

The grass is not as green as you think: Affect evaluation in people with internalizing disorders



Renee J. Thompson^{a,*}, Katharina Kircanski^b, Ian H. Gotlib^b

^a Washington University in St. Louis, United States

^b Stanford University, United States

ARTICLE INFO

Article history:

Received 28 March 2016

Received in revised form

31 May 2016

Accepted 3 June 2016

Available online 4 June 2016

Keywords:

Emotion

Depression

Affective disorders

Generalized anxiety disorder

Affect evaluation

ABSTRACT

Background: Affect evaluation — how people evaluate their emotion experiences — has important implications for mental health.

Methods: We examined how 70 adults diagnosed with Major Depressive Disorder and/or Generalized Anxiety Disorder or no psychiatric disorders (control group) believe they should feel in the moment (should affect). We repeatedly assessed participants' current affect and should affect over one week using experience sampling. To examine the psychometric properties of should affect, participants rated their level of rumination at each survey and completed trait measures of brooding and ideal affect at the lab.

Results and conclusions: Independent of group status, participants reported that they should be feeling more positive affect and less negative affect. Even after accounting for mean affect, the clinical groups' reports were generally more extreme than were those of the control group. We documented good convergent and discriminant validity of should affect. Finally, we describe clinical implications and directions for future research.

© 2016 Elsevier B.V. All rights reserved.

People hold beliefs about, and goals for, themselves and their emotions. For example, self-discrepancy theory (Higgins, 1987) posits that individuals differ in their representations of their self-domains (e.g., ought self). People also have emotional scripts and goals that differ as a function of context (e.g., Koopmann-Holm and Tsai, 2014; Tamir et al., 2008). For example, how do you think you should feel when you are on a date with your romantic partner? Or when you receive a promotion at work? This study focuses on people's evaluations of their state emotional experiences, or how individuals think they should feel in the moment (should affect).

Should affect is an important component of emotional experience; these affect evaluations inform people about whether they should increase or decrease their affect and provide feedback to shape future experiences. We posit that an individual's levels of should positive affect (PA) and should negative affect (NA) are dynamic, varying as a function of the individual's current context. Further, although state PA and NA also vary over time, we do not expect that people's levels of state affect will be strongly associated with should affect. In other words, we do not expect that these affective experiences will always be coupled. Nevertheless,

given that people generally want to feel good (e.g., Larsen, 2000), we expect that most people will report that they should feel more PA (i.e., more should PA) and less NA (i.e., less should NA). We hypothesize that individuals, such as those with internalizing disorders, who are characterized by aberrant emotional experience, including difficulties with emotion regulation, will have more extreme evaluations of their emotional experiences than will people who do not experience these difficulties. More specifically, we expect that people with Major Depressive Disorder (MDD) and/or Generalized Anxiety Disorder (GAD) will have higher should PA and lower should NA than will healthy controls.

To examine these hypotheses, we recruited participants diagnosed with MDD, GAD, and co-occurring MDD and GAD (i.e., MDD-GAD), as well as a healthy control group (CTL). The diagnostic criteria for MDD and GAD include the experience of high levels of negative affect (e.g., high negative mood in MDD; high worry in GAD); the diagnostic criteria for MDD also include experiencing low levels of PA (i.e., loss of interest or pleasure; American Psychiatric Association, 2013). To be diagnosed with MDD, people must report a marked change in these emotional experiences. To the extent that people with MDD and/or GAD have insight into these changes, they could think that they should feel better, which is adaptive as it could motivate them to make changes or seek treatment.

We hypothesize two reasons that may drive the expected group differences in should affect. First, we think that people with MDD

* Correspondence to: Washington University in St. Louis, Department of Psychology, 1 Brookings Drive, Campus Box 1125, St. Louis, MO 63130, United States.
E-mail address: reneejthompson@gmail.com (R.J. Thompson).

and/or GAD are implicitly comparing their emotional experiences to those of “other people” (i.e., imagined others who have better psychological functioning, or a healthier version of the participant's self). We think that individuals in the clinical groups hold beliefs about the emotional experiences of “other people” that do not reflect normative emotional experiences, leading them to think that they should be feeling *much* better. In effect, they are miscalculating how others feel and how they, themselves, should be feeling. In other words, we do not think differences in should affect will be driven by group differences in levels of mean PA and NA. We expect that even after adjusting for mean affect, individuals with MDD and/or GAD will have more extreme should affect than the CTL group. Importantly, these negative evaluations of their emotional experience are consistent with findings that people with MDD are self-critical (e.g., Enns and Cox, 1999; Luyten et al., 2007).

A second reason why we theorize that levels of should affect will differ between healthy controls and those with MDD and/or GAD involves perfectionism. More extreme values of should affect in clinical groups is consistent with the formulation that people diagnosed with MDD and GAD hold higher emotional standards or goals for what they think they should be feeling than do healthy controls. Investigators have linked perfectionism to both GAD (e.g., Handley et al., 2014) and MDD (Egan et al., 2011). Although research on perfectionism does not include goals about emotions, we think it may generalize to this construct.

Finally, should affect is conceptually related to ideal affect and rumination. Ideal affect has been operationalized as a trait, reflecting the extent to which people would ideally like to experience low- and high-arousal PA and NA (e.g., Tsai, 2007). Although should affect likely has a stable trait component, we contend that it is distinct from the construct of *ideal affect*. This is consistent with Tsai et al. (2006), who distinguished empirically between reports of how people would ideally like to feel and how they “ought” to feel. Although we did not assess state ideal affect, we posit that if should and ideal affect were examined in state form over time, should affect would be more dynamic and variable (i.e., more within-person variance). In other words, we expect that state should affect would vary more as a function of an individual's current context than would state ideal affect.

Should affect shares features with rumination; both constructs focus on the self (Nolen-Hoeksema et al., 2008; Thomsen, 2006) and include negative and repetitive thinking. We expect that trait rumination is significantly associated with should NA. More specifically, we think that higher levels of trait rumination will be inversely associated with more extreme should NA (i.e., thinking one's NA should be even lower). We examined the associations between should affect and state rumination to demonstrate that they are unique constructs.

Using experience sampling, we surveyed participants with a handheld device randomly and repeatedly over one week. We assessed how participants felt in the moment (state affect) and how they thought they should be feeling in the moment (should affect). We expected that both the clinical and CTL groups would report wanting to feel better (i.e., more should PA, less should NA). We also predicted that compared with the CTL group, the clinical groups would report higher should PA and lower should NA, and we did not expect these differences to be explained by group differences in mean affect. Finally, to demonstrate the psychometric properties of should affect, we assessed trait ideal affect and rumination and state rumination.

1. Method

1.1. Participants and procedure

We recruited 70 women between the ages of 18 and 50 through online advertisements and at local psychiatric clinics. We restricted our sample to women both to strengthen statistical power and because MDD, GAD, and their co-occurrence are twice as prevalent in women as in men (Kendler et al., 2007). Additional demographic characteristics by clinical group are presented in Table 1.

To determine eligibility, participants completed a diagnostic interview for current and past mental health, the *Structured Clinical Interview for DSM-IV Axis I Disorders* (First et al., 2001), which was administered by trained interviewers. Participants in the MDD group (n=16) and GAD group (n=15) met diagnostic criteria for the respective disorder but not GAD and MDD, respectively, in the past 24 months. Participants in the co-occurring MDD-GAD group (n=20) met diagnostic criteria for current MDD and current GAD. Finally, to be eligible for the CTL group (n=19), people could not meet criteria for any current or lifetime Axis I disorders. Inter-rater reliability was excellent among the interviewers for depressive and anxiety diagnoses ($\kappa=.92-1.0$). Exclusion criteria included any of the following: not fluent in English, severe head trauma, psychotic symptoms, bipolar disorder, current substance abuse or dependence.

At another laboratory session, participants completed self-report measures and received a handheld electronic device (Palm Pilot Z22), including training in its use. The devices were programmed using ESP 4.0 software (Barrett and Feldman-Barrett, 2000) to prompt participants to complete surveys eight times per day during a 12-hour period between 8am and 10 pm for approximately one week. On average, prompts occurred 96 min apart (SD=37 min). Participants were given five minutes to begin each survey. We excluded one participant who did not respond to at least five prompts. Participants provided informed consent, and the study was approved by the university institutional review board.

Table 1
Demographic and clinical characteristics of participants.

	MDD M(SD) or %	GAD M(SD) or %	MDD-GAD M(SD) or %	CTL M(SD) or %
Age	31.6 (10.3)	31.1 (7.0)	35.5 (10.1)	34.7 (9.9)
Race/ethnicity (%)				
Non-Hispanic White	50.0	66.7	60.0	66.7
Hispanic/Latina	0	13.3	10.0	0
Black/African American	6.3	0	5.0	11.1
Asian American	18.8	20.0	15.0	5.6
Bi-racial	25.0	0	10.0	16.7
Prompt completion (%)	57.3 (25.3)	65.5 (21.8)	68.3 (26.3)	65.1 (23.4)
Depressive symptoms	28.3 (8.6) _c	14.2 (9.6) _b	30.7 (10.6) _c	1.5 (2.6) _a
Generalized Anxiety Disorder symptoms	8.0 (4.0) _b	10.9 (1.1) _c	10.4 (2.6) _c	1.9 (2.2) _a
Global Assessment of Functioning	55.9 (5.2) _c	64.1 (5.7) _b	54.4 (6.1) _c	89.4 (8.8) _a

Note. MDD = current Major Depressive Disorder; GAD = current Generalized Anxiety Disorder; MDD-GAD = current MDD and GAD; CTL = no past or current psychiatric disorder. Different subscripts within rows indicate significant pairwise comparisons, $p < 0.05$.

1.2. Experience sampling measures

1.2.1. State affect

At each survey, participants rated their current levels of PA and NA. Using a 5-point scale (1 = not at all, 5 = extremely), participants indicated the extent to which they were currently feeling a series of emotions, “I felt [emotion] at the time of the beep.” Emotions included low and high arousal emotions of the affective circumplex (Barrett and Russell, 1999; Larson and Diener, 1992). Mean levels of PA (i.e., contented, excited, interested, happy, calm) and NA (i.e., nervous, angry, irritable, bored, sad) were computed for each survey for each participant.

1.2.2. Should affect

At each survey, participants rated the extent to which they thought they should be feeling PA and NA. The two items to assess should PA and NA was: “You just finished reporting how you were feeling at the time of the beep. Should your POSITIVE [NEGATIVE] feelings have been...?” A visual analog scale was presented below each item with anchors of “less intense” and “more intense.” Participants indicated how much differently they thought they should feel. The program converted the locations of the ratings to a 100-point visual analog scale (1 = least intense, 100 = most intense). The cursor’s starting point was at the midpoint. We centered the values so that the least intense value was –50 and the most intense value was 50, with zero representing that they did not think they should feel any differently.

To index the reliability of the should affect items (and all other one-item measures), the intraclass correlation (ICC) was computed for each item as the proportion of intersubject variability to total variability using restricted maximum likelihood estimates. This statistic represents the average correlation between ratings on an item at two randomly selected time points for a given participant (Snijders and Bosker, 2011). The significance of each ICC value was then evaluated using a Wald test, $H_0: ICC=0$. The ICC value was greater than 0 for should PA, $ICC=0.29$, $Z=5.40$, $p < 0.001$, and should NA, $ICC=0.33$, $Z=5.43$, $p < 0.001$, indicating appropriate within-subject dependency.

1.2.3. State rumination

At each survey, participants reported their current level of rumination (see Kircanski et al. (2015)). They rated the extent to which they were engaging in the following process, “At the time of the beep, I was dwelling on my feelings and problems.” They used a 100-point visual analog scale (1 = not at all, 100 = very much so). Item content was drawn from previous ESM studies of rumination (e.g., Moberly and Watkins, 2008), and the item was pilot-tested for clarity and feasibility of completion prior to the study. The ICC value was greater than 0 for rumination, $ICC=0.35$, $Z=5.58$, $p < 0.001$, indicating appropriate within-subject dependency.

1.3. Self-report questionnaires

1.3.1. Ideal affect

Ideal affect was assessed using the ideal affect measure of the Affect Valuation Index (AVI; Tsai et al., 2006). Using a 5-point Likert scale (1 = never, 5 = all the time), participants rated how often they would ideally like to have a series of emotions over the course of a typical week. We computed low arousal positive (LAP) as calm, peaceful, relaxed (Cronbach’s $\alpha=0.86$) and high arousal positive (HAP) as excited, enthusiastic, elated ($\alpha=0.76$; Tsai et al., 2007b). We computed low arousal negative (LAN) as dull, sleepy, and sluggish ($\alpha=0.87$) and high arousal negative (HAN) as hostile, nervous, and fearful ($\alpha=0.72$; Tsai et al., 2007a). The AVI has good psychometric properties (Tsai et al., 2006).

1.3.2. Trait rumination

Trait rumination was assessed using the Ruminative Response Scale (RRS; Treynor et al., 2003). The RRS Brooding subscale, which has excellent psychometric properties (e.g., Molina and Borkovec, 1994), was administered to measure maladaptive trait rumination (Nolen-Hoeksema et al., 2008). The internal consistency of this subscale’s items was high in our sample ($\alpha=0.87$).

1.3.3. Clinical measures

To assess the symptom severity of MDD and GAD, participants completed the Beck Depression Inventory–II (BDI-II; Beck et al., 1996) and Generalized Anxiety Disorder Questionnaire–IV (GAD-Q-IV; Newman et al., 2002). Both measures have strong psychometric properties (e.g., Dozois et al., 1998; Robinson et al., 2010). In the present sample, internal consistency was strong among the items of the BDI-II ($\alpha=0.96$) and good among the dimensional items of the GAD-Q-IV ($\alpha=0.81$), with the dichotomous items summed as a continuous variable (see Rodebaugh et al. (2008)). Finally, SCID interviewers made Global Assessment of Functioning (GAF) ratings.

1.4. Analytic plan

Because of the nested structure of the data (i.e., prompts nested within participants), analyses including experience sampling data were conducted using multilevel modeling, which does not assume independence of data points. Multilevel modeling simultaneously estimates within- and between-person effects (Krull and MacKinnon, 2001) while handling varying time intervals between prompts and missing data (Snijders and Bosker, 2011). We used Hierarchical Linear Modeling (HLM) software version 7.01 (Raudenbush et al., 2004) and report parameter estimates with robust standard errors. Full models, all of which were random effects models (i.e., intercepts and slopes were allowed to vary), are described. In the equations below, i represents beeps or prompts and j represents participants.

First, we examined the demographic and clinical characteristics by diagnostic group. Then we examined whether should affect varied by group and assessed the role of mean affect in understanding any significant group differences. We also examined the extent to which state affect was related to should affect. Finally, we examined the associations between should affect and (a) trait ideal affect, (b) trait brooding, and (c) state rumination.

All analyses were conducted separately for PA and NA although due to space considerations only equations for the models testing PA are presented. Multilevel models were run so that all possible group differences were examined. For all models this entailed having three diagnostic group variables at Level 2. Due to space considerations, we present the full equations only for models that have the CTL group as the referent group; however, we present the results from all models, with each diagnostic group as a referent group.

2. Results

2.1. Demographic and clinical characteristics of participants

Demographic and clinical characteristics of the groups are presented in Table 1. There were no group differences in age, $F(3,66)=0.94$, $p=0.43$, proportion of college-educated participants, $\chi^2(3, N=70)=0.08$, $p=0.99$, distribution by race/ethnicity, $\chi^2(15, N=70)=14.93$, $p=0.46$, or percentage of surveys completed, $F(3,66)=0.64$, $p=0.59$. Consistent with diagnoses, the groups differed with respect to levels of depressive and anxious symptoms (See Table 1). Significant pairwise comparisons for depression

Table 2
Means and standard deviations of affect variables by group status.

	MDD group			GAD group			MDD-GAD group			CTL group		
	Mean	SD within	SD between	Mean	SD within	SD between	Mean	SD within	SD between	Mean	SD within	SD between
Should affect												
Positive Affect	10.64	15.38	7.63	10.85	16.67	9.05	12.70	16.03	8.67	3.62	8.44	5.85
Negative Affect	-10.39	16.79	11.00	-14.87	15.26	9.21	-14.58	16.68	7.12	-4.98	9.50	6.20
Actual affect												
Positive Affect	2.01	0.72	0.49	2.49	0.83	0.41	2.22	0.82	0.64	2.92	0.75	0.51
Negative Affect	1.63	0.59	0.34	1.65	0.62	0.30	2.09	0.85	0.57	1.17	0.29	0.16
Ideal affect												
LAP	4.10	-	0.81	4.02	-	0.81	3.98	-	0.99	4.02	-	0.89
HAP	3.27	-	0.80	3.45	-	0.59	3.10	-	0.80	3.59	-	0.81
LAN	1.54	-	0.58	1.64	-	0.81	1.77	-	0.92	1.35	-	0.32
HAN	1.25	-	0.38	1.33	-	0.65	1.45	-	0.70	1.31	-	0.42

Note. MDD = current Major Depressive Disorder; GAD = current Generalized Anxiety Disorder; MDD-GAD = current MDD and GAD; CTL = no past or current psychiatric disorder. LAP = low arousal positive affect, HAP = high arousal positive affect, LAN = low arousal negative affect, HAN = high arousal negative affect.

symptoms, generalized anxiety disorder symptoms, and GAF scores are denoted in Table 1. The co-occurring MDD-GAD group was not significantly more impaired than the MDD group, but the MDD and the MDD-GAD groups were more impaired than the GAD group. Finally, means and SDs (both within- and between-level) for all affect variables are presented in Table 2.

2.2. Should affect

Before testing our hypotheses, we tested unconditional models, which revealed that 29% of the variance in should PA and 33% of the variance in should NA was at the between-person level, which is consistent with our hypothesis that should affect has high intra-individual variability. Then we tested our primary hypothesis that, compared to the CTL group, the clinical groups would report higher levels of should PA and lower levels of should NA.

Model 1:

Level 1:

$$\text{should PA} = \beta_0 + r \quad (1a)$$

Level 2:

$$\beta_0 = \gamma_{00} + \gamma_{01}*(\text{MDD}) + \gamma_{02}*(\text{GAD}) + \gamma_{03}*(\text{MDD} - \text{GAD}) + u_0 \quad (1b)$$

Groups' average levels of should PA and NA are presented in Fig. 1. In all four groups, levels of should PA were significantly greater than zero, $t(66) > 3.05$, $ps < 0.004$, suggesting that all groups reported that they should be feeling more PA. As predicted, the three clinical groups reported greater should PA than the CTL group, $t(66) > 2.76$, $ps < 0.01$. There were no differences among the three clinical groups in should PA, $t(66) < 0.93$, $ps > 0.35$. Adding the group variables accounted for 15% of the between-person variance.

Levels of should NA were significantly less than zero for all four groups, $t(66) > 3.80$, $ps < 0.001$. Compared to the CTL group, should NA was marginally lower for the MDD group, $t(66) = 1.86$, $p = 0.067$, and significantly lower for the GAD and MDD-GAD groups, $t(66) > 3.56$, $ps < 0.001$. There were no differences among the three clinical groups in should NA, $t(66) = 1.07$, $ps > 0.29$. Importantly, adding the group variables accounted for 16% of the between-person variance.

2.2.1. State affect and mean affect

Next, we examined group differences in mean PA and NA. We entered group variables as a Level 2 variables and predicting either state PA or NA (no Level 1 predictors). Mean PA for the CTL group was significantly different than zero, $\gamma_{00} = 2.90$, $SE = 0.12$, $t(66) =$

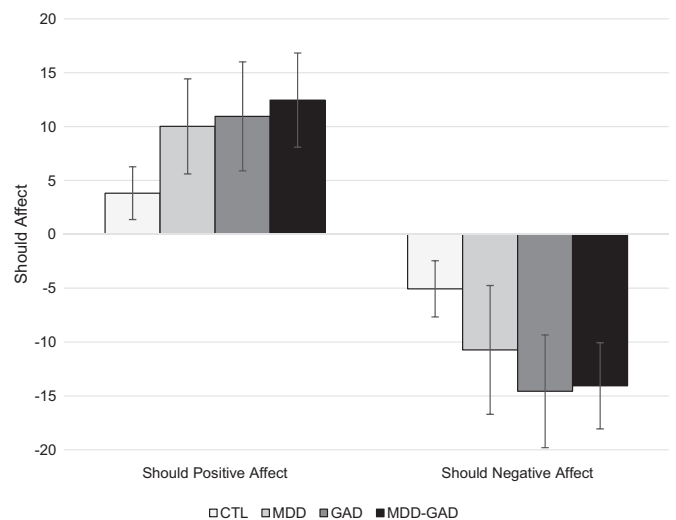


Fig. 1. Mean difference in should PA and NA by diagnostic group. A value of zero corresponds to participants thinking that they should not be feeling different than they are. Positive values indicate that participants thought that they should be feeling more PA or NA; negative values indicate that participants thought that they should be feeling less PA or NA. The error bars represent 95% confidence intervals.

24.12, $p < 0.001$, which was significantly higher than the mean PA for the three clinical groups, $\gamma_{0xS} = -0.78$ to -0.45 , $SEs = 0.17$ – 0.18 , $t(66) > 2.49$, $ps < 0.02$. Mean NA for the CTL group was significantly different than zero, $\gamma_{00} = 1.19$, $SE = .09$, $t(66) = 13.59$, $p < 0.001$, which was significantly lower than the mean NA for the three clinical groups, $\gamma_{0xS} = 0.52$ – 0.83 , $SEs: 0.12$ – 0.13 , $t(66) > 3.98$, $ps < 0.001$.

Next, we assessed whether group differences in should PA and NA were accounted for by mean levels of PA and NA, respectively (Model 2). In this model we also examined the associations between state and should affect. State PA and NA were included as Level 1 variables (person-mean centered), and, in addition to the group variables (uncentered), mean PA and NA were included as Level 2 variables (grand-mean centered).

Model 2:

Level 1:

$$\text{should PA} = \beta_0 + \beta_1*(\text{state PA}) + r \quad (2a)$$

Table 3
Examining associations between should affect and state and mean affect.

	Unstd coeff	SE	t (65)	p-Value
Intercept (should positive affect), β_0				
CTL, γ_{00}	3.72	1.64	2.27	0.026
MDD, γ_{01}	6.33	2.80	2.27	0.027
GAD, γ_{02}	7.23	2.80	2.58	0.012
MDD-GAD, γ_{03}	8.83	2.72	3.24	0.002
Mean PA, γ_{04}	0.243	1.92	0.13	0.899
Slope state positive affect, β_1				
CTL, γ_{10}	-0.70	1.76	0.40	0.691
MDD, γ_{11}	5.67	3.49	1.62	0.110
GAD, γ_{12}	2.27	2.83	0.80	0.425
MDD-GAD, γ_{13}	-0.15	2.90	0.05	0.958
Mean PA, γ_{14}	3.89	2.36	1.65	0.105
Intercept (should negative affect), β_0				
CTL, γ_{00}	-5.20	2.01	2.59	0.012
MDD, γ_{01}	-5.50	3.78	1.45	0.151
GAD, γ_{02}	-9.34	3.57	2.62	0.011
MDD-GAD, γ_{03}	-8.74	3.20	2.73	0.008
Mean NA, γ_{04}	-0.28	3.19	0.09	0.930
Slope state negative affect, β_1				
CTL, γ_{10}	0.05	2.87	0.02	0.987
MDD, γ_{11}	7.15	4.28	1.67	0.100
GAD, γ_{12}	-4.25	3.89	1.09	0.278
MDD-GAD, γ_{13}	-2.31	5.06	0.46	0.649
Mean NA, γ_{14}	-0.37	3.14	0.12	0.908

Note. MDD = current Major Depressive Disorder; GAD = current Generalized Anxiety Disorder; MDD-GAD = current MDD and GAD; CTL = no past or current psychiatric disorder.

Level 2:

$$\beta_0 = \gamma_{00} + \gamma_{01}^*(\text{MDD}) + \gamma_{02}^*(\text{GAD}) + \gamma_{03}^*(\text{MDD} - \text{GAD}) + \gamma_{04}^*(\text{mean PA}) + u_0 \quad (2b)$$

$$\beta_1 = \gamma_{10} + \gamma_{11}^*(\text{MDD}) + \gamma_{12}^*(\text{GAD}) + \gamma_{13}^*(\text{MDD} - \text{GAD}) + \gamma_{14}^*(\text{mean PA}) + u_0 \quad (2c)$$

After taking into account mean PA, levels of should PA were significantly different from zero for all groups, $t(65) > 2.27$, $ps < 0.03$ (See Table 3, γ_{01} , for CTL as the referent group). As shown in Table 3, all differences between the CTL and clinical groups described in Model 1 remained significant after controlling for mean PA, suggesting that the differences between the CTL and clinical groups was not accounted for by mean PA. The slope between state and should PA was marginally significant for the MDD group, $\gamma_{10} = 4.96$, $SE = 2.84$, $t(65) = 1.76$, $p = 0.08$, but not significant for the other groups, γ_{10} s: -0.70 to 1.57, SE s = 1.76–2.11, t s (65) < 0.72 , $ps > 0.47$. Mean PA was not significantly related to should PA and did not significantly moderate the relation between state and should PA for any of the groups (See Table 3, γ_{04} and γ_{14} , respectively, for CTL as the referent group).

After taking into account mean NA, levels of should NA were significantly different from zero for all groups, $t(65) > 2.59$, $ps < 0.02$ (See Table 3, γ_{01} , for CTL as the referent group). In terms of group differences in should NA after mean NA was taken into account, as shown in Table 3, the GAD and the MDD-GAD groups, but not the MDD group, significantly differed from the CTL group. The slope between state and should NA was significant for the MDD group, $\gamma_{10} = 7.19$, $SE = 2.95$, $t(65) = 2.44$, $p < 0.02$, but not for the other groups, γ_{10} s: -4.21 to 0.05, SE s: 2.62–3.18, t s(65) < 1.61 , $ps > 0.11$. Mean NA was not significantly related to should NA, and did not moderate the relation between state and should NA for any of the groups (See Table 3, γ_{04} and γ_{14} , respectively, for CTL as the referent group).

2.2.2. Ideal affect

To examine whether the groups differed in ideal affect, we conducted a multivariate analysis of variance (MANOVA) with diagnostic group (i.e., CTL, MDD, GAD, MDD-GAD) as the fixed effect and LAP, HAP, LAN, and HAN as the dependent variables. There was not significant effect for group, $F(12) = 0.87$, $p = 0.58$. We conducted a two-group MANOVA comparing the CTL group with the clinical groups combined as the fixed effect and LAP, HAP, LAN, and HAN as the dependent variables because this analysis provided more power and reflected the pattern of findings for which we obtained group differences in should affect. Again, the effect for group was not significant, $F(4,62) = 1.82$, $p = 0.14$.

Next, we examined whether should and ideal affect were related. The multilevel model for should and ideal PA are described in Model 3. We conducted parallel analyses for should and ideal NA (i.e., LAN and HAN). For these models, LAP and HAP (LAN and HAP) were grand-mean centered.

Model 3:

Level 1:

$$\text{should PA}_{ij} = \beta_{0j} + r_{ij} \quad (3a)$$

Level 2:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}^*(\text{LAP}_j) + \gamma_{02}^*(\text{HAP}_j) + u_{0j} \quad (3b)$$

Neither LAP, $\gamma_{01} = 1.21$, $SE = 0.94$, $t(64) = 1.29$, $p = 0.201$, nor HAP, $\gamma_{02} = -2.06$, $SE = 1.22$, $t(64) = -1.69$, $p = 0.096$, was significantly related to should PA. Likewise, neither LAN, $\gamma_{01} = -1.53$, $SE = 1.56$, $t(64) = -0.98$, $p = 0.329$, nor HAN, $\gamma_{02} = 2.10$, $SE = 2.20$, $t(64) = 0.96$, $p = 0.342$, was significantly related to should NA.¹

2.2.3. Rumination

Next, we examined associations between should NA and trait brooding and state rumination. For trait brooding, we entered should NA as the outcome variable (with no predictors) at Level 1; we entered trait brooding at Level 2 (grand-mean centered). Trait brooding was significantly related to should NA, $\gamma_{01} = -0.69$, $SE = 0.18$, $t(67) = 3.72$, $p < 0.001$, suggesting that higher trait brooding is associated with thinking one should be experiencing lower NA (i.e., less should NA). For state rumination, at Level 1, we predicted should NA from state rumination (person-mean centered). No variables were entered at Level 2. State rumination was not significantly associated with should NA, $\gamma_{10} = -0.001$, $SE = 0.03$, $t(68) = 0.04$, $p = .97$, suggesting that should NA is unique from state rumination.

3. Discussion

The present findings provide strong evidence that people have expectations about their daily emotional experiences. Independent of people's mental health status, they thought they should be feeling more PA and less NA than they actually did. Further, people with MDD and/or GAD reported that they should be feeling more PA and less NA than did healthy controls. This latter finding may appear to be self-evident. For example, MDD is typically conceptualized as an ego-dystonic disorder. Nevertheless, there is evidence supporting the hypothesis that people with MDD and/or GAD think that they should *not* feel differently. Worries are often seen as ego-syntonic (e.g., Langlois et al., 1998). Compared to people without GAD, people with GAD view worry more positively (e.g., Ladouceur et al., 1998). Depressed individuals may make

¹ We also ran multilevel models that included both linear and quadratic forms of actual affect as predictors of should affect. None of the quadratic terms were significant in either the should PA or NA model.

more realistic inferences than do nondepressed people (Moore and Fresco, 2012). Moreover, Millgram et al. (2015) found that even after accounting for current sadness and happiness, people with depressive disorders chose to view sad images more frequently than did nondepressed individuals. Consequently, it is plausible that depressed people would report that their feelings should not be different, potentially reflecting the belief that it is others who should feel differently. Because there are reasons to hypothesize different patterns of findings, the systematic examination of should affect is particularly important.

As hypothesized, clinical groups' reports of should affect were generally more extreme than the CTL group's reports. Compared to the CTL group, the three clinical groups reported greater should PA. The MDD group reported marginally lower, and the GAD and MDD-GAD groups significantly lower, should NA than did the CTL group. The three clinical groups did not differ in levels of should PA or NA. Thus, levels of should affect were largely transdiagnostic, adding to the studies documenting transdiagnostic factors in MDD, GAD, and MDD-GAD (e.g., Kircanski et al., 2015; Ruscio et al., 2015, 2011). The absence of group differences between the clinical groups is notable because the MDD and MDD-GAD exhibited greater functional impairment than the GAD group. Thus, should affect was not related to disorder severity; instead, should affect may be a broad vulnerability factor for internalizing disorders.

We examined one potential reason why the clinical groups differed from the healthy control group in should affect. Because the clinical groups experienced higher NA and lower PA than the CTL group, it was possible that the differences in should affect would diminish once the groups' mean affect was taken into account. For should PA, the group differences remained significant even after controlling for mean PA, suggesting that the clinical groups think they should to feel even more PA than what the CTL groups report for themselves. After accounting for mean NA, the GAD and MDD-GAD groups, but not the MDD group, reported more extreme should NA than did the CTL group. The MDD finding was in the predicted direction, and we expect that future research that has greater power will find a significant difference.

Our should affect findings have important clinical utility and treatment implications, particularly for cognitive-behavioral or mindfulness-based interventions (e.g., Barlow et al., 2011; Mennin and Fresco, 2014). Individuals with MDD and/or GAD may hold the belief that healthy people are fine with how they feel; our findings, however, indicate that thinking one should feel differently is actually the norm. Our results may help those with MDD and GAD put their emotional experience into context and feel more acceptance of their emotions.

Future research should examine factors, such as perfectionism, that drive people's affect evaluations. Another profitable line of inquiry may include experiential avoidance (Hayes et al., 1996), particularly affective avoidance – when someone does not remain in contact with and tries to alter affective experiences. Hayes et al. (1996) theorized that many psychiatric disorders, including MDD, are characterized by experiential avoidance. Further, people use worry, the central symptom of GAD, to avoid imagery and physiological arousal from negative emotion (e.g., Borkovec et al., 2004), and individuals with GAD have elevated levels of negative beliefs about emotions (e.g., Mennin et al., 2005). When clinical groups report that their affect should be less intense, they may be avoiding their affect.

Although current study is an initial step in understanding affect evaluations, we think that the role of social context, broadly defined, should be further examined. The normative theory of emotion formulated by Hochschild (e.g., Hochschild, 1975), and theories and research in linguistics (e.g., Wierzbicka, 1994) and psychology (e.g., Mesquita, 2001) describe the importance of social context in influencing people's beliefs and experiences, extending

to emotion. Consistent with this research, personal and perceptions of social expectancies of negative emotions were significantly associated (Bastian et al., 2012; Bastian et al., 2015). Interestingly, undergraduate students' depressive symptoms were uniquely associated with their perceptions of social, but not of personal, expectancies of experiencing negative emotions (Bastian et al., 2015). Because others' expectancies of emotion are likely more salient in social contexts, future research should examine whether should affect is more extreme in social than in non-social situations in clinical samples. We also think it is important to assess the accuracy of clinical samples' views of others' expectancies of emotions. In addition, people's general tendencies to pursue happiness is related to lower well-being in individualistic cultures like the U.S. (e.g., Ford et al., 2014; Mauss et al., 2011), but to higher well-being in collectivist cultures such as Japan and Taiwan (Ford et al., 2015). Researchers should examine whether our finding that higher should PA is associated with internalizing disorders extends to collectivistic cultures.

We also examined the within-person associations between state and should affect (after accounting for mean affect). For PA, consistent with our hypotheses, the association between state and should PA was not significant for any group. For the MDD group, however, state PA was marginally positively associated with should PA—higher state PA was related to higher should PA. State and should NA were inversely although not significantly related for the CTL, GAD or MDD-GAD groups. For the MDD group, state NA was significantly positively associated with should NA—higher state NA was associated with less extreme levels of should NA. This pattern of results needs to be replicated and further explored. We computed the correlation between current and should affect for each participant, and examined the range of these correlations by group. At least 30% of each group had positive correlations between their current and should affect, suggesting that there is considerable between-person variation in the direction of the associations between state and should affect. Future research should elucidate factors that underlie these individual differences.

The assessment of how people should feel shares features with the “ought self” – “a representation of someone's sense of your duty, obligations, or responsibilities” – from self-discrepancy theory (Higgins, 1987, p. 321). For the ought self, people indicate which attributes they or an important other think they should or ought to possess. Discrepancies between actual and ought selves are described in terms of transgressing a moral standard or failure to fulfill perceived duties or obligations (Higgins, 1987). Our conceptualization of should affect does not focus explicitly on moral standards and obligations, and we assess this construct via our participants' perspectives, not an important other's perspective. According to the self-discrepancy theory, differences between actual and ought self-states are related to anxiety, not depression (Strauman, 1989). We found that levels of should affect were similar in individuals with GAD and/or MDD.

With the exception of Tsai et al. (2006), who assessed ought affect, should affect has not been assessed before. Consistent with Tsai et al., we found that should affect was unique from ideal affect. Although future research should examine the relation between state should affect and state ideal affect, we are confident in our findings; Sims and Tsai (2015) found positive associations between daily and trait ideal PA. Further, the CTL group differed from the clinical groups in should but not ideal affect. Finally, approximately 70% of the variance for should PA and NA was due to within-person variance.

We examined the relations between should NA and rumination both at trait and state levels. Trait rumination was significantly negatively related to should NA; thus, as trait rumination increases, people's reports of should NA decreases, reflecting beliefs that they should feel even lower NA. Should NA, however, was

unrelated to state rumination. People who are trait ruminators are particularly evaluative in their NA, but should NA is not better accounted for by state rumination, providing convergent and discriminant validity, respectively, for should NA.

In terms of limitations of the current study, our samples sizes were relatively small. Because MDD and GAD are highly comorbid (e.g., Brown et al., 2001; Judd et al., 1998), recruiting participants who had only one disorder was difficult, and future research should assess larger samples. Second, we restricted our study to women, in whom both depression and anxiety disorders are more common (Kendler et al., 2007). Future research should include samples of men who are diagnosed with various forms of psychopathology to assess the generalizability of our findings.

In closing, people have certain ideas about how they should feel as they go about their daily life. Although on average all groups seemed to think they should feel better, there were important differences based on people's mental health status that could not be largely explained by their state affect. We identified potential factors that may be driving links between should affect and MDD and GAD and outlined important future avenues of research that will elucidate the role of context in affect evaluation.

Acknowledgements

We thank Howard Berenbaum and Jeanne Tsai for their helpful feedback on the manuscript and Maria Lemus and Cat Camacho for their help in data collection. This research was supported by grants from the National Institute of Mental Health (MH096385 to Katharina Kircanski, MH091831 to Renee J. Thompson, and MH059259 to Ian H. Gotlib). All authors report no competing or financial interests.

References

- American Psychiatric Association, 2013. Diagnostic and Statistical Manual of Mental Disorders, Fifth ed., Washington, DC.
- Barlow, D.H., Farchione, T.J., Fairholme, C.P., Ellard, K.K., Boisseau, C.L., Allen, L.B., Ehreich-May, J.T., 2011. Unified protocol for transdiagnostic Treatment of Emotional Disorders: Therapist Guide, New York, NY.
- Barrett, L.F., Russell, J.A., 1999. The structure of current affect: controversies and emerging consensus. *Curr. Dir. Psychol. Sci.* 8, 10–14.
- Barrett, D.J., Barrett, L.F., 2000. The Experience Sampling Program (ESP). (<http://www.experiencesampling.org/>) (accessed 03.22.16).
- Bastian, B., Kuppens, P., Hornsey, M.J., Park, J., Koval, P., Uchida, Y., 2012. Feeling bad about being sad: the role of social expectancies in amplifying negative mood. *Emotion* 12, 69–80.
- Bastian, B., Koval, P., Erbas, Y., Houben, M., Pe, M., Kuppens, P., 2015. Sad and alone: social expectancies for experiencing negative emotions are linked to feelings of loneliness. *Soc. Psychol. Pers. Sci.* 6, 496–503.
- Beck, A.T., Steer, R.A., Brown, G.K., 1996. Manual for the Beck Depression Inventory–II, San Antonio, TX.
- Borkovec, T.D., Alcaine, O., Behar, E., 2004. Avoidance theory of worry and generalized anxiety disorder. In: Heimberg, R.G., Turk, C.L., Mennin, D.S. (Eds.), *Generalized Anxiety Disorder: Advances in Research and Practice*. Guilford Press, New York, NY, pp. 77–108.
- Brown, T.A., Campbell, L.A., Lehman, C.L., Grisham, J.R., Mancill, R.B., 2001. Current and lifetime comorbidity of the DSM-IV anxiety and mood disorders in a large clinical sample. *J. Abnorm. Child. Psychol.* 110, 585–599.
- Dozois, D.J.A., Dobson, K.S., Ahnberg, J.L., 1998. A psychometric evaluation of the Beck Depression Inventory–II. *Psychol. Assess.* 10, 83–89.
- Egan, S.J., Wade, T.D., Shafran, R., 2011. Perfectionism as a transdiagnostic process: a clinical review. *Clin. Psychol. Rev.* 31 (2), 203–212.
- Enns, M.W., Cox, B.J., 1999. Perfectionism and depression symptoms severity in major depressive disorder. *Behav. Res. Ther.* 37, 783–794.
- First, M.B., Spitzer, R.L., Gibbon, M., Williams, J.B.W., 2001. The Structured Clinical Interview for DSM-IV-TR Axis I Disorders, New York, NY.
- Ford, B.Q., Shallcross, A.J., Mauss, I.B., Floerke, V.A., Gruber, J., 2014. Desperately seeking happiness: valuing happiness is associated with symptoms and diagnosis of depression. *J. Soc. Clin. Psychol.* 34, 890–905.
- Ford, B.Q., Dmitrieva, J.O., Heller, D., Chentsova-Dutton, Y., Grossmann, I., Tamir, M., Uchida, Y., Koopmann-Holm, B., Floerke, V.A., Bokhan, T., Mauss, I.B., 2015. Culture shapes whether the pursuit of happiness predicts higher or lower well-being. *J. Exp. Psychol. Gen.* 144, 1053–1062.
- Handley, A.K., Egan, S.J., Kane, R.T., Rees, C.S., 2014. The relationships between perfectionism, pathological worry and generalised anxiety disorder. *BMC Psychiatry*, 14.
- Hayes, S.C., Wilson, K.G., Gifford, E.V., Follette, V.M., Strosahl, K., 1996. Experiential avoidance and behavioral disorders: a functional dimensional approach to diagnosis and treatment. *J. Consult. Clin. Psychol.* 64, 1152–1168.
- Higgins, E.T., 1987. Self-discrepancy: a theory relating self and affect. *Psychol. Rev.* 94 (3), 319–340.
- Hochschild, A.R., 1975. The sociology of feeling and emotion: selected possibilities. *Sociol. Inq.* 45, 280–307.
- Judd, L.L., Kessler, R.C., Paulus, M.P., Zeller, P.V., Wittchen, H.U., Kunovac, J.L., 1998. Comorbidity as a fundamental feature of generalized anxiety disorders: results from the National Comorbidity Study (NCS). *Acta Psychiatr. Scand. Suppl.* 393, 6–11.
- Kendler, K.S., Gardner, C.O., Gatz, M., Pedersen, N.L., 2007. The sources of comorbidity between major depression and generalized anxiety disorder in a Swedish national twin sample. *Psychol. Med.* 37, 453–462.
- Kircanski, K., Thompson, R.J., Sorenson, J., Sherdell, L., Gotlib, I.H., 2015. Rumination and worry in daily life: examining the naturalistic validity of theoretical constructs. *Clin. Psychol. Sci.* 3, 926–939.
- Koopmann-Holm, B., Tsai, J.L., 2014. Focusing on the negative: cultural differences in expressions of sympathy. *J. Personal. Soc. Psychol.* 107, 1092–1115.
- Krull, J.L., Mackinnon, D.P., 2001. Multilevel modeling of individual and group level mediated effects. *Multivar. Behav. Res.* 36, 249–277.
- Ladouceur, R., Blais, F., Freeston, M.H., Dugas, M.J., 1998. Problem solving and problem orientation in generalized anxiety disorder. *J. Anxiety Disord.* 12, 139–152.
- Langlois, F., Freeston, M.H., Ladouceur, R., 1998. Differences and similarities between obsessive intrusive thoughts and worry in a non-clinical population: Study 1. *Behav. Res. Ther.* 38, 157–173.
- Larsen, R., 2000. Toward a science of mood regulation. *Psychol. Inq.* 11, 129–141.
- Larsen, R.J., Diener, E., 1992. Promises and problems with the circumplex model of emotion. In: Clark, M.S. (Ed.), *Emotion: The review of personality and social psychology* vol. 13. Sage Publications, Thousand Oaks, CA, pp. 25–59.
- Luyten, P., Sabbe, S., Blatt, S.J., Meganck, S.J., Jansen, B., De Grave, C., Maes, F., Corveleyn, J., 2007. Dependence and self-criticism: relationship with major depressive disorder, severity of depression, and clinical presentation. *Depress Anxiety* 24, 586–596.
- Mauss, I.B., Tamir, M., Anderson, C.L., Savino, N.S., 2011. Can seeking happiness make people unhappy? Paradoxical effects of valuing happiness. *Emotion* 11 (4), 807–815.
- Mennin, D.S., Heimberg, R.G., Turk, C.L., Fresco, D.M., 2005. Preliminary evidence for an emotion dysregulation model of generalized anxiety disorder. *Behav. Res. Ther.* 43 (10), 1281–1310.
- Mennin, D.S., Fresco, D.M., 2014. Emotion regulation therapy. In: Gross, J.J., (Ed.), *Handbook of Emotion Regulation* (2nd ed.), New York, NY, pp. 469–490.
- Mesquita, B., 2001. Emotions in collectivist and individualist contexts. *J. Personal. Soc. Psychol.* 80, 68–74.
- Millgram, Y., Joormann, J., Huppert, J.D., Tamir, M., 2015. Sad as a matter of choice? Emotion-regulation goals in depression. *Psychol. Sci.* 26, 1216–1228.
- Moberly, N.J., Watkins, E.R., 2008. Ruminative self-focus and negative affect: an experience sampling study. *J. Abnorm. Psychol.* 117, 314–323.
- Molina, S., Borkovec, T.D., 1994. The Penn State Worry Questionnaire: Psychometric properties and associated characteristics. In: G.C.L. Davey, F. Tallis (Eds.), *Worrying: Perspectives on Theory, Assessment, and Treatment*. John Wiley, New York, NY, pp. 265–283.
- Moore, M.T., Fresco, D.M., 2012. Depressive realism: a meta-analytic review. *Clin. Psychol. Rev.* 32, 496–509.
- Newman, M.G., Zullig, A.R., Kachin, K.E., Constantino, M.J., Przeworski, A., Erickson, T., Cashman-McGrath, L., 2002. Preliminary reliability and validity of the Generalized Anxiety Disorder Questionnaire–IV: a revised self-report diagnostic measure of generalized anxiety disorder. *Behav. Ther.* 33, 215–233.
- Nolen-Hoeksema, S., Wisco, B.E., Lyubomirsky, S., 2008. Rethinking rumination. *Perspect. Psychol. Sci.* 3, 400–424.
- Raudenbush, S.W., Bryk, A.S., Congdon, R., 2004. HLM (Version 6) [Computer software]. Scientific Software International, Skokie, IL.
- Robinson, C.M., Klenck, S.C., Norton, P.J., 2010. Psychometric properties of the Generalized Anxiety Disorder Questionnaire for DSM-IV among four racial groups. *Cogn. Behav. Ther.* 39, 251–261.
- Rodebaugh, T.L., Holaway, R.M., Heimberg, R.G., 2008. The factor structure and dimensional scoring of the Generalized Anxiety Disorder Questionnaire for DSM-IV. *Assessment* 15, 343–350.
- Ruscio, A.M., Seitchik, A.E., Gentes, E.L., Jones, J.D., Hallion, L.S., 2011. Perseverative thought: a robust predictor of response to emotional challenge in generalized anxiety disorder and major depressive disorder. *Behav. Res. Ther.* 49, 867–874.
- Ruscio, A.M., Gentes, E.L., Jones, J.D., Hallion, L.S., Coleman, E.S., Swendsen, J., 2015. Rumination predicts heightened responding to stressful life events in major depressive disorder and generalized anxiety disorder. *J. Abnorm. Psychol.* 124, 17–26.
- Sims, T., Tsai, J.L., 2015. Patients respond more positively to physicians who focus on their ideal affect. *Emotion* 15, 303–318.
- Snijders, T.A.B., Bosker, R., 2011. *Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modeling*, second edition. Sage, Thousand Oaks, California.
- Strauman, T.J., 1989. Self-discrepancies in clinical depression and social phobia: cognitive structures that underlie emotional disorders? *J. Abnorm. Psychol.* 98,

- 14–22.
- Tamir, M., Mitchell, C., Gross, J.J., 2008. Hedonic and instrumental motives in anger regulation. *Psychol. Sci.* 19 (4), 324–328.
- Thomsen, D.K., 2006. The association between rumination and negative affect: a review. *Cogn. Emot.* 20, 1216–1235.
- Treynor, W., Gonzalez, R., Nolen-Hoeksema, S., 2003. Rumination reconsidered: A psychometric analysis. *Cognit. Ther. Res.* 27, 247–259.
- Tsai, J.L., 2007. Ideal affect: cultural causes and behavioral consequences. *Perspect. Psychol. Sci.* 2, 242–259.
- Tsai, J.L., Knutson, B., Fung, H.H., 2006. Cultural variation in affect valuation. *J. Personal. Soc. Psychol.* 90, 288–307.
- Tsai, J.L., Miao, F.F., Seppala, E., 2007a. Good feelings in Christianity and Buddhism: religious differences in ideal affect. *Pers. Soc. Psychol. Bull.* 33, 409–421.
- Tsai, J.L., Miao, F.F., Seppala, E., Fung, H.H., Yeung, D.Y., 2007b. Influence and adjustment goals: sources of cultural differences in ideal affect. *J. Personal. Soc. Psychol.* 92 (6), 1102–1117.
- Wierzbicka, A., 1994. Emotion, language, and cultural scripts. In: Kitayama, S., Markus, H.R. (Eds.), *Emotion and Culture: Empirical Studies of Mutual Influence*. American Psychiatric Association, Washington DC, pp. 133–196.