Low, G., Ross, C., Stickland, M., Wilson, D. & Wong, E.

Perspectives of Aging among People Living with Chronic Obstructive Pulmonary Disease.

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Abstract

Among pulmonary rehabilitation attendees, we explored their tendency to downplay versus acknowledge physical and psychosocial health limitations, and the subsequent impact either strategy had on how they perceive their own aging process. Participants (n=87) were 44 to 82 years of age, and diagnosed with chronic obstructive pulmonary disease. The St. George's Respiratory Questionnaire measured their health limitations. The Attitudes to Aging Questionnaire captured their perspectives of aging. Participants downplayed their symptoms and psychosocial impact, and remained most positive about psychosocial loss and carefully reserved about psychological growth. Acknowledged activity impairment had negative consequences, however, for their perspectives of physical change. These findings signify a balanced identity and perspective of aging that supports the Identity Process Theory. We encourage nurses and other practitioners to use this theory to better understand how people with chronic obstructive pulmonary disease adapt to aging.

Keywords: chronic obstructive pulmonary disease, aging attitudes, pulmonary rehabilitation**,** health limitations research, Identity Process Theory

Perspectives of Aging among People Living with Chronic Obstructive Pulmonary Disease

Chronic Obstructive Pulmonary Disease (COPD) is a chronic debilitating condition that typically increases in severity with aging, with increasingly onerous physical and psychosocial consequences (O'Donnell et al., 2007). COPD is associated with significant disability and reduced quality of life for people of all ages (Kanervisto et al., 2010; O'Donnell et al., 2007). Although COPD is often thought of as being prevalent among older retired persons, many people in their forties and fifties are diagnosed with COPD (see, for example, Ek & Ternstedt, 2008; Seamark, Blake, Seamark, & Halpin, 2004). Living with this chronic progressive illness is likely to have implications for how afflicted people perceive and adapt to aging. We explored the relevance that two psychological strategies (i.e. to downplay and acknowledge physical and psychosocial health limitations) could have for people living with COPD through the perspective of Identity Process Theory (Sneed & Whitbourne, 2001; Whitbourne & Collins, 1998). This theory indicates that people who strategically respond to their physical and psychosocial health limitations are better able to adapt to aging.

Living with Respiratory Disease and Aging

Research studies of what it is like to be living with COPD draw attention to onerous physical, social, and psychological consequences of this disease as it progresses. Activities of living become difficult to accomplish because of the difficult symptoms of COPD such as shortness of breath, frequent coughing, debilitating fatigue, and excess sputum production (Kanervisto et al., 2010). These respiratory disease symptoms also progressively interfere with the person's ability to be active both within and outside of the home (Caverly, 2006; Miravtilles, Anzueto, Legnani, Forstmeier, & Fargel, 2007;

Omenaas, Dahl, Bakke, & Lehmann, 2006). Activity avoidance (Habraken, Pols, Bindels, & Willems, 2008) and associated feelings of dependency and psychological distress (Ek & Ternestedt, 2008) are not unusual with COPD. Social roles such as those associated with spouses and grandparents, or through hobbies or other social networks may no longer be possible or enacted in familiar ways (Gullick & Stainton, 2008). Not only is social connectedness reduced through job loss in some cases, but also more commonly because these persons generally feeling stigmatized by others (Miravittles et al., 2007). Not surprisingly, some report a penchant for solitary or isolated activities (Seamark et al., 2004; Williams, Bruton, Ellis-Hill, & McPherson, 2007). Others express low confidence and fear over leaving the home (Barnett, 2005). Reduced meaningful activities and relationships have also provoked feelings of grief and loneliness (Ek & Ternestedt, 2008; Elofsson & Ohlen, 2004).

The process of aging itself typically involves physical changes in appearance and bodily function that provoke losses in independence and social connectedness, inner struggles to accept an unchangeable past and see potential for personal growth in an unknown future (Reed, 1991). Walker (2002) defined physical change, psychosocial loss, and foreseeing the potential for personal growth as key developmental challenges that all mature adults must strive to come to terms with in order to adapt to aging. These challenges of aging beg the question of how people living out their remaining life years with the additional physical and psychosocial limitations of COPD perceive and adapt to their own process of aging. To date, there appears to have been only one investigation relevant to this question. Levy and Myers (2005) investigated whether an age-specific psychological factor, older individuals' beliefs about their own aging, predicted the

likelihood of their dying from respiratory causes. They found that individuals with a higher baseline positive self-perceptions of aging were significantly less likely to die of respiratory causes over the next 23 years, while those with more negative self-perceptions of aging were more likely to die of respiratory causes. However Levy and Myers (2005) did not explain the psychological processes behind negativity toward aging in part because they did test a psychological aging theory.

Theoretical Framework

Identity Process Theory (IPT) focuses on how people strategically respond to limitations in functioning in order to better adapt to aging (Sneed & Whitbourne, 2001; Whitbourne & Collins, 1998). IPT maintains that a person's identity encompasses his or her physical, psychological, and social functioning, with health limitations being a key factor in these three domains (Whitbourne & Collins, 1998). Physical and psychosocial health limitations are cues that stimulate people to recognize that the aging process has asserted itself in their lives. In response, people assimilate and accommodate to these health limitations.

People tend to assimilate or downplay with age their physical and psychosocial health limitations as much as possible. When people downplay health limitations, they do so to preserve and protect their sense of identity (Sneed & Whitbourne, 1991). People who assimilate also minimize or deny the significance of their health limitations for their own process of aging (Whitbourne & Collins, 1998). Thus assimilators also tend to see themselves as more youthful and they remain more positive about their own aging. Some health limitations are, however, too onerous to downplay and people find themselves having to accommodate to or acknowledge these limitations (Whitbourne & Collins,

1998). Onerous health limitations serve as a sign for people that they are losing their youth and instill in them greater negativity and doubt toward their own aging (Sneed & Whitbourne, 2001). Selectively accommodating to onerous health limitations helps people circumvent any negativity and doubt about aging. In theory, then, people who assimilate and accommodate are better able to adapt to aging because they have a more balanced perspective of their identity and, as a consequence, their own process of aging (Sneed & Whitbourne, 2001; Whitbourne & Collins, 1998).

IPT was determined to be a useful guiding framework for our aging with COPD study. IPT is not a disease-oriented theory, yet it is relevant to people living with COPD because of its emphasis on physical, social, and psychological health limitations. People living with COPD are also aging. IPT could help us begin to understand the age-related strategies that people with COPD use to adapt to their own aging. Determining which physical and psychosocial health limitations people with COPD symptoms consider most onerous can help us make more prudent recommendations for intervention.

Purpose

In this study, through the lens of IPT, we answered four research questions: (1) Do people with COPD assimilate to or downplay their least onerous physical and psychosocial health limitations with age? (2) Do people with COPD accommodate to or acknowledge their most onerous health limitations with age? When people with COPD downplay their least onerous physical and psychosocial health limitations, those limitations should have a significant negative effect upon age. In the case of accommodation, their most onerous health limitations should have a significant positive effect upon age. We also asked: (3) If people with COPD have a greater propensity to

assimilate to physical and psychosocial health limitations, do they tend remain more positive about their own aging? (4) Does the use of assimilation and accommodation among people diagnosed with COPD afford them a more balanced perspective of aging? In keeping with Walker's (2002) perspective, we conceived of aging as a multidimensional process of physical change, psychosocial loss, and psychological growth. With respect to our third research question, the number of health limitations negatively affecting age should outnumber those positively affecting age. In turn, age should have a non-significant effect upon the most positively appraised dimensions of aging and a significant positive effect upon those least positively appraised. For people with COPD to have a more balanced perspective on aging, age must have a significant negative effect upon at least one dimension of aging.

Methods

Study Design

We undertook a cross-sectional survey study in 2009 among adults of all ages who were taking part in the 8-week 'Breath Easy' pulmonary rehabilitation program (BEP) at the Centre for Lung Health (Covenant Health) in Edmonton, Alberta.

Measurements

Physical and psychosocial health limitations. The participants' physical and psychosocial health limitations associated with COPD were measured using the St. George's Respiratory Questionnaire (SGRQ; Jones, Quirk, Baveystock, & Littlejohns, 1992). The SGRQ containing 50 pre-weighted items solicits the individual's perception of physical (symptoms and activities) and psychosocial (impact of disease) health impairment. Physical and psychosocial health impairment scores range from 0 to 100.

The *symptoms* domain pertains to shortness of breath, wheezing, and phlegm. *Activity* has to do with perceived difficulties with a variety of daily activities inside and outside of one's own home, and breathlessness during activity. *Impact of disease* covers a range of common disturbances in psychosocial function, such as panicking, feeling embarrassed in public or like a nuisance to others, and the belief that one is an invalid and won't get any better (Jones & Forde, 2008). Higher domain scores indicate more severe health impairments. We received end-of-program scores at the domain rather than item-level from the BEP coordinator as this is the only level of data recorded in each participant's master program file. We did, however, find two North American studies providing evidence in support of the SGRQ for use among adults living with COPD at a variety of ages who are also attending pulmonary rehabilitation (Bentsen, Wentzel-Larsen, Henriksen, Rokne, & Wahl, 2010; Wilson, 2006). Bensten et al. reported Cronbach's alpha coefficients for of .86, .85, and .97 for symptoms, activities, and psychosocial impact, respectively. Wilson reported a coefficient range of α=.80 to α=.90 for the three SGRQ domains.

The aging process. Participants' perspectives of their own aging process were measured using the Attitudes to Aging Questionnaire (AAQ; Laidlaw, Power, Schmidt, & WHOQOL-OLD Group, 2007). The AAQ contains 24 items in total across three domains, namely psychosocial loss, physical change, and psychological growth. Psychosocial loss focuses on whether respondents equate old age with being lonely, depressed, and having losses such as whether they are currently feeling disengaged from society and excluded from things, and as they get older, lose their physical independence, and have difficulty making friends and talking about their feelings. Respondents are also

asked about physical changes (their aging ease, feeling old, identity not being defined by age, energy and health at present given their age, physical health problems not holding them back, and exercise regularity and importance). The psychological growth that comes with aging is about better coping and self-acceptance, believing one's life has made a difference, seeing aging as a privilege and as pleasant, giving of and being a good example to others, and felt wisdom. The eight items in each domain are measured on a 5-point Likert scale thus domain scores range from 8 to 40. Item-response categories range from strongly disagree to strongly agree, uncertainty being the middle category, and from not at all true to extremely true. On the AAQ, the higher a domain score is, the more positive the attitude towards one's own aging process in that domain.

The domain structure of the AAQ has been supported by studies undertaken in 15 countries (Laidlaw et al., 2007), among Brazilians (Chachomovic, Fleck, Laidlaw, & Power, 2009), and Canadians and Norwegians (Kalfoss, Low, & Molzahn, 2010) with a variety of chronic illnesses, including lung disease. In these studies, inter-item reliability coefficients for psychosocial loss and physical change range from .72 to .77 and .75 to .81, respectively. For psychological growth the range was .70 to .81. Cronbach's alpha coefficients in our study fell within this range (loss α=.77; change α=.72; growth α=.76).

Respiratory disease severity. We aimed to recruit people who varied in age and COPD severity, as COPD severity typically increases with age (O'Donnell et al., 2007). Activity limitations, symptoms, and psychosocial impact also typically worsen as COPD severity increases (Jones & Forde, 2008). Hence we measured participants' Forced Expiratory Volume in one second (FEV-1), taking into account their height, weight, age, and gender (O'Donnell et al., 2007). Respiratory disease severity or FEV-1 for all

participants was assessed by a BEP registered respiratory therapist.

Data Collection Procedures

Over an 8 month period, 200 active participants in the BEP were recruited on the last day of their program. The morning and afternoon groups consisted of persons aged 65 and over, and evening groups of persons 40+ years of age. We recruited subjects on the last day because all BEP participants must undergo a wide variety of screening assessments (i.e. respiratory disease severity, quality of life, oxygen requirements, and a six-minute walk distance capacity) at the beginning and during the program. We wished to avoid further respondent burden.

A member of the BEP care staff asked if the primary investigator (PI) could tell them about the study. Upon this approval, the PI then gave a brief presentation outlining the research project and answered questions. The PI emphasized that future access to the BEP was not contingent upon their participation in this study. Participants were told that the study only involved their completing an informed consent form and a questionnaire about their perspectives of ageing. Both were to be returned either in a postage-paid pre-addressed envelope or left at the BEP for pick-up.

Sample

Participation required a confirmed diagnosis of COPD. Other participatory criteria were: (a) able to understand English and communicate both verbally and in writing and (b) having no other chronic illness preventing a participant from taking part in the BEP. Eighty-seven persons participated in this study, with all completing and returning their consent form and questionnaires within one week. The study participants' demographic and clinical characteristics, and SGRQ, AAQ, and COPD severity scores are shown in

Table 1.

Analysis

As there were missing responses for the AAQ, the highest number (n=2, 2.4%) pertaining to physical change, maximum likelihood estimates were imputed to preserve variability and produce unbiased estimates of predicted missing values (Schafer & Graham, 2002). Levy and Myers' (2005) study did not focus on gender, but we compared male and female SGRQ, AAQ, and COPD severity scores through a Multiple Analysis of Variance. Wilk's Lambda ratio (**λ)** was used to test the likelihood of the data with respect to equal population means for all groups versus being identical to the sample means for different groups (Tabachnick & Fidell, 2001). We proceeded accordingly to a path analysis using AMOS 20.0 (Arbuckle, 2011).

Path analysis is an extension of the regression model, used to test the fit of a correlation matrix against models (Byrne, 2001). The variables on the extreme left of Figure 1 are exogenous variables that have no prior influencing factors; specifically COPD severity, COPD symptoms, activity impairment, and the psychosocial impact of this disease. Exogenous variables are free to co-vary and thus correlate with one another. Exogenous variables may influence endogenous variables (or those whose value is dependent upon and thus directly affected by other variables), specifically chronological age as a mediator and psychosocial loss, physical change, and psychological growth as outcome variables of interest. Our sample size meets the 82 participant requirement for testing the fit of a correlation matrix against a path model with 4 exogenous variables (Tabachnick & Fidell, 2001).

Path analysis allows the researcher to test the plausibility of variable relationships in their entirety against an independent dataset. The researcher imposes the structure of the hypothesized model on the sample data and then tests how well the observed relationships or correlations between variables from the sample data fit this restricted structure (Byrne, 2001). We relied on model chi-square (χ^2) and adjusted goodness of fit (AGFI) as model-to-data fit indices (Byrne, 2001). Model χ^2 is indicative of goodness of fit of model-implied relationships with those observed in the actual data set; hence, a value indicating non-significant differences is desired. The AGFI indicates the percentage of match between model-implied relationships and those observed when unexpected statistically significant relationships are observed in the actual data. Effect sizes for all three path models were determined using Cohen's (1988) multiple regression criteria.

Results

The MANOVA yielded no significant score differences among men and women across all seven of our study variables (λ=.115, F[7, 79]=1.46, p=.193). Hence gender was excluded from the path models we went on to test with psychosocial loss, physical change and, then, psychological growth as outcome variables.

The path model for psychosocial loss (see Figure 1), physical change (see Figure 2), and psychological growth (see Figure 3) achieved goodness-of-fit with the study data. In all three models, the path from COPD severity to age was found not to be statistically significant. COPD severity did however significantly co-vary with activity limitations, COPD symptoms, and the psychosocial impact of COPD. Higher FEV-1 scores (lesser COPD severity) were associated with lower SGRQ scores (lesser health limitations).

Based on the SGRQ scores shown in Table 1, the data indicated participants perceived the psychosocial impact of COPD to be their least and activity limitations as their most onerous health limitation. In the path models for psychosocial loss (see Figure 1), physical change (see Figure 2), and psychological growth (see Figure 3), both COPD symptoms and the psychosocial impact of COPD had significant negative medium-size effects upon age. The most onerous physical health limitation (i.e. activity limitations) had a large positive effect upon age across all three path models.

The mean scores on the AAQ instrument shown in Table 1 indicate that the participants were most optimistic about psychosocial loss and least optimistic with respect to physical change. The subsequent effect of age upon participants' perspectives of psychosocial loss and psychological growth was not statistically significant (see Figures 1 and 3). Age explained virtually none of the variance in participants' perspectives of loss (R^2=.001) and growth (R^2=.012). Age did have a significant medium-size positive effect upon participants' perspectives of physical change (see Figure 2) as age explained 16.7% of the variance in participants' perspectives of physical change. We also added a path capturing the negative medium-size direct effect of activity limitations upon participant perspectives of physical change. Without this added path, the physical change model lacked goodness-of-fit. (X^2=11.34, df=4, p= .023; AGFI=.70).

Discussion

Through the lens of IPT (Sneed & Whitbourne, 2001; Whitbourne & Collins, 1998), we investigated among 87 people living with COPD between 44 and 82 years of age tended to assimilate and accommodate to the physical and psychosocial health limitations provoked by this disease. We also examined the outfall of the use of either

strategy upon their perspectives of psychosocial loss, physical change, and psychological growth. To date there has been only one study of perspectives of aging among people living with COPD adapt to aging. Specifically, Levy and Myers (2005) found that people living with COPD from age 50 onward who were more negative about their own aging increased their likelihood of dying.

In our IPT-based psychosocial loss model, as COPD severity increased so too did the participants' activity limitations, COPD symptoms, and the psychosocial impact of this disease. Nonetheless we found that there was significantly less reporting of COPD symptoms and the psychosocial impact of COPD with age across our studied sample. Participants' psychosocial impact scores were also lowest overall, followed by their COPD symptoms scores. Hence in keeping with IPT (Sneed & Whitbourne, 2001; Whitbourne & Collins, 1998), our participants appeared to assimilate to the least onerous psychosocial impact of COPD. Our participants also appeared to assimilate to their COPD symptoms, as the physical health limitation seemingly causing them the least bother. Participants appeared to accommodate to and thus acknowledge more with age across the studied sample their onerous activity limitations.

In other studies, respiratory symptoms have been found to significantly interfere with getting out (Miravtilles et al., 2007; Omenaas et al., 2006) and the fulfillment of social roles (Gullick & Stainton, 2008); while also enhancing psychological distress (Ek & Ternestedt, 2008). Activity reductions or tapering has been linked with low confidence and fear about leaving the home (Barnett, 2005) along with grief and loneliness (Ek & Ternestedt, 2008; Elofsson & Ohlen, 2004). Engaging in solitary or isolated activities has been identified as a consequence (Seamark et al., 2004; Williams et al., 2007). In our

study, despite having accommodated to their activity limitations, the subsequent effect of age upon our participants' perspectives of psychosocial loss was not significant. Our participants thus minimized the significance of their health limitations in relation to their own process of aging (Whitbourne & Collins, 1998). Such minimizing was advantageous for our participants' perspectives of psychosocial loss because their loss scores were highest overall; five of the eight loss-related items had scores greater than four. For example, participants felt it was only slightly true that as they get older, they would have difficulty making friends, and that they feel disengaged from society. There was less certainty expressed about but still disagreement with them being lonely and depressed in old age. Hence in keeping with IPT (Sneed & Whitbourne, 2001), it appears that our participants' greater propensity for assimilating and selectively accommodating with age helped them remain positive about psychosocial loss.

Sneed and Whitbourne (2001) also previously and perhaps correctly draw attention to giving sufficient credit to the resilience people, as they weather functional limitations and see something positive in their own aging process. Resilience is a psychological resource helping people to negotiate developmental challenges, and even when their circumstances are less than favorable (Harris, 2008). Resilience is also thought to enhance older peoples' ability to sustain social connections and interests, and thus manage one way or another (Windle, Markland, &Woods, 2008). Drawing internally upon their resilience may explain our participants' untethered positivity about psychosocial loss despite accommodating to activity limitations. Our study should not be surprising, as people with COPD have shown a remarkable ability, over time, to psychologically adapt (Wilson et al., 2008). They adapt through asking for support and

assistance from significant others, gradually adjusting their expectations around what can be accomplished each day, and pacing and tapering activities (Nicholson & Anderson, 2003; Wilson et al., 2008). It is also possible that BEP attendees were more robust in both health and psychological stamina than were the people who declined to take part in this study when invited.

Using assimilation and accommodation, in theory, helps people remain more positive about and thus enhance their adaptation to aging (Sneed & Whitbourne, 2001; Whitbourne & Collins, 1998). We found that participants assimilated to COPD symptoms and the psychosocial impact of COPD and accommodated to their activity limitations with age in the physical change model as well. Age, in turn, significantly and positively affected participants' perspectives of physical change. The direction of this age-related effect makes sense because participants' appraisals of physical change were least positive overall. When we reviewed participant responses at the item-level, participants thought it only slightly true that they had more energy and better health than they expected for their age, and that their physical health problems weren't an encumbrance. Participants also thought it moderately true that they felt old. There was strong agreement about the importance of exercising at any age; however it must be recognized that exercise is emphasized in the BEP. Hence, the greater propensity for assimilating and selectively accommodating with age across the studied sample significantly reduced negativity toward physical change.

The lesser negativity toward physical change across our studied sample may also be partly owing to the age-inclusive nature of the BEP. Peer observations and comparisons can instill the belief that trying respiratory-related physical limitations are to

be expected with age (Habraken et al., 2008). The latter finding does, however, suggest that younger attendees were at a disadvantage because even though they reported lesser activity impairment than did older attendees, younger attendees tended to be more negative and doubtful about physical change. Therefore based on our findings as a whole in relation to physical change we echo others' sentiments about the need for continual education in pulmonary rehabilitation settings on how to conserve energy and time medications to circumvent activity limitations (Habraken et al., 2008; O'Donnell et al., 2007). Older attendees might also serve as mentors for younger attendees to help them psychologically prepare for and better navigate the physical changes of aging.

Nonetheless participants' use of both strategies appeared to afford them only partial protection against negativity and doubt about physical change in their own aging. In the physical change model, the findings that we gained through the path we added indicate that participants' more onerous activity limitations could also be directly detrimental to their perspectives of physical change at any age. The direct negative effect of activity limitations upon physical change was similar in stature to that of age upon physical change; both were medium-size effects. Hence, participants appeared to be equally vulnerable to negativity and doubt about physical change.

Whitbourne and Collins (1998) similarly indicated that peoples' concern for losing physical abilities can begin in their forties, and also that people are more vigilant and reactive toward limitations in physical functions that are central to their identity. In our study, activity limitations appeared to be of more central to participants' physical identity than COPD symptoms. Despite our observing a mean score for COPD symptoms relatively close in value to that for activity limitations, reports of activity limitations per

se significantly increased with age across our studied sample. Although COPD symptoms and activity limitations increased as COPD increased across the studied sample, activity limitations alone magnified participants' lesser optimism about physical change at any age. That activity limitations were more bothersome in the more severe stages of COPD and instigated further negativity toward physical change across the studied sample bring others` findings to mind. For example, Elofsson and Ohlen's (2004) found that people with more severe forms of COPD were fervently aware of having an aging body that set limits on their lives and made day-to-day life hard because of the physical hardships brought on by their lung condition. In two other studies, this fervent awareness was also seen as pertaining to the heightened visibility of bodily dysfunction and a shrinking scope for physical effectiveness (Ek & Ternestedt, 2008; Gullick & Stainton, 2008).

The path coefficients in the psychological growth model are nearly identical to those for psychosocial loss. Participants' psychological growth scores also fell on middle ground, between those for psychosocial loss and physical change. At the item-level, participants appeared to hover between uncertainty and agreement with respect to believing that aging is a privilege, or whether it brings gains in wisdom and opportunities to make a difference in others' lives, and it makes them better able to cope and more self-accepting. This sense of careful reservation stands somewhat in contrast to the findings from other COPD studies about a clear recognition of a sense of contentment and hope (Eloffson & Ohlen, 2004), and the value of one's past accomplishments (Seamark et al., 2004). Nonetheless because our participants hovered between uncertainty and agreement, and not disagreement, our study further supports the assimilator`s tendency to air on the side of positivity about their own process of aging (Whitbourne & Collins, 1998). Our

participants' average growth-related scores were also 7.86 points higher than those reported in Kalfoss et al.'s (2010) study of older Canadians with a variety of illnesses. Seemingly, then, the findings we report across all three path models indicate that the use of assimilation and accommodation created affordances for a more balanced perspective of the aging process. Our participants remained most positive about psychosocial loss and guardedly reserved about psychological growth, but equally vulnerable to negativity and doubt about physical change.

It should be noted that having participants complete the study questionnaires at a point in time when the 8-week BEP was ending may have been problematic as bi-weekly peer engagement and clinical monitoring in a structured and supportive program environment were coming to a close. There is strong agreement about the importance of the continuity in supportive and educative care, and exercise in pulmonary rehabilitation programs (Brooks et al., 2007; Habraken et al., 2008; O'Donnell et al., 2007). However, access to such programs is severely limited Canada-wide (O'Donnell et al., 2007) and few programs offer ongoing or maintenance support (Brooks et al., 2007). Identifying community outlets for continuing social activities with BEP participants prior to program completion may further support adapting to physical change and enhance psychosocial growth. Having a variety of sources with which people living with COPD can meaningfully socially engage has enhanced physical well-being (Barnett, 2005; Williams et al., 2007) and the capacity to look more positively upon one's life as a whole (Guthrie et al., 2001).

In sum, the 87 COPD-afflicted pulmonary rehabilitation attendees taking part in this study appeared to assimilate to their less onerous COPD symptoms and the

psychosocial impact of COPD. They also accommodated to onerous activity limitations. The participants' greater propensity to assimilate was advantageous in terms of how they perceived their own aging process. That is, despite the reporting of greater activity limitations with age across our studied sample, these participants remained most positive about psychosocial loss and carefully reserved about their own psychological growth. The participants' activity limitations appeared to be of greater central importance to their physical identity because this was the only physical health limitation that was becoming significantly more bothersome with age across the study sample. Moreover, the participants' onerous activity limitations made them equally vulnerable to negativity and doubt about physical change at any age. Seemingly, then, the use of both age-related strategies afforded the participants of this study a more balanced perspective of their own aging process. As such, these patterns of findings empirically support IPT (Sneed & Whitbourne, 2001; Whitbourne & Collins, 1998). Hence, we encourage nurse and other practitioners and researchers in pulmonary rehabilitation settings to consider adopting IPT as a guiding framework to augment their understanding of how people diagnosed with COPD adapt to aging.

Our modest sample size does, however, limit the relevance of our claims to the studied sample of attendees. Recruiting by convenience attendees alone, however, does not rule out the possibility that loss-related optimism was partly owing to self-selection bias. Taking part in pulmonary rehabilitation programs has already been identified as enhancing quality of life, and perceived control and well-being (Arnold et al., 2006; Lacasse, Goldstein, Lasserson, & Martin, 2006). Non-attendees of these programs also report more skepticism about managing chronic lung disease, and their ability to perform

activities of daily living (Bully et al., 2009; Fischer et al., 2007). Thus we could state that BEP attendees may have been more resilient than non-attenders. Because we analyzed cross-sectional data, we are only able to infer that assimilating was used most often at one point in time and observe patterns strategic responses to physical and psychosocial health limitations with age across a single studied sample.

In the future, we will obtain a larger random sample of people with COPD. Recruiting persons not enrolled in pulmonary rehabilitation would allow us to rule out self-selection bias over loss-related optimism. Measuring resilience (see, for example, Friborg, Hjemdal, Rosenridge, & Martinussen, 2003) will permit us to assess its effect upon activity limitations and psychosocial loss. Collecting data over time will help us determine whether growth-related reservations occur when the BEP ends, and the prevalence of assimilating versus accommodating across time. Qualitative interviews will help us understand with greater depth the IPT effect upon participants` perspectives of their own aging process. In our next study, we will interview persons living with COPD about the meaning of activity limitations for physical change. The downplaying of COPD symptoms, a physical health limitation yielding a mean score similar to that of activity limitations, also needs to be explored with greater depth. All such research is needed to ensure that people who are living with COPD better weather their illness and adapt to aging.

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Table 1. Frequency data for Participant Characteristics and COPD severity (N = 87)

Variable (Range)	*N (%)*	*M (SD)*
Gender		
Female	47 (54%)	
Male	40 (46%)	
Age (Range 44-82)		66.76 (8.31)
Oxygen Therapy		
Yes	25 (21.4%)	
No	62 (78.6%)	
Continuous Flow Oxygen		
Yes	8 (32%)	
No	17 (68%)	
Number of chronic illnesses (Range 0-6)		2.0 (1.0)
None	33 (37.9%)	
1-2	24 (27.5%)	
3-4	22 (25.2%)	
4+	17 (19.5%)	
Smoking History		
Yes	81 (93.1%)	
No	6 (6.9%)	
COPD severity based on FEV-1 (19.79-109.27)		
Mild COPD (FEV-1 80% or higher)	8 (9.2%)	8 (9.2%)
Moderate COPD (FEV-1 50-79%)	41 (47.1%)	41 (47.1%)
Severe COPD (FEV-1 <30%)	38 (43.7%)	38 (43.7%)

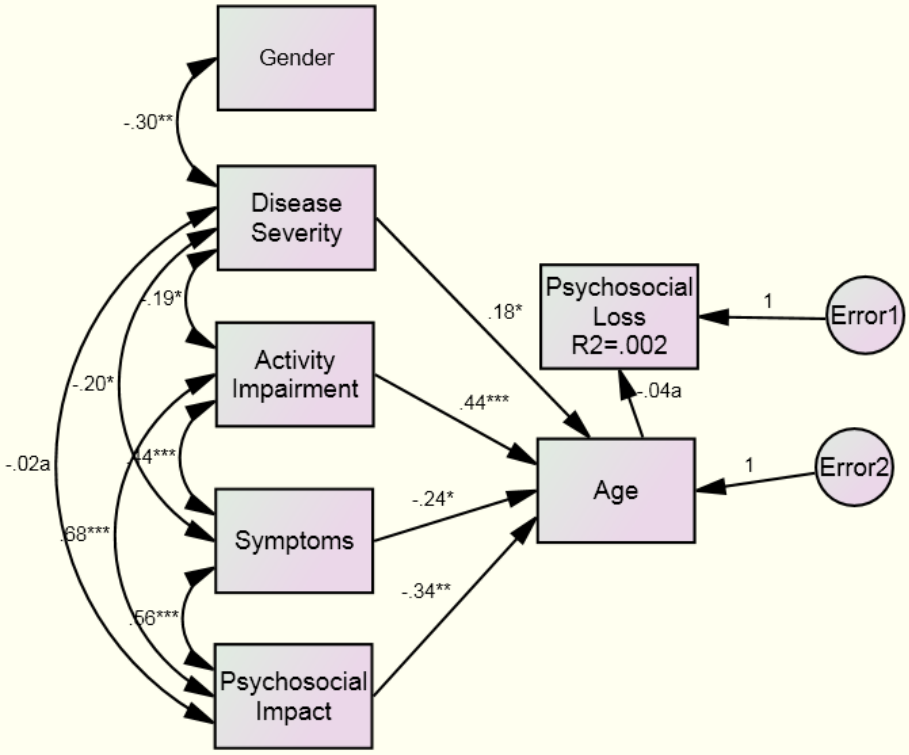
Note: COPD = Chronic Obstructive Pulmonary Disease; FEV-1 = Forced Expiratory Volume in One Second.

Table 2. Mean scores for Participant Characteristics, and the AAQ and SGRQ (N=87).

Variable (Range)	*M (SD)*
Age (Range 44-82)	66.76 (8.31)
Number of chronic illnesses (Range 0-6)	2.0 (1.0)
Number of Years Smoke-free	9.25 (11.57)
6-Minute Walk Distance in Meters[a]	458.38 (113.67)
COPD severity based on FEV-1 (19.79-109.27)	52.84 (21.36)
AAQ	
Psychosocial Loss (15-38)	31.03 (5.04)
Physical Change (13-34)	23.99 (4.76)
Psychological Growth (15-38)	27.67 (4.41)
SGRQ	
Symptoms (11.05-100)	52.60 (20.34)
Activity Impairment (5.25-100)	56.12 (21.07)
Psychosocial Impact (4.19-64.67)	24.42 (13.57)

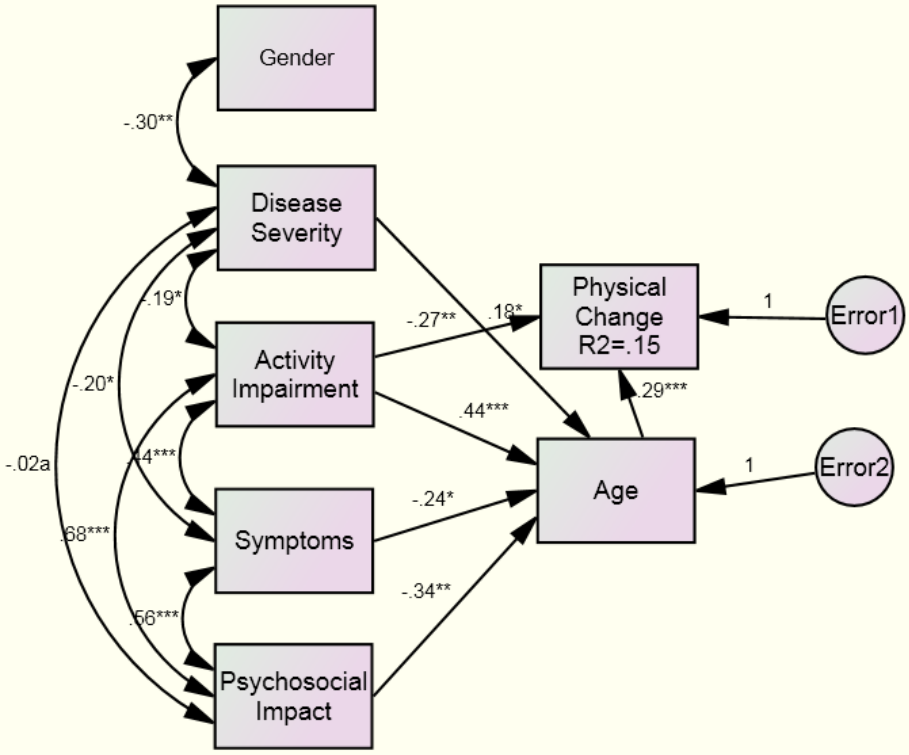
Note: AAQ = Attitudes to Aging Questionnaire; SGRQ = St. George's Respiratory Questionnaire; COPD = Chronic Obstructive Pulmonary Disease; FEV-1 = Forced Expiratory Volume in One Second.
[a]Studies of healthy men and women 35-79 range from 500-580 meters (American Thoracic Society, 2002).

Figure 1. Respiratory Functional Limitations, Age, and Perpsectives of Psychosocial Loss



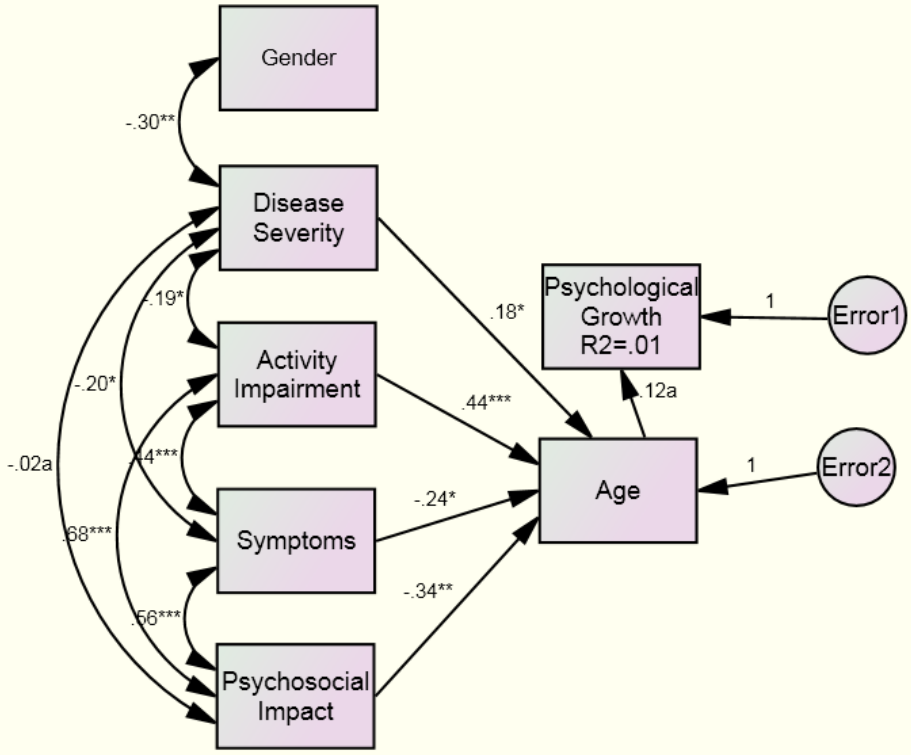
Model Chi-square=11.72, df=8, p=.230; AGFI=.91

Figure 2. Respiratory Functional Limitations, Age, and Perpsectives of Physical Change



Model Chi-square=8.64, df=8, p=.374; AGFI=.93

Figure 3. Respiratory Functional Limitations, Age, and Perpsectives of Psychological Growth



Model Chi-square=7.82, df=9, p=.553; AGFI=.94