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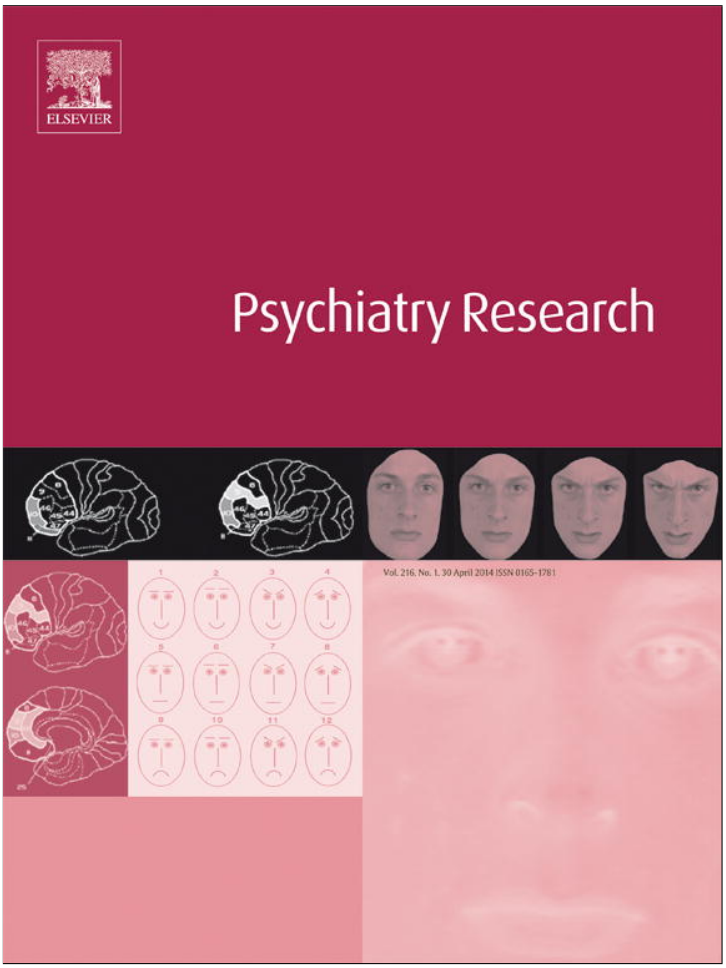

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Self-conscious emotions' role in functional outcomes within clinical populations

Rebecca MacAulay*, Alex Cohen

Louisiana State University, Department of Psychology, 236 Audubon Hall, Baton Rouge, LA 70803, U.S.A.

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ABSTRACT

Patients with severe mental illnesses (SMI) often experience dysfunction in their ability to efficiently carry out everyday roles and/or skills. These deficits are seen across many domains of daily functioning. We suggest that the "self-conscious emotions" of pride and shame play a role in these functional outcomes. Pride and shame appear to facilitate individuals' ability to evaluate their group status, detect social threats, and to adjust their behaviors accordingly. This study utilized an objective performance measure of functional capacity and a self-report of quality of life (QoL) to examine the respective roles of pride and shame in functional outcomes within two SMI patient groups (schizophrenia and affective disorder) and a community control group. The influence of neurocognition, affect and symptomatology on functional outcomes was also assessed. The patient groups did not differ in cognitive functioning, QoL, or shame. The schizophrenia group reported significantly higher pride and displayed worse objective performance than the other groups. Within each of the groups, shame had an inverse relationship with QoL, while pride positively associated with QoL. Shame associated with worse functional capacity in the schizophrenia group. Shame associated with better functional capacity, while pride associated with worse functional capacity within the affective disorder group.

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1. Introduction

Patients with severe mental illnesses (SMI) frequently experience dysfunction in their ability to efficiently carryout everyday roles and/or skills. These deficits are seen across a multitude of domains, to include: independent living skills, vocational and financial responsibilities, and interpersonal relationships (Green et al., 2000, 2004). While there has been some success in attenuating patients' symptoms via current psychosocial and pharmacological interventions there remains notable impairments in patients' daily functioning skills (Bowie and Harvey, 2006). Thus, determining factors that significantly influence functional outcomes in clinical patients remains an important direction for research. Research suggests that affective traits, as well as neuro – and social cognitive dysfunction are associated with measures of functional outcomes in patients with a SMI (Horan et al., 2008; Fett et al., 2011; Keefe et al., 2004); however, a large proportion of variance in functional outcomes still remains unexplained by these factors. Moreover, while increased attention has been paid to the role of broad emotional factors (i.e., positive affect: PA and negative affect: NA) in functional outcomes, the emotions that comprise the domains of PA and NA are considerably heterogeneous in many regards (e.g., differences in their underlying neurobiological mechanisms and interpersonal functions). In the present paper, we propose that the "self-conscious emotions" of pride and shame, which are linked to distinct global, internal, and stable attributions about the self (Lewis, 2007; Tangney and Dearing, 2002; Tangney et al., 1992; Tracy and Robins, 2007b), are important to understanding how emotional factors influence functional outcomes both generally, as well as pathologically. Pride and shame were examined in terms of functional capacity (as measured by a brief version of the UCSD Performance-based Skills Assessment: UPSA-2; Patterson et al., 2001) and quality of life (QoL) within two SMI patient groups (schizophrenia and affective disorders), as well as a matched community control group. The independent contributions of neurocognition, affective traits and symptomatology on functional outcomes were also assessed.

Individual differences in the tendency to experience negative as compared to positive emotional states has been linked to an increased risk of developing a clinical disorder, as well as being found in patients with a SMI (Blanchard et al., 2001; Watson et al., 1988a, 1988b). Specifically, trait PA, defined as the tendency to experience positive emotions (e.g., enthusiasm and pride) is associated with improved QoL and better functional outcomes; whereas trait NA, defined as the tendency to experience negative emotions (e.g., anger and shame), is associated with worse community functional outcomes within schizophrenia (Blanchard et al., 1998; Horan et al., 2008). These relationships appear to be independent of cognitive impairment and symptomatology within schizophrenia

* Corresponding author. Tel.: +1 310 995 7620; fax: +1 225 578 4125.
E-mail address: rkmacaulay@gmail.com (R. MacAulay).

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patients. Similar relationships between QoL and affective traits have also been found within non-clinical populations (see Lyubomirsky et al., 2005). However, while there appears to be a link between emotional factors and functional outcomes, more research is needed to understand how such factors might influence outcomes. To address this issue, this study examined the emotions of shame and pride, which we believe to be more proximally related to functional outcomes. As we will discuss, shame and pride both have distinct neurobiological correlates, involve internalizing self-relevant attributions styles, play an important role in the development of self-esteem, and are related to one's ability to function within social groups.

Emotional experience is important to understanding pathology in that emotions have distinct underlying biological mechanisms that serve to differentially influence our behavioral and psychological responses in response to environmental challenges (see Damasio, 2004). Importantly, information regarding an emotion's functional role might be masked when solely focusing on the broad affective domains. For instance, the emotions of anger and shame are both included in the measurement of NA, yet the experience of anger often involves external attributions of other-blame, whereas the experience of shame involves the negative evaluation of oneself and attributions of self-blame (see Lazarus, 1993; Tracy and Robins, 2007b). Moreover, the experience of anger and shame appear to serve different functions as well as elicit different behavioral patterns (e.g., approach vs. avoidance).

As discussed, emotions play an important role in guiding social behaviors. In particular, the complex emotions of shame and pride appear to distinguish themselves from other emotions both biologically and behaviorally. Shame and pride appear to facilitate individuals' ability to evaluate their group status, detect social threats, and to adjust their behaviors accordingly. Pride is largely viewed as a positive emotion and is believed to reflect positive internal attributions that are both stable and centered on beliefs about ones' core competencies (Tracy and Robins, 2007b). Pride is activated in response to actions that promote group acceptance, and developmentally the experience of pride reinforces behaviors associated with obtaining positive group social status, which in turn serves to develop and maintain one's self-esteem (Tracy and Robins, 2007a). The experience of pride is also linked to perceptions of competence and warmth of one's social group members (see Harris and Fiske, 2007). Pride is linked to both less depression and trait anxiety, as well as greater relationship satisfaction (see Tracy et al., 2010). Conversely, shame is a negative affective state that involves the experience of negative evaluation of oneself and is linked to physiological changes (i.e., cortisol release) in response to psychosocial stress (see Dickerson and Kemeny, 2004). Shame can serve an adaptive function through shaping (i.e. discouraging) maladaptive behaviors (e.g., fighting or stealing), however the repeated experience of shame is associated with deleterious outcomes such as depression and a negative self-image, as well as having potential underlying biological mediators that heighten stress reactivity (e.g., heightened cortisol release and lowered serotonin) and increase behavioral avoidance (see Gilbert and McGuire, 1998; Gilbert, 2000; Gruenewald et al., 2004). Furthermore, while shame is significantly associated with negative attribution styles – it appears to make its own independent contributions to depression (Tangney et al., 1992). Shame has been linked to greater behavioral avoidance as well as severer pathology in both depression and schizophrenia (Gilbert and McGuire, 1998; Gilbert, 2000; Morrison, 1985) and has been found to mediate the relationship between perceived low social status and depression (Tracy and Robins, 2007a). Moreover, the experience of shame is associated with physiological responses to stress (stress induced cortisol) that are linked to pathology within both depression and schizophrenia (see Southwick et al., 2005 and Walker et al., 2008). Similar, stress-induced relationships with shame have been found in children (Lewis and Ramsay, 2002). Clinically speaking, shame may be an important treatment target to improving functional outcomes within SMI populations. Shame has proven to be an important and modifiable predictor of health-related quality of life in other highly stigmatized health conditions (HIV-positive individuals; Persons et al., 2010). In this regard, greater understanding of the role of shame, which is commonly reported by patients with a SMI, may help to inform treatment interventions (Miller and Mason, 2005; Morrison, 1985).

Pride and shame are also closely tied to the maintenance and development of self-esteem. Developmentally shame appears to contribute to the development and maintenance of negative beliefs about oneself (e.g., "I always fail because I am incompetent"), whereas the tendency to experience pride enhances one's self-image (Lewis, 2007). In this regard, individual differences in pride and shame would play a prominent role in the development of core competencies and the maintenance of such perceptions, which in turn would influence functional outcomes. Indeed, pride and shame have both been posited to be a mechanism by which the maintenance and enhancement of self-esteem may occur (see Tracy and Robins, 2007a). Consistent with this notion, Brown and Marshall (2001) found that pride and shame (as measured by single-item scales from the Positive and Negative Affect Schedule: PANAS; Watson et al., 1988a, 1988b) accounted for 83% of the variance in self-esteem scores, and they were the only emotions that significantly predicted self-esteem scores. In summary, self-conscious emotions appear to play a regulatory in social behaviors that influence functional outcomes.

Neuro- and social-cognitive factors appear to play a role in functional outcomes; however, as Fett et al. (2011) meta-analysis on the relationship between cognition and functional outcomes in schizophrenia illustrated, there remains a large proportion of unexplained variance in functional outcomes. Specifically, social cognition and neurocognition, which both appear to independently contribute to functional outcomes, leave approximately 75% of the variance in functional outcome measures unexplained (Fett et al., 2011). Similarly, while patient symptomatology has been linked to QoL, a large proportion of variance remains largely unaccounted for by symptomatology alone in patients with schizophrenia, schizoaffective and/or a mood disorder (Kuehner and Buerger, 2005; Ritsner et al., 2000). This research also suggests that psychosocial factors play an important role in the subjective QoL of patients with a SMI. Thus, studying pride and shame, which are predictive of such factors is an important direction for research that might help to inform future treatment interventions and research.

The expression of pride and shame in response to success and failure appears to be a cross culture phenomena that cannot entirely be explained by social learning processes, as the behavioral expression of these emotions in response to winning and losing are also evident in the congenitally blind (Tracy and Matsumoto, 2008). From a neurological perspective it is becoming increasingly evident that social cognitive and affective processes are reliant on similar systems and often appear to have an interdependent nature (e.g., emotional understanding and experience both play a critical role in social interactions; see Kennedy and Adolphs, 2012; Olsson and Ochsner, 2008). Shame and pride in particular have both been associated with regions of the brain associated with social cognition (particularly, the ability to make inferences about others intentions), as well as motivation systems. Specific neural activations within medial and inferior frontal gyrus have been found for shame as compared to guilt (Michl et al., 2012). Neural regions in the right posterior superior temporal sulcus and left temporal pole have been found to be activated in pride but not joy conditions (Takahashi et al., 2008), and although

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not consistently found, activation of regions implicated in emotion regulation (ventromedial prefrontal cortex) and motivation (ventral tegmental area) appear to play a general role in self-conscious emotions (Zahn et al., 2009; Michl et al., 2012).

Pride and shame are sociobiologically relevant emotions that likely evolved to maintain social status hierarchies and facilitate social group interactions. We suggest that the emotions of pride and shame play a specific role in functional outcomes as they regulate social behaviors, and play a fundamental role in the development and maintenance of beliefs about one's competencies. We hypothesized that patients with a SMI (schizophrenia and affective disorders) would report significantly higher levels of shame and lower levels of pride compared to a community control group. In turn, shame would associate with worse functional outcomes, whereas pride would associate with better functional outcomes within all groups. We specifically hypothesized pride would associate with better social QoL, while shame would associate with worse social QoL. We also analyzed whether these individual difference variables were significantly intercorrelated with each other. Based on past research, affective traits, patient symptoms, and neurocognition were also assessed in order to quantify their influence on the study variables and account for potential confounds.

2. Methods

2.1. Participants

Participants were recruited from a community mental health outpatient clinic, community-based assisted living facilities, and from the general community. Patients included (a) 26 individuals with Diagnostic & Statistical Manual of Mental Disorders 4th edition (DSM-IV; Association, 1994) diagnosed schizophrenia, and (b) 21 individuals with a DSM-IV affective disorder. The non-psychiatric control group was comprised of 34 individuals who did not meet current criteria or have a history of a DSM-IV diagnosis. Diagnoses were based on information obtained from the patients' medical records and a structured clinical interview (Structured Clinical Interview for DSM-IV: SCID; First et al., 1996). Exclusion criteria included: (a) global assessment of functioning rating below 30, (b) evidence of mental retardation from medical history, (c) current or historical DSM-IV diagnosis of substance dependence indicative of severe physiological symptoms (e.g., delirium tremens or black outs), and (d) history of significant head trauma (requiring overnight hospitalization). All patients were clinically stable at the time of testing and receiving pharmacological treatment under the supervision of a multi-disciplinary team.

2.2. Procedures and measures

2.2.1. Diagnostic and symptom ratings

The Brief Psychiatric Rating Scale (BPRS; Lukoff et al., 1986) was used to measure patients' symptoms; factor subscale scores (defined in Ventura et al., 2000) reflecting positive, negative, depressive/anxiety, and mania/excitement symptoms were employed to assess the relationship between patient symptoms and functional outcomes. Preliminary diagnoses and symptom ratings were made by one of four doctoral level students who were trained to criterion (intra-class correlation coefficient values >0.70) utilizing the BPRS symptom scales. Diagnoses and ratings were based on information obtained from medical records, the patients' treatment teams, patients' self-report and behavioral observations made during the research interviews. Consensus for final ratings and diagnoses were obtained from all case conference members upon review of clinical interview (led by a licensed clinical psychologist) and were recorded when full agreement by the case conference members was made.

2.2.2. Neurocognitive functioning

An empirically supported measure of cognitive functioning was administered to assess for its influence on outcome variables (Brief Assessment of Cognition in Schizophrenia: BACS; Keefe et al., 2004). The BACS consists of six neurocognitive tests that are used to assess verbal memory, working memory, motor speed, attention, executive functions and verbal fluency. The six subtests were first transformed into *z*-scores for each individual. Next, these standardized tests scores were summed to form an average score, which was then converted to a *z*-score to form the BACS composite score.

2.2.3. Functional outcome measures

The UPSA-2 is a brief performance based measure that assesses an individual's everyday living skills in five selected domains of daily functioning: (1) financial skills, (2) communication, (3) organization/planning, (4) transportation, and (5) household management. Performance tasks simulate daily activities (e.g., planning a doctor appointment) that are considered to be necessary for independent functioning in the community. UPSA-2 scores are computed by converting total scores for each domain into a 0–20 point index. Domain index scores are then summed in order to create an UPSA summary score. This yields a score range of 0–100 points with higher scores reflecting better performance.

QoL was assessed using a modified computerized brief version of Lehman's (1995) scale: the QoL-B. The QoL-B is a self-report measure that evaluates seven areas of daily functioning: home concerns, daily activities, family relationships, social relationships, financial concerns, legal concerns, and health concerns. Areas of functioning are assessed across two domains: individuals' objective and subjective perceptions of QoL. QoL-B items for each area were respectively summed within each domain to create domain subscales. Social Objective Total and Subjective Total QoL-B scales were formed by summing each of the respective domain's items. Social subjective (e.g., satisfaction with social interactions) and objective (e.g., frequency of social interactions) subscales were also analyzed. Due to unequal range between Objective QoL-B subscales, scores were first converted into *z*-scores before being summed to create a global composite scale of Objective Total QoL-B. Internal consistency reliabilities ranged from adequate on the Objective Total scale (Chronbach's $\alpha=0.69$) to good on the Subjective Total Scale (Chronbach's $\alpha=0.81$).

2.2.4. Emotions

Emotions were measured using a computerized version of the PANAS, which has been shown to have good item validity (Watson et al., 1988a, 1988b). Participants were requested to respectively self-report how often they *generally* experience ten NA items and ten PA items on a 5-point Likert scale from one (very slightly or not at all) to five (extremely). NA and PA scales were formed by respectively summing their emotional items. The emotional items: proud and ashamed, which were independently analyzed were excluded from the composite NA and PA scales.

2.3. Data analyses

The testing battery was broken into two sessions to reduce testing fatigue. Data for the second session was not available for 11 subjects (controls: $n=6$, affective disorder $n=4$, schizophrenia: $n=1$) due to technical, literacy and other issues.

Preliminary analyses to identify potential confounds were performed before examining the primary hypotheses. Relationships between demographic characteristics (sex, ethnicity, education and age) and variables of interest were examined within all levels of analyses. Individuals with unipolar and bipolar affective disorders did not statistically on any of the study's outcome variables, and were thus were collapsed into a single affective disorder group.

Within both patient groups, the relationship between the four BPRS factor subscales (positive, negative, depressive/anxiety, and mania/excitement) with functional outcomes and neurocognition were also assessed. Scatterplots were used to visually inspect for potential spurious relationships.

Data analyses were conducted in three phases. First, independent *t*-tests assessed for patient group differences in BPRS symptom scales. Next, ANOVAs were employed to test our hypotheses that the patient groups would significantly differ from controls in neurocognition, functional outcomes, and emotions. Significant ANOVAs were then followed by planned comparisons. Second, within each group, correlational analyses were conducted (1) to test our hypotheses that pride would associate with better UPSA performance and QoL-B ratings, while shame would associate with poorer UPSA performance and worse QoL-B ratings, and (2) to assess for potential relationships between neurocogniton (via BACS Composite Score), PA, NA and BPRS symptoms with the outcome measures. Fisher's *r*-to-*z* transformations were computed to compare the magnitude of the difference between the groups' correlation coefficients. Third, within each group, relevant predictor variables were entered into hierarchal regression model to determine their independent contributions to the UPSA performance. Two-tailed tests were used to compute all *p*-values.

3. Results

3.1. Group differences in symptoms, neurocognition, functional outcomes, and emotions

Table 1 presents the demographic characteristics of the three groups. Sex was entered as a covariate in analyses of UPSA performance due to a significant interaction found between gender and group on UPSA performance, $F(2, 74)=5.82$, $p<0.01$. Patient groups did not statistically differ in BPRS mania/

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excitement or negative symptoms, $ps > 0.10$. Schizophrenia patients compared to the affective disorder group were significantly higher in positive symptoms, $t(1, 27.99) = 3.19$, $p < 0.01$, and significantly lower in depression/anxiety, $t(1, 27.99) = 2.79$, $p < 0.01$. Symptoms were not related to BACS scores within either patient group, $ps > 0.10$. Within the schizophrenia group, no significant relationships between BPRS factor scales and QoL were found, $ps > 0.10$. BPRS anxiety/depression symptoms associated with worse subjective total scores ($r = -0.46$, $p < 0.05$), subjective social QoL-B scores ($r = -0.65$, $p < 0.01$), and displayed a trend relationship with worse objective QoL-B scores ($r = -0.42$, $p < 0.07$) within the affective disorder group.

ANOVAS were used to evaluate group differences in: (1) BACS composite score, (2) UPSA summary scores, (3) QoL-B total scores, and (4) emotion ratings (see Table 2). BACS composite scores did not significantly differ between patient groups. Both patient groups had significantly worse cognitive performance than the control group. Schizophrenia patients demonstrated significantly poorer UPSA performance, than the affective disorder group, with controls having the best UPSA performance. Our hypotheses were supported in that the patient groups reported similar higher levels of shame and worse overall objective and subjective QoL-B scores than the control group. Patient groups reported significantly higher NA, but not lower PA than the control group. Interestingly, the schizophrenia group reported significantly higher pride than the other groups.

3.2. Correlations between functional outcome measures with emotions and neurocognition

Table 3 presents the correlations between QoL-B measures and self-conscious emotions with comparison of the magnitude of correlations between groups. No significant relationships between negative emotions and objective total QoL-B were found. Better objective total QoL-B significantly associated with PA and pride only within the affective disorder group. Better objective social QoL-B was positively associated with PA within the affective disorder group.

The relationship between less satisfaction with objective social QoL-B and shame reached trend level only within the schizophrenia group. Less satisfaction with subjective total QoL-B significantly associated with higher shame within the affective disorder and control group. Better subjective social QoL-B was positively linked with pride within all groups. Shame and pride had an inverse relationship only within the affective disorder group ($r = -0.46$, $p < 0.05$). No significant relationship between shame and pride was found within the schizophrenia or control group, $ps > 0.05$.

Table 4 presents correlations between individual difference variables and UPSA scores within each group; group comparison of the magnitude of correlations is included. Positive correlations between neurocognitive performance and UPSA performance were only found within the schizophrenia and control group; however the magnitude of these correlations did not differ across groups. Depression/anxiety was related to UPSA performance only within the affective disorder group, and was thus entered into the subsequent hierarchal regression model to assess for its overall contribution. Worse UPSA performance significantly associated

Table 1
Demographic characteristics of groups.

	Schizophrenia ($n = 26$)	Affective Disorder ($n = 21$)	Community Controls ($n = 34$)
Age: *M* (S.D.)	42.22 (11.73)	42.91 (10.81)	40.32 (12.48)
Education: *M* (S.D.)	11.88 (1.99)^{a}	11.00 (2.01)^{a}	14.32 (2.31)^{b}
Ethnicity			
% Caucasian	59.2	60.9	50
% African American	38.8	39.1	41.2
% Other	–	–	8.8
Sex			
% Female	30.6	52.2	50
% Male	69.4	47.8	50

Note: Means significantly differed between groups with different alpha superscripts, $ps < 0.05$.

Table 3
Within group correlations between quality of life (QoL) and emotions.

	Schizophrenia	Affective disorder	Controls
Objective total QoL			
NA scale	0.22	−0.19	−0.23
Shame	−0.05	−0.24	−0.16
PA Scale	0.05^{a}	0.059^{**,b}	0.11^{a}
Pride	−0.07	0.45*	0.24
Objective social QoL			
NA scale	−0.06	−0.01	−0.08
Shame	−0.36†	−0.12	0.01
PA scale	< 0.01^{a}	0.55^{*,b}	−0.13^{a}
Pride	−0.14	0.16	0.25
Subjective total QoL			
NA scale	−0.09	−.0.43*	−0.49**
Shame	−0.29	−0.56**	−0.37*
PA scale	0.54*	0.54*	0.48**
Pride	0.16	0.46*	0.17
Subjective social QoL			
NA scale	0.05^{a}	−0.54^{*,b}	−0.20^{a,b}
Shame	0.13^{a}	−0.61^{**,b}	−0.40^{*,b}
PA scale	0.46*	0.43*	0.11
Pride	0.57**	0.46*	0.32†

Notes: Different alpha superscripts indicate that the correlation magnitude significantly differed. Pride and shame were excluded from NA and PA scales. $^{\dagger}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$.

Table 2
Multivariate analysis of mean group differences.

	Schizophrenia	Affective disorder	Community controls	$F =$	partial eta$^2 \leq$
BACS composite score	−0.53 (0.66)^{a}	−0.68 (0.94)^{a}	0.83 (0.62)^{b}	33.46**	0.50
UPSA summary score	57.14 (11.99)^{a}	63.83 (12.56)^{b}	75.72 (8.71)^{c}	27.60**	0.44
Quality of life					
Objective Total	−21.81 (8.71)^{a}	−19.22 (7.61)^{a}	−4.94 (8.08)^{b}	37.56**	0.48
Subjective Total	31.27 (9.15)^{a}	30.41 (60.61)^{a}	36.66 (4.86)^{b}	7.12**	0.15
Trait Emotions					
NA Scale	19.77 (8.18)^{a}	23.20 (8.04)^{a}	14.50 (4.06)^{b}	11.64**	0.23
Shame	1.92 (1.20)^{a}	2.13 (1.29)^{a}	1.24 (0.43)^{b}	6.57**	0.14
PA Scale	32.42 (8.01)^{a}	30.33 (7.37)^{a}	32.82 (4.52)^{a}	0.99	0.03
Pride	3.54 (1.33)^{a}	2.87 (1.58)^{b}	3.18 (1.03)^{b}	1.64	0.04

Notes: Ns differed for measures. Groups with different alphabet superscripts significantly differed. Sex was entered as a covariate for UPSA. $^{*}p < 0.05$. $^{**}p < 0.01$. Pride and shame were excluded from NA and PA scales.

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Table 4
Correlations between UPSA performance and individual difference variables.

	UPSA summary score		
Variables	Schizophrenia	Affective disorder	Community controls
BACS composite score	0.35†	0.22	0.51**
BPRS symptoms			
Anxiety/Depression	−0.06[a]	0.64**,[b]	–
Manic/Excitement	−0.07	0.40	–
Negative	−0.31	−0.12	–
Positive	−0.06	0.38	–
Trait emotions			
NA scale	−0.23[a]	0.51*,[b]	-0.01[a]
Shame	−0.51**,[a]	0.70**,[b]	0.21[c]
PA scale	−0.22	−0.15	<0.01
Pride	−0.31[a,b]	−0.48*,[b]	0.16[a]

Notes: Different alpha superscripts indicate significant group differences in the correlation coefficient. † $p < 0.10$. * $p < 0.05$. ** $p < 0.01$. Pride and shame were excluded from NA and PA scales.

Table 5
Correlations between cognitive functioning with quality of life and emotions.

	BACS composite score		
Variables	Schizophrenia	Affective disorder	Community controls
Quality of Life			
Objective total	−0.33	0.10	−0.10
Objective social	−0.11	−0.22	0.22
Subjective total	<0.01	−0.37	−0.22
Subjective social	−0.11	−0.25	−0.07
Trait emotions			
NA scale	−0.12	0.35	0.00
Shame	<0.01[a]	0.53*,[b]	0.19[a,b]
PA scale	−0.07	−0.30	−0.08
Pride	0.17[a]	−0.54*,[b]	−0.13[a,b]

Notes: Different alpha superscripts indicate significant group differences in the correlation coefficient. Pride and shame were excluded from NA and PA scales. † $p < 0.10$. * $p < 0.05$. ** $p < 0.01$.

with greater shame only within the schizophrenia group. NA associated with better UPSA performance only within the affective disorder group. An unexpected robust relationship between better UPSA performance and greater shame in the affective disorder group was found. PA was not linked to UPSA performance. Pride associated with significantly worse UPSA performance within the affective disorder group; the magnitude of this relationship significantly differed from the control but not the schizophrenia group.

Correlations between BACS composite scores with QoL-B and emotions ratings are presented in Table 5 for each group. No significant relationships between neurocognition with QoL-B measures were found, $ps > 0.05$. Shame associated with significantly better BACS performance, whereas pride associated with significantly worse BACS performance within the affective disorder group; however, once manic/excitement symptoms were controlled for the relationship between pride and neurocognition no longer reached statistical significance. The magnitude of the difference in the relationships between pride and shame with neurocognition significantly differed from the schizophrenia but not the control group.

3.3. Regression analyses of functional capacity

Hierarchal multiple regressions were performed in order to quantify the contributions that the significant variables made to UPSA scores within each group. Within the control and schizophrenia group, sex was entered into the first block, followed by BACS composite score, last shame and pride were entered into the model. Only sex ($\Delta R^2 = 0.15$, $\Delta F = 4.29$, $p < 0.05$) and neurocognition ($\Delta R^2 = 0.27$, $\Delta F = 10.87$, $p < 0.05$) predicted UPSA performance in the control group. The final model with all factors entered accounted for 46.4% of the variance in UPSA performance, $F(4, 22) = 4.77$, $p < 0.01$. Within the schizophrenia group, sex accounted for a significant proportion of variance ($\Delta R^2 = 0.26$, $\Delta F = 7.57$, $p < 0.05$). The addition of neurocognition into the equation did not reach statistical significance ($\Delta R^2 = 0.09$, $\Delta F = 2.88$, $p \geq 0.10$). Subsequently, pride and shame significantly accounted for additional variance in UPSA performance ($\Delta R^2 = 0.26$, $\Delta F = 6.17$, $p < 0.05$). The final model accounted for 60.3% of the variance in UPSA performance, $F(4, 19) = 7.22$, $p < 0.01$. Within the affective disorder group, anxiety/depression symptoms were first entered into the model, next NA was entered, followed by pride and shame in the final step. Anxiety/Depression within the first step accounted for 28.6% of the variance in UPSA performance ($\Delta R^2 = 0.29$, $\Delta F = 6.41$, $p < 0.05$). No significant changes were observed within the second step ($\Delta R^2 = 0.02$, $\Delta F = 0.93$, $p > 0.10$). The addition of shame and pride into the model accounted for an additional 28.5% of the variance in UPSA performance scores ($\Delta R^2 = 0.29$, $\Delta F = 4.52$, $p < 0.05$). Of notice, in the final model, shame ($\beta = 0.71$) followed by anxiety/depression symptoms ($\beta = -0.34$) accounted for the largest proportion of variance in UPSA performance, $F(4, 13) = 4.68$, $p < 0.05$.

4. Discussion

A goal of this paper was to account for additional variance in functional outcomes beyond what it predicted by neurocognition, PA, NA, and patient symptomatology through examining the role of self-conscious emotions in functional outcomes. While cognitive factors play a role in functional outcomes, this study revealed an important relationship between self-conscious emotions and functional outcome measures that accounted for a surprisingly large proportion of variance beyond what these factors alone would explain in SMI patients. As expected, the patient groups displayed greater global cognitive impairment, and reported significantly higher shame and worse QoL than the control group. Of notice, and consistent with theories that shared pathology exists between these disorder (e.g., NIMH Research Domain Criteria initiative), patient groups did not significantly differ on these measures. Differences between patient groups were found in pride and UPSA performance. The schizophrenia group reported significantly higher levels of pride and had significantly worse UPSA performance than the other groups. BPRS factor scales were not related to cognitive functioning; however, within the affective disorder group anxiety/depression symptoms associated with better UPSA performance and worse QoL. In the interest of brevity, results not related to our primary hypotheses are not discussed in detail. In summary, pride and shame appear to play a unique role in the relationship between pathology and functional outcomes that warrants further investigation.

To our knowledge this is the first study to examine the influence of self-conscious emotions on functional outcomes within SMI. A strength of this study is that two commonly used different methodologies (self-report and performance based) were used to assess functional outcomes. Our hypothesis that within each group shame would associate with less satisfaction with QoL, and pride would associate with greater satisfaction with QoL was generally supported. Self-reported QoL largely displayed the predicted patterns of positive emotions (PA and pride) associating with better QoL, and negative emotions (NA and shame) associating with worse QoL. Of relevance, the observed response pattern between QoL and self-conscious emotions in community controls

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was largely similar to the patient groups. As predicted, social QoL appeared to drive most of these relationships. Our results suggest that social QoL is negatively impacted by shame, whereas pride enhances perceptions of social QoL regardless of group status. As hypothesized, shame associated with worse UPSA performance within the schizophrenia group. However, unexpectedly shame and NA associated with better UPSA performance, while pride associated with worse UPSA performance within the affective disorder group. Of further interest, unlike pride, no significant relationship between UPSA performance and PA was found. Last, similar to past research (see Keefe et al., 2006), self-report as compared to performance based measures displayed different patterns of results with neurocognition, such that UPSA performance significantly associated with cognitive functioning while quality-of-life was unrelated to cognitive functioning. These results convey how different measures of assessment for functional outcomes might lead to divergent conclusions within the literature.

Within the affective disorder group, some of the results pose questions that are outside the scope of this paper to answer. It is intriguing that positive (PA and pride) and negative (NA and shame) emotions displayed the predicted patterns with better and worse quality-of-life, respectively; yet, the opposite effect was found in relation to UPSA and BACS performance with negative emotions and pride. As discussed, shame can be adaptive in that it serves to decrease behaviors that stray from group norms, but this rationale cannot explain why pride would be related to worse functioning. There is research that links impaired behavior regulation in patients with orbitofrontal cortex (OFC) damage to disrupted self-conscious emotions (Beer et al., 2003); this study also suggests that self-conscious emotions in OFC patients, rather than successfully guiding behavior, appear to reinforce maladaptive behaviors (e.g., feeling proud following socially inappropriate behaviors). Following this line of reason, it is possible that impairments in the ability to adapt behaviors as a function of prior reinforcements via aberrant emotional experience might provide a basis for the relationship between emotional experience and functional capacity; however, more research is clearly needed to elucidate these relationships within SMI populations.

Limitations within this study should be noted. First, we might have been underpowered to detect certain relationships due to the smaller sample size in the patient groups; however, despite this limitation several interesting findings were revealed that suggest that the interplay between self-conscious emotions and functional outcomes warrants future investigation. Next, this study did not examine authentic versus hubristic pride. Although pride is largely viewed as a positive emotion, distinctions have been made in the literature regarding hubristic pride and authentic pride (for detail, see Tracy et al., 2010). Future investigation of the different facets of pride in respect to functioning and symptomatology in SMI is recommended in that it might help shed light on some of the more puzzling findings within the affective disorder group. Lastly, the present study did not provide analysis of the potential impact of medications on functioning within the patients groups. However, all patients were clinically stable on medications at time of testing.

In conclusion, our results are consistent with research that neurocognition leaves a large proportion of variance in functional outcomes unexplained. Thus, it may be that neurocognition does not directly predict functional outcomes (see Bowie and Harvey, 2006). Furthermore, growing evidence suggests that examining emotions solely along the broad domains of positive and negative affect may obfuscate important information in regards to the relationship between pathology and emotional experience. Given the overlap in underlying neural systems, addressing the interdependency of social cognitive and affective processes remains an important future direction for research. A possible explanation for the relationships that were found is that the underlying neural mechanisms involved in pride and shame are believed to be those that underlie social cognition and emotion regulation processes. Admittedly, there is a limited number of studies that have examined the neural activations for these emotions – however, the ones that have been conducted suggest that the self-reflective/evaluative nature of these emotions are crucial to social cognition and play an integral role in shaping behavioral responses. Future research regarding the functional roles of pride and shame may help to shed light on the relationship between poor functional outcomes and pathology.

References

Association, A.P., 1994. Diagnostic and Statistical Manual of Mental Disorders, fourth ed. American Psychiatric Association, Washington DC.

Blanchard, J.L., Horan, W.P., Brown, S.A., 2001. Diagnostic differences in social anhedonia: a longitudinal study of schizophrenia and major depressive disorder. Journal of Abnormal Psychology 110 (3), 363–371.

Blanchard, J.J., Mueser, K.T., Bellack, A.S., 1998. Anhedonia, positive and negative affect, and social functioning in schizophrenia. Schizophrenia Bulletin 24 (3), 413–424.

Beer, J.S., Heerey, E.A., Keltner, D., Scabini, D., Knight, R.T., 2003. The regulatory function of self-conscious emotion: insights from patients with orbitofrontal damage. Journal of Personality and Social Psychology 85 (4), 594–604.

Bowie, C.R., Harvey, P.D., 2006. Cognitive deficits and functional outcome in schizophrenia. Neuropsychiatric Disease and Treatment 2 (4), 531–536.

Brown, J.D., Marshall, M.A., 2001. Self-esteem and emotion: some thoughts about feelings. Personality and Social Psychology Bulletin 27 (5), 575–584.

Damasio, A.R., 2004. Emotions and feelings: a neurological perspective. In: Manstead, A.S., Frijda, N., Fischer, A. (Eds.), Feelings and Emotions: The Amsterdam Symposium. Cambridge University Press, Cambridge, UK, pp. 49–57.

Dickerson, S.S., Kemeny, M.E., 2004. Acute stressors and cortisol responses: a theoretical integration and synthesis of laboratory research. Psychological Bulletin 13 (3), 355–391.

Fett, A.K.J., Viechtbauer, W., Dominguez, M.D.G., Penn, D.L., van Os, J., Krabbendam, L., 2011. The relationship between neurocognition and social cognition with functional outcomes in schizophrenia: a meta-analysis. Neuroscience and Biobehavioral Reviews 35 (3), 573–588.

First, M.B., Spitzer, R.L., Gibbon, M., Williams, J.B.W., 1996. User's guide for the Structured Clinical Interview for DSM-IV Axis I Disorders–Research Version (SCID-I version 2.0, February 1996 Final Version). Biometrics Research Department. New York State Psychiatric Institute, New York.

Gilbert, P., McGuire, M.T., 1998. Shame, status, and social roles: psychobiology and evolution. In: Gilbert, P., Andrews, B. (Eds.), Shame: Interpersonal Behavior, Psychopathology, and Culture. Oxford University Press, New York, NY, pp. 99–125.

Gilbert, P., 2000. The relationship of shame, social anxiety and depression: the role of the evaluation of social rank. Clinical Psychology and Psychotherapy 7 (3), 174–189.

Green, M.F., Kern, R.S., Braff, D.L., Mintz, J., 2000. Neurocognitive deficits and functional outcome in schizophrenia: are we measuring the "right stuff"? Schizophrenia Bulletin 26 (1), 119–136.

Green, M.F., Kern, R.S., Heaton, R.K., 2004. Longitudinal studies of cognition and functional outcome in schizophrenia: implications for MATRICS. Schizophrenia Research 72 (1), 41–51.

Gruenewald, T.L., Kemeny, M.E., Aziz, N., Fahey, J.L., 2004. Acute threat to the social self: shame, social self-esteem, and cortisol activity. Psychosomatic Medicine 66 (6), 915–924.

Harris, L.T., Fiske, S.T., 2007. Social groups that elicit disgust are differentially processed in mPFC. Social Cognitive and Affective Neuroscience 2 (1), 45–51.

Horan, W.P., Blanchard, J.J., Clark, L.A., Green, M.F., 2008. Affective traits in schizophrenia and schizotypy. Schizophrenia Bulletin 34 (5), 856–874.

Keefe, R.S., Goldberg, T.E., Harvey, P.D., Gold, J.M., Poe, M.P., Coughenour, L., 2004. The brief assessment of cognition in schizophrenia: reliability, sensitivity, and comparison with a standard neurocognitive battery. Schizophrenia Research 68 (2–3), 283–297.

Keefe, R.S., Poe, M., Walker, T.M., Harvey, P.D., 2006. The relationship of the brief assessment of cognition in schizophrenia (BACS) to functional capacity and real-world functional outcome. Journal of Clinical and Experimental Neuropsychology 28 (2), 260–269.

Kennedy, D.P., Adolphs, R., 2012. The social brain in psychiatric and neurological disorders. Trends in Cognitive Sciences 16 (11), 559–572.

Kuehner, C., Buerger, C., 2005. Determinants of subjective quality of life in depressed patients: the role of self-esteem, response styles, and social support. Journal of Affective Disorders 86 (2), 205–213.

Lazarus, R.S., 1993. From psychological stress to the emotions: a history of changing outlooks. Annual Review of Psychology 44, 1–22.

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Lehman, A., 1995. Evaluating Quality of Life for Persons with Severe Mental Illness: Assessment Toolkit. The Evaluation Center at Health Services Research Institute, Cambridge, Massachusetts.
Lewis, M., 2007. Self-conscious emotional development. In: Tracy, J.L., Robins, R.W., Tangney, J.P. (Eds.), The Self-Conscious Emotions: Theory and Research. Guilford Press, New York, NY, pp. 134–149.
Lewis, M., Ramsay, D., 2002. Cortisol response to embarrassment and shame. Child Development 73 (4), 1034–1045.
Lukoff, D., Nuechterlein, K.H., Ventura, J., 1986. Manual for the expanded brief psychiatric rating scale (BPRS). Schizophrenia Bulletin 12, 594–602.
Lyubomirsky, S., King, L., Diener, E., 2005. The benefits of frequent positive affect: does happiness lead to success? Psychological Bulletin 131 (6), 803.
Michl, P., Meindl, T., Meister, F., Born, C., Engel, R.R., Reiser, M., Hennig-Fast, K., 2012. Neurobiological underpinnings of shame and guilt: a pilot fMRI study. Social Cognitive and Affective Neuroscience, [Epub], http://dx.doi.org/10.1093/scan/nss114.
Miller, R., Mason, S.E., 2005. Shame and guilt in first-episode schizophrenia and schizoaffective disorders. Journal of Contemporary Psychotherapy 35 (2), 211–221.
Morrison, N.K., 1985. Shame in the treatment of schizophrenia: theoretical considerations with clinical illustrations. The Yale Journal of Biology and Medicine 58 (3), 289.
Olsson, A., Ochsner, K.N., 2008. The role of social cognition in emotion. Trends in Cognitive Sciences 12 (2), 65–71.
Patterson, T.L., Goldman, S., McKibbin, C.L., Hughs, T., Jeste, D.V., 2001. UCSD performance-based skills assessment: development of a new measure of everyday functioning for severely mentally ill adults. Schizophrenia Bulletin 27 (2), 235–245.
Persons, E., Kershaw, T., Sikkema, K.J., Hansen, N.B., 2010. The impact of shame on health-related quality of life among HIV-positive adults with a history of childhood sexual abuse. AIDS Patient Care and STDs 24 (9), 571–580.
Ritsner, M., Modai, I., Endicott, J., Rivkin, O., Nechamkin, Y., Barak, P., Ponizovsky, A., 2000. Differences in quality of life domains and psychopathologic and psycho-social factors in psychiatric patients. Journal of Clinical Psychiatry 61 (11), 880–889.
Southwick, S.M., Vythilingam, M., Charney, D.S., 2005. The psychobiology of depression and resilience to stress: implications for prevention and treatment. Annual Review of Clinical Psychology 1, 255–291.
Takahashi, H., Matsuura, M., Koeda, M., Yahata, N., Suhara, T., Kato, M., Okubo, Y., 2008. Brain activations during judgments of positive self-conscious emotion and positive basic emotion: pride and joy. Cerebral Cortex 18 (4), 898–903.
Tangney, J.P., Wagner, P., Gramzow, R., 1992. Proneness to shame, proneness to guilt, and psychopathology. Journal of Abnormal Psychology 101 (3), 469.
Tangney, J.P., Dearing, R.L., 2002. Shame and Guilt. Guilford Press, New York, NY.
Tracy, J.L., Matsumoto, D., 2008. The spontaneous expression of pride and shame: evidence for biologically innate nonverbal displays. Proceedings of the National Academy of Sciences 105 (33), 11655–11660.
Tracy, J.L., Robins, 2007a. The nature of pride. In: Tracy, J.L., Robins, R.W., Tangney, J. P. (Eds.), The Self-Conscious Emotions: Theory and Research. The Guilford Press, New York, NY, pp. 263–282.
Tracy, J.L., Robins, 2007b. The self in self-conscious emotions: a cognitive appraisal approach. In: Tracy, J.L., Robins, R.W., Tangney, J.P. (Eds.), The Self-Conscious Emotions: Theory and Research. The Guilford Press, New York, NY, pp. 3–20.
Tracy, J.L., Shariff, A.F., Cheng, J.T., 2010. A naturalist's view of pride. Emotion Review 2 (2), 163–177.
Ventura, J., Nuechterlein, K.H., Subotnik, K.L., Gutkind, D., Gilbert, E.A., 2000. Symptom dimensions in recent-onset schizophrenia and mania: a principal components analysis of the 24-item brief psychiatric rating scale. Psychiatry Research 97 (2–3), 129–135.
Walker, E.F., Mittal, V., Tessner, K., 2008. Stress and the hypothalamic pituitary adrenal axis in the developmental course of schizophrenia. Annual Review of Clinical Psychology 4, 189–216.
Watson, D., Clark, L.A., Carey, G., 1988a. Positive and negative affectivity and their relation to anxiety and depressive disorders. Journal of Abnormal Psychology 97 (3), 346–353.
Watson, D., Clark, L.E., Tellegen, A., 1988b. Development and validation of brief measures of positive and negative affect: the PANAS scales. Journal of Personality and Social Psychology 54 (6), 1063–1070.
Zahn, R., Moll, J., Paiva, M., Garrido, G., Krueger, F., Huey, E.D., Grafman, J., 2009. The neural basis of human social values: evidence from functional MRI. Cerebral Cortex 19 (2), 276–283.