

1 **EXPLORING SELF-CONSCIOUS EMOTIONS IN INDIVIDUALS WITH**
2 **CHRONIC OBSTRUCTIVE PULMONARY DISEASE: A MIXED-METHODS**
3 **STUDY**

4
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19 **A. Abstract**

20

21 B. Objectives: This study aimed to explore the extent to which self-conscious emotions are
22 expressed, to explore any associations with adverse health outcomes and to compare self-
23 conscious emotions in individuals with COPD to healthy controls.

24 B. Methods: A two stage mixed-methods study design was employed. Interviews with 15
25 individuals with COPD informed the choice of questionnaires to assess self-conscious
26 emotions which were completed by individuals with COPD and healthy controls.

27 B. Results: Five overarching themes were abstracted: grief, spectrum of blame, concern
28 about the view of others, concealment and worry about the future. The questionnaires were
29 completed by 70 patients [mean(SD) age70.8(9.4) years, FEV₁%pred 40.5(18.8), 44%male]
30 and 61 healthy controls [mean(SD) age62.2(12.9) years, 34%male]. Self-conscious
31 emotions were associated with reduced mastery, heightened emotions and elevated anxiety
32 and depression (all p<0.001). Individuals with COPD reported lower self-compassion,
33 higher shame and less pride than healthy controls (all p≤0.01).

34 B. Conclusion: There is a need to increase awareness of self-conscious emotions in
35 individuals with COPD. Therapies to target such emotions may improve mastery, emotions
36 and psychological symptoms

37 **Key words:** mixed-methods; COPD; shame; guilt; compassion

38

39

40 **A. Introduction**

41

42 Symptoms of breathlessness on exertion limit the ability of individuals with Chronic
43 Obstructive Pulmonary Disease (COPD) to sustain physical and social activities which are
44 important for wellbeing, compromising quality of life and leading to psychological co-
45 morbidities¹⁻³. Personal culpability for COPD is often experienced due to the onset of the
46 disease being commonly attributed to smoking behavior, potentially leading to self-
47 conscious emotions.

48

49 Self-conscious emotions related to our sense of self and self-worth, are associated with both
50 self-perceptions and appraisals of how we are perceived by others, and encompass feelings
51 such as; guilt, shame, embarrassment and self-blame. In individuals with COPD such
52 feelings of self-worth may be compromised by the presence of a chronic, debilitating
53 disease which requires seeking help from family members⁴. Visible differences conferred

54 by symptoms as well as dependency on others and on devices may force patients to
55 reappraise their identity within the context of their disease ⁵.

56

57 Constructions of self-blame and personal culpability for disease are prominent in narratives
58 of patients with COPD ⁶⁻⁸. This is perhaps unsurprising if communicated by the substantial
59 proportion of physicians who believe that patients with COPD are to blame for their disease
60 (9). The experience of self-blame and concern about the manner in which others view their
61 behavior has been associated with negative emotional responses including feeling shamed,
62 disgraced, depressed and embarrassed, leading to reduced help-seeking, reduced adherence
63 to oxygen therapy, failure to attend pulmonary rehabilitation (PR) and social isolation ^{6, 10-}
64 ¹².

65

66 To date, such issues have been noted indirectly, elicited from patients' narratives describing
67 their disease experience or exploring views on smoking behavior ^{6, 8}. We chose to adopt a
68 mixed-methods approach consisting of qualitative and quantitative methodologies to
69 explore the extent to which self-conscious emotions are expressed in patients with COPD,
70 to explore any associations with reduced health related quality of life (HRQOL), self-

71 efficacy or increased psychological symptoms and to compare self-conscious emotions in
72 individuals with COPD to healthy controls.

73

74 **A. Methods**

75

76 B. Study design

77 A two stage mixed-methods study design was employed. Qualitative techniques enable the
78 collection of detailed data allowing for true meaning and contradictions to be explored.
79 Information arising from the qualitative phase informed the choice of questionnaires to
80 assess self-conscious emotions which are relevant to individuals with COPD.

81

82 Ethical approval for this study was obtained from the The Joint Bridgepoint Health – West
83 Park Healthcare Centre – Toronto Central Community Care Access Centre – Toronto Grace
84 Health Centre Research Ethics Board and all participants provided written informed
85 consent prior to inclusion in the study.

86

87 B. Recruitment

88 *C. Individuals with COPD*

89 Eligible patients had a diagnosis of COPD confirmed by spirometry, a smoking history
90 greater than 10 pack years, resided in the community and were able to provide written
91 informed consent. Individuals were excluded if they had a primary respiratory diagnosis
92 other than COPD and an inability to communicate because of language skills, hearing or
93 cognitive impairment. Consecutive patients with COPD were approached in an out-patient
94 respiratory clinic held at a specialized rehabilitation center.

95

96 *C. Healthy Controls*

97 Multiple strategies were used for the recruitment of healthy controls. Friends and family
98 members of patients who attended respiratory clinics were approached. Posters, emails,
99 advertisements, and announcements were displayed at the rehabilitation center.

100 To be considered eligible controls had to; consider themselves ‘healthy’ and be over 40
101 years old. Subjects were excluded if they had a chronic respiratory condition.

102

103 B. Data collection

104 *C. Phase 1: Qualitative phase*

105 A semi-structured interview schedule consisting of open-ended questions was informed by
106 the results of a previous study exploring the views of patients who refused a referral to PR

107 following an acute exacerbation¹². Feedback was provided from a patient advisory group
108 consisting of four members. The interview schedule was revised throughout data collection.

109

110 SH interviewed participants individually in a quiet room at the healthcare center. Interviews
111 lasted between 20 minutes and 60 minutes and were largely patient led

112

113 *C. Phase 2: Quantitative phase*

114 Patients completed a questionnaire pack consisting of self-reported measures of self-
115 conscious emotions, COPD-specific items of self-consciousness, HRQOL, self-efficacy and
116 psychological symptoms. The choice of measures was informed by the qualitative findings
117 and advice was sought from a patient advisory group consisting of four individuals with
118 COPD. Healthy controls completed a questionnaire pack consisting of the three measures
119 of self-consciousness only.

120

121 *C. The Brief Fear of Negative Evaluation Scale*¹³

122 The Brief Fear Negative Evaluation (BFNE) scale is a valid and reliable measure of social
123 anxiety ($\alpha = 0.97$)¹⁴. It is convenient for use consisting of 12 items measured on a five-

124 point likert scale (one to five). Scores range from 12 to 60 with higher scores indicating
125 greater apprehension about others evaluations.

126

127 *C. The Shame and Guilt Scale* ¹⁵

128 The State Shame and Guilt Scale (SGS) contains five shame items ($\alpha = 0.89$) five guilt
129 items ($\alpha = 0.82$) and five pride items ($\alpha = 0.78$). Responses are given on a five-point Likert
130 scale (1 = “always feeling this way” to 5 = “never feeling this way”). Lower scores indicate
131 increased feelings of shame and guilt and elevated levels of pride. The scale was adapted to
132 ask how individuals had felt “in the past two weeks” rather than at the present moment to
133 counteract any influence of the hospital setting on levels of shame or guilt.

134

135 *C. The Self-Compassion Scale-Short Form* ¹⁶

136 The Self-Compassion Scale-Short Form (SCS-SF) assesses six aspects of self-compassion;
137 self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-
138 identification. The 12-items are rated on a five-point response scale ranging from one
139 (almost never) to five (almost always). The shortened scale correlates well with the full
140 SCS ($r \geq 0.97$) ¹⁷. The total score is calculated by adding together each item and dividing by
141 12.

142 *C. COPD-specific items of self-consciousness* Supplement 1

143 Based on the qualitative findings and the advice from patient advisory group members
144 disease-specific items were developed encompassing self-conscious emotions related to
145 COPD. Each item is scored on a five-point Likert scale. Positive and negative statements
146 were included so as not to induce feeling of self-consciousness.

147

148 *C. Health-related quality of life - The Chronic Respiratory Questionnaire-Self Reported*
149 *(CRQ-SR)* ¹⁸

150 The CRQ-SR is a self-reported measure of health status shown to be valid and reliable in
151 patients with COPD ¹⁹. It consists of four dimensions: dyspnoea, fatigue, emotion and
152 mastery.

153

154 *C. Self-efficacy - The Pulmonary Rehabilitation Adapted Index of Self-efficacy (PRAISE)* ²⁰

155 The PRAISE has been fully validated in a PR population ²⁰. The tool consists of 15
156 questions, each one scored from one to four with four being the highest level of perceived
157 self-efficacy.

158

159 *C. Psychological symptoms - The Hospital Anxiety and Depression Scale (HADS)* ²¹

160 The HADS comprises of two subscales; anxiety ($\alpha=0.68$) and depression ($\alpha=0.91$) with a
161 score range of zero to 21. Scores ≥ 11 for each sub-scale are considered to indicate clinical
162 caseness²¹.

163

164 B. Data analysis

165 *C. Phase 1: Qualitative phase*

166 All interviews were recorded and transcribed verbatim. The data was stored and organized
167 using a computer software program (QSR NVivo version 9; QSR International, Doncaster,
168 Australia) and analyzed using Inductive Thematic Analysis (ITA).

169

170 The process of analysis followed the procedure described by Hayes (2000)²² with
171 researcher (SH) initially reading the transcripts to identify meaningful units of text. Initial
172 coding for each transcript involved grouping units of text dealing with similar issues into
173 categories and labeling them with a provisional name and definition, this step was
174 undertaken by SH and verified in two transcripts by a second researcher (DB). SH and DB
175 then systematically reviewed the original transcripts to ensure the labels and description
176 assigned to each code were accurately supported by the data. Categories were grouped into
177 emerging themes agreed on by the two researchers (SH, DB) and presented to members of

178 the patient advisory group and at a collaborative workshop consisting of; a research
179 assistant, a nurse, an occupational therapist, a physiotherapist, two respirologists, two
180 scientists, one PhD student and one clinical care coordinator. The final master themes were
181 settled by SH and DB and thematic mapping was used to develop the relationships between
182 themes.

183

184 *C. Phase 2: Quantitative phase*

185 The sample was powered to detect a medium effect size (0.30) for a positive/one-sided
186 correlation ²³.

187

188 The statistical analyses were performed using SPSS[®] (Statistical Package for Social
189 Sciences, version 18.0 for Windows). Relationships between self-reported measures of self-
190 consciousness and the COPD-specific items of self-consciousness and other variables were
191 assessed using Pearson correlations. Due to multiple comparisons a Bonferroni correction
192 was applied and the significance level was set at $p < 0.001$. Comparisons between measures
193 of self-consciousness in patients with COPD and healthy controls were performed using
194 independent t-test with significance set at $p < 0.05$.

195

196

197 **A. Results**

198 **B. Phase 1: Qualitative phase**

199 Fifteen individuals agreed to participate in semi-structured interviews. Demographic
200 information was recorded and is displayed in table 1. Their mean age was 73 years, BMI
201 24.7, FEV₁%pred 41.1% and FEV₁/FVC 44.2%.

202

203 Across the five themes novel interpretations are described in detail, informed and
204 contextualized by findings from the previous qualitative investigations. A total of five
205 themes were identified.

206

207 *C. 1. Grief and loss*

208 Issues surrounding feelings of grief appeared two-fold: patients expressed grief for the
209 person they once were and the things they used to be able to do and they articulated a sense
210 of loss surrounding their inability to fulfill plans they had made for the future.

211

212 Patients appeared acutely aware of the constraints on daily activities conferred by their
213 disease, using strong language to portray the value placed on those activities in which they

214 were no-longer able to participate and consequent feelings of sadness and frustration “*I*
215 *love going out to get my wife but I won’t be driving anymore cause I’ve given up my*
216 *license.*” (ID. 1) “*And I do miss not gardening. That is my biggest horror... that I can’t get*
217 *and dig in the dirt.*” (ID. 8).

218

219 Participants’ transcripts relay accounts of the time and energy spent working to save for
220 retirement and the anticipation of being unable to attain their goals. The excitement of
221 fulfilling these plans appears to compound the sense of loss felt that due to the limitations
222 inflicted by the progression of their disease they were no-longer able to complete “*I wanted*
223 *to start an indoor herb garden. That didn’t happen.*”(ID. 2).

224

225 *C. 2. Spectrum of blame*

226 Blame was discussed by most participants as they made sense of their state of health and its
227 origins and could be construed as a spectrum extending from personal culpability for the
228 development of a chronic and progressive disease to fault from external agencies.

229

230 At one end of the spectrum, five individuals readily accepted personal responsibility for
231 their condition “*Stupidity. There’s only uh two ways you can get emphysema, smoking and*

232 *second hand smoke*” (ID. 13) and emphasized their compliance with interventions such as,
233 PR and smoking cessation. At polar opposite three participants refused to accept any
234 personal responsibility for their condition, ascribing their condition to occupational factors
235 and passive smoking *“I really do believe that it is the ceramic dust that has caused it.”* (ID.
236 10).

237

238 For those patients expressing personal culpability for COPD dissonance appeared
239 prominent alongside attempts to suppress thoughts or externalize blame. *“Hitler’s fault.
240 It’s a poor excuse but everybody smoked in the war.”*(ID. 11). These narratives were
241 infused with considerable emotional expressions of; shame, self-pity and regret. *“I was full
242 of self-pity and I was very depressed....Oh God, you think to yourself, you know, like you
243 should have had a bag put over your head for being so unintelligent. You know?”* (ID. 3),
244 *“I’m embarrassed to say that I was a smoker.”* (ID. 5).

245

246 C. 3. Concern about the view of others

247 Participants’ narratives reflect heightened sensitivity to the ways in which they are viewed
248 by others. Concerns were expressed surrounding the ‘visibility’ of the condition with
249 subsequent impact on patients’ sense of wellbeing and adherence to supportive aids.

250

251 COPD seemed to be construed as a socially undesirable condition in terms of the symptoms
252 it provokes *“I mean the only thing that bothers me as far as other people go [cough] is my*
253 *coughing. That can sort of embarrass me. Other than that...It’s gross.”*(ID. 6) as well as its
254 impact on physical appearance *“It’s disgusting. I don’t like the bruises. Yeah it looks*
255 *terrible, yeah.”*(ID. 4).

256

257 Patients’ appeared apprehensive about others evaluation *“I’m sure when I get out of a car,*
258 *people must look at me and think, why is she in handicap parking?”* (ID. 6) *“one thing I’m*
259 *told is... should not swallow it. But yet if you’re in a public place what are you supposed to*
260 *do?”* (ID. 13) displaying an acute awareness of the manner in which they must appear and
261 be perceived by others.

262

263 Devices which increase the visibility of the disease, namely oxygen and rollers, were
264 described as symbols of disability and aging provoking stoical attitudes. *“Because you*
265 *know I always associated it [rollator] with people who are feeble or old.”*(ID. 15).

266 Consequently, participants made attempt to minimize their dependency on aids to preserve
267 an image of independence. *“I don’t like using it [rollator]. Like I’ve never used it ... when*

268 *I've gone anywhere. Uh that ... that maybe it's uh... that might be a pride thing, I don't*
269 *know.” (ID. 6).*

270

271 Participants noted that even the most facilitative and well-intentioned actions were affected
272 by their use of supports. Behavior could be a source of embarrassment and shame
273 surrounding a sense of perceived vulnerability and burdening others. *“I was coming home*
274 *by bus. And I felt too embarrassed to be in there because I was there... people got up and*
275 *made sure I had a seat, that was... you know, but I felt as if it [rollator] was in the way.*
276 *And I felt very embarrassed.” (ID. 10).*

277

278 Yet, other participants expressed gratitude for devices which improved function and
279 enabled independence. *“Uh, what the first time I was on oxygen?... I felt great. Yeah*
280 *because uh... I was struggling all the time. And now I was struggling less. Right? And not*
281 *all the time.” (ID. 14) “So I traded it [rollator] and got this one and I couldn't care*
282 *less. That's how I get out, that's how I get out.”(ID. 11).* For these patients the benefits
283 obtained through the use of these supportive devices appeared to outweigh any self-
284 conscious emotions.

285

286 C. 4. Concealment

287 Participants describe attempts to hide their disability often driven by expressed guilt for
288 contributing to their condition, and their motivation to retain integrity and appear physically
289 robust. This desire to appear competent seems to overwhelm the need for their disability to
290 be understood by others.

291

292 Stoical attitudes are expressed, encouraged by feelings of guilt pertaining to the emotional
293 burden patients see as inflicting on others. *“I don’t really talk to ... about it too much. I
294 don’t volunteer any information. I try not to say anything to him about it. Just let him know
295 everything is fine, you know”* (ID. 4).

296

297 Participants attempts to conceal their condition seems driven by a desire to appear
298 competent in their current roles, at work and in the home *“I didn’t tell the truth, I never told
299 a soul at work....I had to present myself as someone who is extremely capable and keep
300 trucking. I had to prove to yourself and everybody else that there was nothing wrong with
301 me.”*(ID. 3). Inability to complete these roles appeared to provoke shame-based emotions
302 and diminished self-worth *“Well I have become pretty useless. Uh, you know it’s like when
303 you can’t bend down to pick something up.”* (ID 13).

304 Whilst hiding their condition permitted patients to maintain their identity and sense of self-
305 worth, frustration was expressed at the lack of awareness and compassion shown by others
306 *“it’s not a nice disease and it’s hidden too, so a lot of people don’t know you are sick*
307 *and... .. going up the stair I’ll stop at the mall and they... they try to push you out of the*
308 *way”* (ID. 4)

309

310 Concealment seemed accompanied by social comparisons to others with COPD which
311 served to minimize the significance of their own disease state. *“So other people may have*
312 *something. There are some people there that are really ill.”*(ID 9). Patients readily
313 accepted delays in their care, emphasizing the urgency of attending to other patients’ needs
314 before their own, believing their own condition to be less serious and or/life threatening and
315 being unable or unwilling to assert themselves. *“I would think they would deal with the*
316 *heart attack and stroke before me. Would think it’s a bit more serious, whereas with me I*
317 *would expect I guess, me being me, they could always give me a mask temporarily.”* (ID.
318 7).

319

320

321

322 C. 5. Worry about the future

323 Patients' narratives portrayed a sense of threat which was both imminent and yet stretched
324 into the future.

325

326 Patients appeared hyper-vigilant to their disease state voicing catastrophic cognitions
327 concerning the effects of certain actions and activities "*I get a little anxious especially*
328 *when I am going home....I get anxious, my heart starts racing cause I realize okay...*
329 *especially in the winter. Put on a coat, put on the boots... even if it's summer I guess.*" (ID.
330 15). Such anxieties appeared to result in avoidance of activities for fear that it would
331 prompt undesirable symptoms "*If the situation required me to exert a lot. I wouldn't do*
332 *it.*"(ID. 7).

333

334 The progressive nature of the disease seemed to provoke feelings of worry and uncertainty
335 about what the future will hold "*where is this going? You know what I mean? How bad is*
336 *it going to get or how worse it's going to get.*" (ID. 5). Such concerns appeared to limit
337 individuals' ability to be spontaneous and live the lifestyle once known "*Yep, it still affects*
338 *my confidence because I travelled. And uh ... I had fears of not being able to get myself*
339 *from point A to point B due to my limitations.*" (ID. 3)

340 B. Phase 2: Quantitative phase

341 *C. Individuals with COPD*

342 Recruitment and patient demographics are reported in figure 1 and table 2 respectively

343

344 *C. Healthy controls*

345 Sixty three healthy individuals agreed to participate. Two were excluded from the data

346 analysis because they had abnormal spirometry (Forced Expiratory Volume in one second

347 (FEV₁%) predicted <80% or Forced Expiratory Volume in one second/Forced Vital

348 Capacity (FEV₁/FVC) <70%) leaving 61 subjects to complete the questionnaires. Five

349 subjects were unable to perform the spirometry testing correctly but were included on the

350 basis they had no history of smoking or respiratory compromise. Subject characteristics

351 (n=61) are displayed in table 2.

352

353 B. Associations with health outcomes

354 Self-reported measures of self-consciousness, including the COPD-specific items of self-

355 consciousness, correlated with each other (all p<0.01). Relationships between measures of

356 self-consciousness and the COPD-specific items of self-consciousness with health

357 outcomes, including HRQOL, self-efficacy, anxiety and depression, are displayed in table
358 3.

359

360 B. Self-conscious emotions in individuals with COPD and healthy controls

361 Differences between scores obtained on measures of self-conscious emotions in individuals
362 with COPD compared to healthy controls are displayed in table 4.

363

364 **A. Discussion**

365

366 COPD is acknowledged as self-inflicted provoking painful emotions surrounding feelings
367 of self-blame, embarrassment, shame and guilt. Self-conscious emotions were prominent
368 and associated with reduced mastery, heightened emotions and elevated symptoms of
369 anxiety and depression. Individuals with COPD were noted to be less compassionate
370 towards themselves, have higher levels of shame and lower levels of pride than healthy
371 controls.

372

373 These findings echo previous literature in which self-blame and personal culpability are
374 prominent in the narratives of individuals with COPD⁶⁻⁸. Self-blame has been associated

375 with negative emotional responses including feeling shamed, disgraced, depressed and
376 embarrassed, leading to reduced help-seeking, reduced adherence to oxygen therapy and
377 social isolation ^{6,10,11}. Self-conscious emotions are also reported in conjunction with
378 negative feelings of dependency on people and on devices which force patients to
379 reappraise their identity within the context of their disease. Such critical self-appraisals
380 negatively influences self-confidence and challenges feelings of self-worth ⁵ which can lead
381 to the decline of active interventions as patients feel undeserving of dedicated care ¹².
382 Feelings of worthlessness may also mean patients have difficulty asserting themselves.
383 They describe feeling they have no right to complain especially when dealing with health
384 care professionals ⁵. Shaming attributes may arise from interactions with health care
385 professionals, who believe patients with COPD are to blame for their disease, resulting in
386 patients feeling stigmatized ^{7,9}. Therefore, health care professionals need to be mindful of
387 interactions with patients; taking the time to listen can positively influence patients' self-
388 control and feelings of self-worth ²⁴.

389

390 Self-conscious emotions have not previously been assessed objectively in individuals with
391 COPD. Such emotions were strongly associated with reduced mastery, a heightened
392 emotional response and elevated symptoms of anxiety and depression, detectable both by

393 the general measures of self-consciousness and the disease-specific items. This is the first
394 study to apply these objective measures of self-compassion, shame and guilt to a population
395 of older adults living with chronic disease. Patients with COPD were found to be less
396 compassionate towards themselves than healthy controls of a similar age, and both
397 populations in this study scored lower than scores reported in younger adults aged 17-36
398 years ¹⁶.

399

400 The vast majority of patients expressed feelings of guilt during the interviews and identified
401 their “own behavior” as being responsible for their lung disease, yet questionnaire-assessed
402 guilt did not differ between healthy individuals and those with COPD. Given that guilt is
403 rarely experienced on the conscious level it may be difficult to detect using self-reported
404 measures ²⁵. Although it has been reported in the narratives of individuals newly diagnosed
405 with COPD ²⁶, it is unclear whether feelings of guilt remain salient eight years following
406 diagnosis.

407

408 This study is not without its limitations. The infrequent application of the self-conscious
409 measures in those with COPD, in particular the SGS, makes it difficult to contextualize our
410 results in comparison with other chronic disease populations. This measure was chosen as it

411 considers three important dimensions, (shame, guilt and pride) two of which (shame and
412 pride) are strongly associated with important health outcomes. Given the number of
413 correlations the chance of significant correlation was high. However, even after correction
414 for multiple correlations all self-conscious emotions, with the exception of guilt, were
415 significantly associated with reduced mastery, a heightened emotional response and
416 psychological symptoms.

417

418 Our observations suggest a need to scope and address self-conscious emotions in
419 individuals with COPD. Therapies to target self-conscious emotions include, compassion
420 focused therapy ²⁷ and mindfulness ²⁸. Self-compassion, as a key component of
421 mindfulness, has been reported to mediate the effect of mindfulness-based cognitive
422 therapy for depression supporting Gilberts' model (2010) of self-compassion as a mediator
423 for psychological affect ^{29,20}. A pilot randomized controlled trial of an eight week Mindful
424 Self-Compassion program noted significant differences in favor of the intervention group in
425 self-compassion, mindfulness, life satisfaction, depression, anxiety, stress and avoidance
426 and these benefits were also visible after 12 months ³¹. Such interventions have the
427 potential to improve wellbeing, reduce psychological symptoms and encourage effective
428 disease strategies. Although disease-specific self-conscious items still require psychometric

429 testing prior to broader application in the COPD population, the items correlated well with
430 other general measures of self-consciousness and with important health outcomes. They
431 were simple to apply and well accepted by individuals with COPD.

432

433 B. Conclusion

434 Patient narratives reflected low levels of self-compassion, high self-judgment and
435 diminished self-worth, known to negatively impact on help-seeking behavior and adherence
436 to active interventions. Self-conscious emotions are prominent and were associated with
437 reduced mastery, heightened emotions and elevated symptoms of anxiety and depression.
438 Individuals with COPD were less compassionate towards themselves, had higher levels of
439 shame and lower levels of pride compared with than healthy controls of a similar age. An
440 improved awareness of self-conscious emotions will enable targeted therapy aimed at
441 improving mastery and reducing psychological symptoms.

442

443 **Funding Acknowledgements:** This study was funded by the Canadian Lung Association,
444 Canadian Respiratory Health Professionals (CRHP), and DB holds a Canadian Research
445 Chair.

446

447 **Declaration of Conflicting Interests:** The Authors declare that there is no conflict of
448 interest

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544 mindful self-compassion program. *J Clin.Psychol.*, 2013;69(1):28

545 **Table 1. Patient demographics for Phase 1: Qualitative phase**

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| | Age (y) | Gender | BMI | FEV ¹ %pred | FEV ¹ /FVC | Smoking status | Pack years | Length of diagnosis (y) | Social status (lives with) | Oxygen usage | Walking aid usage |
|--------|---------|--------|------|------------------------|-----------------------|----------------|------------|-------------------------|----------------------------|--------------|-------------------|
| ID. 1 | 72 | M | 19.7 | 29 | 29 | Ex | 50 | 11 | Alone | Yes | Yes |
| ID. 2 | 70 | F | 21.3 | 23 | 37 | Ex | 15 | 8 | Spouse | No | Yes |
| ID. 3 | 66 | F | 20.9 | 25 | 42 | Ex | 10 | 28 | Spouse | Yes | Yes |
| ID. 4 | 63 | M | 35.4 | 30 | 42 | Ex | 60 | 16 | Alone | No | Yes |
| ID. 5 | 78 | F | 23.8 | 45 | 50 | Ex | 20 | 16 | Alone | No | Yes |
| ID. 6 | 68 | M | 25.9 | 29 | 30 | Ex | 100 | 4 | Alone | No | No |
| ID. 7 | 69 | F | 20.7 | 45 | 27 | Ex | 40 | 10 | Spouse | No | Yes |
| ID. 8 | 90 | F | 30.0 | 66 | 68 | Yes | 60 | 14 | Alone | Yes | Yes |
| ID. 9 | 85 | M | 30.1 | 59 | 51 | Ex | 95 | 18 | Alone | No | No |
| ID. 10 | 76 | F | 32.1 | 48 | 73 | Ex | 20 | 17 | Alone | No | Yes |
| ID. 11 | 76 | F | 23.0 | 50 | 58 | Ex | 50 | 10 | Alone | No | Yes |
| ID. 12 | 73 | F | 27.2 | 50 | 30 | Ex | 40 | 4 | Alone | Yes | Yes |
| ID. 13 | 72 | M | 21.5 | 56 | 49 | Ex | 58 | 24 | Spouse | Yes | Yes |
| ID. 14 | 65 | M | 22.2 | 31 | 47 | Yes | 100 | 20 | Alone | Yes | Yes |
| ID. 15 | 68 | F | 16.9 | 30 | 30 | Ex | 40 | 21 | Spouse | No | Yes |

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549 **Table 2. Between group differences in characteristics between individuals with COPD and healthy controls**

| | Individuals with COPD (n=70) Mean (SD) | Healthy controls (n=61) Mean (SD) | Between group differences |
|--|---|--------------------------------------|---------------------------|
| Age (y) | 70.8 (9.4) | 66.2 (12.9) | p=0.33 |
| Gender (%male) | 44 | 34 | p=0.23 |
| BMI | 25.2 (6.3) | 25.8 (4.9) | p=0.617 |
| FEV ¹ %pr | 40.5 (18.8) | 89.2 (28.0) | p<0.001 |
| FEV ¹ /FVC | 43.5 (14.4) | 76.4 (7.5) | p<0.001 |
| Smoking status (%yes, ex, no) | 5.7 94.3 0 | 4.9 18.0 77.0 | p<0.001 |
| Pack years | 43.5 (21.7) | 2.8 (7.3) | p<0.001 |
| Length of diagnosis (y) | 8.8 (6.7) | | |
| Number of co-morbidities | 2.7 (2.0) | 1.1 (1.4) | p<0.001 |
| Social status (lives with) (%alone spouse, family, other) | 37.7 37.1 24.3 1.4 | 28.3 58.3 10.0 3.3 | p=0.004 |
| Oxygen usage (% yes) | 44.3 | | |
| Walking aid usage (% yes) | 51.4 | | |

550 SD; Standard Deviation, BMI; Body Mass Index, FEV¹; Forced Expiratory Volume in one second FEV¹/FVC; Forced
 551 Expiratory Volume in one second/Forced Vital Capacity

552 **Table 3: Significant correlations between self-conscious emotions and health related quality of life (HRQOL), self-efficacy and psychological symptoms (Persons r)**

| | CRQ-SR: Dyspnoea | CRQ-SR: Fatigue | CRQ-SR: Mastery | CRQ-SR: Emotions | PRAISE | HADS: Anxiety | HADS: Depression |
|--|---------------------|--------------------|--------------------|---------------------|--------|---------------|---------------------|
| BFNE | NS | NS | r=-0.47* | r=-0.60* | NS | r=0.60 * | r=0.49* |
| SCS-SF 16 | NS | NS | r=0.41* | r=0.55* | NS | r=-0.50* | r=-0.51* |
| SGS: Guilt | NS | NS | NS | r=0.45* | NS | r=-0.47* | NS |
| SGS: Shame | NS | NS | r=0.52* | r=0.65* | NS | r=-0.70* | r=-0.56* |
| SGS: Pride | NS | NS | r=-0.50* | r=-0.57* | NS | r=0.58* | r=0.61* |
| COPD-specific items of self-consciousness | NS | NS | r=0.58* | r=0.65* | NS | r=-0.51* | r=-0.55* |

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554 BFNE: Brief Fear of Negative Evaluation, SCS-SF: Self-Compassion Scale-Short Form, SGS: Adapted Shame and Guilt Scale, COPD: Chronic
555 Obstructive Pulmonary Disease, PRAISE: Pulmonary Rehabilitation Adapted Index of Self-Efficacy, HADS: Hospital Anxiety and Depression
556 Scale, CRQ-SR: Chronic Respiratory Questionnaire-Self-Reported.
557 Due to multiple comparisons significance levels were set at $p < 0.001$ *
558 NS: Not Significant

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Table 4. Self-conscious emotions in individuals with COPD compared to healthy controls

| Measures of self-conscious emotions | COPD (n=70) mean (SD) | Healthy controls (n=59) mean (SD) | Between-group differences | 564 565 566 567 568 569 |
|-------------------------------------|--------------------------|---|---------------------------|--|
| BFNE | 27.8 (10.5) | 30.9 (7.2) | p=0.046* | 570 571 |
| SCS-SF | 3.3 (0.6) | 3.6 (0.7) | p=0.010* | 572 573 |
| SGS - Guilt | 18.8 (4.3) | 18.6 (3.4) | p=0.808 | 574 575 |
| SGS - Shame | 21.3 (3.9) | 23.0 (2.8) | p=0.006* | 576 577 |
| SGS - Pride | 12.3 (4.03) | 10.3 (3.2) | p=0.001* | 578 579 580 |

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COPD: Chronic Obstructive Pulmonary Disease; SD: standard deviation; BFNE: Brief Fear of Negative Evaluation, SCS-SF: Self-Compassion Scale-Short Form, SGS: Adapted Shame and Guilt Scale
Significance levels were set at p<0.05*

595 **Figure 1: Recruitment diagram for Phase 2: Quantitative Phase, individuals with COPD**

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