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“In this together”: Social identification predicts health outcomes (via self-efficacy) in a chronic disease self-management program

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ABSTRACT

Rationale: Self-management programs are an established approach to helping people cope with the challenges of chronic disease, but the psychological mechanisms underlying their effectiveness are not fully understood. A key assumption of self-management interventions is that enhancing people's self-efficacy (e.g., via the development of relevant skills and behaviours) encourages adaptive health-related behaviors and improved health outcomes. However, the group-based nature of the programs allows for the possibility that identification with other pro-gram members is itself a social psychological platform for positive changes in illness-related confidence (i.e., group-derived efficacy) and physical and mental health.

Method: The researchers evaluated this hypothesis in a telehealth version of a chronic disease self-management program delivered in 13 rural and remote communities in northern Ontario, Canada (September 2007 to June 2008). Participants were 213 individuals with a self-reported physician diagnosis of chronic lung disease, heart disease, stroke, or arthritis. Measures of social identification, group-derived efficacy, and individual efficacy were administered seven weeks after baseline, and mental and physical health outcomes (health distress, psy-chological well-being, depression, vitality, pain, role limits, and disability) were assessed at four months.

Results: Structural equation modeling indicated that social identification was a positive predictor of group-de-rived efficacy and (in turn) individual self-efficacy (controlling for baseline), which was significantly associated with better physical and mental health outcomes.

Conclusion: The results are consistent with growing evidence of the value of a social identity-based approach in various health and clinical settings. The success of chronic disease self-management programs could be enhanced by attending to and augmenting group identification during and after the program.

1. Introduction

One of the most remarkable global trends of the past century is the “aging of humanity,” which presents multiple challenges for most so-cieties and their members (World Health Organization, 2011). With gains in longevity, individuals face a new set of developmental tasks involving a diminished state of health that is increasingly likely to in-clude some form of chronic disease. Aging populations thus require strategies to aid the successful management of these tasks—medically, emotionally, and in the context of relationships and life roles—and minimize demands on health care resources (Lorig and Holman, 2003).

One popular approach to these problems emphasizes the self-manage-ment of chronic disease: It complements traditional patient education by promoting the development of problem-solving skills and specific plans “to help patients make decisions, take appropriate actions, and alter these actions as they encounter changes in circumstance or disease” (Bodenheimer et al., 2002, p. 2471).

Whereas evidence exists for the effectiveness of self-management programs, questions remain about their key social and psychological mechanisms. In this study—an analysis of a chronic disease self-management program conducted in rural and remote communities (Jaglal et al., 2013)—we focus on the group-based nature of self-management,

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and on processes highlighted by applications of the social identity ap-proach to health and well-being (e.g., Haslam, 2014; Haslam et al., 2009; Haslam et al., 2018; Jetten et al., 2012; Steffens et al., 2017). In particular, we explored an elaborated route to successful self-manage-ment of chronic disease that highlights the potential benefits of "being in this together," such that outcomes reflect the extent that program members have a shared sense of belonging, identity, and purpose.

1.1. Chronic disease self-management and self-efficacy

The creation and accomplishment of action plans are key elements of the self-management approach. These implicate the construct of self-efficacy—"beliefs in one's capabilities to organize and execute [effec-tive] courses of action" (Bandura, 1997, p. 3, p. 3)—which is the cor-nerstone of the chronic disease self-management program (CDSMP) developed by the Stanford Patient Education Research Center (Lorig et al., 1996). The CDSMP is a layperson-led group health education program delivered in six weekly, 2-h sessions designed to help parti-cipants develop both the range of skills and the confidence necessary to deal more effectively with their chronic conditions.

Self-efficacy is theoretically and empirically well-established as a predictor of health-related behavior and outcomes (e.g., Bandura, 1997; Benight and Bandura, 2004). Moreover, a number of randomized trials (e.g., Lorig et al., 2001) have demonstrated that the CDSMP has small-to moderate effects on self-efficacy, at least over the short term, which in turn is linked to improved health status and health behaviors (e.g., increased physical activity, symptom management). On the other hand, proponents of the program acknowledge that the mechanisms under-lying its effectiveness are "not entirely clear" (Lorig and Holman, 2003, p. 4). The evidence regarding the effectiveness of self-management programs is also somewhat mixed, across different chronic conditions and outcome measures (for reviews, see Bodenheimer et al., 2002; Warsi et al., 2004). For this reason, there may be aspects of program delivery or structure that are unexplored drivers of positive outcomes, and which may offer opportunities for their enhancement.

One set of possibilities reflects the group format of self-management interventions, thus setting the stage for social influence processes (Lorig and Holman, 2003) or social support effects (Harrison et al., 2011). Indeed, one secondary analysis of a randomized controlled trial of the CDSMP showed that participants' perceptions of group processes were better predictors of program outcomes than their ratings of the course content (Harrison et al., 2011). The "group processes," however, were assessed as an amalgam of variables, including "quality of the inter-action; social comparison and identification among group members; inspiration, learnind help from and to the group" (Harrison et al., 2011, p. e41), leaving more precise pathways unspecified. Among these variables, social identification has a particularly well-established the-oretical and empirical background, one that has in recent years been elaborated with respect to health and well-being.

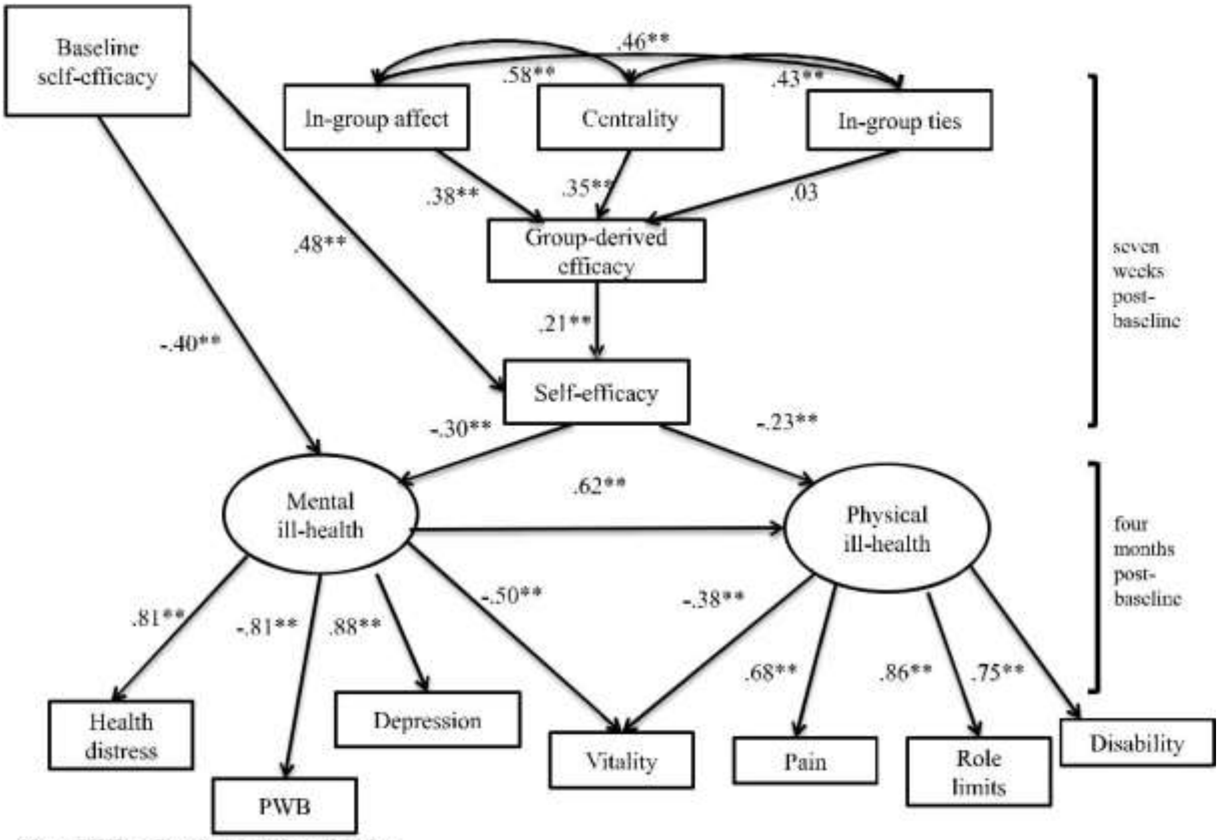
1.2. Social identity, health, and well-being

Social identification refers to the extent to which group membership shapes self-conception, along with its contribution to self-evaluation and the emotional bond between the individual and group (Tajfel, 1978). In recent years, the "social identity approach"—a meta-theore-tical perspective inspired by the twin theories of social identity (Tajfel and Turner, 1979) and self-categorization (Turner et al., 1987)—has been fruitfully applied to health in community, organizational, and clinical domains (Haslam et al., 2009; Jetten et al., 2012; Steffens et al., 2017). As Haslam (2014) summarized, "social identity matters for health because humans are social animals who achieve a sense of purpose and self-worth through social connectedness and group life" (p. 5). Groups act as a social resource for their members (Correll and Park, 2005; Haslam et al., 2009), providing self-esteem, social support, a sense of belonging, and hope (e.g., Baumeister and Leary, 1995; Deaux, 1996; Deaux et al., 1999; Johnson et al., 2006; Marmarosh and Corazzini, 1997; Marmarosh et al., 2005). This is consistent with a growing body of research documenting positive outcomes accom-panying group membership, including lower levels of depression (for a review, see Cruwys et al., 2013) and greater self-efficacy (Cameron, 1999; Harris et al., 2010). Similarly, focused applications of the social identity approach demonstrate the benefits entailed by identification with social groups in a range of clinical and community settings, and including both mental and physical health outcomes. The maintenance or bolstering of social identities (e.g., via group-focused interventions) has positive effects on depression, anxiety, and life satisfaction for people suffering from social isolation (Haslam et al., 2016), social an-xiety (Meuret et al., 2016), well-being during recovery from strokes (Haslam et al., 2008; Tarrant et al., 2016) and for older adults in re-sidential care (Gleibs et al., 2011; Haslam et al., 2010). Interventions can introduce group activities (e.g., group singing; Tarrant et al., 2016), capitalize on people's existing network of social identities (see Haslam et al., 2016), or highlight identification with other people sharing si-milar physical or mental health challenges (e.g., Meuret et al., 2016). It is also clear that social identification is the "critical curative me-chanism" (Haslam et al., 2016, p. 193) in these interventions; in other words, being in groups enhances well-being to the extent that in-dividuals identify with those groups (see also Cruwys et al., 2014). For example, in community and clinical samples, group activities and group psychotherapy reduced the severity of depression only for more strongly identified participants (Cruwys et al., 2014).

Of particular relevance to the self-management of chronic disease is that the conceptual shift from "I" to "we" (see Haslam, 2014) results in an elaborated view of self-efficacy. More specifically, when individuals belong to meaningful social groups, confidence and action is formed in conjunction with other group members, and as a function of identifi-cation with those groups. For some groups, such as sports teams, effi-cacy perceptions can be assessed in terms of the shared belief that the group can achieve a collective outcome (i.e., collective efficacy; Bandura, 2000). For other groups, including those in therapeutic con-texts, the more relevant issue is the extent to which individuals see group membership as aiding the pursuit of their personal goals for change or achievement (i.e., group-derived efficacy; Cameron, 1999). Two previous studies conducted in different group settings—university students (Cameron, 1999) and therapy groups (Marmarosh et al., 2005)—demonstrated that perceptions of group-derived efficacy can be reliably assessed and are predictive of positive outcomes on dimensions of psychological well-being.

In the context of the CDSMP, we expect that the more strongly in-dividuals identify with their self-management group, the more they will see it as a promising vehicle for goal attainment, providing a basis for individual confidence in disease management; in turn, this will predict positive health-related outcomes. Thus, we tested a model in which (a) social identification predicts self-efficacy in managing chronic disease, via group-derived efficacy; and (b) group-derived efficacy predicts health outcomes via individual self-efficacy (see Fig. 1). Given that previous research has emphasized the relationship between social identification and mental health, we were also particularly interested in evaluating pathways to physical health outcomes involving pain and disability. Although we had no theoretically-based expectations about how various facets of attachment to the group might have different relationships with self-efficacy and well-being, for exploratory reasons we opted to operationalize social identification in multidimensional terms (Cameron, 2004). Some previous research, for example, suggests that the emotional and evaluative aspects of identification (e.g., col-lective self-esteem; Luhtanen and Crocker, 1992) are particularly con-sistent predictors of self-efficacy and mental-health-related outcomes (e.g., Cameron, 1999; Harris et al., 2010; Marmarosh et al., 2005).

Finally, whereas our conceptual prioritization of social identifica-tion is broadly consistent with viewing social support as enabling self-efficacy (see Benight and Bandura, 2004), self-efficacy might also



Note. PWB = Psychological well-being.

Fig. 1. Structural model and standardized regression coefficients evaluating relationships between social identification and health outcomes, via self-efficacy.

facilitate access to, and maintenance of, social resources (e.g., group-derived efficacy). Therefore, we evaluated two alternative models re-presenting versions of this “cultivation hypothesis” (Schwarzer and Knoll, 2007): (a) baseline self-efficacy predicting both social identifi-cation and group-derived efficacy (with the group-related variables mediating between initial self-efficacy and health outcomes); and (b) post-intervention self-efficacy predicting health outcomes via group-derived efficacy (the reverse of the mediational path in Fig. 1).

1.3. The study context

We analyzed data collected in an evaluation of the CDSMP in rural and remote communities in Ontario, Canada (Jaglal et al., 2013). On-tario's sprawling, sparsely populated northern region poses challenges for health care delivery and access. Whereas self-management offers potential advantages in this context, remote communities have small numbers of people with a given chronic condition and practical barriers to having trained leaders present in all locations. For these reasons, Jaglal et al.’s (2013) primary objective was to evaluate the effectiveness of a variant of the CDSMP via telehealth—linking leaders to groups of participants via videoconference—which has the potential to enhance the reach and equity of health care services (e.g., Roine et al., 2001). The results showed statistically significant improvements in self-effi-cacy, health behaviours, health status, and health care use at four months post-program (Jaglal et al., 2013, 2014). A secondary set of objectives concerned the potential roles of social identification and group-derived efficacy as potential drivers of program success, and these are the focus of the analyses presented here.

2. Method

2.1. Participants

Participants were 213 individuals from 13 rural and remote Northern Ontario communities, with a self-reported physician diagnosis of chronic lung disease, heart disease, stroke, or arthritis. They were predominantly women (70.2%), of European decent (84.9%), and ranged in age from 44 to 88 years (median age = 67 years). Approximately half of participants were married (47.6%), and had an average income between $20,000 to $40,000 and a median education level of high school completion. Participants reported an average of 2.6 chronic conditions (SD = 1.16). Three-quarters of the participants at-tended four or more of the six weekly sessions, and almost two thirds (63.6%) attended at least five sessions (M = 4.7, SD = 1.3). N = 186 (87%) completed follow-up questionnaires via telephone at four months.

2.2. Procedure

The six-week program was delivered in accordance with the CDSMP (e.g., Lorig et al., 1996), using a companion self-management guide designed for people living with chronic disease (Lorig et al., 2004). The course involves leader-facilitated development of self-management skills via action planning, feedback on progress, and modeling of adaptive behaviours. The content of the weekly 2-h sessions includes developing an exercise program, cognitive symptom management, breathing exercises, relaxation techniques, problem solving strategies, communication skills (e.g., with family, friends, and health care pro-viders), treatment decisions, use of medication, and dealing with the emotions often associated with chronic disease (e.g., depression). In Michie et al.’s (2013) taxonomy, the CDSMP intervention corresponds most closely with the "goals and planning" category of behavior change techniques (e.g., action planning, problem solving, goal setting), though social support is also recognized as a mechanism of change.

The study involved 19 CDSMP groups, each with two trained leaders and 10–15 participants. Of the team leaders, at least one at each site had a chronic disease relevant to this study, and one was either a health care professional or other professional (e.g., teacher). Sessions were held in local telehealth studios with leaders and participants connected via videoconference. There were two configurations of the groups: (a) single telehealth sites, in which participants from one community formed a self-management group linked to program leaders via tele-health; and (b) multiple telehealth sites, in which participants from a number of remote communities were linked to one another, and to program leaders, via telehealth (see Jaglal et al., 2013).

We administered measures of social identification, group-derived efficacy, and individual self-efficacy immediately after program com-pletion (seven weeks after baseline), controlling for self-efficacy as-sessed at baseline. Mental and physical health outcomes were assessed via a telephone survey four months later.

2.3. Measures

With a few exceptions (e.g., social identification and group-derived efficacy), we used the Stanford Patient Education Center's measures of self-efficacy and health outcomes (Lorig et al., 1996), many of which were adapted from the Medical Outcomes Studies (e.g., Stewart et al., 1992). We created composite scores by averaging responses to the items on each scale, scored in the direction of the original response options. Most of the health outcome measures are nominally negative, so we refer to the relevant latent variables as "mental ill-heath" and "physical ill-heath."

Social identification. A 12-item measure of social identification (Cameron, 2004) assessed how participants felt about membership in their telehealth group in terms of: (a) the centrality of the group in the self-concept (e.g., "I often thought about the fact that I was a member of my telehealth group"; α = .80); (b) their evaluation of membership (in-group affect; e.g., "In general, I was glad to be a member of my tele-health group"; α = .81); and (c) their sense of attachment with other group members (in-group ties; e.g., "I had a lot in common with other members of my telehealth group"; α = .81). Response options ranged from 1 (strongly disagree) to 6 (strongly agree).

Group-derived efficacy. Participants indicated the extent to which they thought that being a member of their telehealth group helped them: take responsibility for the day-to-day management of their chronic disease; feel confident in their ability to manage their disease; identify barriers in their lives; identify strategies for managing their disease; develop an action plan for managing their disease; and better communicate with their health care providers (6 items; α = .93). Responses ranged from 1 = not at all to 6 = very much.

Individual self-efficacy. Lorig et al.'s (1996) measure of self-effi-cacy for managing chronic disease is operationalized in terms of re-spondents' confidence in (a) keeping various aspects of illness—fatigue, physical discomfort, emotional distress, and other "symptoms or health problems"—from interfering with their lives; (b) being able to do the different activities needed to manage their health condition; and (c) being able to do things other than taking medications to reduce how illness impacts their everyday life (six items; α = .91). Responses ranged from 1 = not at all confident to 10 = totally confident.

Mental ill-health. We used three measures of mental health: (a) a five-item psychological well-being scale (Stewart et al., 1992), which asked participants about how they felt and "how things have been" during the past month (e.g., "Have you felt calm and peaceful?," from 0 = none of the time to 5 = all of the time; α = .88); (b) a four-item index of health distress over the past month (Lorig et al., 1996; e.g., "Were you fearful about your future health?") where 0 = none of the time to 5 = all of the time (α = .88); and (c) the 30-item Geriatric Depression Scale (Yesavage et al., 1983; e.g., "Do you often feel downhearted and blue?"), on which responses to each item (no = 0; yes = 1) were summed to obtain a score out of 30 (α = .90).

Physical ill-health. Measures of physical health status included: (a) the eight-item Stanford Disability Scale (Lorig et al., 1996), which as-sesses participants' ability to perform activities of daily living (e.g., "At the moment, are you able to get in and out of bed?," ranging from 0 = without any difficulty to 3 = unable to do; α = 0.79); (b) a four-item social role/activity limitation scale (Stewart et al., 1992), which asks participants to rate how much their health has interfered with their everyday activities (e.g., household chores, social activities) over the last four weeks (0 = not at all to 4 = almost totally; α = .91); (c) a two-item measure of pain severity (Stewart et al., 1992) on which partici-pants indicated their physical discomfort or pain over the past four weeks "on the average" and "at its worst," from 0 = none to 100 = as bad as you can imagine (α = .87); and (d) a five-item scale (Stewart et al., 1992) assessing the amount of energy or fatigue participants felt over the last month (e.g., "Did you have enough energy to do the things you wanted to do?," scored in the direction of vitality, from 0 = none of the time to 5 = all of the time; α = .88).

3. Results

3.1. Data screening

Of the initial 213 participants, 194 completed the outcomes at seven weeks, and 186 completed the measures at four months. Twenty-seven respondents had missing data for the four-month follow-up. There were no differences between participants who completed the follow-up survey at four months and those who did not on any of the patient or disease characteristics, social identity, efficacy beliefs, or health status variables. Using Mahalanobis distance ($p < .001$), we identified seven multivariate outliers from the analyses (Tabachnick and Fidell, 2001). The main analyses were performed both with and without outliers to determine their influence on the final solution. We found no substantive differences when the outliers were removed, so they were retained for a final sample of 186 participants. All health status variables were slightly negatively skewed, with the Mardia test for multivariate nor-mality indicating a moderate departure from multivariate normality (critical ratio = 8.25, $p < .05$). Jaglal et al. (2013) found no significant differences in outcomes between participants in the single and multiple telehealth sites. In the current analyses, we confirmed that the type of site also had no effect on the social identification and group-derived efficacy variables.

3.2. Correlations between variables

Descriptive statistics and correlations for all primary variables are presented in Table 1. On average, identification scores were quite high, indicating that the telehealth groups were indeed meaningful and po-sitive aspects of participants' self-concepts at the end of the program. Consistent with our expectations, (a) the identification variables were all significantly and positively associated with group-derived efficacy beliefs, and (b) there was a significant positive association between group-derived efficacy beliefs and personal self-efficacy. At the bi-variate level, the group-related variables were largely unrelated to physical and mental health outcomes, with the exception of significant negative correlations between depression and both in-group affect and group-derived efficacy. Self-efficacy significantly correlated with all ill-health outcomes in the expected (negative) directions.

Finally, although we did not include attendance in the conceptual model, it is worth noting that the number of self-management sessions participants attended was significantly correlated with two of the three social identification facets (in-group ties, $r = .18$, $p = .01$; and in-group affect, $r = .22$, $p = .003$), and group-derived efficacy ($r = .20$, $p = .006$).

Table 1
Descriptive statistics and bivariate correlations.

Variable	M (SD)	1.	2	3	4	5	6	7	8	9	10	11	12	13
1.Group -derived efficacy[a]	4.72 (1.12)													
2. In-group ties[a]	4.75 (1.09)	.33**												
3. Centrality[a]	4.52 (1.15)	.58**	.44**											
4. In-group affect[a]	5.56 (0.61)	.61**	.45**	.59**										
5. Self-efficacy (baseline)[b]	6.56 (1.78)	.01	.02	-.05	.11									
6. Self-efficacy (7 weeks)[a]	7.39 (1.53)	.16*	.03	.09	.07	.50**								
7. Disability[c]	0.39 (0.37)	.02	-.02	.03	-.07	-.40**	-.38**							
8. Role limitations[c]	1.25 (1.13)	-.01	.10	.06	-.02	-.39**	-.42**	.64**						
9. Psychological well-being[c]	3.75 (0.93)	.05	.09	-.05	.07	.44**	.37**	-.37**	-.45**					
10. Vitality[c]	2.34 (1.10)	.02	-.06	-.01	.01	.44**	.41**	-.51**	-.62**	.63**				
11. Health distress[c]	1.38 (1.15)	-.12	.04	.02	-.12	-.42**	-.42**	.48**	.57**	-.61**	-.60**			
12. Depression[c]	6.41 (6.09)	-.15*	-.09	-.03	-.18*	-.49**	-.42**	.50**	.52**	-.74**	-.68**	.70**		
13. Pain[c]	63.73 (20.83)	.03	.16*	.06	.04	-.33**	-.32**	.53**	.57**	-.33**	-.50**	.51**	.38**	

Note: [a]Assessed post program (seven weeks after baseline). [b]Assessed at baseline. [c]Assessed at four months post-program.
*p < .05. **p < .01.

3.3. Model evaluation

We performed a two-step structural equation modeling analysis using AMOS 16.0 (Arbuckle, 2007), with a full information maximum likelihood estimation approach to handle missing data (Enders, 2010). The first step tested the two-factor measurement model recommended by Hann and Reeves (2008) to define the seven mental and physical health outcome variables. The second step evaluated the structural model linking social identification, group-derived efficacy, individual self-efficacy, and the latent constructs of mental and physical ill-health (Fig. 1).

Chi-square statistics assessed whether the models fit the data. A non-significant χ^2 indicates good fit, although this statistic is sensitive both to sample size and to departures from multivariate normality (Kline, 2005). Therefore, we conducted bootstrapping (500 replica-tions) to obtain adjusted standard errors, p-values and confidence in-tervals (Nevitt and Hancock, 2001). The Bollen-Stine (1992) adjusted p-value for the χ^2 statistic was applied to assess overall model fit. Fol-lowing common practice, we used several other “goodness of fit” in-dices: (a) the comparative fit index (CFI), which ranges from zero to one (values over .90 indicate reasonably good fit and values above .95 in-dicate very good fit); (b) the Tucker Lewis index (TLI), which is eval-uated similarly, although it is typically lower than other fit indices, particularly with smaller sample sizes (Kline, 2005); and (c) the root mean square of approximation (RMSEA; values between .05 and .08 indicate reasonably good fit; Hu and Bentler, 1995).

Evaluation of the measurement model. The social role limita-tions, pain, and disability scales indexed the physical ill-health di-mension, while the health distress, emotional well-being, and depres-sion scales measured the mental ill-health dimension. Given that vitality is a function of both mental and physical health (Hann and Reeves, 2008; Ware et al., 1995), we hypothesized that energy/fatigue would load on both factors. Moreover, as recommended by Hann and Reeves (2008), the mental and physical health components were al-lowed to correlate, and the model was measured with independent errors. The hypothesized two-factor structure of mental and physical health yielded a good fit of the data, $\chi^2(12, N = 186) = 22.24$, $p = .035$; CFI = .98, TLI = .97, RMSEA = .07 (90% CI = .03, .11). The Bollen-Stine adjusted p-value for the χ^2 was non-significant ($p = .12$), also demonstrating good model fit. These results are consistent with previous evidence (Hann and Reeves, 2008) that the mental and phy-sical health components from the Medical Outcomes Studies are sig-nificantly correlated ($r = .72$), and that vitality is an index of both mental ($\beta = -0.50$, $p < .001$) and physical health ($\beta = -0.38$, $p < .001$).

Evaluation of the structural model. The hypothesized structural model specified the three components of social identification as directly related to group-derived efficacy, which in turn were positioned as a predictor of individual self-efficacy immediately following the inter-vention. Finally, it included direct associations between self-efficacy and mental and physical ill-health, while adjusting for baseline self-efficacy scores. The resulting model indicated a less than ideal fit, $\chi^2(59, N = 186) = 153.15$, $p < .001$, with a significant Bollen-Stine p-value of .004. However, the overall model fit indices indicated a fairly good fit of the data, CFI = .91, TLI = .87, RMSEA = .09 (90% CI = .07, .11). Modification indices pointed to improvements if direct effects were estimated between (a) baseline self-efficacy and the mental ill-health factor (modification index = 18.86); and (b) mental ill-health and physical ill-health (modification index = 4.98). Given that these links made conceptual sense, we added them to the model (Fig. 1), which fit the data better: The Bollen-Stine p-value was no longer sig-nificant ($p = .32$) and the overall fit indices improved as well, CFI = .98, TLI = .98, RMSEA = .03 (90% CI = .00, .06). All path coefficients were statistically significant ($p < .05$), with the exception that in-group ties did not significantly predict group-derived efficacy ($\beta = 0.03$, $p = .69$).

Evaluation of indirect effects. Consistent with our hypotheses, there were significant indirect effects involving (a) the paths from in-group affect and centrality to individual self-efficacy (assessed post-intervention), via group-derived efficacy [$\beta = 0.08$ (95% CI = 0.03, 0.15), $p = .009$; and $\beta = 0.075$ (95% CI = 0.03, 0.17), $p = .006$, re-spectively]; and (b) the path from group-derived efficacy, via individual self-efficacy, to both mental ill-health [$\beta = -0.06$ (95% CI = -0.14, -0.02), $p = .006$] and physical ill-health [$\beta = -0.09$ (95% CI = -0.18, -0.04), $p = .005$].

Evaluation of alternative models. We tested two additional models to gauge the plausibility of the hypothesis that self-efficacy cultivates social resources (Benight and Bandura, 2004; Schwarzer and Knoll, 2007). The first of these specified (a) a direct association between baseline self-efficacy and the three social identification components; and (b) a direct association between baseline self-efficacy and group-derived efficacy. This model fit the data poorly, $\chi^2(57, N = 186) = 200.78$, $p < .001$, with nonsignificant paths between baseline self-efficacy and the 3 identity components, and between baseline self-efficacy group-derived efficacy ($ps > .05$). The second alternative model specified (a) a direct association between self-efficacy and group-derived efficacy (both assessed post-intervention); and (b) indirect associations between self-efficacy and the mental and physical ill-health outcomes via group-derived efficacy. Again, model fit was poor, $\chi^2(58, N = 186) = 97.69$, $p < .001$, with nonsignificant links between group-derived efficacy and mental and physical ill-health ($p = .08$ and $p = .10$, respectively), and nonsignificant indirect effects of self-efficacy (via group-derived efficacy) on mental and physical ill-health ($p = .12$ and $p = .75$, respectively).

4. Discussion

Among the benefits of belonging to social groups is that they can facilitate goal attainment by lending their members a sense of efficacy in the pursuit of those aims. Thus, the social identity approach to health (e.g., Haslam et al., 2009) is directly applicable to chronic disease self-management programs, which are group-based, and designed to foster the confidence and skills that enable adaptive responses to changing life circumstances (Lorig and Holman, 2003). In this article, we conceptually elaborate the self-management model so that (a) the groups are viewed not simply as vehicles for delivering program content, but also meaningful and productive sources of social identification; and (b) as such, they may provide a platform for the establishment of self-efficacy and (in turn) improved health outcomes.

4.1. Social identification as a platform for health-related outcomes

Consistent with our hypotheses, the results were consistent with a bolstering effect of social identification on participants' confidence in managing various challenges of their chronic disease. More specifically, the centrality and emotional positivity of telehealth group membership predicted participants' sense of group-based confidence in achieving key program goals (their group-derived efficacy), which in turn predicted their personal efficacy in achieving their action plans. Finally, and as predicted on the basis of the self-management approach, self-efficacy was associated with better mental and physical health outcomes four months later. These pathways expand the conventional framing of self-management programs by positioning self-efficacy as a mediator of group-derived effects. (Modeling self-efficacy as a cause of either group identification or group-derived efficacy did not fit the data well.) In this way, self-efficacy is viewed not just as an asset carried by, and presumably conveyed (via the self-management program), to “stand-alone” individuals, but as a function of the collective self. Similarly, “patient empowerment,” seen through this lens, is a phenomenon involving not just health professionals, but also fellow program members. This perspective is consistent with a growing body of research demonstrating that social identities matter for both mental and physical health (cf. Haslam, 2014; Jetten et al., 2012), and the results have particular implications for enhancing the effectiveness of self-management programs.

4.2. Implications, limitations, and future directions

Previous work on the CDSMP has hinted at group processes contributing to its success (Harrison et al., 2011; Lorig and Holman, 2003), but these have not been systematically examined. Our results suggest that social identification—the psychological link of the individual to a contextually meaningful group—can provide an avenue to a number of social processes and resources that promote health-related outcomes. Thus, it provides an important elaboration of the self-management model, and, as Gleibs et al. (2011) have noted in another health-care setting, a new perspective on the “active ingredients” of complex interventions such as the CDSMP. As suggested by the growing literature on social identity and health, self-efficacy is only one of a number of potential paths from social identity to well-being, but it is one that is especially salient in the self-management context. Future research might examine more specific and dynamic group processes that promote self-efficacy via identification, including mutual social influence and support (e.g., strongly identified members would be most likely to provide and receive information, advice, and emotional assistance in the course of the program; Haslam et al., 2009). In this vein, it is worth noting that whereas cognitive and affective facets of social identification predicted group-derived efficacy, in-group ties—a subjective sense of cohesion with other group members—did not. This pattern mirrors previous findings in a very different setting (university students; Cameron, 1999), and suggests that the cognitive centrality and positive evaluation of the group may be sufficient drivers of self-efficacy, more so than “feeling connected” with other members. Still, interventions targeting that aspect of group belonging (e.g., via activities encouraging group interaction) may demonstrate its effects as well.

Our interpretations are subject to some important limitations. Given the correlational nature of the data, any conclusions about the causal role of group processes must remain speculative. Moreover, whereas the data did not support alternative and theoretically plausible models, social identification, group-derived efficacy, and individual self-efficacy were all assessed at the same time point (seven weeks after baseline), which precludes a convincing demonstration of any particular mediational sequence of variables. An additional limitation concerns the nested nature of the data, with 19 telehealth groups involved in the study. Whereas a multilevel statistical approach would be appropriate here, our sample size falls well below the minimum recommended for optimal estimation (e.g., 50–100 groups; Maas and Hox, 2005).

Some other questions remain unanswered, in part because of the specificity of the setting and the design of the study. For example, whereas it is noteworthy that identification with both single and multiple telehealth groups had meaningful effects—so that it is the psychological meaningfulness of the group that matters, even in the absence of the direct physical presence of all other members—future work will be necessary to generalize these to other modes of program delivery. The small and remote communities in which the study took place also meant that program delivery varied from the standard CDSMP in other ways, including the heterogeneity of the groups vis-à-vis the kinds of chronic health challenges experienced by participants. Finally, further research is necessary to determine whether the benefits of social identification—and those of the intervention itself—extend beyond the four-month timeframe.

In any case, the results suggest that the self-management groups are sources of not just instrumental resources (e.g., as delivered by program leaders), but also social ones (in this sense, group identities can be seen as a form of social capital; e.g., Helliwell and Barrington-Leigh, 2012) If, as our model suggests, successful management of chronic disease depends partly on the extent to which participants see their groups as an important and valuable part of their self-concept, then there are opportunities to capitalize on this by building more focused group-related interventions into future self-management interventions. Indeed, there is mounting evidence, in a wide array of settings, that interventions designed to build or strengthen relevant social identities have positive effects on health, well-being, and recovery (e.g., Cruwys et al., 2014; Gleibs et al., 2011; Haslam et al., 2010, 2016; Tarrant et al., 2016). These include contexts analogous to chronic disease self-man-agement programs, in which the relevant social identities derive from shared membership in a treatment group (e.g., psychotherapy group; Cruwys et al., 2014), as well shared health conditions and challenges (e.g., "other people with the same problems as me"; see Meuret et al., 2016). Thus, self-management interventions could be enhanced by ex-plicitly incorporating a social identity component, in which participants are made aware of their social resources, and the ways they can be strengthened and linked to the formulation and enactment of action plans (Haslam et al., 2016). The module-based "Groups 4 Health" program (G4H; Haslam et al., 2016) is the most sophisticated example of such an approach, and includes a "sustaining" component that re-visits participants' plans, and encourages the maintenance of social identities over time. Thus, social identities formed during the CDSMP could provide a basis for the maintenance of relationships between participants beyond the bounds of the formal program. In turn, it provides opportunities to introduce "boosters" of social identification that might help sustain program benefits over the longer term (see Haslam et al., 2016). These can be as simple (and cost-effective) an intervention as reminding people about their group affiliations (Marmarosh and Corazzini, 1997).

5. Conclusion

People persist, cope, and thrive not as isolated individuals, but as members of social groups. The present results suggest that the success of chronic disease self-management programs can be enhanced by re-inforcing social identities that matter (cf. Haslam, 2014) during and after program delivery.

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