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Self-report is a crucial part of psychological assessment, but the reliability and validity of self-report measures can be threatened by individual differences in item interpretation and response. Individuals higher in trait neuroticism were hypothesized to use a lower threshold to determine whether a given experience qualifies as symptomatic when completing self-report measures. This study investigated signal-detection processes to explain the association between trait neuroticism and overreport of psychological symptoms. A nondiagnosed sample of 280 college students were asked to determine the caseness of 34 target and foil vignettes, 22 of which describe negative, potentially symptomatic experiences. The main hypothesis was not supported by study findings. Exploratory findings and future directions are discussed.

THE EFFECT OF NEUROTICISM ON SYMPTOM REPORT:

A SIGNAL-DETECTION MODEL

by

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APPROVAL PAGE

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CHAPTER I

INTRODUCTION

Clinical researchers and practitioners rely on self-report to assess the symptoms, functioning, and well-being of clients and participants when behavioral observation, consultation with other sources, and medical tests are insufficient, infeasible, or unavailable (Ben-Zeev & Young, 2010). These assessments aid in decisions regarding diagnosis, prognosis, and treatment and contribute to scientific understanding of the causes and management of psychopathology. Unfortunately, even the most psychometrically sound self-report measures are subject to any number of response errors that threaten the extent to which reliable and valid conclusions can be drawn from the scores.

Many threats to the reliability and validity of symptom self-report measures are readily apparent. An individual might give random responses to items due to inattention, lack of interest, or lack of cognitive or intellectual ability (Kessler, Wittchen, Abelson, Zhao, & Stone, 2000). An individual might underreport symptoms to improve self-presentation or overreport symptoms for attention, health services, or a way to avoid adverse consequences (Kessler et al., 2000). Without discounting these sources of error (which often imply fault on behalf of the respondent), more attention should be directed toward sources of inadvertent self-report error that are in some cases less immediately evident. For example, error might result from difficulty understanding the question,

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misinterpretation of the question, or difficulty retrieving the appropriate memory (e.g., memory of which symptoms were experienced during the respondent's first depressive episode) to answer the question accurately (Kessler et al., 2000; Shiffman, 2000).

Inadvertent overreporting lacks the intent of malingering, but it nevertheless presents major obstacles to effective evaluation and intervention in clinical settings (Ben-Zeev & Young, 2010). As such, it has received substantial attention in clinical research. This attention, however, has not included explicit discussion of the taxonomy of overreporting, which limits the precision of any ensuing hypotheses. For the purposes of this research, overreporting is proposed to comprise two components: symptom amplification and symptom overendorsement. Unintentional symptom amplification occurs when the respondent overestimates symptom frequency and/or severity of symptoms (i.e., the respondent endorses greater symptom intensity than is actually experienced). Unintentional symptom overendorsement occurs when the respondent overestimates the presence of symptoms (i.e., the respondent endorses symptoms that are not truly present). Overendorsement significantly complicates the process of differential diagnosis, which makes it difficult for the clinician to prioritize symptoms to address in treatment (Frueh, Hamner, Cahill, Gold, & Hamlin, 2000).

Symptom overendorsement has received less attention than symptom amplification, but evidence of diffuse symptom reporting in PTSD (that is, overendorsing symptoms outside the range of the respondent's diagnoses) suggests that overendorsement could be an important component of overreporting in clinical settings (Frueh et al., 2000). In the case of diffuse symptom reporting, a wide range of symptoms

is reported over and above what would be explained by comorbid illnesses or other true symptom experience (Frueh et al., 2000). Although this response style can, if suspected, be noted in a clinical interview, no current methods can truly distinguish symptom experience from overendorsement in questionnaire data.

Respondents who experience or otherwise perceive chronic distress (e.g., individuals high in trait neuroticism or experiencing chronic psychopathology) might be likely to interpret self-report items as signifying general distress rather than a specific symptom and overendorse accordingly (Vassend & Skrondal, 1999). Further study of this phenomenon could shed light on clinical evidence of overreporting. Clinical research into overreporting has, however, generally focused on illness-specific overreporting (e.g., overreporting of depressive symptoms in individuals with depression) rather than general symptom overreport. There is therefore a need for more research using general psychological symptom report (rather than illness-specific instruments) to examine self-report processes.

Research on cognitive aspects of survey methodology (Tourangeau, 2003) reveals the points at which response accuracy can be compromised. When respondents read a question, they must retrieve memories relevant to the item and then determine if the memory they have retrieved is sufficient for endorsement (Karabenick et al., 2007). Many questions on psychiatric symptom questionnaires are designed to capture extreme variants of otherwise common and normative experiences, such as difficulty sleeping or anxiety. In completing these questionnaires, respondents have to decide what type of experience the item is asking for, retrieve relevant information from memory, and decide

if the retrieved information is sufficiently extreme to qualify for the item in question. In order for the response to be accurate, normative versions of the experience must be excluded. That is, respondents have to find a signal amid the noise.

It is highly likely that some responses to symptom questionnaires will include experiences retrieved from memory that are not sufficiently extreme to actually qualify for the item being endorsed. These response errors could be assessed in, for example, an interview with a trained clinician, who can use follow-up questions to discriminate between threshold and subthreshold experiences. However, written questionnaires can offer no such assessment, and the responses do not reveal what experience the respondent had in mind when decided to endorse or not endorse a given item. The respondent alone decides what a question means and how to respond. Individual differences are expected to play a role in this decision process.

Neuroticism has regularly emerged as a significant predictor of overreporting (Domken, Scott, & Kelly, 1994; Larsen, 1992; Safer & Keuler, 2002; Watson & Pennebaker, 1989). Trait neuroticism has been associated with overreport of a range of clinical symptoms (Larsen, 1992; Pennebaker, 2000). Respondents high in neuroticism (i.e., who are more likely to report a history of negative affectivity, vulnerability to stress, mood reactivity, and difficulty with self-regulation) have been shown to overreport (compared to physiological measures) medical symptoms and retrospectively overestimate (compared to experiential reports) the extent to which they experienced negative affect and somatic symptoms (Pennebaker, 2000; Robinson & Clore, 2002). This finding has been explained as the effect of enhanced accessibility of self-related

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negative memories (Domken et al., 1994). As with other dimensions of personality, neuroticism can be a considered a source of personal beliefs about who one is as a person and what one is likely to experience; illness could be a particularly accessible construct for individuals high in neuroticism (Houtveen & Oei, 2007; Larsen, 1992). These semantic beliefs would then be expected to lower the threshold used to determine whether a symptom item should be endorsed.

Prior research on self-report errors has focused on diagnosed clinical populations, whose retrospective symptom reports can be compared against clinician ratings (Corruble, Legrand, Zvenigorowski, Duret, & Guelfi, 1999), self-reports given during a different phase of the illness (Coyne, Thompson, & Racioppo, 2001), or experiential self-report within a discrete assessment period (Houtveen & Oei, 2007). This line of research has found that participants from clinical populations routinely overestimate their symptom experience when reporting retrospectively. There is a need for efficient research designs that are sufficiently powerful to detect individual differences in self-report processes in general settings and nondiagnosed samples.

Signal-detection theory offers a promising framework for investigating how neuroticism affects how respondents decide whether to endorse symptom items (McFall & Treat, 1999). This line of inquiry compares signal report to the true presence or absence of a signal. Within psychology, signal-detection theory has been applied to research on sensory perception and recognition memory, but it has received relatively little explicit attention in clinical research (Williams & Zumbo, 2003).

Current research suggesting signal-detection differences in neuroticism is largely based on the retrospective and online report of somatic symptoms, although explicit signal-detection theory and formal signal-detection tests are lacking in this literature. Individuals high in neuroticism are more likely to notice and report physical symptoms (Mora, Halm, Leventhal, & Ceric, 2007) and to misinterpret subclinical medical experiences as symptoms (Feldman, Cohen, Doyle, Skoner, & Gwaltney, 1999). Laboratory studies of somatic symptom reports can investigate response bias by comparing participant response against physiological measures. Reports of psychological symptoms cannot be verified in this way.

Prior research on neuroticism and overreport of psychological symptoms has compared symptom self-report against other symptom reports, such as those given at a previous time or by a clinician. These methods cannot determine which symptom report is (true or relatively true) and which symptom report is distorted. A basic scientific approach to self-report and objective investigation of the processes involved in symptom report offers more definitive evidence for how and why symptom self-reports might fail to represent true symptom experience.

In order to investigate symptom report mechanisms, true symptom experience must be distinguished in some way from erroneous symptom report. This distinction is especially important in the case of neuroticism, in which both true symptom experience and overreporting response style are pronounced. Elevated scores on subjective symptom measures can otherwise be attributed to associated features of neuroticism, such as emotion overproduction (Hervas & Vazquez, 2011). The use of symptom report measures

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in which the true answer is already known would offer more conclusive results in the study of psychological symptom report processes.

Differences in signal-detection could account for symptom overendorsement in neuroticism. In response to a symptom measure item, more normative experiences are likely to be judged as qualifying events by respondents high in neuroticism. This noise along with an already amplified signal – that is, true symptom experience, with which neuroticism is highly associated (Suls & Martin, 2005) – results in an elevated symptom profile across a wide range of clinical symptoms for which accurate assessment becomes very difficult without extensive probing and clinical skill. This effect can be studied empirically by examining how accurately respondents distinguish clinical signal from subclinical noise when judging whether a given experience meets a given criterion.

Symptom overendorsement presents a major obstacle to accurate assessment inasmuch as it threatens the reliability and validity of clinical research and practice. This problem cannot be meaningfully addressed without empirical research on overendorsement processes, yet little such research exists. Signal-detection theory offers promising methods for measuring response bias, but it has received little direct attention in clinical research. The signal-detection methods pioneered by this study offer an avenue for further empirical investigation into response style.

This study sought to investigate individual differences in signal-detection processes, by which neuroticism is proposed to be associated with overendorsement of clinical symptoms in self-report. To that end, this study measured the effect of neuroticism on participants' assessments of potentially clinical vignettes. It was

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hypothesized that participants higher in neuroticism set a lower threshold in determining

whether their experiences qualify as clinical symptoms and would therefore be more

likely to decide that subclinical experiences satisfy a given symptom criterion.

CHAPTER II

METHOD

Participants

A total of 280 University of North Carolina at Greensboro undergraduate students participated in this study. Sixteen participants were excluded from analyses due to insufficient data. Analyses included 264 participants (59 male, 204 female; 1 participant did not provide gender information) between the ages of 18 and 28 years ($M = 18.9$, SD = 1.41). Participants were recruited through mass screening procedures used in introductory psychology classes. Participants received course credit for their participation.

Measures

To measure signal-detection threshold, participants were asked to assess 34 target-foil pairs of vignettes (Appendix A). Twenty-two of the target-foil pairs describe negative psychological experiences (e.g., panic, social rejection). The other 12 pairs describe positive psychological experiences (e.g., pride, social support). Each target-foil pair consists of two brief vignettes. The target vignette was intended to be sufficiently diagnostic for the term given (e.g., "You hear a voice talking about what you are doing. No one else hears the voice, but you're sure that it's really talking to you" for the term "hallucination"). The foil vignette is highly similar to the target vignette, but stated more vaguely, such that it was intended to be insufficiently diagnostic (e.g., "You think you hear someone say your name, but you turn out to have been mistaken" for the term

"hallucination"). Following each vignette was a question about whether a particular term applies to the situation in question.

The NEO Personality Inventory 3 (NEO-PI-3; McCrae, Costa, & Martin, 2005) was administered to measure baseline personality traits (specifically, neuroticism). Reliability and validity of the NEO-PI-3 as a five-factor personality overview for a young adult sample have been established (McCrae et al., 2005). The NEO-PI-3 consists of 240 items scored on a five-point scale (1 = *strongly disagree*, 5 = *strongly agree*). Scores for each domain (neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness) are calculated by summing the 48 item responses of the appropriate subscale. Each domain comprises six facets, which are calculated by summing the eight item responses of the appropriate facet scale. The neuroticism facets measured by the NEO-PI-3 are Anxiety (N1), Hostility (N2), Depression (N3), Self-Consciousness (N4), Impulsiveness (N5), and Vulnerability to Stress (N6). For the purposes of this study, only the neuroticism subscale and its facets was used in analysis.

Participants were asked to rate their current mood on a seven-point Likert scale (1 = *Very unhappy*, 4= *Neither happy nor unhappy,* 7 = *Very happy*). They were also asked to rate their level of confidence in their answer to each vignette question using a five-point Likert scale (1 = *Not confident*, 5 = *Very confident*).

Procedure

The study took place online. After giving informed consent, participants were asked to complete the vignette measure. This measure was presented in two parts. Before each part, participants were asked to rate their current mood using the seven-point Likert

scale described previously. The first part of the vignette measure contained one vignette (either target or foil) from each pair (either positive or negative); the second part contained the other half of each pair. Each part contains 22 positively and six negatively valenced items. Vignettes within each half were presented at random, and the two sets of vignettes were counterbalanced. Following each vignette question, participants were asked to rate their level of confidence in their answer using the five-point Likert scale described previously.

In between the two halves of the vignette measure, participants completed the NEO-PI-3 to measure trait neuroticism. After completing these measures, participants were asked to provide their age and sex. Upon completing the study, participants were thanked for their time and invited to direct questions about the study to the investigator via email. Participants received course credit for their participation. All procedures were approved by the University of North Carolina at Greensboro Institutional Review Board.

Data Preparation

Separate hit, miss, false alarm, and correct rejection rates for positive and negative vignettes were computed for each participant. "Yes" answers to target vignettes were scored as hits, while "No" answers to target vignettes were scored as misses. "Yes" answers to foil vignettes were scored as false alarms, while "No" answers to foil vignettes were scored as correct rejections. These scores were summed and divided by the total number of positive target, positive foil, negative target, or negative foil items to produce eight rates for each participant. All eight rates were converted to z scores. To measure participant accuracy, d' scores were calculated by subtracting false alarm rate z

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scores from hit rate z scores. Hit rate and false alarm rate z scores were averaged to yield c scores, which are used as a measure of criterion and response bias, for positive and negative vignettes (Stanislaw & Todorov, 1999). Using this method, larger positive c scores are interpreted as suggesting a greater bias toward responding "yes." For the negative vignette set, larger positive c scores were therefore interpreted as a greater tendency to miscategorize subclinical experiences as clinical.

Analyses

To examine the effect of neuroticism on criterion, c scores were regressed on total neuroticism scores. Separate regressions were performed for positive vignette c scores, negative vignette c scores, and overall c scores. The same procedure was used to examine the effect of neuroticism on accuracy using d' scores. This procedure was also used to examine the effect of average confidence per item as well as that of overall mood on criterion and accuracy for positive vignettes, negative vignettes, and overall. Multiple regressions in which the score of interest was regressed on all six neuroticism facets (entered at the same step) were performed in order to explore the extent to which facets might predict variance in criterion and accuracy for positive vignettes, negative vignettes, and overall.

To examine the effect of neuroticism on mood and confidence, overall mood scores and average confidence scores were each regressed on total neuroticism scores. Mutiple regressions in which mood and confidence were each regressed on all six neuroticism facets (entered at the same step) were performed in order to explore the

extent to which facets might predict variance in average confidence per item as well as overall mood.

In order to explore the extent to which the effects of confidence and mood on criterion and accuracy for positive, negative, and all vignettes varied at different levels of neuroticism, separate hierarchical regressions for total neuroticism score and each facet score were performed for each score of interest. For tests of the interaction between confidence and neuroticism score, confidence was entered at the first step, neuroticism total or facet score was entered at the second step, and the multiplicative interaction term was entered at the third step. For tests of the interaction between mood and neuroticism score, mood was entered at the first step, neuroticism total or facet score was entered at the second step, and the multiplicative interaction between mood and neuroticism was entered at the third step.

CHAPTER III

RESULTS

Sample and Measure Characteristics

Separate c and d' scores were computed for all vignettes, positive vignettes only, and negative vignettes only. Separate c and d' scores for each half of the measure were also computed for each category in order to test accuracy and criterion differences within the measure. C scores across both halves were reasonably correlated for all vignettes ($r =$ .60, $p < .001$), positive vignettes only ($r = .47$, $p < .001$), and negative vignettes only ($r =$ .77, $p < .001$). There were no significant criterion differences across halves for all vignettes, $t(263) = -0.22$, $p = .83$; positive vignettes only, $t(263) = -0.21$, $p = .98$; or negative vignettes only, $t(263) = -0.31$, $p = .76$. D' scores across both halves were reasonably correlated for all vignettes ($r = .37$, $p < .001$), positive vignettes only ($r = .39$, $p < .001$), and negative vignettes only ($r = .62$, $p < .001$). There were no significant accuracy differences across halves for all vignettes, $t(263) = -0.23$, $p = .82$; positive vignettes only, $t(263) = -0.24$, $p = .81$; or negative vignettes only, $t(264) = -0.31$, $p = .76$. Given the lack of criterion and accuracy differences across the two halves of the vignette measure, scores for the entire measure (collapsed across halves) were used in all subsequent analyses.

Mood scores from both halves were averaged to compute a composite overall mood score for each participant. Participant overall mood was neutral to good ($M = 4.81$,

SD = 1.24). Mood scores across both halves of the test were highly correlated (*r* = .65, *p* < .001) and did not significantly differ across halves, *t*(263) = -0.22, *p* = .83. Confidence scores were averaged across items to yield average confidence scores per item for each participant. Participants were generally confident in their answers (*M* = 4.08, *SD* = 0.575). Average confidence scores across both halves of the test were highly correlated (*r* = .78, *p* < .001) and did not significantly differ across halves, *t*(263) = -0.65, *p* = .52. Average confidence scores for positive and negative items were very strongly correlated (*r* = .91, *p* < .001) Average confidence for positive items was significantly higher (by 0.24 points) than that for negative items, *t*(263) = 15.87, *p* < .001.

Confirmatory Hypothesis Tests

This study hypothesized that higher neuroticism scores would prediction higher *c* scores for negative vignettes. This hypothesis was not supported by study findings. Participants exhibited variability in total and facet neuroticism scores (Table 1). Total neuroticism score did not significantly predict *c* scores for negative vignettes, *F*(1, 260) = 1.88, *B* = 0.003, *SE* = 0.002, *p* = .17. The six neuroticism facets did not significantly predict *c* scores for negative vignettes taken together, *F*(6, 255) = 0.61, *p* = .72, or examined separately within a multiple regression model (Table 2).

Total neuroticism score did not significantly predict *c* scores for positive vignettes, *F*(1, 260) = 1.48, *B* = -0.003, *SE* = 0.002, *p* = .23. The six neuroticism facets did not significantly predict *c* scores for positive vignettes taken together, *F*(6, 255) = 0.92, *p* = .48; or examined separately within a multiple regression model (Table 2). Total neuroticism score did not significantly predict overall *c* scores across all vignettes, *F*(1,

260) $= 0.40$, $B = 0.001$, $SE = 0.002$, $p = .53$. The six neuroticism facets did not

significantly predict overall c scores taken together, $F(6, 255) = 0.519$, $p = .79$; or

examined separately within a multiple regression model (Table 2).

Exploratory Analyses

  Effects of neuroticism on confidence and mood. In order to explore the levels

of confidence respondents high in neuroticism experience in self-report tasks, average

confidence per item was regressed on neuroticism scores. Neuroticism predicted slightly

lower average confidence per item, $F(1, 260) = 4.23$, $B = -0.003$, $p = .04$; accounting for

1.6% of the variance in confidence. The six neuroticism facets entered together

significantly predicted average confidence per item, $F(6, 255) = 3.58$, $p = .002$;

accounting for 7.8% of the variance in confidence. This effect was driven by the

significant (albeit opposite) effects from two facets: N1 (anxiety), $B = 0.03$, $SE = 0.01$, p

$= .003$; and N6 (vulnerability to stress), $B = -0.03$, $SE = 0.01$, $p = .003$. The other four

facets were not significant within the model (Table 3).

  Given its strong association with negative affect, it was not surprising that higher

levels of neuroticism predicted lower overall mood, $F(1, 261) = 28.53$, $B = -0.02$, $p <$

$.001$; accounting for 9.9% of the variance in mood. The six neuroticism facets entered

together significantly predicted average mood, $F(6, 255) = 5.01$, $p < .001$; accounting for

10.5% of the variance in mood. None of the individual facets significantly predicted

mood when examined separately within the model (Table 3).

  Effects of confidence and mood on c. C scores were regressed on average

confidence per item to explore whether response bias could be predicted from higher or

lower levels of respondent confidence. Interactions between confidence and neuroticism scores were tested to explore the extent to which any relationship between confidence and response bias was moderated by overall neuroticism and/or particular neuroticism facets. Average confidence per item significantly predicted overall c scores, $F(1, 262) = 5.37$, $B = 0.19$, $p = .02$, accounting for 2.0% of the variance in overall c scores. Average confidence per item did not significantly predict c scores for negative vignettes, $F(1, 262) = 1.11$, $B = 0.09$, $p = .29$. Average confidence per item significantly predicted c scores for positive vignettes, $F(1, 262) = 20.09$, $B = 0.34$, $p < .001$; accounting for 7.1% of the variance in c scores for positive vignettes.

There was no significant interaction between average confidence per item and total neuroticism score (nor for any of the individual facets) in predicting c scores for negative vignettes (Table 4). There was a significant interaction between N2 (hostility) and average confidence per item in predicting c scores for positive vignettes, $B = 0.05$, $SE = 0.02$, $p = .01$. Hostility and confidence also interacted to significantly predict overall c scores, $B = 0.40$, $SE = 0.02$, $p = .02$. There was a significant interaction between N6 (vulnerability to stress) and average confidence per item in predicting c scores for positive vignettes, $B = 0.04$, $SE = 0.02$, $p = .02$. Vulnerability to stress and confidence also interacted to significantly predict overall c scores, $B = 0.04$, $SE = 0.02$, $p = .03$. There was no significant interaction between average confidence per item and total neuroticism score (nor for any of the other individual facets) in predicting c scores for positive vignettes or overall c scores (Table 4).

C scores were regressed on overall mood to explore whether response bias could be predicted from lower mood scores. Interactions between mood and neuroticism scores were tested to explore the extent to which any relationship between mood and response bias was moderated by overall neuroticism and/or particular neuroticism facets. Average mood did not significantly predict *c* scores for negative vignettes, $F(1, 262) = 0.16$, $B = -0.02$, $SE = 0.04$, $p = .70$; positive vignettes, $F(1, 262) = 2.90$, $B = 0.06$, $SE = 0.04$, $p = .09$; or all vignettes, $F(1, 262) = 0.14$, $B = 0.02$, $SE = 0.04$, $p = .71$. There was no significant interaction between average mood and total neuroticism score (nor for any of the individual facets) in predicting *c* scores for negative vignettes, positive vignettes, or all vignettes (Table 5).

Effects of neuroticism on *d'*. *D'* scores were regressed on total and facet neuroticism scores to examine whether neuroticism predicts any variance in signal-detection accuracy. Total neuroticism score did not significantly predict *d'* scores for negative vignettes, $F(1, 260) = 1.68$, $B = 0.004$, $SE = 0.003$, $p = .20$. The six neuroticism facets entered together significantly predicted *d'* scores for negative vignettes, $F(6, 255) = 7.11$, $p < .001$; accounting for 14.3% of the variance in *d'* scores for negative vignettes. This effect was driven by significant effects from four facets: N1 (anxiety), $B = 0.06$, $SE = 0.02$, $p < .001$; N2 (hostility), $B = -0.03$, $SE = 0.02$, $p = .046$; N4 (self-consciousness), $B = 0.06$, $SE = 0.02$, $p = .002$; and N6 (vulnerability to stress), $B = -0.06$, $SE = 0.02$, $p = .003$. The other two facets were not significant predictors within the model (Table 6).

Total neuroticism score did not significantly predict *d'* scores for positive vignettes, $F(1, 260) = 0.06$, $B = 0.001$, $SE = 0.004$, $p = .81$. The six neuroticism facets

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entered together significantly predicted d' scores for positive vignettes, $F(6, 255) = 3.13$, $p = .006$; accounting for 6.8% of the variance in d' scores for positive vignettes. This effect was driven by significant (albeit opposite) effects from two facets: N4 (self-consciousness), $B = 0.05$, $SE = 0.02$, $p = .03$; and N6 (vulnerability to stress), $B = -0.05$, $SE = 0.03$, $p = .047$. The other four facets were not significant predictors within the model (Table 6).

Total neuroticism did not significantly predict overall d' scores, $F(1, 260) = 1.22$, $B = 0.004$, $SE = 0.004$, $p = .27$. The six neuroticism facets entered together significantly predicted overall d' scores, $F(6, 255) = 6.67$, $p < .001$; accounting for 13.6% of the variance in overall d' scores. This effect was driven by significant effects from four factors: N1 (anxiety), $B = 0.06$, $SE = 0.02$, $p = .001$; N2 (hostility), $B = -0.04$, $SE = 0.02$, $p = .03$; N4 (self-consciousness), $B = 0.06$, $SE = 0.02$, $p = .002$; and N6 (vulnerability to stress), $B = -0.06$, $SE = 0.02$, $p = .01$. The other two facets were not significant predictors within the model (Table 6).

Effects of confidence on d'. D' scores were regressed on average confidence ratings to examine whether respondents who tended to report higher levels of confidence in their answers were, in fact, more accurate. Interaction effects between confidence and neuroticism scores were tested to explore how overall neuroticism and/or individual facets might affect the ability of confidence to predict accuracy. Average confidence per item significantly predicted d' scores for negative vignettes, $F(1, 262) = 11.82$, $B = 0.40$, $p = .001$; accounting for 4.3% of the variance in d' scores for negative vignettes. Average confidence per item significantly predicted d' scores for positive vignettes, $F(1, 262) =$

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32.30, $B = 0.78$, $p < .001$; accounting for 11.0% of the variance in d' scores for positive

vignettes. Average confidence per item significantly predicted overall d' scores, $F(1,$

$262) = 20.20$, $B = 0.58$, $p < .001$; accounting for 7.2% of the variance in overall d'

scores.

      There was no significant interaction between average confidence per item and

total neuroticism score (nor for any of the individual facets) in predicting d' scores for

negative vignettes (Table 7). There was a significant interaction between N1 (anxiety)

and average confidence per item in predicting d' scores for positive vignettes, $B = -0.08$,

$SE = 0.03$, $p = .02$. There was a significant interaction between N2 (hostility) and

average confidence per item in predicting d' scores for positive vignettes, $B = 0.09$, $SE =$

0.03, $p = .003$. Hostility and confidence also interacted to significantly predict overall d'

scores, $B = 0.01$, $SE = 0.03$, $p = .048$. There was a significant interaction between N3

(depression) and average confidence per item in predicting d' scores for positive

vignettes, $B = 0.06$, $SE = 0.03$, $p = .04$. There was no significant interaction between

average confidence per item and total neuroticism score (nor for any of the other

individual facets) in predicting d' scores for positive vignettes or overall d' scores (Table

7).

      Effects of mood on d'. D' scores were regressed on average mood scores to test

whether mood had any effect on accuracy. Interaction effects between mood and

neuroticism scores were tested to explore whether overall neuroticism and/or individual

facet levels moderated any relationship between mood and accuracy. Mood did not

significantly predict *d'* scores for negative vignettes, $F(1, 262) = 1.73$, $B = -0.07$, $SE = 0.06$, $p = .19$. There was a significant interaction between mood and total neuroticism score in predicting *d'* scores for negative vignettes, $B = -0.01$, $SE = 0.003$, $p = .048$. There was no significant interaction between mood and any of the individual neuroticism facets in predicting *d'* scores for negative vignettes (Table 8).

Mood alone did not significantly predict *d'* scores for positive vignettes, $F(1, 262) = 1.69$, $B = -0.09$, $SE = 0.07$, $p = .19$. There was a significant interaction between N3 (depression) and mood in predicting *d'* scores for positive vignettes, $B = -0.03$, $SE = 0.01$, $p = .01$. There was no significant interaction between average mood and total neuroticism score (nor for any of the other individual facets) in predicting *d'* scores for positive vignettes (Table 8).

Mood alone did not significantly predict overall *d'* scores, $F(1, 262) = 2.37$, $B = -0.10$, $SE = 0.06$, $p = .13$. There was a significant interaction between mood and total neuroticism score in predicting overall *d'* scores, $B = -0.01$, $SE = 0.003$, $p = .04$. N3 (depression) and mood also interacted to significantly predict overall *d'* scores, $B = -0.03$, $SE = 0.01$, $p = .02$. There was no significant interaction between mood and any of the other individual facets in predicting overall *d'* scores (Table 8).

CHAPTER IV

DISCUSSION

This study used a signal-detection model to investigate putative mechanisms underlying the relationship between neuroticism and overendorsement of psychiatric symptoms. Participants were asked to decide whether target and foil vignettes qualified for a given label. One set of vignettes described negative, potentially symptomatic psychological experiences. The other set was written to serve as a comparison and described positive psychological experiences. Criterion (c) and accuracy (d') scores for each set were computed for each participant based on their responses. The hypothesis that participants higher in neuroticism would exhibit higher c scores for negative vignettes – that is, that they would set a laxer criterion when deciding whether the experiences described qualified for a given clinical label – was not supported.

The fact that neuroticism failed to explain any variance in criterion setting suggests that any effect of neuroticism might have been superseded by other, unmeasured predictors. For this measure, actual knowledge of the terms presented might have been the most powerful predictor of response. When assessing vignettes not drawn from their own experience, individuals might exhibit little variance in response bias given similar knowledge of the vocabulary they are being asked to use. Individual ability and performance differences might have washed out any personality differences in response style. This possibility is supported by the finding that higher average confidence

predicted greater accuracy for positive vignettes, negative vignettes, and overall. In such a case, the measure used in this study might be unable to adequately capture any criterion differences related to neuroticism.

In order to explore the levels of confidence respondents high in neuroticism experience in self-report tasks, average confidence per item was regressed on neuroticism scores. Higher levels of neuroticism predicted slightly lower average confidence. The effect in this case was small, and it is unclear at this point whether an effect of this size makes a meaningful difference in response variability. However, the association suggests that respondents who are higher in neuroticism might be less consistent in deciding whether particular life experiences qualify for particular symptom report items due to lower confidence. Longitudinal research (e.g., through experience sampling methodology) could shed light on whether any response variability over time in relation to neuroticism is moderated by lower confidence.

Examination of the effect of neuroticism on average confidence at the facet level revealed some interesting heterogeneity. While higher vulnerability to stress facet scores predicted lower average confidence per item, higher anxiety facet scores predicted higher average confidence per item. Given that individuals higher in either of those facet scores might be expected to experience lower levels of confidence, these results would need to be explored in greater depth using confirmatory hypothesis tests in order for meaningful conclusions to be drawn.

C scores were regressed on average confidence per item to explore whether response bias could be predicted from higher or lower levels of confidence in ones

answers. Interestingly, average confidence per item significantly predicted criterion both for positive vignettes alone and all vignettes. Participants who reported greater average confidence in their answers had a slightly greater tendency to respond "yes" to positive items and overall – that is, they set a laxer criterion for deeming a given label appropriate for a given vignette. This finding suggests that response bias for positive items might promote a higher sense of confidence in ones answers.

Interactions between confidence and neuroticism scores were tested to explore the extent to which any relationship between confidence and response bias was moderated by overall neuroticism and/or particular neuroticism facets. Hostility and vulnerability to stress each interacted with average confidence per item to predict slightly greater tendency to respond "yes" to positive vignette items and overall at higher levels of each facet. These significant interactions defy easy explanation. Further confirmatory investigation into these phenomena would give a better sense for whether these results are spurious, or reflect real individual differences in response to positive items.

D' scores were regressed on total and facet neuroticism scores to examine whether neuroticism predicted any variance in signal-detection accuracy. Interaction effects between confidence and neuroticism scores were tested to explore how overall neuroticism and/or individual facets might affect the ability of confidence to predict accuracy. Although overall neuroticism had no significant effect on accuracy, significant (and heterogeneous) predictions of signal-detection accuracy were found at the neuroticism facet level. Anxiety predicted slightly greater accuracy for negative vignettes and overall. However, anxiety interacted with average confidence per item to predict

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slightly lower accuracy for positive vignettes – that is, the relationship between confidence and accuracy decreased at higher anxiety facet score levels. Depression interacted with average confidence per item to predict better accuracy for positive vignettes – that is, the relationship between confidence and accuracy increased at higher depression facet score levels. This effect of trait anxiety on the positive relationship between confidence and accuracy could be the result of some degree of pessimism or cognitive misappraisals of positive stimuli, although were that the case, the same phenomenon in the same direction would be expected to be present in depression.

Vulnerability to stress predicted slightly worse accuracy for positive vignettes, negative vignettes, and overall, while self-consciousness predicted slightly greater accuracy for negative vignettes, positive vignettes, and overall. These differences might reflect performance differences outside of neuroticism, such as focused attention or knowledge of the terms presented. Hostility predicted slightly worse accuracy for positive vignettes and overall. However, hostility interacted with average confidence per item to predict slightly better accuracy for positive vignettes and overall – that is, the relationship between confidence and accuracy increased at higher hostility facet score levels. Why higher hostility would improve the relationship between confidence and accuracy in labeling positive vignettes requires more in-depth investigation (e.g., using more substantial hostility assessments).

D' scores were regressed on average mood scores to test whether mood had any effect on accuracy. Interaction effects between mood and neuroticism scores were tested to explore whether overall neuroticism and/or individual facet levels moderated any

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relationship between mood and accuracy. Total neuroticism score and mood interacted to predict slightly worse accuracy for negative vignettes and overall – that is, participants with better overall mood were slightly less accurate at higher neuroticism score levels. Depression and mood interacted to predict slightly worse accuracy for positive vignettes and overall – that is, participants with better overall mood were slightly less accurate at higher depression facet score levels. Neither total neuroticism score, nor depression, nor mood significantly predicted variance in accuracy on their own. Still, these significant interactions suggest that any benefit to accuracy provided by positive mood is at least dampened by high trait neuroticism.

Given their exploratory nature and small coefficients, these findings must be interpreted with caution. The large number of exploratory tests performed could have increased the likelihood that any significant results reflected type I error rather than some true effect. Significant findings could be spurious or could reflect individual differences other than neuroticism. Nevertheless, this heterogeneity within neuroticism with regard to criterion and accuracy suggests that individual differences in response style might be better understood at the facet level by using more nuanced personality measurement.

Further empirical investigation into symptom self-report would benefit from including multiple methods of assessment. The use of symptom measures and malingering measures could give a better sense for how individual differences in response style influence the utility and psychometric properties (e.g., diagnostic specificity and sensitivity) of assessments commonly used in research and clinical settings. Qualitative study of item response to these measures (e.g., asking participants

what they think a particular question was asking and what they had in mind when responding) as well as quantitative study of item response to these measures (e.g., differential item functioning analyses) could complement signal-detection investigations into self-report.

This study represents an important step into the empirical study of symptom self-report. Despite current null confirmatory findings, exploratory findings suggest that individual differences in response style are more evident at the facet level of neuroticism than at the domain level and that these facet-level differences interact with confidence to predict further differences in signal-detection criterion and accuracy. Empirical methods such as signal-detection offer novel, objective ways to answer research questions regarding the mechanisms underlying clinical phenomena. Basic methods to study response style phenomena must be investigated further in order to improve the accuracy and validity of clinical and other assessments.

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APPENDIX A

TABLES

Table 1

Summary of Neuroticism Total and Facet Scores

Scale	Min	Max	Mean	*SD*
N1 (anxiety)	13.00	38.00	26.17	4.90
N2 (hostility)	9.00	38.00	23.15	5.04
N3 (depression)	9.00	39.00	23.75	5.43
N4 (self-consciousness)	10.00	38.00	24.26	5.24
N5 (impulsiveness)	11.00	38.00	24.45	4.36
N6 (vulnerability to stress)	9.00	36.00	21.00	4.45
N total	75.00	204.00	143.02	21.61

Table 2

Coefficients from Multiple Regression of C *Scores on Neuroticism Facet Scores*

	Vignettes								
	Positive			Negative			All		
Scale	*B*	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*
N1 (anxiety)	0.02	0.01	.13	0.01	0.01	.59	0.01	0.01	.29
N2 (hostility)	0.003	0.01	.80	0.01	0.01	.61	0.01	0.01	.57
N3 (depression)	-0.01	0.01	.30	-0.01	0.01	.43	-0.01	0.01	.28
N4 (self-consciousness)	-0.01	0.01	.43	0.01	0.01	.36	0.01	0.01	.66
N5 (impulsiveness)	-0.01	0.01	.57	-0.01	0.01	.64	-0.01	0.01	.53
N6 (vulnerability to stress)	-0.04	0.01	.76	0.01	0.02	.47	0.01	0.02	.65

Table 3

Coefficients from Multiple Regression of Average Confidence and Average Mood on Neuroticism Facet Scores

	Confidence			Mood		
Scale	*B*	*SE*	*p*	*B*	*SE*	*p*
N1 (anxiety)	0.03	0.01	.003	-0.01	0.02	.52
N2 (hostility)	-0.01	0.01	.20	-0.01	0.02	.63
N3 (depression)	-0.001	0.01	.90	-0.03	0.02	.14
N4 (self-consciousness)	-0.01	0.01	.40	0.001	0.02	.97
N5 (impulsiveness)	0.003	0.01	.75	-0.03	0.02	.11
N6 (vulnerability to stress)	-0.03	0.01	.003	-0.03	0.02	.21

Table 4

Coefficients from C *Score Interaction Effects for Average Confidence and Total and Facet Neuroticism Scores*

| | Vignettes | | | | | | | | |
| | Positive | | | Negative | | | All | | |
Scale	*B*	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*
N1 (anxiety) * confidence	-0.02	0.02	.34	-0.01	0.02	.59	-0.02	0.02	.47
N2 (hostility) * confidence	0.05	0.02	.01	0.03	0.02	.07	0.04	0.02	.02
N3 (depression) * confidence	0.02	0.02	.30	0.01	0.02	.42	0.02	0.02	.37
N4 (self-consciousness) * confidence	0.003	0.02	.85	0.03	0.02	.08	0.03	0.02	.16
N5 (impulsiveness) * confidence	0.01	0.02	.51	0.03	0.02	.21	0.02	0.02	.27
N6 (vulnerability to stress) * confidence	0.04	0.02	.02	0.04	0.02	.09	0.04	0.02	.03
N total * confidence	0.01	0.004	.14	0.01	0.01	.12	0.01	0.004	.10

Table 5

Coefficients from C *Score Interaction Effects for Average Mood and Total and Facet Neuroticism Scores*

	Vignettes								
	Positive			Negative			All		
Scale	*B*	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*
N1 (anxiety) * mood	-0.01	0.01	.15	<0.001	0.01	.96	-0.01	0.01	.56
N2 (hostility) * mood	-0.01	0.01	.30	-0.01	0.01	.36	-0.01	0.01	.27
N3 (depression) * mood	-0.004	0.01	.50	-0.003	0.01	.71	-0.003	0.01	.63
N4 (self-consciousness) * mood	-0.01	0.01	.49	0.001	0.01	.85	-0.001	0.01	.84
N5 (impulsiveness) * mood	<0.001	0.01	.99	0.01	0.01	.64	0.004	0.01	.64
N6 (vulnerability to stress) * mood	0.01	0.01	.49	0.004	0.01	.64	0.01	0.01	.50
N total * mood	-0.002	0.002	.39	-0.001	0.002	.73	-0.001	0.002	.56

Table 6

Coefficients from Multiple Regression of D' *Scores on Neuroticism Facet Scores*

| | Vignettes | | | | | | | | |
| | Positive | | | Negative | | | All | | |
Scale	B	SE	p	B	SE	p	B	SE	p
N1 (anxiety)	0.04	0.02	.06	0.06	0.02	<.001	0.06	0.02	.001
N2 (hostility)	-0.04	0.02	.06	-0.03	0.02	.046	-0.04	0.02	.03
N3 (depression)	-0.03	0.02	.24	-0.03	0.02	.07	-0.04	0.02	.07
N4 (self-consciousness)	0.04	0.02	.046	0.06	0.02	.002	0.06	0.02	.002
N5 (impulsiveness)	0.04	0.02	.08	0.03	0.02	.09	0.04	0.02	.054
N6 (vulnerability to stress)	-0.05	0.03	.047	-0.06	0.02	.003	-0.06	0.02	.005

Table 7

Coefficients from D' *Score Interaction Effects for Average Confidence and Total and Facet Neuroticism Scores*

| | Vignettes | | | | | | | | |
| | Positive | | | Negative | | | All | | |
Scale	*B*	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*
N1 (anxiety) * confidence	-0.08	0.03	.02	-0.02	0.03	.52	-0.04	0.03	.15
N2 (hostility) * confidence	0.09	0.03	.003	0.03	0.03	.20	0.06	0.03	.048
N3 (depression) * confidence	0.06	0.03	.04	0.03	0.02	.18	0.04	0.03	.11
N4 (self-consciousness) * confidence	0.01	0.03	.85	<0.001	0.03	.99	0.003	0.03	.93
N5 (impulsiveness) * confidence	0.02	0.04	.50	0.01	0.03	.85	0.01	0.03	.76
N6 (vulnerability to stress) * confidence	0.03	0.03	.37	0.04	0.03	.20	0.03	0.03	.28
N total * confidence	0.01	0.01	.28	0.004	0.01	.50	0.01	0.01	.44

Table 8

Coefficients from D' *Score Interaction Effects for Average Mood and Total and Facet Neuroticism Scores*

	Vignettes								
	Positive			Negative			All		
Scale	*B*	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*p*
N1 (anxiety) * mood	0.01	0.01	.61	-0.003	0.01	.76	0.001	0.01	.96
N2 (hostility) * mood	-0.01	0.01	.27	-0.01	0.01	.23	-0.02	0.01	.19
N3 (depression) * mood	-0.03	0.01	.02	-0.02	0.01	.06	-0.03	0.01	.02
N4 (self-consciousness) * mood	-0.03	0.01	.86	-0.02	0.01	.09	-0.02	0.01	.20
N5 (impulsiveness) * mood	-0.03	0.02	.07	-0.02	0.01	.20	-0.02	0.01	.11
N6 (vulnerability to stress) * mood	-0.02	0.02	.14	-0.02	0.01	.13	-0.02	0.01	.09
N total * mood	-0.01	0.003	.10	-0.01	0.003	.048	-0.01	0.003	.04

VIGNETTE MEASURE

The following are some experiences that people have reported. Please read each item carefully. Then, indicate if, in your opinion, a particular label applies to the experience in question.

1. You hear a voice talking about what you are doing. No one else hears the voice, but you're sure that it's really talking to you.

    In this example, was what you experienced a HALLUCINATION?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.
    Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

2. You give a presentation in front of your class. Your teacher gives you a good grade and tells you that it was the best student presentation he had seen this year.

    In this example, was what you experienced PRAISE?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.
    Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

3. You find it hard to focus on studying after a busy day, but you're able to study the next morning.

In this example, was what you experienced DIFFICULTY CONCENTRATING?
YES   NO

Please indicate your level of confidence in your answer to the item above.
**Not confident   A little bit confident   Somewhat confident   Mostly confident
Very confident**

4. You and a close family member talk on the phone about a movie you both saw recently. Your family member shares an opinion about how the movie should have ended.

In this example, was what you experienced SOCIAL SUPPORT?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
**Not confident   A little bit confident   Somewhat confident   Mostly confident
Very confident**

5. Out of nowhere, you begin to feel very nervous. You can feel your heart racing.

In this example, was what you experienced PANIC?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
**Not confident   A little bit confident   Somewhat confident   Mostly confident
Very confident**

6. You remember something funny that happened to you last week and draw a cartoon about it.

In this example, was what you experienced CREATIVITY?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.

Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

7. You are standing in a long line, and someone cuts in front of you. You get angry and ask that person to go to the back of the line.

   In this example, was what you experienced LOSING YOUR TEMPER?   **YES NO**

   Please indicate your level of confidence in your answer to the item above.

   Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

8. You put a lot of time and effort into learning how to cook an elaborate dish. In the end, it doesn't come out as good as you had expected, but you feel that you have learned something from the experience.

   In this example, was what you experienced PRIDE?   **YES   NO**

   Please indicate your level of confidence in your answer to the item above.

   Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

9. About a month ago, someone you had been dating for a while broke up with you unexpectedly. Since then, you've been feeling sad most of the time and haven't wanted to spend time with friends.

In this example, was what you experienced DEPRESSION?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

10. The parent of a friend has helped you get a job you wanted. You think about how fortunate you are that this person was so generous to you.

    In this example, was what you experienced GRATITUDE?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.
    Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

11. You are afraid of spiders, so much so that you make sure to kill any that come near you.

    In this example, was what you experienced a PHOBIA?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.
    Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

12. You attend a talk by an important person in your field. Afterward, you feel admiration for the speaker and think about how you would like to achieve greater professional success.

    In this example, was what you experienced INSPIRATION?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.

**Not confident   A little bit confident   Somewhat confident   Mostly confident
Very confident**

13. You happen to think about a minor argument you had with a parent when you were 12 or 13. You feel that you have ruined your parent's life.

    In this example, was what you experienced GUILT?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.
    **Not confident   A little bit confident   Somewhat confident   Mostly confident
    Very confident**

14. You are working on a difficult task. You begin to feel frustrated, but you keep trying to see if you can figure it out.

    In this example, was what you experienced PERSISTENCE?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.
    **Not confident   A little bit confident   Somewhat confident   Mostly confident
    Very confident**

15. It bothers you that your neighbor often plays loud music when you are trying to sleep. You feel certain that your neighbor must be an inconsiderate person.

    In this example, was what you experienced PARANOIA?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.

**Not confident   A little bit confident   Somewhat confident   Mostly confident
Very confident**

16. You are facing a setback, and you think about how things could have turned out better.

    In this example, was what you experienced HOPEFULNESS?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.
    **Not confident   A little bit confident   Somewhat confident   Mostly confident
    Very confident**

17. You are disappointed that a friend has cancelled plans with you because she has decided to spend time with someone she likes better.

    In this example, was what you experienced SOCIAL REJECTION?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.
    **Not confident   A little bit confident   Somewhat confident   Mostly confident
    Very confident**

18. A relative from out of town is visiting you this weekend. You think about how you can't wait to see her again.

    In this example, was what you experienced EXCITEMENT?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.
    **Not confident   A little bit confident   Somewhat confident   Mostly confident
    Very confident**

19. On any given day, you are likely to experience different emotions. Just today, you were feeling happy, but then you start to feel a little bit upset.

In this example, was what you experienced MOOD SWINGS?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

20. You receive your first paycheck from a new job, and you want to celebrate by going out tonight. Based on your other expenses, you calculate how much you can afford to spend.

In this example, was what you experienced SELF-CONTROL?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

21. For the past few days, you have been feeling better and more excited than usual. You have started a lot of projects at once, and you've barely slept.

In this example, was what you experienced MANIA?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

22. You are enjoying a day lounging on the beach. All of your cares and worries feel far away.

In this example, was what you experienced RELAXATION?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

23. Lately, you've been feeling a little down. You cheer yourself up by watching your favorite TV shows.

In this example, was what you experienced DEPRESSION?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

24. Out of nowhere, you feel calm and content.

In this example, was what you experienced JOY?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

25. Out of the corner of your eye, you mistake the shadow of a bush for a cloaked figure. When you take a closer look, you realize it was just an illusion.

In this example, was what you experienced a HALLUCINATION?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
**Not confident   A little bit confident   Somewhat confident   Mostly confident
Very confident**

26. You suddenly find yourself feeling very anxious for no real reason. You feel your heart racing, and you are unable to calm yourself down.

    In this example, was what you experienced PANIC?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.
    **Not confident   A little bit confident   Somewhat confident   Mostly confident
    Very confident**

27. Your doctor accidentally calls in the wrong prescription for you. You feel certain that your doctor cannot be trusted to be more careful.

    In this example, was what you experienced PARANOIA?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.
    **Not confident   A little bit confident   Somewhat confident   Mostly confident
    Very confident**

28. Your coworker invited everyone from work, but not you, to a birthday party with her friends and family.

    In this example, was what you experienced SOCIAL REJECTION?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.

Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

29. You are babysitting a child who keeps throwing her toy at you. You feel very frustrated with the child and take the toy away.

    In this example, was what you experienced LOSING YOUR TEMPER?   **YES NO**

    Please indicate your level of confidence in your answer to the item above.

    Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

30. You haven't been sleeping much lately, and you feel like you're on top of the world. Other people keep telling you that you seem much more excited and hyperactive than usual.

    In this example, was what you experienced MANIA?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.

    Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

31. You felt a little bit down out of nowhere this morning, but you start to cheer up by the afternoon.

    In this example, was what you experienced MOOD SWINGS?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.

Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

32. You're working on some paperwork. No matter how hard you try, you keep making mistakes.

In this example, was what you experienced DIFFICULTY CONCENTRATING?
YES   NO

Please indicate your level of confidence in your answer to the item above.

Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

33. You are afraid of heights, so much so that you always feel a bit nervous when you drive across a bridge.

In this example, was what you experienced a PHOBIA?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.

Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

34. You feel sick, so you stay home from work. When you return to work, you're certain that your time away is the reason why there have been so many problems at your workplace.

In this example, was what you experienced GUILT?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.

Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

The following are some experiences that people have reported. Please read each item carefully. Then, indicate if, in your opinion, a particular label applies to the experience in question.

1. You think you heard someone say your name, but you turn out to have been mistaken.

   In this example, was what you experienced a HALLUCINATION?   **YES   NO**

   Please indicate your level of confidence in your answer to the item above.
   Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

2. You give a presentation in front of your class. Your teacher gives you a good grade and tells you that it covered all of the assigned material satisfactorily.

   In this example, was what you experienced PRAISE?   **YES   NO**

   Please indicate your level of confidence in your answer to the item above.
   Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

3. You're reading an important book for class. After you've read a passage, you have trouble remembering what you've just read.

   In this example, was what you experienced DIFFICULTY CONCENTRATING?
   YES   NO

   Please indicate your level of confidence in your answer to the item above.
   Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

4. You and a close family member talk on the phone about recent events in your life. Your family member gives you advice about how you could approach a problem you've expressed concerned about.

In this example, was what you experienced SOCIAL SUPPORT?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

5. You are giving a presentation in front of a large audience, and you feel nervous. You can feel your heart rate increase.

In this example, was what you experienced PANIC?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

6. You remember something funny that happened to you last week and write it down in your journal so that you will remember it later.

In this example, was what you experienced CREATIVITY?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

7. You are standing in a long line, and someone cuts in front of you. You get angry and yell at that person.

   In this example, was what you experienced LOSING YOUR TEMPER?   **YES   NO**

   Please indicate your level of confidence in your answer to the item above.
   Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

8. You put a lot of time and effort into learning how to cook an elaborate dish. In the end, it comes out better than you had expected, and you feel a sense of accomplishment.

   In this example, was what you experienced PRIDE?   **YES   NO**

   Please indicate your level of confidence in your answer to the item above.
   Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

9. This afternoon, someone you had been dating for a while broke up with you unexpectedly. You feel sad for the rest of the day and cancel plans you had made with friends for that evening.

   In this example, was what you experienced DEPRESSION?   **YES   NO**

   Please indicate your level of confidence in your answer to the item above.
   Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

10. The parent of a friend has helped you get a job you wanted. You think about how much you are looking forward to starting the job.

In this example, was what you experienced GRATITUDE?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

11. You are afraid of spiders, so much so that you avoid cleaning your house for fear of encountering a cobweb.

In this example, was what you experienced a PHOBIA?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

12. You attend a talk by an important person in your field. Afterward, you feel excited about your field and have lots of ideas about how you could achieve greater professional success.

In this example, was what you experienced INSPIRATION?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

13. You happen to think about a minor argument you had with a parent when you were 12 or 13. You regret how you behaved at that time.

In this example, was what you experienced GUILT?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

14. You are working on a difficult task. You begin to feel frustrated, so you decide to take a short break.

In this example, was what you experienced PERSISTENCE?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

15. It bothers you that your neighbor often plays loud music when you are trying to sleep. You feel certain that your neighbor must be deliberately trying to keep you from sleeping.

In this example, was what you experienced PARANOIA?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

16. You are facing a setback, and you think about how things could still be better in the future.

    In this example, was what you experienced HOPEFULNESS?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.
    Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

17. You are disappointed that a friend has cancelled plans with you because she has to study for an exam.

    In this example, was what you experienced SOCIAL REJECTION?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.
    Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

18. A relative from out of town is visiting you this weekend. You think about fun things she might like to do during her visit.

    In this example, was what you experienced EXCITEMENT?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.
    Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

19. On any given day, you are likely to experience different emotions. Just today, you were feeling happy, but then you start to feel upset out of nowhere.

In this example, was what you experienced MOOD SWINGS?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
**Not confident   A little bit confident   Somewhat confident   Mostly confident
Very confident**

20. You receive your first paycheck from a new job, and you want to celebrate by going out tonight. Based on your other expenses, you decide to instead put any extra money toward a car you hope to buy next month.

    In this example, was what you experienced SELF-CONTROL?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.
    **Not confident   A little bit confident   Somewhat confident   Mostly confident
    Very confident**

21. This afternoon, you have been feeling better and more excited than usual. You have gotten some good ideas for a project, and you plan to stay up late to work on it.

    In this example, was what you experienced MANIA?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.
    **Not confident   A little bit confident   Somewhat confident   Mostly confident
    Very confident**

22. You are enjoying a day lounging on the beach. You think about the work waiting for you when you get back home.

In this example, was what you experienced RELAXATION?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
Not confident   A little bit confident   Somewhat confident   Mostly confident
Very confident

23. Lately, you've been feeling completely worthless, and you no longer enjoy watching your once favorite TV shows.

    In this example, was what you experienced DEPRESSION?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.
    Not confident   A little bit confident   Somewhat confident   Mostly confident
    Very confident

24. Out of nowhere, you feel overwhelmingly happy.

    In this example, was what you experienced JOY?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.
    Not confident   A little bit confident   Somewhat confident   Mostly confident
    Very confident

25. Out of the corner of your eye, you mistake the shadow of a bush for a cloaked figure. When you take a closer look, you still see the cloaked figure.

    In this example, was what you experienced a HALLUCINATION?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.

**Not confident   A little bit confident   Somewhat confident   Mostly confident
Very confident**

26. You find yourself worrying about a problem in your life that you don't know how to solve. You feel your heart beat faster, and you have to breathe deeply to calm yourself down.

    In this example, was what you experienced PANIC?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.
    **Not confident   A little bit confident   Somewhat confident   Mostly confident
    Very confident**

27. Your doctor accidentally calls in the wrong prescription for you. You feel certain that your doctor was trying to poison you.

    In this example, was what you experienced PARANOIA?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.
    **Not confident   A little bit confident   Somewhat confident   Mostly confident
    Very confident**

28. Your coworker didn't invite anyone from work, including you, to a birthday party with her friends and family.

    In this example, was what you experienced SOCIAL REJECTION?   **YES   NO**

    Please indicate your level of confidence in your answer to the item above.
    **Not confident   A little bit confident   Somewhat confident   Mostly confident
    Very confident**

29. You are babysitting a child who keeps throwing her toy at you. You feel very frustrated with the child and yell that you are going to throw all of her toys in the trash.

   In this example, was what you experienced LOSING YOUR TEMPER?   **YES NO**

   Please indicate your level of confidence in your answer to the item above.
   Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

30. You just received some good news, and you feel like you're on top of the world. Although no one else seems to notice, you feel excited and hyperactive for the rest of the day.

   In this example, was what you experienced MANIA?   **YES   NO**

   Please indicate your level of confidence in your answer to the item above.
   Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

31. You felt very upset out of nowhere this morning, but you feel fantastic by the afternoon.

   In this example, was what you experienced MOOD SWINGS?   **YES   NO**

   Please indicate your level of confidence in your answer to the item above.
   Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

32. You're working on some paperwork. You have to double check that you haven't made any mistakes.

In this example, was what you experienced DIFFICULTY CONCENTRATING?
YES   NO

Please indicate your level of confidence in your answer to the item above.
Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

33. You are afraid of heights, so much so that you take lengthy detours to avoid driving across bridges.

In this example, was what you experienced a PHOBIA?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident

34. You feel sick, so you stay home from work. When you return to work, you're concerned that your time away might have inconvenienced your coworkers.

In this example, was what you experienced GUILT?   **YES   NO**

Please indicate your level of confidence in your answer to the item above.
Not confident   A little bit confident   Somewhat confident   Mostly confident Very confident