



Defeatist performance beliefs in college students: Transdiagnostic associations with symptoms and daily goal-directed behavior



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ABSTRACT

Defeatist performance beliefs are prevalent and linked to decreased motivation in people with psychological disorders. In this study, we investigated whether defeatist performance beliefs were associated with transdiagnostic psychopathology risk in people with no history of formal diagnosis and whether defeatist performance beliefs impacted engagement in daily goal-directed behavior. One hundred and two college students completed self-report measures of defeatist performance beliefs and risk for depression, mania, and psychosis. Sixty-one of these participants were randomly selected to identify a goal and complete daily surveys about their actual and expected goal progress, effort expenditure, experienced pleasure, and difficulty of goal pursuit. We found that greater defeatist performance beliefs were associated with higher risk for depression, mania, and psychosis. Using multilevel modeling, we found that greater defeatist performance beliefs predicted less goal progress, effort expenditure, and pleasure from goal pursuit. Together, these findings suggest that defeatist performance beliefs may impact goal-directed behavior in healthy people with no reported psychiatric history. Interventions targeting defeatist performance beliefs may have utility for actual goal-directed behavior in many people, regardless of psychiatric status.

1. Introduction

Defeatist performance beliefs—overgeneralized negative thoughts about one's ability to successfully perform goal-directed behavior—are present in some people with schizophrenia (e.g., Granholm et al., 2014; Grant and Beck, 2008;), depression (e.g., Beck, 2008), and bipolar disorder (e.g., Alloy et al., 2009). Another commonality across these disorders is impairments in motivation (American Psychiatric Association, 2013; Alloy et al., 2009; Campellone et al., 2016b; Rector et al., 2005), which can impact engagement in daily goal-directed behavior (e.g., Alloy and Abramson, 2010; Gard et al., 2014). Defeatist performance beliefs have also been observed in people at elevated risk for developing psychopathology (e.g., Luther et al., 2016), and have been linked to impairments in motivation (e.g., Campellone et al., 2016a). Together, these findings suggest that defeatist performance beliefs may be associated with symptoms of psychopathology in people without a formal diagnosis. However, while the link between defeatist performance beliefs and laboratory-based assessment of motivation has

been studied, it is less clear if and how defeatist performance beliefs impact daily engagement in goal-directed behavior among people with elevated symptoms of psychopathology. Thus, we investigated whether defeatist performance beliefs a) were related to symptoms of psychopathology in a sample of people with no history of psychological disorders, and b) predicted engagement in real-life daily goal-directed behavior.

1.1. Defeatist performance beliefs and psychopathology symptoms

Broadly, defeatist performance beliefs refer to negative thoughts related to carrying out a course of action. For example, although a person might have the desire to work, thoughts about not having the skills or experience to be successful might prevent that person from applying for a job. Defeatist performance beliefs were initially described by Beck and colleagues as part of a cognitive model for depression (e.g., Beck, 1979), and later schizophrenia (e.g., Rector et al., 2005). According to this model, unsuccessful goal attainment can give

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rise to dysfunctional attitudes, such as defeatist performance beliefs, which in turn lead to a decrease in motivation for future goal-related activities.

While this model identifies other dysfunctional attitudes that can impact goal-directed behavior, such as negative expectancies about social interactions (Grant and Beck, 2010), defeatist performance beliefs have been shown to be a transdiagnostic cognitive factor. In both depression and people with schizophrenia experiencing prominent negative symptoms, defeatist performance beliefs are posited to thwart engagement in goal-directed behavior (Beck, 1979; Beck and Rector, 2005). Among people with schizophrenia experiencing prominent positive symptoms, delusional thinking has been linked to the defeatist performance beliefs. For example, grandiose thinking about the ability to successfully carry out a course of action can lead to later defeatist beliefs when that action is unsuccessful (e.g., Beck and Rector, 2005). For people with bipolar disorder, increased symptoms of mania are associated with increased goal-directed behavior, setting of unrealistic goals, and overvaluation of goal attainment (e.g., Johnson, 2005; Johnson et al., 2012). As such, attempting and failing to achieve unrealistic and overvalued goals can lead to defeatist performance beliefs (e.g., Alloy et al., 2009; Lam et al., 2004). Thus, despite differences in manifestation, defeatist performance beliefs are common across these diagnoses.

Importantly, elevated defeatist performance beliefs are also found in people with elevated symptoms of psychopathology. People high in schizotypy, a set of personality traits that represent a risk for schizophrenia-spectrum disorders (e.g., Lenzenweger, 2015), report greater defeatist performance beliefs than non-schizotypy comparison groups (e.g., Luther et al., 2016). Further, greater defeatist performance beliefs among people with elevated schizotypy are associated with diminished motivation (Campellone et al., 2016a). Similarly, defeatist performance beliefs have been found in people with elevated symptoms of depression (e.g., Brown et al., 1995) and mania (e.g., Jones et al., 2006), and elevated risk for these disorders is associated with motivational impairment (Dickson et al., 2017).

1.2. Defeatist performance beliefs, motivation, and goal-directed behavior

Defeatist performance beliefs are especially important given their association with impairments in motivation (e.g., Campellone et al., 2016b; Rector et al., 2005), a common feature of schizophrenia, depression, and bipolar disorder (e.g., Whitton et al., 2015). To better understand the factors that contribute to motivational impairment, recent models (Barch and Dowd, 2010; Kring and Barch, 2014) have begun to unpack motivation into distinct, inter-related components. Model components can be broadly divided temporally into those that precede goal-directed behavior or occur during/after goal-directed behavior. Two components of motivation where this distinction has been shown to be particularly important are the experience of pleasure and effort expenditure. Recent work in affective and clinical science has parsed the experience of pleasure into consummatory (in-the-moment experience) and anticipatory, or expected pleasure components (e.g., Kring and Caponigro, 2010; Kring and Elis, 2013). Similarly, studies of effort expenditure have distinguished effort-based decision-making, or choosing a course of action based on expected effort expenditure (e.g., Treadway et al., 2009), and the actual expenditure of effort to carry out a behavior.

Simultaneous investigation of both expected and actual components of pleasure and effort expenditure can provide insight into how these temporally distinct processes work together and how defeatist performance beliefs might impact goal-directed behavior. It may be the case that defeatist performance beliefs impact goal-directed behavior by influencing expectations about aspects of motivation, such as overestimating the effort required or underestimating anticipated pleasure. Alternatively, it may be the case that defeatist performance beliefs influence motivation in the moment, contributing to dampening the

experience of pleasure or inflating the perceived effort required to carry out a goal-directed behavior. Defeatist performance beliefs may also contribute to discrepancies between expected and actual experience across aspects of motivation, or even the kind of goals that people set in daily life. By investigating the associations between defeatist performance beliefs and ratings of expected and actual goal-directed behavior in daily life, we hope to elucidate how defeatist performance beliefs may impact specific components of motivation.

1.3. Present study

In this study, we first investigated the extent to which defeatist performance beliefs were related to transdiagnostic symptoms of psychopathology. We then tested the prospective impact of defeatist performance beliefs on momentary reports of goal-directed behavior. More specifically, we tested two hypotheses: 1) in line with work showing that defeatist performance beliefs are associated with elevated symptoms of psychopathology (Brown et al., 1995; Jones et al., 2006; Luther et al., 2016), we predicted that greater defeatist performance beliefs would be associated with greater self-reported depression, hypomania, and schizotypy; 2) given that defeatist performance beliefs are associated with impairments in motivation (e.g., Campellone et al., 2016b; Green et al., 2012), we predicted that greater defeatist performance beliefs would be associated with impairments in goal-directed behavior in daily life. In line with recent models (e.g., Barch and Dowd, 2010; Kring and Barch, 2014), we examined the relationships between defeatist performance beliefs and components of motivation, including expected and actual pleasure and effort expenditure.

2. Methods

One hundred and two participants were recruited from the Experimental Research Laboratory participant pool at large public university. This pool consisted of both current and former students as well as employees. Participants in this study were between the ages of 18 and 27 and were required to have a cell phone or mobile device that was capable of receiving emails and text messages.

Participants completed a demographic questionnaire that included age, education, racial background, and socioeconomic status of the primary household that they grew up in (Hollingshead, 1975). Participants were asked whether they had a history of depression, bipolar disorder, or schizophrenia. Seven participants endorsed a history of depression, 2 participants endorsed a history of bipolar disorder, and no participants endorsed a history of schizophrenia. All study findings remained the same regardless of whether these participants were included in the analyses, so these participants were retained. The university Institutional Review Board approved all study procedures and participants were compensated \$15 per study hour for the laboratory assessment.

2.1. Laboratory assessment

2.1.1. Self-report questionnaires

After providing informed consent, participants completed a battery of self-report questionnaires using Qualtrics Insight Platform (Provo, UT). To assess psychopathology symptoms, participants completed the Beck Depression Inventory, Second Edition (BDI; Beck et al., 1996), Hypomanic Personality Scale (HPS; Eckblad and Chapman, 1986), and Schizotypal Personality Questionnaire-Brief (SPQ-BR; Cohen et al., 2010). Positive and negative schizotypy subscale totals were computed. To assess endorsement of defeatist performance beliefs, participants also completed the 15-item defeatist performance beliefs subscale (Cane et al., 1986) of the Dysfunctional Attitudes Scale (Weissman and Beck, 1978). All self-report measures demonstrated strong internal consistency (α 's > 0.83).

2.1.2. Goal setting and rating

Sixty-one of the 102 participants were randomly selected to take part in daily reporting on goal progress. Selected participants provided informed consent and identified a goal that satisfied the following criteria: 1) something that can be achieved or nearly achieved in 5 days, 2) something that you can work on every day for the next 5 days, and 3) something that you can track your progress towards every day for the next 5 days.

After selecting a goal that satisfied these criteria, participants made predictions about their confidence in achieving the goal, difficulty working towards the goal, importance of achieving the goal, pleasure experienced while working towards the goal, how social the goal would be, and different motivations behind the goal (external factors, sense of mastery). We also asked participants the extent to which their goal was being pursued freely versus out of a sense of obligation. Ratings were made using a 1 (not at all) to 7 (very much) Likert Scale. See Supplemental Materials for relationships between defeatist performance beliefs and the goal content ratings described above.

2.2. Daily assessment

Prior to leaving the laboratory session, participants who were randomly selected to take part in the daily assessment portion provided their telephone number and were told to expect a survey sent to them via email each night for 5 consecutive nights. A member of the research team sent each participant an email that contained a standardized script and a link to a Qualtrics survey between 6:30 and 7:30 PM each night for 5 consecutive nights.

Daily surveys consisted of two sets of four questions about the goal that participants set during the laboratory session. In the first set, participants rated their *actual* goal-directed behavior over the course of the day. Specifically, participants rated how much **progress** they had made toward their goal that day, how much **effort** they expended during goal pursuit, **perceived difficulty** of goal pursuit, and **experienced pleasure** during goal pursuit. In the second set, participants rated their *expected* goal progress, effort, difficulty, and pleasure during goal pursuit for the next day. Both actual and expected ratings were made on a 0 (not at all) to 6 (very much) scale.

For every successfully completed survey, participants had their name entered into a drawing for a \$25 gift card. Lottery drawings were conducted at the end of both semesters that the study was being conducted.

2.3. Statistical analysis plan

Prior to analyses, we examined the distributions of our variables with Shapiro-Wilk tests. We applied appropriate transformations for any variable with a non-normal distribution. To address our first hypothesis regarding the relationship between defeatist performance beliefs and symptoms of psychopathology, we computed zero-order correlations between reported defeatist performance beliefs and depression (BDI), hypomania (HPS), and positive and negative schizotypy (SPQ-BR).

To address our second hypothesis, we used multilevel modeling (MLM) to investigate whether defeatist performance beliefs predicted daily goal progress and ratings (expected and actual) of effort, difficulty, and pleasure. MLM can accommodate the nesting of observations (goal ratings) within a person. Our first step was to conduct an unconditional random intercept model for each daily goal rating to determine if the use of MLM was appropriate. We then conducted separate models with defeatist performance beliefs predicting each daily goal rating (expected and actual goal progress, effort, pleasure, and difficulty). Next, data were lag coded so that we could investigate how expected goal-directed behavior and defeatist performance beliefs predicted actual daily goal-directed behavior. Actual ratings (outcome) and expected ratings (covariate) were entered at Level 1. At Level 2, we

Table 1
Demographic and clinical variables.

	(n = 102) Mean (SD)
Age	19.78 (2.1)
Education (years)	13.31 (1.4)
Childhood SES	4.39 (1.2)
Racial Background (%)	
White	22.3%
Asian	55.3%
Hispanic	13.6%
Black	1.9%
Other	5.8%
% Male	41.0%
Defeatist Performance Beliefs	50.23 (14.3)
Beck Depression Inventory (BDI)	12.43 (7.4)
Hypomanic Personality Scale (HPS)	24.17 (3.2)
Schizotypal Personality Scale	
Positive	33.07 (10.1)
Negative	27.00 (8.3)

entered defeatist performance beliefs and the cross-level interaction between defeatist performance beliefs and expected goal ratings. The cross-level interaction between defeatist performance beliefs and expected ratings allowed us to investigate whether the relationship between expected and actual goal-directed behavior was moderated by defeatist performance beliefs. In other words, we could examine whether discrepancies between actual and expected goal-directed behavior were driven by the degree of defeatist performance beliefs endorsement. MLM analyses were conducted using HLM software Version 7 (Raudenbush et al., 2013).

3. Results

Shapiro-Wilk tests indicated that all dependent variables were normally distributed. Participant age, education, gender, and childhood SES were not associated with any of our dependent variables. Further, there were no differences in any demographic or clinical variables for participants that were and were not randomized to take part in daily goal reporting (see Table 1).

Defeatist performance beliefs and Psychopathology Symptoms

We examined the associations between defeatist performance beliefs and psychopathology symptoms. As shown in Table 2, we found that greater self-reported defeatist performance beliefs were associated with greater self-reported depression, hypomania, and both positive and negative schizotypy. Thus, consistent with our first hypothesis, greater defeatist performance beliefs were associated with increased transdiagnostic symptoms of psychopathology.

3.1. Defeatist performance beliefs and daily goal-directed behavior

Of the 61 participants that were randomly selected for daily reporting, 5 participants completed fewer than 60% (< 3 out of 5) daily

Table 2
Correlations between self-reported defeatist performance beliefs (DB), depression (BDI), hypomania (HPS), and positive (SPQ-P) and negative (SPQ-N) schizotypal traits (n = 102).

	DB	BDI	HPS	SPQ-P	SPQ-N
DB	–				
BDI	0.45***	–			
HPS	0.20*	0.21*	–		
SPQ-P	0.29**	0.31**	0.32**	–	
SPQ-N	0.30**	0.43***	–0.04	0.45***	–

* $p < 0.05$,

** $p < 0.01$,

*** $p < 0.001$

Table 3

Multi-level models of defeatist performance beliefs (mean centered) predicting daily ratings of prospective and actual goal progress, effort, pleasure and difficulty.

	B	t	p	Cohen's d
Predicted progress	−0.004	−0.30	0.77	0.05
Predicted effort	0.01	0.86	0.39	0.15
Predicted pleasure	−0.09	−0.68	0.50	0.12
Predicted difficulty	0.002	0.21	0.83	0.03
Actual progress	−0.03	−2.26	0.03	0.30
Actual effort	−0.02	−2.22	0.03	0.30
Actual pleasure	−0.03	−2.79	0.01	0.38
Actual difficulty	−0.002	−0.26	0.79	0.04

surveys; these participants were excluded from analyses. Therefore, MLM analyses include a final sample of 56 participants. To address our second hypothesis, we examined whether defeatist performance beliefs predicted daily ratings of actual progress, difficulty, effort, and pleasure experienced during goal pursuit. Random intercept models for each daily goal rating indicated significant variance in daily goal ratings, suggesting that MLM was appropriate. We then conducted MLM with defeatist performance beliefs entered at Level 2 as the only predictor of actual or expected goal-directed behavior. With respect to actual behavior, defeatist performance beliefs significantly predicted goal progress and experienced pleasure, as well as effort at a trend level, but not difficulty. For expected goal behavior, defeatist performance beliefs did not significantly predict expected progress, effort, difficulty or pleasure (see Table 3 for MLM results). Thus, defeatist performance beliefs were related to evaluations of actual daily goal engagement, but they were not related to expectations about a subsequent day's goal engagement.

To examine whether defeatist performance beliefs moderated the relationship between actual and expected ratings, we conducted separate models for each daily goal rating with actual and expected ratings entered at Level 1 and defeatist performance beliefs and the cross-level interaction between defeatist performance beliefs and expected rating entered at Level 2. We found that greater reported defeatist performance beliefs predicted lower actual goal progress, lower actual effort in goal pursuit, and lower actual pleasure experienced in goal pursuit. Defeatist performance beliefs did not predict actual difficulty in goal pursuit (see Table 3). In the cross-level interactions between defeatist performance beliefs and expected ratings, we found that defeatist performance beliefs and expected difficulty significantly interacted to predict greater actual difficulty in goal pursuit, $t(55) = 3.87$, $p < 0.004$, $d = 0.52$. That is, the relationship between greater ratings of expected difficulty and greater ratings of actual difficulty was stronger for participants reporting greater defeatist performance beliefs (see Fig. 1). All other cross-level interactions were not significant ($p > 0.17$).

4. Discussion

Defeatist performance beliefs are observed across several psychological disorders and among those with elevated symptoms of psychological disorders. Defeatist performance beliefs are also associated with impairments in motivation. In this study, we found that greater self-reported defeatist performance beliefs were associated with greater transdiagnostic symptoms of psychopathology. Further, greater defeatist performance beliefs predicted less actual goal progress as well as less effort expended and pleasure experienced during daily life goal pursuit. While defeatist performance beliefs did not predict ratings of difficulty during goal pursuit, defeatist performance beliefs moderated the relationship between expected and actual difficulty during goal pursuit; that is, greater defeatist performance beliefs predicted a closer association between actual and expected difficulty ratings. Interestingly, defeatist performance beliefs did not predict expected

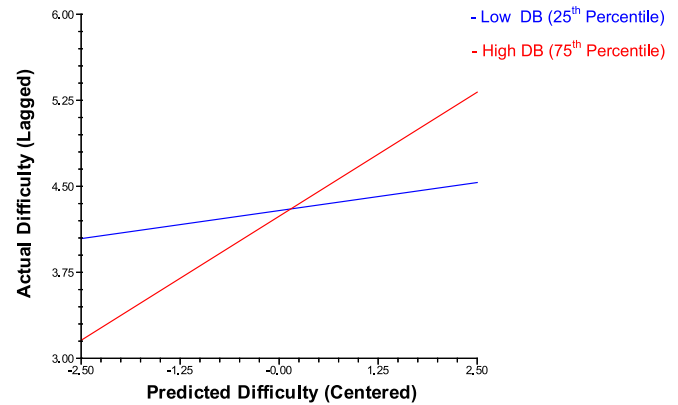


Fig. 1. Cross-level interaction between self-reported defeatist performance beliefs (DB) and ratings of expected difficulty predicting ratings of actual difficulty in goal pursuit. Greater ratings of expected difficulty predicted ratings of actual difficulty, but only for participants reporting greater defeatist performance beliefs.

progress, difficulty, effort, or pleasure components of goal-directed behavior. By parsing motivated behavior into actual and expected components, our findings reveal that defeatist performance beliefs are related to actual goal pursuit in daily life rather than expectations about goal pursuit.

In line with a broader cognitive model of psychopathology (e.g., Beck and Haigh, 2014), and in support of our hypothesis, we found that elevated defeatist performance beliefs were associated with greater reported symptoms of depression, hypomania, and schizotypy. This is consistent with previous findings showing that defeatist performance beliefs are associated with elevated risk for psychopathology in sub-clinical populations (e.g., Luther et al., 2016) and suggests that defeatist performance beliefs may represent a transdiagnostic cognitive style risk factor. Given the relatively weak relationship between defeatist performance beliefs and hypomania in particular, it will be important for future studies to replicate these findings.

Our findings are in line with a focus on transdiagnostic factors espoused by NIH's Research Domain Criteria (RDoC; Insel et al., 2010), which emphasizes dimensional approaches to identifying causal and maintaining factors in psychopathology. Though not formally listed, defeatist performance beliefs appear to fit within both the Expectancy/Reward Prediction subconstruct of the Positive Valence Systems domain, which focuses on factors that predict the possibility of a reward, or more broadly within the Negative Valence System, which focuses on factors that are associated with impaired motivation. Our findings provide initial support for defeatist performance beliefs as a transdiagnostic factor associated with symptoms of psychopathology and await replication in future studies.

Our findings build upon previous work showing a link between defeatist performance beliefs and goal-directed behavior by showing that defeatist performance beliefs may impact daily goal-directed behavior. Specifically, by investigating the temporal nature of goal-directed behavior, we found that greater defeatist performance beliefs predicted lower ratings of actual, but not expected, goal progress, pleasure, and effort. These findings suggest that defeatist performance beliefs may not influence people's expectations regarding future goal-directed behavior as much as how they appraise their experience of current (actual) goal-directed behavior. As such, interventions to increase goal-directed behavior in someone with elevated defeatist performance beliefs may benefit from including a focus on how these beliefs are linked with the process and assessment of goal pursuit. However, given that this is the first study to examine the impact of defeatist performance beliefs on goal-directed behavior in daily life, future studies should seek to replicate our findings regarding the distinction between expected and actual goal ratings.

We also found that greater defeatist performance beliefs moderated the relationship between actual and expected ratings of difficulty in goal pursuit. In other words, people reporting greater defeatist performance beliefs had a smaller discrepancy between their predicted and actual goal pursuit difficulty than people reporting lower defeatist performance beliefs. While speculative, this finding suggests that for people reporting greater defeatist performance beliefs, expectations of greater difficulty may color the experience of goal pursuit more than it does for people reporting lower defeatist performance beliefs. That is, greater expectations of not achieving a goal (e.g., “I can’t finish this race”) may shape the actual experience of how difficult that behavior was perceived to be (e.g., “That race was incredibly hard to run”), which could influence the willingness to engage in that behavior in the future. Discrepancies between expected and actual experience can be adaptive for goal-directed behavior. For example, the overestimation of anticipated pleasure from a course of action (relative to the actual experience of pleasure) has been shown to be associated with a greater likelihood of engaging in that behavior (e.g., Greitemeyer, 2009; Mellers and McGraw, 2001; Miloyan and Suddendorf, 2015). Our findings regarding rating the difficulty of daily goal pursuit suggest that underestimating goal difficulty (relative to actual goal difficulty) may be adaptive. However, defeatist performance beliefs may undermine this adaptation by reducing the discrepancy between expected and actual difficulty, and this in turn may contribute to less goal-directed behavior.

4.1. Broader implications

Taken together, our findings have implications for understanding the relationship between defeatist performance beliefs and psychopathology and how these beliefs may impact daily engagement in real life goal-directed behavior. Our findings suggest that defeatist performance beliefs may pose a barrier to goal-directed behavior for people with symptoms but no formal diagnosis. Indeed, the prevalence of subthreshold, yet clinically relevant, symptoms of depression (18–20%; Saluja et al., 2004; Shim et al., 2011), psychosis (5%; van Os et al., 2009), and hypomania (11%; Angst et al., 2003) in the general population are higher than the prevalence rates of these formal diagnoses. Thus, while we know that defeatist performance beliefs impact goal-directed behavior in people with various diagnoses, our findings suggest that a larger proportion of the population with sub-threshold symptoms may still experience defeatist performance beliefs and associated impairments in daily goal-directed behavior.

Although tentative, our findings suggest that decreasing defeatist performance beliefs may help increase goal pursuit and attainment. For people with psychopathology, the most common approach to decreasing defeatist performance beliefs is cognitive therapy (e.g., Beck, 1979; Granholm et al., 2013, 2014); however, for people with no history of psychopathology who may not experience the same level of defeatist performance beliefs, a different approach may prove to be effective. For example, unpacking goal progress into small steps with clear objective success criteria may help reduce the perception of making less progress among people with elevated defeatist performance beliefs. Another possibility could be the use of online coaching delivered via mobile application or web-based platform, which could provide “just in time” assistance needed to overcome defeatist performance beliefs during goal pursuit. Future studies should investigate the impact of challenging defeatist performance beliefs in people with no history of psychopathology.

4.2. Limitations

As with any study, it is important to acknowledge limitations. First, while our sample was randomly selected from a large, socioeconomically diverse participant pool, this pool was primarily composed of undergraduate students. As such, it is not clear whether these

findings also reflect the relationships between defeatist performance beliefs, psychopathology risk, and goal-directed behavior in non-college student population. Thus, it will be important to replicate these findings in a broader sample. Second, to assess for past history of psychopathology, participants were asked to report whether they had ever been diagnosed with various mental health problems. While we have no reason to question the authenticity of participants’ responding, more formal diagnostic interviews such as the Structured Clinical Interview for DSM-5 (SCID-5; First et al., 2015) can confirm such reports. Third, defeatist performance beliefs are just one example of the dysfunctional attitudes posited to be related to motivation and goal-directed behavior. Future studies should examine whether other dysfunctional attitudes, such as negative expectancies about social interactions (e.g., Beck and Grant, 2008), are associated with transdiagnostic symptoms of psychopathology.

Finally, to assess actual and expected goal-directed behavior, participants completed a brief survey each evening of the study. Our decision to collect surveys at a single time point was to reduce participant burden and minimize any effect of the survey on goal-directed behavior. However, this approach relied on participants’ accurate recall of their progress, pleasure, effort, and difficulty experienced over the course of the day, and thus may have been subject to some recall bias. Still, collecting once daily rather than once weekly minimized such possible bias. Future studies could nevertheless include more frequent assessment to examine the temporal relationships between expected and actual goal-directed behavior over the course of each day.

In summary, we found that greater defeatist performance beliefs were associated with greater transdiagnostic symptoms of psychopathology. We also found that greater defeatist performance beliefs predicted actual goal progress, pleasure, and effort and that greater defeatist performance beliefs were associated with a smaller discrepancy between expected and actual difficulty. Taken together, our findings extend our understanding of defeatist performance beliefs by showing how these beliefs impact daily goal directed-behavior in people without a history of psychopathology.

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Contributors

TRC and AHS designed the study and collected the data. TRC, AHS, and DF conducted the data analysis. TRC wrote the manuscript and AHS, DF, and AMK provided feedback on previous drafts.

Conflicts of interest

None of the authors have any conflicts to disclose.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.psychres.2018.12.045](https://doi.org/10.1016/j.psychres.2018.12.045).

References

- Alloy, L.B., Abramson, L.Y., Walshaw, P.D., Gerstein, R.K., Keyser, J.D., Whitehouse, W.G., Urošević, S., Nusslock, R., Hogan, M.E., Harmon-Jones, E., 2009. Behavioral approach system (BAS)-relevant cognitive styles and bipolar spectrum disorders:

- Concurrent and prospective associations. *J. Abnorm. Psychol.* 118, 459–471.
- Alloy, L.B., Abramson, L.Y., 2010. The role of the behavioral approach system (BAS) in bipolar spectrum disorders. *Curr. Dir. Psychol. Sci.* 19, 189–194.
- American Psychiatric Association, 2013. *Diagnostic and Statistical Manual of Mental Disorders* (Fifth ed.). American Psychiatric Publishing, Arlington, VA.
- Angst, J., Gamma, A., Benazzi, F., Ajdacic, V., Eich, D., Rössler, W., 2003. Toward a re- definition of subthreshold bipolarity: epidemiology and proposed criteria for bipolar- II, minor bipolar disorders and hypomania. *J. Affect. Disord.* 73, 133–146.
- Barch, D.M., Dowd, E.C., 2010. Goal representations and motivational drive in schizo- phrenia: the role of prefrontal-striatal interactions. *Schizophr. Bull.* 36, 919–934.
- Cognitive Therapy of Depression, 1979. In: Beck, A.T. (Ed.), *Cognitive Therapy of Depression*. Guilford press.
- Beck, A.T., 2008. The evolution of the cognitive model of depression and its neurobi- ological correlates. *Am. J. Psych.* 165, 969–977.
- Beck, A.T., Haigh, E.A., 2014. Advances in cognitive theory and therapy: the generic cognitive model. *Ann. Rev. Clin. Psychol.* 10, 1–24.
- Beck, A.T., Steer, R.A., Brown, G.K., 1996. Beck depression inventory-II. *San Antonio* 78 (2), 490–498.
- Brown, G.P., Hammen, C.L., Craske, M.G., Wickens, T.D., 1995. Dimensions of dysfunc- tional attitudes as vulnerabilities to depressive symptoms. *J. Abnorm. Psychol.* 104, 431–435.
- Campellone, T.R., Elis, O., Mote, J., Sanchez, A.H., Kring, A.M., 2016a. Negative symp- toms in psychometrically defined schizotypy: the role of depressive symptoms. *Psych. Res.* 240, 181–186.
- Campellone, T.R., Sanchez, A.H., Kring, A.M., 2016b. Defeatist performance beliefs, ne- gative symptoms, and functional outcome in schizophrenia: a meta-analytic review. *Schizophr. Bull.* 42, 1343–1352.
- Cane, D.B., Olinger, L.J., Gotlib, I.H., Kuiper, N.A., 1986. Factor structure of the dys- functional attitude scale in a student population. *J. Clin. Psychol.* 42, 307–309.
- Cohen, A.S., Matthews, R.A., Najolia, G.M., Brown, L.A., 2010. Toward a more psycho- metrically sound brief measure of schizotypal traits: introducing the SPQ-brief re- vised. *J. Pers. Disord.* 24, 516–537.
- Dickson, J.M., Johnson, S., Huntley, C.D., Peckham, A., Taylor, P.J., 2017. An integrative study of motivation and goal regulation processes in subclinical anxiety, depression and hypomania. *Psych. Res.* 256, 6–12.
- Eckblad, M., Chapman, L.J., 1986. Development and validation of a scale for hypomanic personality. *J. Abnorm. Psychol.* 95, 214–222.
- First, M.B., Williams, J.B.W., Karg, R.S., Spitzer, R.L., 2015. *Structured Clinical Interview For DSM-5—Research Version (SCID-5 For DSM-5, Research Version; SCID-5-RV)*. American Psychiatric Association, Arlington, VA.
- Gard, D.E., Sanchez, A.H., Cooper, K., Fisher, M., Garrett, C., Vinogradov, S., 2014. Do people with schizophrenia have difficulty anticipating pleasure, engaging in effortful behavior, or both? *J. Abnorm. Psychol.* 123, 771–782.
- Granholt, E., Holden, J., Link, P.C., McQuaid, J.R., Jeste, D.V., 2013. Randomized controlled trial of cognitive behavioral social skills training for older consumers with schizophrenia: defeatist performance attitudes and functional outcome. *Am. J. Ger. Psych.* 21, 251–262.
- Granholt, E., Holden, J., Link, P.C., McQuaid, J.R., 2014. Randomized clinical trial of cognitive behavioral social skills training for schizophrenia: improvement in func- tioning and experiential negative symptoms. *J. Consult. Clin. Psychol.* 82, 1173–1185.
- Grant, P.M., Beck, A.T., 2008. Defeatist beliefs as a mediator of cognitive impairment, negative symptoms, and functioning in schizophrenia. *Schizophr. Bull.* 35, 798–806.
- Grant, P.M., Beck, A.T., 2010. Asocial beliefs as predictors of asocial behavior in schi- zophrenia. *Psych. Res.* 177, 65–70.
- Green, M.F., Helleman, G., Horan, W.P., Lee, J., Wynn, J.K., 2012. From perception to functional outcome in schizophrenia: modeling the role of ability and motivation. *Arch. Gen. Psych.* 69, 1216–1224.
- Greitemeyer, T., 2009. The effect of anticipated affect on persistence and performance. *Pers. Soc. Psychol. Bull.* 35, 172–186.
- Hollingshead, A.A., 1975. *Four-factor Index of Social Status*. Unpublished manuscript, Yale University, New Haven, CT.
- Insel, T., Cuthbert, B., Garvey, M., Heinssen, R., Pine, D.S., Quinn, K., Sanislow, C., Wang, P., 2010. Research domain criteria (RDoC): toward a new classification framework for research on mental disorders. *Am. J. Psych.* 167, 748–751.
- Johnson, S.L., 2005. Mania and dysregulation in goal pursuit: a review. *Clin. Psychol. Rev.* 25, 241–262.
- Johnson, S.L., Fulford, D., Carver, C.S., 2012. The double-edged sword of goal engage- ment: consequences of goal pursuit in bipolar disorder. *Clin. Psychol. Psychotherapy* 19, 352–362.
- Jones, S., Mansell, W., Waller, L., 2006. Appraisal of hypomania-relevant experiences: development of a questionnaire to assess positive self-dispositional appraisals in bi- polar and behavioural high risk samples. *J. Affect. Disord.* 93, 19–28.
- Kring, A.M., Barch, D.M., 2014. The motivation and pleasure dimension of negative symptoms: neural substrates and behavioral outputs. *Euro Neuropsychopharm.* 24, 725–736.
- Kring, A.M., Caponigro, J.M., 2010. Emotion in schizophrenia: where feeling meets thinking. *Curr. Dir. Psychol. Sci.* 19, 255–259.
- Kring, A.M., Elis, O., 2013. Emotion deficits in people with schizophrenia. *Ann. Rev. Clin. Psychol.* 9, 409–433.
- Lam, D., Wright, K., Smith, N., 2004. Dysfunctional assumptions in bipolar disorder. *J. Affect. Disord.* 79, 193–199.
- Lenzenweger, M.F., 2015. Thinking clearly about schizotypy: Hewing to the schizo- phrenia liability core, considering interesting tangents, and avoiding conceptual quicksand. *Schizophr. Bull.* 41, S483–S491.
- Luther, L., Salyers, M.P., Firmin, R.L., Marggraf, M.P., Davis, B., Minor, K.S., 2016. Additional support for the cognitive model of schizophrenia: evidence of elevated defeatist beliefs in schizotypy. *Compr. Psych.* 68, 40–47.
- Mellers, B.A., McGraw, A.P., 2001. Anticipated emotions as guides to choice. *Curr. Dir. Psychol. Sci.* 10, 210–214.
- Miloyan, B., Suddendorf, T., 2015. Feelings of the future. *Trends Cognit. Sci.* 19, 196–200.
- Raudenbush, S., Bryk, A., Congdon, R., 2013. *HLM 7.01 For Windows* [Hierarchical Linear and Nonlinear Modeling Software]. Multivariate Software, Los Angeles.
- Rector, N.A., Beck, A.T., Stolar, N., 2005. The negative symptoms of schizophrenia: a cognitive perspective. *Can. J. Psych.* 50, 247–257.
- Saluja, G., Iachan, R., Scheidt, P.C., Overpeck, M.D., Sun, W., Giedd, J.N., 2004. Prevalence of and risk factors for depressive symptoms among young adolescents. *Arch. Pediatr. Adol. Med.* 158, 760–765.
- Shim, R.S., Baltrus, P., Ye, J., Rust, G., 2011. Prevalence, treatment, and control of de- pressive symptoms in the United States: results from the National Health and Nutrition Examination Survey (NHANES), 2005–2008. *J. Am. Board Fam. Med.* 24, 33–38.
- Treadway, M.T., Buckholtz, J.W., Schwartzman, A.N., Lambert, W.E., Zald, D.H., 2009. Worth the ‘‘Effort’’? The effort expenditure for rewards task as an objective measure of motivation and anhedonia. *PLoS one* 4 (8), e6598.
- Van Os, J., Linscott, R.J., Myin-Germeys, I., Delespaul, P., Krabbendam, L., 2009. A systematic review and meta-analysis of the psychosis continuum: evidence for a psychosis proneness–persistence–impairment model of psychotic disorder. *Psychol. Med.* 39, 179–195.
- Weissman, A.N., Beck, A.T., 1978. Development and validation of the dysfunctional atti- tude scale: a preliminary investigation. In: Paper Presented at the Annual Meeting of the American Educational Research Association. Toronto, Canada.
- Whitton, A.E., Treadway, M.T., Pizzagalli, D.A., 2015. Reward processing dysfunction in major depression, bipolar disorder and schizophrenia. *Curr. Opin. Psych.* 28, 7–12.