Impulsive responses to emotion as a transdiagnostic vulnerability to internalizing and externalizing symptoms

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A B S T R A C T

Introduction: This study explored the hypothesis that impulsive reactions to heightened emotion may reflect a transdiagnostic vulnerability to both externalizing and internalizing symptoms.

Methods: A sample of undergraduates completed self-report measures of aggression, borderline personality disorder symptoms, anxiety symptoms, and alcohol problems, and a subset completed interviews that assessed suicidality. All participants also completed self-report measures relating to impulsivity. We predicted that emotion-reactive impulsivity, but not other aspects of impulsivity, would be related to the set of psychopathology symptoms.

Results: Multiple regression analyses found that emotion-reactive impulsivity was uniquely related to each of the psychopathology scales, whereas non-emotion-relevant impulsivity was uniquely related only to alcohol problems.

Conclusion: Discussion focuses on limitations and clinical implications.

1. Introduction

In recent years, conceptualizations of vulnerability to disorder have moved from a view in which each disorder is linked to a unique vulnerability to a view, recently synthesized in the NIMH RDOC initiative, in which being extreme on particular dimensions of functioning may predispose people to diverse kinds of psychopathologies (Cuthbert, 2005). This viewpoint on the nature of vulnerability is often labeled transdiagnostic, in order to indicate the sense that a single vulnerability may be relevant to multiple diagnostic categories (e.g., Harvey et al., 2004). One well-known transdiagnostic view is the idea that trait neuroticism increases general vulnerability to psychopathology (e.g., Kotov et al., 2010; Lahey, 2009).

Another recent example of a transdiagnostic viewpoint is the idea that inadequate cognitive control over emotions can yield phenomenotypically diverse problems in behavior (Carver et al., 2008; Depue and Lenzenweger, 2005; Johnson-Laird et al., 2006). Poor cognitive control over emotions is manifested as tendencies toward (emotion-consistent) impulsive thought and action during states of heightened emotions. The specific problems that emerge from this impulsive reactivity depends on what emotions are common in the person's experience, which in turn depends partly on other aspects of the person's make-up.

For example, a person who has a very sensitive incentive-approach temperament along with high reactivity to emotions may be overwhelmed by strong desires, yielding expression of sensation seeking or antisocial impulses. A person who has a blunted approach temperament along with high reactivity to emotions may be over-affected by sadness and fatigue, resulting in the lethargy and inaction that often characterizes depression. A person with a very sensitive threat-avoidance temperament system along with high reactivity to emotions may be dominated by anxiety. This reasoning thus suggests that a single core vulnerability – poor control over impulsive reactions to emotions – can be reflected both in externalizing problems and in internalizing problems.

The idea that poor control over reactions to emotions, expressed as impulsive thoughts and actions, may represent a transdiagnostic vulnerability is the focus of this article. Preliminary support for this argument comes from several sources. For example, a great deal of data support a relation between impulsive reactivity to emotions and externalizing problems such as violence, sensation seeking, and substance abuse (Cyders et al., 2009; Dick et al., 2010; Whiteside and Lynam, 2003). A tendency to overreact to positive feelings in particular – called positive urgency – has also been related to externalizing problems such as vandalism, risky sexual behavior, gambling, and drug use (Cyders et al., 2007; Zapolski et al., 2009), and to manic temperament and diagnosis (Johnson et al., in press).

Less intuitive is the idea that reactivity to emotions represents a vulnerability to internalizing problems. Nonetheless, there is
some support for that idea as well. A variety of indirect evidence suggests that depression is characterized by reflexive responsiveness to sad emotions (reviewed by Carver et al. (2008). In a more direct study of the question, people meeting a diagnosis for major depressive disorder at some time during their lives reported being more reactive to emotions—including positive emotions—than persons without that diagnosis (Carver et al., in press).

Taken together, these findings suggest the merit of further examining poor cognitive control over emotion as potentially relevant to a broad range of psychiatric syndromes. The study reported here pursued this idea. It extends previous research by considering several internalizing and externalizing tendencies in the same study. Participants completed a range of self-reports bearing on diverse behavioral and emotional problems ranging from aggression, to borderline personality disorder, to anxiety symptoms, to problems with alcohol. A subset of participants completed interviews that assessed lifetime suicidality.

Participants also completed a set of measures pertaining to impulsivity. These measures have previously been determined to reflect three underlying factors, two of which pertain to control over emotions, and one of which does not (Carver et al., 2011). We predicted that the factors pertaining to emotion-related impulsivity would be related to each of the psychopathology indices. We did not expect that pattern for the impulsivity factor that does not involve reactivity to emotion.

2. Method

All procedures were approved by the University Institutional Review Board. Participants were University of Miami undergraduates (69% female, age $M = 18.77$, $SD = 1.90$), who completed informed consent and measures in multiple group sessions near the start of the academic semester. Individual interviews were conducted with a subset of participants to assess suicidality. Because of scheduling difficulties that limited attendance at some sessions, Ns vary across measures (Ns for specific analyses are provided in the tables). Ethnicity of the sample was approximately half non-Hispanic White, a quarter Hispanic, with the other quarter being approximately evenly divided among African American, Asian, Caribbean, and “other.”

2.1. Measures of psychopathology symptoms

Several measures were completed that reflect psychopathological behaviors and symptoms. Measures were chosen to index both internalizing and externalizing syndromes.

2.1.1. Aggression Questionnaire Short Form (AQ)

The AQ (Buss and Perry, 1992) assesses several aspects of aggression. Bryant and Smith (2001) developed a shorter version of the AQ using principal components analysis; they omitted items with low loadings or multiple loadings, as well as items with reverse-scored wording. The modified scale contains 12 items and is more psychometrically sound than the original (Bryant and Smith, 2001). Responses here were made on a 1–5 scale and were averaged for each subscale. Subscales are Anger (3 items, e.g., “I have trouble controlling my temper,” $M = 2.40$, $SD = 0.97$, $\alpha = .67$), Hostility (3 items, e.g., “I wonder why I am so bitter about things,” $M = 2.76$, $SD = 0.90$, $\alpha = .61$), Verbal Aggression (3 items, e.g., “I often find myself disagreeing with people,” $M = 2.78$, $SD = 0.97$, $\alpha = .75$), and Physical Aggression (3 items, e.g., “I have threatened people I know,” $M = 2.15$, $SD = 1.03$, $\alpha = .75$).

2.1.2. Mood and Anxiety Symptoms Questionnaire-Somatic Arousal subscale (MASQ-SA)

The MASQ (Watson et al., 1995) was developed to help differentiate symptoms that are specific to anxiety and depression from those that are common to both syndromes, such as insomnia and poor concentration. We used the 17-item short version of the Somatic Arousal subscale, designed to capture symptoms that are uniquely related to anxiety, such as tendencies to startle easily, dizziness, and trembling. Participants are asked to rate the severity of each symptom during the past week on a scale of 1 (not at all) to 5 (extremely), and the total reflects the sum of items ($M = 13.98$, $SD = 4.84$, $\alpha = .79$). The SA subscale has shown discriminant validity in factor analytic research and high correlations with other measures of anxiety (Watson et al., 1995).

2.1.3. Alcohol Use Disorder Identification Test (AUDIT)

Alcohol problems are frequently observed in undergraduate populations. The AUDIT (Saunders et al., 1993) is a 10-item self-report designed to screen for excessive alcohol consumption and for drinking problems (e.g., “Have you or someone else been injured as a result of your drinking?” $M = 5.29$, $SD = 5.27$, $\alpha = .84$). The AUDIT is correlated with diagnoses of alcohol abuse and dependence (Allen et al., 2001).

2.1.4. McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD)

The MSI-BPD (Zanarini et al., 2003) was designed as a screening instrument for borderline personality disorder. This 10-item true-false self-report questionnaire was derived from the borderline personality disorder module of the Diagnostic Interview for DSM-IV Personality Disorders, a reliable semi-structured interview for Axis II disorders. Each DSM diagnostic criterion is assessed by a single item, with the exception of paranoia/dissociation, which is assessed by two items. The MSI-BPD has shown adequate test-retest reliability, and good specificity (.85) and sensitivity (.81) compared to clinical interviews (Zanarini et al., 2003). In this study, reliability was good ($\alpha = .79$) and 11.3% of the sample scored at or above the cutoff score of 7 (Zanarini et al., 2003).

2.1.5. Suicidality

A subset of participants completed face-to-face interviews to assess their lifetime engagement in suicidal behavior. Due to staffing limitations, these interviews were done for only 136 individuals (only 120 of whom completed all the measures bearing on impulsive reactivity). Participants were asked about the occurrence and frequency of suicidal thought without plans or intent, parasuicidal behavior (e.g., cutting, burning without intent to cause death), suicidal attempts, and hospitalizations for suicidal behavior. A summary index was computed to reflect the most severe level of suicidality endorsed ($M = 45$, $SD = 93$). Only one person endorsed a suicide attempt, but 15 endorsed at least some form of self-harm without lethal attempt and another 17 endorsed periods of suicidal thoughts without a plan, attempt, or behavior (passive death wish).

2.2. Measures bearing on impulsive reactivity versus self-control

Several measures bearing on self-control versus reflexive reactivity were administered. Given high response burden (all sessions included measures other than those described here), some scales were slightly abbreviated by selecting highest-loading items. Across scales except one noted below, items were rated from 1 (I agree a lot) to 5 (I disagree a lot), and responses were averaged. Mean, SD, sample items, and alpha for measures of control versus reactivity are in Table 1.

2.3. Measures bearing on cognitive control over emotion versus reactivity

Several measures were completed that reflect the ability to control or override emotional reactivity (see Table 1).
2.2.2. Urgency and Lack of Perseverance

The UPPS impulsive behavior scale (Whiteside and Lynam, 2001) assesses impulsive tendencies. Items reflect distinct processes that might lead people to act without regard for potential adverse consequences. Two of the four UPPS subscales were administered. Urgency is the tendency to experience strong impulses; about half the items indicate that the impulses follow from or lead to negative affect, the rest do not. Lack of Perseverance assesses an inability to stay focused on difficult or tedious tasks. We used 12 items from the Urgency scale and 10 items from Lack of Perseverance.

2.2.3. Positive urgency

The Positive Urgency measure (Cyders et al., 2007) assesses the tendency to act recklessly or inappropriately when experiencing positive emotions (Cyders and Smith, 2008). This measure has been shown to predict a variety of specific risky behaviors such as vandalism (Cyders et al., 2007), high alcohol consumption per sitting (Cyders et al., 2009), and impulsive behavior on a laboratory task after a mood induction (Cyders et al., 2010). Positive Urgency is moderately related to UPPS Urgency (r = .37), but it has been shown in two studies to predict outcomes through different pathways than UPPS Urgency (Cyders et al., 2007). We used 7 items from this scale.

2.2.4. Self-control

The Self-control scale (Tangney et al., 2004) is a measure of general self-control tendencies versus impulsiveness (we used the 13-item Brief version). Items tend to focus on persistence in completing activities. Self-control scale scores predict higher grade point average, better adjustment, less alcohol abuse, and better interpersonal skills (Tangney et al., 2004). To orient all impulse-related scales in the same direction, scores on this measure were computed as lack of self-control.
2.2.5. Laziness

The Behavioral Indicators of Conscientiousness (Jackson et al., 2010) is an inventory of behaviors related to conscientiousness. We administered the Laziness scale (low conscientiousness), which reflects lack of carry-through. Items ask how often respondents engage in specific behaviors, 1 (“never”) to 5 (“very often”).

2.2.6. Project-specific scales

A number of items were written for the larger parent study to target very specific reflections of reactivity versus control (Carver et al., 2011). Sadness Paralysis (2 items) is reacting reflexively to sad feelings with inaction. Inability to Overcome Lethargy (7 items) is a more general inability to get moving despite having things to do (again, reflexive inaction, but in response to feelings of fatigue). Emotions Color Worldview (3 items) reflects the experience of having an emotional state lead reflexively to biased perceptions of the world. Reflexive Reaction to Feelings (7 items) assesses tendencies to act reflexively and quickly when experiencing emotions. Distractibility (9 items) is the tendency for attention to be drawn off-task readily.

2.3. Factors of reactivity versus self-control

The various measures bearing on impulsive reactivity versus self-control were previously factor analyzed (each scale score being treated as a data point; using both exploratory and confirmatory techniques) in a sample of 303 (reported in Carver et al., 2011), which largely overlaps the present sample. Those procedures yielded three correlated factors. The pattern matrix from the exploratory analysis is reproduced in Table 2. Factor 1, Pervasive Influence of Feelings, reflects a broad tendency for emotions to reflexively shape the person’s orientation to the world: having one’s worldview affected by temporary feelings, generalizing from negative events to the overall sense of self-worth, and reacting to sadness and fatigue with inaction. Factor 2 (Lack of Follow Through) centers on the tendency to complete tasks versus letting things go. This factor has no overtones of reactivity to emotion. The cross-loading of Lethargy on Factors 1 and 2 reflects the fact that items in the Lethargy scale reflect both a strong influence of feelings of fatigue and a resulting failure to follow through. Factor 3 (Feelings Trigger Action) centers explicitly on impulsive behavioral reactivity to emotions, including positive emotions (the positive urgency measure). The cross-loading of the urgency scale on Factors 1 and 3 appears to reflect the fact that some urgency items specify responses to negative affect and others more neutrally specify responses to “feelings.”

Factor scores for each participant were created by the regression method (each factor centered at 0 with SD = 1). The factor scores were positively correlated with each other (fitting the view that all reflect some aspect of impulse versus control) but only moderately so (fitting the differences in content). Specifically, in the sample of 303, factor 1 correlated .36 with 2 and .34 with 3; factor 2 correlated .16 with 2 (. Carver et al., 2011). These factor scores were used in analyses previously reported for diagnosis of major depressive disorder (Carver et al., in press) and for manic temperament (Johnson et al., in press). They were also used in the analyses reported here, with factors 1 and 3 being the indicators of reactivity to emotion.

3. Results

All analyses used SPSS statistics, version 20. Alpha was set to .05, and all analyses were two-tailed. Before primary analyses,
intercorrelations of the various psychopathology indices were examined. As shown in Table 3, the four aggression scales were highly correlated with each other. Other associations among psychopathology indices were more modest.

Bivariate correlations of the three impulsivity factors with the psychopathology measures are in Table 4. As shown, both Pervasive Influence of Feelings and Feelings Trigger Action were significantly related to every psychopathology measure. Pervasive Influence of Feelings was robustly correlated with Anger, Hostility, and AUDIT, and moderately correlated with all other indices. Feelings Trigger Action was robustly correlated with Anger, and more moderately correlated with the other psychopathology indices. Lack of Follow Through was also related to many of the psychopathology indices in these bivariate tests, but it was not significantly related to either the borderline screen or suicidality.

We then tested for unique associations of the impulsivity factors, i.e., controlling for the other factors, with each psychopathology, using a separate multiple regression analysis for each psychopathology index in which all impulsivity factors were entered simultaneously as predictors (along with gender). As shown in Table 5, when controlling for the two other factors, Pervasive Influence of Feelings was uniquely related to each measure of psychopathology other than the AUDIT. Controlling for the other two factors, Feelings Trigger Action was uniquely related to each psychopathology dimension other than hostility and suicidality. In contrast, Lack of Follow through was uniquely related only to the AUDIT. Thus, both emotion-reactivity factors contributed independently to the prediction of most measures of psychopathology, but the factor reflecting distractibility without the involvement of emotions did not.

Because these analyses used factor scores, there remains at least a little ambiguity about the meaning of the feelings trigger action factor. Specifically, although the highest loadings on this factor were scales that did not refer in any way to negative feelings, the factor also includes the Urgency scale, a measure that does include some negative content. To ensure that the effects for this factor involved impulsive reactivity to positive emotions (and were not attributable to the negative content), separate analyses tested the association of the Positive Urgency measure with the psychopathology scales (again controlling for gender). Positive Urgency proved to be significantly associated with each psychopathology index (Table 6).

### 4. Discussion

These findings suggest that impulsive reactivity to emotion is correlated with a broad range of distinct psychopathological tendencies, including borderline personality traits, suicidality, anger, hostility, aggression, and anxiety. That is, the two factors Pervasive Influence of Feelings and Feelings Trigger Action both correlated with each of these forms of psychopathology. A final, more focused set of tests confirmed that the measures of psychopathology were related even to poor control over positive emotions, as measured by the Positive Urgency measure. None of these

### Table 4
Correlations of psychopathology indices with three impulsivity factors.

<table>
<thead>
<tr>
<th>Measure (N)</th>
<th>Pervasive Influence of Feelings</th>
<th>Lack of Follow-through</th>
<th>Feelings Trigger Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anger (312)</td>
<td>.45***</td>
<td>-.23**</td>
<td>.40**</td>
</tr>
<tr>
<td>Hostility (311)</td>
<td>.53***</td>
<td>-.22**</td>
<td>.22**</td>
</tr>
<tr>
<td>Physical Aggression</td>
<td>.22</td>
<td>.16</td>
<td>.29</td>
</tr>
<tr>
<td>Verbal Aggression</td>
<td>.29**</td>
<td>.15**</td>
<td>.34**</td>
</tr>
<tr>
<td>MASQ-SA (157)</td>
<td>.34**</td>
<td>.22**</td>
<td>.29**</td>
</tr>
<tr>
<td>AUDIT (312)</td>
<td>.36**</td>
<td>.29**</td>
<td>.21**</td>
</tr>
<tr>
<td>MSI-BPD (167)</td>
<td>.36**</td>
<td>.13</td>
<td>.31**</td>
</tr>
<tr>
<td>Suicidality index</td>
<td>.32**</td>
<td>.15</td>
<td>.20</td>
</tr>
</tbody>
</table>

Note. MASQ-SA=Mood and Anxiety Symptoms Questionnaire-Somatic Arousal subscale; AUDIT=Alcohol Use Disorder Identification Test; MSI-BPD=McLean Screening Instrument for Borderline Personality Disorder.

* * p < .05.
** * p < .01.
*** * p < .001.

### Table 5
Results from regression analyses predicting psychopathology indices by the Positive Urgency measure and gender.

<table>
<thead>
<tr>
<th>Measure (N)</th>
<th>Positive Urgency measure</th>
<th>Gender</th>
<th>Total R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anger (320)</td>
<td>.30</td>
<td>.56**</td>
<td>.01</td>
</tr>
<tr>
<td>Hostility (320)</td>
<td>.27</td>
<td>.49**</td>
<td>.03</td>
</tr>
<tr>
<td>Physical Aggression</td>
<td>.22</td>
<td>.40**</td>
<td>.03</td>
</tr>
<tr>
<td>Verbal Aggression</td>
<td>.23</td>
<td>.42**</td>
<td>.12</td>
</tr>
<tr>
<td>MASQ-SA (166)</td>
<td>.30</td>
<td>.39**</td>
<td>-.02</td>
</tr>
<tr>
<td>AUDIT (334)</td>
<td>.17</td>
<td>.31**</td>
<td>.07</td>
</tr>
<tr>
<td>MSI-BPD (179)</td>
<td>.30</td>
<td>.45**</td>
<td>-.08</td>
</tr>
<tr>
<td>Suicidality index</td>
<td>.23</td>
<td>.27**</td>
<td>.21</td>
</tr>
</tbody>
</table>

Note. MASQ-SA=Mood and Anxiety Symptoms Questionnaire-Somatic Arousal subscale; AUDIT=Alcohol Use Disorder Identification Test; MSI-BPD=McLean Screening Instrument for Borderline Personality Disorder.

* * p < .05.
** * p < .01.
*** * p < .001.

### Table 6
Results from regression analyses predicting psychopathology indices by three impulsivity factors and gender.

<table>
<thead>
<tr>
<th>Measure (N)</th>
<th>Pervasive Influence of Feelings (Factor 1)</th>
<th>Lack of Follow-through (Factor 2)</th>
<th>Feelings Trigger Action (Factor 3)</th>
<th>Gender</th>
<th>Total R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anger (312)</td>
<td>.35</td>
<td>6.26***</td>
<td>.05</td>
<td>.99</td>
<td>.27</td>
</tr>
<tr>
<td>Hostility (311)</td>
<td>.54</td>
<td>9.86**</td>
<td>.09</td>
<td>.99</td>
<td>.03</td>
</tr>
<tr>
<td>Physical Aggression</td>
<td>.18</td>
<td>2.93**</td>
<td>.03</td>
<td>.56</td>
<td>.21</td>
</tr>
<tr>
<td>Verbal Aggression</td>
<td>.22</td>
<td>3.64***</td>
<td>.02</td>
<td>.28</td>
<td>.25</td>
</tr>
<tr>
<td>MASQ-SA (157)</td>
<td>.26</td>
<td>3.08**</td>
<td>.10</td>
<td>1.20</td>
<td>.20</td>
</tr>
<tr>
<td>AUDIT (312)</td>
<td>.02</td>
<td>.32</td>
<td>.26</td>
<td>4.38***</td>
<td>.16</td>
</tr>
<tr>
<td>MSI-BPD (167)</td>
<td>.29</td>
<td>3.70***</td>
<td>.02</td>
<td>.20</td>
<td>.21</td>
</tr>
<tr>
<td>Suicidality index</td>
<td>.29</td>
<td>3.06**</td>
<td>.02</td>
<td>.24</td>
<td>.10</td>
</tr>
</tbody>
</table>

Note. MASQ-SA=Mood and Anxiety Symptoms Questionnaire-Somatic Arousal Subscale; AUDIT=Alcohol Use Disorder Identification Test; MSI-BPD=McLean Screening Instrument for Borderline Personality Disorder.

** * p < .01.
*** * p < .001.
findings was confounded by gender. Our findings on the importance of impulsive reactivity to emotion join with results reported separately concerning two further indicators of psychopathology. That is, emotion-reactivity factors have been found to relate to measures of manic temperament (Johnson et al., in press) and to lifetime diagnoses of major depressive disorder (Carver et al., in press). Together, findings provide support for the idea that poor control over emotion is a robust correlate of internalizing and externalizing conditions.

We also examined distinctions between these two emotion-related forms of impulsivity. In analyses controlling for both alternative factors of impulsivity, Pervasive Influence of Feelings was uniquely related to all forms of psychopathology other than alcohol problems, and Feelings Trigger Action was uniquely related to all forms of psychopathology other than hostility and suicidality. The Hostility and Suicidality scales both captured internal experiences rather than behavioral expressions. That is, Hostility items largely cover perceptions and emotions, and this sample endorsed low base rates of suicidal acts compared to suicidal ideation. Consistent with the idea that Feelings Trigger Action scale is relevant when emotionality leads to a behavioral expression of symptoms, Feelings Trigger Action robustly predicted Anger, Physical Aggression, and Verbal Aggression even after controlling for Pervasive Influence of Feelings.

Although findings suggest that emotion-relevant forms of impulsivity are of importance across syndromes, Lack of Follow Through made a unique contribution only to prediction of alcohol problems. That alcohol problems were related to non-emotion relevant forms of impulsivity fits with previous literature suggesting impairments in facets of impulsivity that are less emotion-related, such as the continuous performance test (Bjork et al., 2004). The modest bivariate association between alcohol symptoms and Pervasive Influence of Feelings suggests that to the extent these students were using alcohol, it represents sensation seeking more than self-medication to reduce distress.

There is an intriguing relationship between this set of findings as a group and results of two recent meta-analyses of linkages from broad personality traits to psychopathology (Kotov et al., 2010; Malouff et al., 2005). Both meta-analyses found a consistent association across disorders not only with neuroticism, but also with low conscientiousness. The opposite pole of conscientiousness incorporates various aspects of impulsivity. Although it is entirely possible that conscientiousness more generally represents a vulnerability to disorder, it is also possible that some facets of low conscientiousness are more relevant than others. Our findings suggest that reactivity to emotion may be one such facet.

It is important to note several limitations. This study relied entirely on self-report measures. Further research is needed using behavioral measures of impulsivity. These findings suggest that it might be most fruitful to examine impulsivity in the context of either naturally occurring or experimentally induced states of heightened emotion (Cyders et al., 2012).

This study was also limited by reliance on analog measures of psychopathology in a convenience sample. The findings indicate, though, that difficulties with emotion-relevant impulsivity can be observed even in persons with mild tendencies towards psychopathology. The profile of findings is consistent with similar observations in studies of persons diagnosed with borderline personality disorder (Whiteside et al., 2005) and alcohol use disorders (Cyders et al., 2007).

Finally, our reliance on a cross-sectional design precludes comment on causal relations. Previous longitudinal studies, though, have suggested that more general measures of impulsivity can predict the course of subsequent suicidality (Oquendo et al., 2004), substance abuse (Grané et al., 2004), bipolar disorder (Swann et al., 2009) and borderline personality disorder (Links et al., 1999). The findings reported here suggest the particular relevance of emotion-reactive forms of impulsivity to such patterns, which should be tested in future prospective research.

5. Conclusion

The pattern of results obtained here, taken together with previous reports (Carver et al., in press; Johnson et al., in press), is consistent with a view in which an impulsive response to emotion represents a vulnerability to diverse syndromes, both externalizing and internalizing. It should be quite clear that we are not proposing that this vulnerability by itself should predict particular disorders. Clearly other factors are involved, leading particular individuals to one versus another symptom profile (Carver et al., 2008; Depue and Lenzenweger, 2005; Johnson-Laird et al., 2006).

This viewpoint also has implications for intervention. It may be important to incorporate elements into diverse interventions that focus on disrupting the tendency to respond reflexively to any intense emotion state. Implementation interventions, in which a person pre-plans specific responses to emotions (Gollwitzer, 1999), can be helpful in reducing impulsive responses to emotion (Webb et al., 2012). Our findings suggest that it would be reasonable to test such intervention procedures transdiagnostically.

Conflict of interest

The authors have no conflicts of interest to report.

Contributors

All authors were engaged in designing the study and gathering data. Drs. Johnson and Carver completed initial data analyses and drafted the manuscript. Dr. Joormann provided editing and suggestions.

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