpha = .93$).

**Social Interaction Anxiety Scale (SIAS).** The SIAS (Mattick & Clarke, 1998) is a 20-item self-report inventory that assesses symptoms of social anxiety disorder, particularly anxiety experienced in dyads or groups. Rodebaugh, Woods, and Heimberg (2007) proposed a scoring system with only the 17 straightforward items (in this sample, $\alpha = .94$).

**Composite score.** These two measures were standardized and aggregated into a composite score ($\alpha = .80$).

**Borderline personality disorder symptoms.** The McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD; Zanarini et al., 2003) is a 10-item measure assessing symptoms of borderline personality disorder. The item assessing for deliberate self-harm was not included, per IRB guidelines (in this sample, $\alpha = .79$).

**Eating disorder symptoms**

**Binge eating symptoms.** The Binge Eating Scale (BES; Gormally, Black, Daston, & Rardin, 1982) is a 16-item scale assessing behavioral manifestations, feelings and cognitions surrounding a binge episode (in this sample, $\alpha = .90$).

**Anorexia nervosa and bulimia symptoms.** The Eating Disorders Attitude Test (EAT-26; Garner, Olmsted, Bohr, & Garfinkle, 1982) is a 26-item inventory that measures problematic eating attitudes and behaviors, particularly symptoms of anorexia nervosa and bulimia (in this sample, $\alpha = .81$). Because these two measures had low reliability when combined ($\alpha = .65$), they were examined separately. This might be due to the fact that they assess different disorders (i.e., binge eating versus anorexia/bulimia, respectively).

**Problematic alcohol use.** The Short Self-Administered Michigan Alcohol Screening Test (SMAST; Selzer, Vinokur, & van Rooijen, 1975) is a 13-item self-report measure assessing symptoms associated with alcohol abuse and dependence. The SMAST exhibited relatively low internal consistency in the present sample ($\alpha = .53$), which is actually consistent with other research utilizing this measure (e.g., Fleming & Barry, 1989). Despite this limited reliability, we decided to include it in this investigation in order to conduct secondary analyses controlling for drinking alcohol, which was one of the strategies examined.

**Results**

We ran stepwise regression analyses predicting each of the psychopathology symptom types with covert emotion regulation strategies (step 1) and overt emotion regulation strategies (step 2). We transformed variables that exhibited non-normal distributions (e.g., skewness statistic $> 2$). Table 1 contains descriptives and Table 2 presents the bivariate correlations between strategies and symptoms. We conducted supplementary regression analyses, in which we sought to adjust for symptom overlap by entering a composite score of all other psychopathological symptoms (i.e., all but the one being predicted) in the first step of each regression analysis.

**Depression symptoms**

In the first step, self-criticism, thought avoidance, and expressive suppression were all positively associated with depression symptoms, $\beta = .26$, $t = 3.93$, $p < .01$, $\beta = .15$, $t = 2.08$, $p < .05$, $\beta = .14$, $t = 2.02$, $p < .05$. Conversely, problem solving and acceptance were negatively associated with symptoms, $\beta = -.26$, $t = -4.29$, $p < .01$, $\beta = -.13$, $t = -2.11$, $p < .05$, $R^2 = .34$, $F = 20.95$, $p < .01$. In the second step, seeking advice was negatively associated with symptoms, $\beta = -.16$, $t = -2.61$, $p < .05$, whereas eating food had a positive association, $\beta = .13$, $t = 2.06$, $p < .05$, $\Delta R^2 = .01$, $\Delta F = 4.26$, $p < .05$. When controlling for other symptoms, only the covert strategies of self-criticism, expressive suppression, and problem solving remained as significant predictors, $\beta = .16$, $t = 2.46$, $p < .05$, $\beta = .13$, $t = 2.12$, $p < .05$, $\beta = -.31$, $t = -5.78$, $p < .01$. In addition, the overt strategies of arguing with others and seeking advice emerged as significant predictors, $\beta = -.14$, $t = -2.61$, $p < .05$, $\beta = .12$, $t = 2.34$, $p < .05$. These two measures were standardized and aggregated into a composite score ($\alpha = .80$).
Anxious arousal

In the first step, worry/rumination and self-criticism were positively associated with anxious arousal, $\beta = .19$, $t\ [210] = 2.68$, $p < .01$, $\beta = .17$, $t\ [210] = 2.35$, $p < .05$, $R^2 = .09$, $F\ [2,\ 210] = 10.64$, $p < .01$. In the second step, only arguing with others was positively associated with anxious arousal, $\beta = .30$, $t\ [209] = 4.66$, $p < .01$, $\Delta R^2 = .09$, $\Delta F\ [1,\ 209] = 21.74$, $p < .01$. When controlling for other symptoms, none of the covert strategies remained significant and arguing with others remained a significant predictor, $\beta = .24$, $t\ [210] = 3.97$, $p < .01$.

Social anxiety symptoms

In the first step, worry/rumination, self-criticism, thought avoidance, and expressive suppression were all positively associated with symptoms, $\beta = .28$, $t\ [206] = 4.26$, $p < .01$, $\beta = .24$, $t\ [206] = 3.63$, $p < .01$, $\beta = .16$, $t\ [206] = 2.59$, $p < .05$, $\beta = .15$, $t\ [206] = 2.21$, $p < .05$. On other hand, acceptance was negatively associated with symptoms, $\beta = -.13$, $t\ [206] = -2.26$, $p < .05$, $R^2 = .37$, $F\ [5,\ 206] = 24.25$, $p < .01$. In the second step, drinking alcohol was positively associated with symptoms, $\beta = .11$, $t\ [205] = 2.03$, $p < .05$, $\Delta R^2 = .01$, $\Delta F\ [1,\ 205] = 4.12$, $p < .05$. When controlling for other symptoms, only worry/rumination and expressive suppression remained significant, $\beta = .25$, $t\ [208] = 4.37$, $p < .01$, $\beta = .14$, $t\ [208] = 2.70$, $p < .01$. None of the overt strategies remained significant.

Borderline personality disorder symptoms

In the first step, self-criticism and thought avoidance were positively associated with
Table 2. *Correlations among regulation strategies and symptoms*

<table>
<thead>
<tr>
<th></th>
<th>MASQ AD</th>
<th>MASQ AA</th>
<th>Social anxiety composite</th>
<th>MSI-BPD</th>
<th>BES</th>
<th>EAT-26</th>
<th>SMAST</th>
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<tr>
<td><strong>Covert adaptive strategies</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Acceptance</td>
<td>−0.22**</td>
<td>−0.05</td>
<td>−0.09</td>
<td>−0.13</td>
<td>−0.12</td>
<td>−0.10</td>
<td>−0.02</td>
</tr>
<tr>
<td>Cognitive reappraisal</td>
<td>−0.07</td>
<td>0.03</td>
<td>0.17</td>
<td>0.03</td>
<td>0.05</td>
<td>0.13</td>
<td>−0.01</td>
</tr>
<tr>
<td>Problem solving</td>
<td>−0.34**</td>
<td>−0.08</td>
<td>−0.08</td>
<td>−0.10</td>
<td>−0.14</td>
<td>0.02</td>
<td>−0.08</td>
</tr>
<tr>
<td><strong>Covert maladaptive strategies</strong></td>
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<tr>
<td>Experiential suppression</td>
<td>0.34**</td>
<td>0.19**</td>
<td>0.37**</td>
<td>0.25**</td>
<td>0.27**</td>
<td>0.27**</td>
<td>−0.03</td>
</tr>
<tr>
<td>Expressive suppression</td>
<td>0.31**</td>
<td>0.08</td>
<td>0.41**</td>
<td>0.26**</td>
<td>0.24**</td>
<td>0.27**</td>
<td>0.02</td>
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<tr>
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<td>0.25**</td>
<td>0.46**</td>
<td>0.36**</td>
<td>0.32**</td>
<td>0.37**</td>
<td>0.11</td>
</tr>
<tr>
<td>Thought avoidance</td>
<td>0.26**</td>
<td>0.16*</td>
<td>0.36**</td>
<td>0.28**</td>
<td>0.28**</td>
<td>0.20**</td>
<td>0.04</td>
</tr>
<tr>
<td>Worry/rumination</td>
<td>0.22**</td>
<td>0.26**</td>
<td>0.49**</td>
<td>0.23**</td>
<td>0.32**</td>
<td>0.29**</td>
<td>0.01</td>
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<tr>
<td><strong>Overt strategies</strong></td>
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<tr>
<td>Arguing with others</td>
<td>0.06</td>
<td>0.36**</td>
<td>0.19**</td>
<td>0.24**</td>
<td>0.17*</td>
<td>0.16*</td>
<td>0.28**</td>
</tr>
<tr>
<td>Avoiding situations</td>
<td>0.27**</td>
<td>0.26**</td>
<td>0.38**</td>
<td>0.35**</td>
<td>0.34**</td>
<td>0.24**</td>
<td>0.09</td>
</tr>
<tr>
<td>Drinking alcohol</td>
<td>0.11*</td>
<td>0.20**</td>
<td>0.17*</td>
<td>0.26**</td>
<td>0.24**</td>
<td>0.19**</td>
<td>0.16*</td>
</tr>
<tr>
<td>Eating</td>
<td>0.20**</td>
<td>0.23**</td>
<td>0.30**</td>
<td>0.23**</td>
<td>0.43**</td>
<td>0.28**</td>
<td>0.16*</td>
</tr>
<tr>
<td>Exercising</td>
<td>−0.05</td>
<td>0.04</td>
<td>0.01</td>
<td>−0.03</td>
<td>0.05</td>
<td>0.13</td>
<td>0.07</td>
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<tr>
<td>Seeking advice</td>
<td>−0.21**</td>
<td>0.07</td>
<td>0.02</td>
<td>−0.02</td>
<td>0.07</td>
<td>0.09</td>
<td>0.16*</td>
</tr>
<tr>
<td>Watching TV/napping</td>
<td>0.18*</td>
<td>0.19**</td>
<td>0.18**</td>
<td>0.15*</td>
<td>0.25**</td>
<td>0.18**</td>
<td>0.04</td>
</tr>
</tbody>
</table>

* p < .05, ** p < .01.
symptoms, $\beta = .30$, $t [208] = 4.58$, $p < .01$, $\beta = .21$, $t [208] = 3.20$, $p < .01$, whereas acceptance was a negative predictor, $\beta = -.13$, $t [208] = -2.13$, $p < .05$, $R^2 = .18$, $F [3, 208] = 15.21$, $p < .01$. In the second step, drinking alcohol and avoiding situations were positively associated with symptoms, $\beta = .19$, $t [206] = 3.09$, $p < .01$, $\beta = .16$, $t [206] = 2.13$, $p < .05$. In the second step (“eating food” and “exercise” were not entered, given their overlap with the criterion variable), drinking alcohol was positively associated with symptoms, $\beta = .28$, $t [210] = 4.20$, $p < .01$, $\Delta R^2 = .07$, $\Delta F [1, 210] = 17.62$, $p < .01$. When controlling for other symptoms, avoiding situations became significant, $\beta = .26$, $t [209] = 3.73$, $p < .01$.

**Discussion**

The findings from this investigation underscore the importance of studying overt and covert emotion regulation strategies in tandem when seeking to understand the affective disturbances that characterize psychopathology. Based on frameworks delineating the structure of the repertoire of emotion regulation strategies (e.g., Gross, 1998; Koo, 2009; Parkinson & Totterdell, 1999), we found support for the notion that overt emotion regulation strategies might help characterize the patterns of affective dysfunction seen across mental disorders. Specifically, we found that overt emotion regulation strategies, such as drinking alcohol, avoiding situations, arguing with others, and seeking advice, emerged as significant predictors of psychopathology above and beyond the more frequently studied covert strategies. Additionally, in line with previous work (e.g., Aldao et al., 2010), we found that symptoms of mental disorders were positively associated with putatively maladaptive covert emotion regulation strategies (e.g., worry/rumination), and that the putatively covert adaptive strategies (e.g., acceptance) were less consistently associated with low levels of psychopathology (e.g., Aldao & Nolen-Hoeksema, 2012). Taken together, these findings constitute an important step in the development of a more nuanced understanding of the repertoire of emotion regulation strategies and the affective disturbances that characterize mental disorders. Moreover, the results from this investigation highlight the importance of adopting a transdiagnostic approach by examining multiple symptom types simultaneously.

In line with predictions, the overt emotion regulation strategies predicted psychopathology above and beyond the covert strategies. In particular, drinking alcohol predicted symptoms of social anxiety, eating disorders,
and borderline personality. In addition, consistent with research on the role of avoidance in maintaining borderline personality disorder symptoms (see Chapman, Dixon-Gordon, & Walters, 2011), situational avoidance was positively associated with these symptoms. Furthermore, our findings also lend support for an emotion regulation role of interpersonal processes (e.g., Marroquín, 2011). We found that arguing with others was associated with elevated anxious arousal and alcohol use problems, and that seeking advice was associated with low levels of depression. Unexpectedly, when we included other symptoms as covariates, arguing with others emerged as a negative predictor of other symptoms as covariates, arguing with others emerged as a negative predictor of depression. Although it is possible that such directionality might have been the result of a suppressor effect (bivariate \( r = .40, p < .01 \)), it will be important to further explore this relationship via a more in-depth functional analyses of the use of these interpersonal strategies across mental disorders. Overall, these findings on overt emotion regulation strategies underscore the importance of broadening our examination of the strategies that constitute a person’s repertoire as we seek to delineate the patterns of affective dysfunction that characterize mental disorders.

Importantly, many associations between strategies and symptoms were no longer significant after additional symptoms were included as a first step in the regression analyses. Such findings could be interpreted as providing support for the notion that these regulation strategies might represent transdiagnostic factors across psychological disorders (e.g., Ehring & Watkins, 2008). However, it is also possible that the composite scores of psychopathology predicted most of the variance in the target symptoms because of the relatively low variance in these measures administered to a normative sample. Thus, in order to fully test the transdiagnostic nature of these findings, it will be critical to examine the relationships between regulation strategies and psychopathology in clinical samples with greater variance in their symptoms.

Participants in this investigation were asked to identify the extent to which they were engaging in a series of behaviors with the conscious intention of regulating their affect. Yet, given the automaticity with which people carry out behaviors in everyday life (e.g., Bargh & Chartrand, 1999), it is possible that participants might not have been aware of the emotion regulation functions of certain behaviors. This is problematic because it might have interfered with our ability to detect meaningful associations between behaviors and symptoms of psychopathology. For example, if participants exercised to improve their mood, but were not aware that they were engaging in that activity for emotion regulation purposes, they would not have endorsed “exercise” when asked about behaviors they carried out with the goal of regulating their affect. We propose that one way of addressing this issue would consist of adopting an experience sampling methodology and asking participants to rate their affect before and after engaging in a potential regulatory behavior of interest. This would allow investigators to capture the extent to which changes in affect could be predicted by the enactment of a given behavior (e.g., Haedt-Matt & Keel, 2011). Another methodological issue resulting from relying on participants’ ability to consciously report on their motivations stems from the possibility that participants were under the impression that a certain behavior served an emotion regulation function, when in reality, other mechanisms might have been at play. For example, a participant might have attributed emotion regulation effects to drinking alcohol at a bar, but in reality such regulatory effects might have been the result of them spending quality time with their friends. We believe that this issue could be partly addressed by training participants to identify contextual factors akin to how it is done in psychotherapy, utilizing fine-grained functional analyses to identify antecedents and consequences of overt emotion regulation strategies (e.g., Linehan, 1993). More broadly, the methodological limitations resulting from asking participants to report on motivations could also be addressed with paradigms assessing implicit associations between a given behavior and emotion regulation (e.g., implicit association test, Greenwald, McGhee, & Schwartz, 1998; go/no-go association task, Nosek & Banaji, 2001). Relatedly, given the multifaceted nature of the overt emotion regulations strategies, it will be important to map out how their effects on emotional experiences might relate to other effects. For example, while having a few drinks might
facilitate emotion regulation in the moment, such behavior may serve other functions, such as enhancing social relationships (e.g., Cooper, 1994).

This investigation had limitations. First, we recruited a sample of undergraduates, which resulted in low means and restricted variance in the psychopathology measures. Thus, as we mentioned above, it will be important to examine the use of covert and overt strategies in clinical samples. Second, our study relied upon self-report measures, some of which had relatively low internal consistency (e.g., the SMAST; Selzer et al., 1975). Future research in this area should incorporate interview-based and behavioral measures of psychopathology and emotion regulation. Third, we modeled symptom overlap by predicting residual variance in the criterion after entering other symptoms in the first step of the regression. This poses substantial interpretive problems to what this “leftover” variance means (e.g., Miller & Chapman, 2001). Thus, it will be important for future investigations examining the extent to which pathological processes can be conceptualized as transdiagnostic, to recruit larger samples that will allow for the proper modeling of symptom overlap using structural equation modeling. More broadly, the conceptual overlap between symptoms of psychopathology and emotion regulation strategies complicates the interpretation of these findings: many of the symptoms that define existing disorders include references to specific types of emotion regulation strategies (e.g., eating food and the eating disorders). Although this overlap highlights the importance of emotion regulation strategies in our understanding of psychopathology, it also requires the development of more sophisticated methods of assessing—and experimentally manipulating—the function of emotion regulation strategies. Thus, one could presumably tease apart whether an individual with, for example, bulimia, is engaging in a binge with an intention to regulate an emotion or as a consequence of impaired cognitive control (e.g., Macht, 2008).

An additional limitation pertains to the utilization of a measure of the emotion regulation strategies that was created for this study (adapted from Aldao & Nolen-Hoeksema, 2012). Consequently, it will be critical to conduct psychometric work examining the reliability and validity of this approach to the assessment of the habitual use of emotion regulation strategies.

Conclusions

This investigation represents a much needed step in the development of a comprehensive understanding of the repertoire of emotion regulation strategies within the context of psychopathology. Whereas previous frameworks (e.g., Gross, 1998; Koole, 2009; Parkinson & Totterdell, 1999) have aimed to develop classifications of both covert and overt emotion regulation strategies, this study constitutes one of the first to empirically examine patterns of associations of both covert and overt strategies in the context of a transdiagnostic approach to psychopathology. In line with predictions, overt regulation strategies (e.g., drinking alcohol, arguing with others, seeking advice, and avoiding situations) predicted symptoms of mental disorders above and beyond the more frequently studied covert strategies (e.g., worry/rumination). Such findings underscore importance of examining a wide range of regulation strategies and symptoms in order to develop a more sophisticated understanding of the process by which individuals regulate—and often misregulate—their emotions. We hope that future work builds upon these findings, particularly by adopting a contextual approach consisting of an in-depth functional analysis of the use of covert and overt strategies by individuals suffering from various mental disorders.

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References
