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## Integrating the ICF With Positive Psychology: Factors Predicting Role Participation for Mothers With Multiple Sclerosis

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**Integrating ICF and Positive Psychology: Factors Predicting  
Role Participation for Mothers with Multiple Sclerosis**

## Abstract

**Objective:** Being a mother has become a realizable life role for women with disabilities and chronic illnesses, including multiple sclerosis (MS). Identifying psychosocial factors that facilitate participation in important life roles – including motherhood – is essential to help women have fuller lives despite the challenge of their illness. By integrating the *International Classification of Functioning, Disability and Health* (ICF) and a positive psychology perspective, this study examined how environmental social factors and positive personal factors contribute to daily role participation and satisfaction with parental participation.

**Method:** One hundred and eleven community-dwelling mothers with MS completed Ryff's Psychological Well-being Scales, the MOS Social Support Survey, the Short Form-36, and the Parental Participation Scale. Hierarchical regression analyses examined associations between social support and positive personal factors (environmental mastery, self-acceptance, purpose in life) with daily role participation (physical and emotional) and satisfaction with parental participation. One-way ANOVAs tested synergistic combinations of social support and positive personal factors.

**Results:** Social support predicted daily role participation (fewer limitations) and greater satisfaction with parental participation. Positive personal factors contributed additional unique variance. Positive personal factors and social support synergistically predicted better function and greater satisfaction than either alone.

**Conclusion:** Integrating components of the ICF and positive psychology provides a useful model for understanding how mothers with MS can thrive despite challenge or impairment. Both positive personal factors and environmental social factors were important contributors to positive

role functioning. Incorporating these paradigms into treatment may help mothers with MS participate more fully in meaningful life roles.

**Keywords:** ICF, Multiple Sclerosis, Disability, Positive Psychology, Role Participation

### **Impact and Implications**

- On a theoretical level, this study demonstrates the synergy of the ICF model (including personal and environmental factors, and participation) and a positive psychology perspective for the field of rehabilitation psychology, providing a framework to help women with chronic conditions cultivate fuller and more satisfying lives across important life roles, including motherhood.
- This study supports the value of incorporating a positive psychological focus into clinical practice with mothers with disabilities or chronic diseases and including it in further research.
- To facilitate role participation in mothers with MS, practitioners might focus on building or strengthening a sense of environmental mastery in creating more accessible environments for themselves and their families, and developing high quality social support.

## **Integrating ICF and Positive Psychology: Factors Predicting Role Participation for Mothers with Multiple Sclerosis**

Multiple sclerosis (MS), a chronic neurological disease with a varied and uncertain course, is found two to three times more frequently in women than men (National Multiple Sclerosis Society [NMSS], 2013). It is often diagnosed during prime childbearing and childrearing years (Bennett, 2005; Signore, Spong, Krotoski, Shinowara & Blackwell, 2011). Becoming a mother can be a highly salient role for many women, including those with chronic illnesses or disabilities (Farber, 2004, 2012; Farber & Poole, 2011). It has been posited that the number of individuals with disabilities who are or will become parents will continue to increase (Blackford, Richardson, & Grieve, 2000; Preston, 2010). Parenthood has become a real possibility for women with disabilities due to multiple factors, including medical advances in the management of disability or disease, the development of technology to facilitate or provide alternative methods of functioning, and societal changes in the overall possibilities available to women with disabilities as a result of the disability rights movement.

Although having a chronic disease complicates life as a parent, psychosocial factors that facilitate daily role participation may allow a person with a disability to thrive in the face of ongoing challenges. The *International Classification of Functioning, Disability and Health* (ICF) developed by the World Health Organization (WHO; 2001) views participation in meaningful life roles as the ‘ultimate’ rehabilitation outcome, which is posited to be highly interconnected with quality of life (QOL) (Chan, Sasson, Ditchman, Kim & Chiu, 2009). In a parallel vein, the field of positive psychology examines the causes and consequences of optimal functioning (Schueller, 2013). Although positive psychology constructs and applications have grown rapidly in the past decade, they have not yet been fully incorporated into the rehabilitation empirical literature (Bertisch, Rath, Long, Ashman, & Rashid, 2014). The current study

integrates ICF and positive psychology perspectives reflecting the values of rehabilitation psychology, to examine how environmental social factors and positive personal factors support greater participation in daily role activities and satisfaction with parental participation in mothers with MS.

### **Pregnancy and Motherhood for Women with MS**

According to the National Council on Disabilities (NCD; 2012), parents with disabilities have been seriously overlooked and discriminated against as a group. Historically, women with MS were discouraged from having children, as it was believed that pregnancy would have an adverse effect on the course of the disease (Payne & McPherson, 2010; Smeltzer, 2002). Although MS can be very challenging physically, cognitively, and socially, with unpredictable and varied symptoms and the potential for disability, pregnancy itself does not appear to increase the long-term progression of the disease (Bennett, 2005; Lee & O'Brien, 2008; Signore et al., 2011). Further, recent biomedical advances have developed disease modifying agents that reduce the frequency of relapse and significantly slow the debilitating aspects of disease progression (Bermel & Rudick, 2007; Reipert, 2004). Even though discontinuing these drugs during pregnancy can cause medical complications, the possible temporary negative consequences may be buffered by the protective immunosuppressive hormonal effect of the pregnancy itself (Lee & O'Brien, 2008). Doctors now work with women who want to have a child to sequence the medicine around the pregnancy and childbirth.

Although the biomedical prognosis for motherhood is now more positive for women with MS than it was in the past, many women still experience a number of subjective difficulties. Pakenham, Tilling, and Cretchley (2012) found that mothers with MS had regrets or guilt about their inability to fully participate in the physical activities of their children or transport them to

activities, especially when hampered by fatigue or mood changes. In contrast, women who established social resources such as assistance with housekeeping, shopping, or transporting child to specialized lessons, experienced greater quality time with family. These findings fit well with the ICF model, which posits the importance of participation (versus participation restriction) and the need for environmental factors such as social support for help when needed.

### **The ICF: Environmental Social Factor**

A particular strength of the ICF model is that it systemically takes into account the interaction of personal and environmental factors (beyond the medical impairment/disorder) that influence functioning and role engagement. Part one of the model relates directly to a health condition, and it includes a) impairment in body functions and structures, b) activities in various domains, and c) participation, conceptualized as “involvement in a life situation” (WHO, 2001, p. 10). Part two contains contextual factors that are considered health-related, including environmental and personal factors. Although ICF environmental factors include technology, attitudes, policies, and services, a particularly salient factor for mothers with MS to function well in this personally meaningful role, is ‘support and relationships’ or social support (Farber 2004, 2012; Gulick, 2007; Pakenham et al., 2012).

Helgeson (2003) describes both structural (existence of social relationships and networks) and functional (emotional, instrumental, tangible or informational) types of social support. It includes input from family, friends and/or significant others (Krokavcova et al., 2008), and can include health care providers or other social interactions. Using the ICF framework, Yorkston, Johnson, and Klasner (2005) suggested that for people with MS, social support contributes to the adequacy of participation in valued activities and roles. Social support has been associated with general and mental health, and contributes to quality of life (QOL) beyond physical disability

(Krokavcova et al., 2008; Yamout et al., 2013). Farber (2004) found that mothers with chronic illness explicitly described the quality of their participation in relationship to their perception of family or social supports, ranging from positively promoting normalization and adequacy, to negatively stimulating feelings of marginalization or inadequacy.

### **The ICF: Positive Personal Factors**

According to the ICF, personal factors include age, gender, coping style, lifestyle, life experience, habits, and psychological assets that together contribute to overall functioning (or disability). Personal factors (PF) as a whole are the only major concept area of the ICF that are not specifically classified “due to the large social and cultural variance associated with them” (ICF; World Health Organization, 2001, p. 8). Yet personal factors have been found to be heuristic throughout international and interdisciplinary literature (Geyh et al., 2011). Although personal factors can have a significant impact on overall functioning, they have been relatively overlooked in recent ICF-related scholarship itself (Conti-Becker, 2009; see also Badley, 2008).

Exploring and focusing on positive personal factors for mothers with MS is particularly important in light of the well-documented history of social bias and discrimination toward mothers with a disability or chronic diseases like MS had (National Council on Disabilities, 2012; Smeltzer, 2002). “Much of the research on parents with disabilities was driven by a search for problems in these families” (Kirshbaum, & Olkin, 2002, p. 66). In contrast to looking for strengths of these mothers, studies often focused on pathological parental assumptions or deficits (Alexander, Hwang & Sipski, 2001; Farber, 2004; Olkin, Abrams, Preston, & Kirshbaum, 2006). Few studies have focused on the actual psychological experiences or “positive strategies” that mothers with MS use or resources that empower these women to overcome and adapt to the challenges of living with this disease (Pakenham et al., 2012; Payne & McPherson, 2010).



Answering this need for more balanced research, positive psychology “explores factors that make life worth living and the human strengths that enable individuals to confront challenges, appreciate others, and regard daily experiences as meaningful” (Dunn & Dougherty, 2005, p. 305). Positive psychology incorporates diverse perspectives and foci, including examination of positive characteristics such as character strengths and subjective life satisfaction, as well as how individuals transcend trauma and thrive “in the face of challenge” (Ryff & Singer, 2008, p.198). Dunn and Dougherty (2005) suggest positive psychology potentially can shape the direction of empirical and applied rehabilitation psychology in the future. Recognizing how people overcome non-normative challenges of chronic illnesses like MS and continue to have a life with meaning and purpose is particularly important.

Numerous perspectives exist, but generally positive psychology has described well-being in terms of two conceptually related but distinct traditions: subjective well-being (hedonic) and psychological well-being (eudaimonic) (Keyes, Shmotkin, & Ryff, 2002; Ryan & Deci, 2001). Subjective well-being primarily focuses on positive emotions, whereas psychological well-being focuses on the good life, including aspects such as a sense of meaning, purpose, self-acceptance, mastery, and self-determination in rising to life’s existential challenges. Whereas subjective well-being is often considered a rehabilitation outcome (related to quality of life, highly intertwined with participation; Chan et al., 2009), psychological well-being includes ways of both feeling and behaving, and thus may be more amenable to change or be capable of self-regulation (Friedman & Kern, 2014; Huta, 2013; Ryan, Huta, & Deci, 2008). There is increasing evidence demonstrating psychological well-being has health protective qualities (Ryff, 2014), and is related to less global fatigue or fatigue-related distress for people with MS, which in turn could positively affect role performance (Schwartz, Coulthard-Morris, & Zeng, 1996).

In the current study, we focus on three components of psychological well-being that are salient for mothers with MS and have received considerable empirical support in the positive psychology literature: environmental mastery, self-acceptance, and a sense of purpose in life. Environmental mastery refers to the extent to which an individual feels capable to effectively manage his or her life and surroundings (Ryff & Keyes, 1995). It involves choosing and creating contexts that will best suit the individual's needs and/or capabilities. Studies with patient populations have found positive associations between mastery and better psychological well-being and lower levels of depression and anxiety (e.g. Knight, Davison, McCabe, & Mellor, 2011; van Jaarsveld, Ranchor, Sanderman, Ormel, & Kempen, 2005). Schwartz et al. (1996) found that participants with MS who could "choose or create environments, suitable to their psychic or physical conditions report less global fatigue and less fatigue-related distress" (p. 165), which in turn they posited could positively impact role participation.

Self-acceptance refers to a positive evaluation of one's life and self (Ryff & Keyes, 1995). Self-acceptance involves accepting and integrating both positive and negative aspects of the self. Patients with MS as a whole tend to have lower levels of self-acceptance and greater resignation, apprehension, and despair (Korwin-Piotowska, Korwin-Piotowska, & Samochowiec, 2010). Pakenham (2007) describes acceptance as an "active integration of their illness into their view of the world and themselves rather than a passive resignation" (p. 387). When one has a disease like MS that involves loss or potential loss of functioning, complex re-identification and acceptance of self occurs. Qualitatively, in mothers with disabilities (including MS) self-acceptance was observed and associated with greater role participation, as well as satisfaction with maternal participation (Farber, 2000, 2004, 2012). Quantitatively, in a sample of persons with MS, Pakenham (2007) found acceptance as one of the strongest predictors of positive

adjustment.

Purpose in life refers to having a sense of direction and believing that one's life matters (Ryff & Keyes, 1995). It has been linked to various positive outcomes, such as feeling satisfied with life, higher self-esteem, positive perceptions of the world, and pursuing and achieving goals (Steger, 2012). It has been also been related to lower mortality risk and better cardiovascular outcomes (Boyle, Barnes, Buchman, & Bennett, 2009; Ryff, Singer, & Love, 2004).

### **The Current Study**

Although rehabilitation literature recognizes the potential for both the ICF classification system and positive psychology (Brown, DeLeon, Loftis & Scherer, 2008; Naidoo, 2006) there is a dearth of literature that explicitly integrates these approaches. The current study examines social support (as an environmental factor) and self-acceptance, environmental mastery and purpose in life (as three positive personal factors) in relation to three outcomes: a) greater role participation with less limitation due to physical health (role-physical) and b) greater role participation with less limitation due to emotional problems (role-emotional), and c) satisfaction with parental participation (parental satisfaction) of mothers with MS. We hypothesized that:

1. Both ICF environmental factors (social support) and positive personal factors (environmental mastery, self-acceptance, purpose in life) would uniquely contribute to greater daily role participation (physical and emotional) and satisfaction with parental participation.
2. Beyond their unique effects, positive personal factors would synergistically combine with social support, such that those with good social support and positive personal factors would have considerably higher levels of daily role participation and maternal satisfaction, compared to others.

## Method

### Overview

Data used in this paper were collected as a part of a larger study of mothers with disabilities and chronic illnesses, which examined interrelationships of participation in mothering activities and general life roles activities, well-being, social support, and perceptions of health. Earlier qualitative studies suggested an inter-relationship among these variables (Farber, 2004). The study was partially funded by the Pennsylvania Department of Health, and all procedures were approved by the local university institutional review board (Farber, 2008).

### Participants

Participants were mothers living in the community who had at least one child 12 years of age or younger. Participants were solicited primarily through notification in the National Multiple Sclerosis Society (NMSS) newsletter distributed in the tri-state urban area. Respondents were sent a packet of surveys, along with a self-addressed stamped envelope. One woman requested and received personal assistance to fill out the forms due to visual limitations. Of 118 surveys received, seven were excluded due to incomplete data, leaving a final sample of 111 mothers.

Of the 111 mothers in our sample, 101 (91%) had relapse-remit MS and 10 (9%) had progressive illness. Sixteen (14.4%) were single and 95 (85.6%) were married or in a relationship. On average, the mothers were first diagnosed 7.2 years prior to the study ( $SD = 5.23$ ). Mothers were 37.4 years old on average ( $SD = 5.76$ ; range 21-56). Mothers had about 2 children ( $M = 1.9$ ,  $SD = 0.9$ , range = 1-4). The average age of the youngest child was 4.8 years ( $SD = 3.4$ ) and of the oldest child was 8.1 years ( $SD = 5.4$ ). After their diagnosis, 68 mothers

(61.3%) had at least one more child. About half (51.4%) were not employed; 28 (25.2%) worked part time, and 26 (23.4%) worked full time.

## Measures

We included two types of predictor variables (positive personal factors and environmental social support) and three outcomes (physical role participation, emotional role participation, and satisfaction with maternal participation). Demographic variables were also included as controls.

**Positive personal factors.** We focused on three positive personal factors: environmental mastery, self-acceptance, and purpose in life, using the respective nine-item subscales from the Ryff Scales of Psychological Well-Being (Ryff & Keyes, 1995). Composite scores were calculated by averaging the nine constituent items, each with a six-point scale (1 = strongly disagree to 6 = strongly agree). Sample items included “In general, I feel I am in charge of the situation in which I live” (environmental mastery), “In general, I feel confident and positive about myself” (self-acceptance), and “I enjoy making plans for the future and working to make them a reality” (purpose in life). Higher scores indicate greater environmental mastery, self-acceptance, or purpose in life. The well-being scales have been widely used in the research literature and in the current study demonstrated adequate reliability (mastery:  $\alpha = .86$ ; acceptance:  $\alpha = .88$ ; purpose in life:  $\alpha = .79$ ).

**Environmental social factor.** The Medical Outcome Study (MOS) Social Support Survey was used to assess the respondents’ perceived availability of environmental social support. It is applicable and brief enough for chronically ill or disabled individuals (Sherbourne & Stewart, 1991) and measures functional social support (emotional/informational, tangible, affectionate support or positive social interaction). The survey includes 19 questions (e.g., “How

often is each of the following kinds of support available to you if you need it...someone who shows you love and affection.... someone to help with daily chores if you were sick”; five-point scale, higher scores indicate greater accessibility/frequency of support). An overall social support score was calculated by averaging the 19 items ( $\alpha = .97$ ).

**Daily role participation.** Participation was measured using the role-emotional and role-physical subscales of the Short Form-36 (SF-36), the most widely-used health status questionnaire throughout the world (Ware, 2003; Ware, Kosinski, & Dewey, 2001) and these scales have been used to measure role participation in women with MS (Tyszka & Farber, 2010). Participants were asked how much either physical health difficulties or mental health problems affected the amount, kind, productivity, or degree of difficulty participating in daily role activities (five point scale; higher scores indicate less limitation and greater participation; physical participation  $\alpha = .93$ ; emotional participation:  $\alpha = .89$ ). Questions were scored using the logarithmic equation recommended in the test manual (Ware et al., 2001).

**Satisfaction with parental participation.** Subjective satisfaction with parental participation was measured by the satisfaction scale of the Parental Participation Scale (PPS), which was developed by the first author to evaluate mothers' satisfaction with their parental participation specifically. Questions were drawn from the Perception of Parental Role Scale (PPRS; Gilbert & Hanson, 1983) and utilized the format from the Assessment of Life Habits (Noreau, Fougere, & Tremblay, 2001), which was specifically designed by and for people with disabilities. The PPS satisfaction scale asks the overall question “how satisfied are you with your level of performance/involvement” in 56 specific parenting activities (e.g., teaching child to get along with others, preparing meals for child, giving child emotional support, providing educational and cultural activities for child, teaching about spirituality or going to the movies

with child). An overall scale score was computed by averaging the responses to all 56 items ( $\alpha = .95$ ; 1 = very dissatisfied, 5 = very satisfied); higher scores signified greater satisfaction with parental participation).

**Demographics.** Demographic information included questions on the mother's age and marital status, employment status (not employed, part time, full time), and type of Multiple Sclerosis (relapse-remit or progressive). Income, education, ethnicity, and other demographic variables were unavailable.

### Data Analyses

Descriptives and variables inter-correlations were calculated. To test our first hypothesis (social support factor and positive personal factors uniquely contribute to better outcomes), separate hierarchical linear regression models were estimated for each outcome, controlling for demographics (age, employment status, marital status, and type of MS), first entering social support, and then adding the three positive personal factors.<sup>1</sup>

To test our second hypothesis (synergistic effect of social support and positive personal factors), we were underpowered to directly test interaction effects. Instead, we created three grouped variables, based on tertiles for social support and each positive personal factor. The first group included individuals who were low on both variables (i.e., lowest tertile on social support and lowest tertile on environmental mastery; lowest tertile on social support and lowest tertile on self-acceptance; or lowest tertile on social support and lowest tertile on purpose in life), the second group was those high on both variables, and the third group was all others. Then, univariate ANOVAs tested mean level differences between the three groups, for each outcome, with specific group differences tested with *t*-tests, and Bonferonni corrected to adjust for

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<sup>1</sup> As prior literature has shown the importance of environmental factors, we *a priori* chose to test a model with only social support (confirming prior literature), and then add the positive personal factors (testing the unique contribution of these factors). Other models could equally be tested.

multiple comparisons. In each case, we hypothesized that the mean value for the second group (i.e., highest social support combined with highest environmental mastery, self-acceptance, or purpose in life) would be significantly higher than the other two groups.

## Results

Summary statistics and correlations are presented in Table 1. On average, despite having a chronic illness, women maintained moderate levels of environmental mastery, purpose in life, self-acceptance, and social support. Women showed slightly less limitation in role participation due to emotional versus physical health reasons (45.59 vs. 42.31,  $t(111) = 2.13, p = .03$ ); both were significantly lower than the general population scores of 50 (both  $ps < .001$ ). The mothers reported considerable satisfaction with their participation in parenting their children, which was not significantly lower than mothers without MS (4.21 vs. 4.31,  $t(164) = 1.26, p = .21$ ). Social support, positive personal factors, and outcomes were correlated with one another. Of the positive personal factors, environmental mastery had the strongest correlations with each outcome.

Regression results are summarized in Table 2.<sup>2</sup> Social support was significantly related to role participation (role-physical and role-emotional) and maternal satisfaction (Model 1). Combined with the demographic variables, social support explained 35 to 44 percent of the variance in each outcome. Positive personal factors explained an additional 9 to 17 percent of the variance in each outcome.

Finally, we examined a synergistic effect between social support and the positive personal factors. Figure 1 visually depicts the means for each group. As predicted, for each

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<sup>2</sup> Although social support and the three positive personal factors were correlated with one another, the maximum bivariate correlation of two of these factors was  $r = .75$ , and multicollinearity statistics (tolerance and VIF) indicated that values were within acceptable range (tolerance ranged from .30 to .42 and VIF was 3.34 max). In the positive psychology literature, these are treated as separate factors (c.f., Ryff, 2014). We thus proceeded with including these multiple predictors in the model, but the overlapping variance should be kept in mind when interpreting the results.



outcomes, participants with high social support and high environmental mastery, purpose, or self-acceptance reported significantly greater role function and satisfaction with parental participation than others.

### **Discussion**

Living with a chronic illness like Multiple Sclerosis (MS), with an uncertain and possibly progressive debilitating course, is challenging for most women, but may be especially complicated for women who are in their prime childbearing and childrearing years. This study examined qualities that may help maintain or optimize role functioning for these women. Integrating theory from positive psychology with the International Classification of Functioning, Disability and Health (ICF), we examined associations between three positive personal factors (environmental mastery, self-acceptance, and purpose in life), an environment factor (social support), and three ICF related outcome (role-physical, role-emotional, satisfaction with parental participation) for mothers with MS. As predicted, both positive personal psychological factors and social support related to daily role participation and parental satisfaction. Further, the positive personal factors synergistically combined with social support, such that women high in both reported significantly better outcomes, compared to those lacking these factors.

Historically, research on mothers with disabilities included personal factors that focused primarily on deficiencies and negative stereotypes. The field of positive psychology focuses on personal and social factors that will help individuals, communities, and societies flourish (Seligman & Csikszentmihalyi, 2000). Building upon this framework, we included three components of psychological well-being, all of which were correlated with better role function and greater parental satisfaction. Similarly, Dunn and Brody (2008) emphasized the importance

of eudaimonic well-being for people with acquired disabilities (including disability from disease). Whereas hedonic well-being may be affected by pain and role function, factors such as mastery, self-acceptance, and having a sense of purpose are more amenable to change and health promoting (Friedman & Kern, 2014; Ryff, 2014)

Notably, in our study, having a higher sense of environmental mastery was associated with better role function and maternal satisfaction. Although an accessible physical and interpersonal environment is known to be invaluable for people with disabilities, an internal sense of control may be vital as well. Environmental mastery may be the result of internalizing a responsive environment over time, and/or the persons' inherent ability to influence their environment. This could include being comfortable asking for what one wants or needs, managing everyday affairs, or being skillful in expressing gratitude, which may endear others to them (Emmons & McCullough, 2003). Environmental mastery may be particularly important for women who have an unpredictable chronic illness like MS, who need to know how to master or adapt their context to the changing symptoms of MS in order to continue to meet their needs. As the disease unfolds, individuals with MS may be faced with a growing number of environmental barriers, which can be accentuated by not having sufficient energy to be involved with their children or not having access to her child's school activities. How does a woman make plans for her day, engage her social network, or ask for adaptations/special accommodations, if she has temporary sensory or motor loss? Proactive coping strategies, which involve "the anticipation and preemptive management of emotional responses by proactively shaping and/or selecting one's environments, behaviors, and cognitions" (Diamond & Aspinwall, 2003, p.132), may be preferable for women who experience unexpected and uncontrollable symptoms.

Prior studies with MS patients have found that social support partially mediated the effect

on the parental concern for their children on symptoms of depression (Harrison & Stuifbergen, 2002), partially alleviated emotional distress (Gulick & Kim, 2004), and mediated the relationship between symptoms and functional performance of mothers with MS (Gulick, 2007). In our study, across the three outcomes, the perceived availability of social support contributed significantly to role functioning and parental satisfaction. However, social support and psychological well-being components were also strongly positively associated, suggesting that personal factors and social factors work together to impact overall functioning. Future studies should continue to examine how personal psychological factors and environmental social support influence one another, and how the two can support one another, testing the full range of the ICF model.

### **Implications**

This paper extends the ICF's potential for improving the quality of lives and participation of people with disabilities or chronic illness by also focusing and including psychological personal factors from the field of positive psychology. Our findings suggest that by supporting both positive personal factors such as environmental mastery, self-acceptance, and purpose in life, and environmental factors such as social support, it might promote greater participation, increase maternal satisfaction, and prevent withdrawal and subsequent secondary disabling behavior.

Environmental mastery was particularly salient for both role functioning and parental satisfaction. This quality has to do with feeling of being in charge of one's life and being able to "juggle" time well and to handle the many responsibilities of everyday life to one's liking. Treatment may be geared to helping mothers know their priorities and manage their life differently, with or around their illness. Ideas for creative problem solving can be cultivated

during the therapeutic encounter or from other mothers with MS. In a parallel qualitative study, some mothers with MS described the importance of keeping things simple, minimize housekeeping expectations, or pacing their energy throughout the day by planning low key snuggly activities such as “book time” when the mother was tired (Farber & Poole, 2011). Other women reported increasing participation by adapting their physical environment or using adaptive equipment to participate in activities such as watching their child’s sports or outdoor activities. Since heat can bring on a pseudo exacerbation of symptoms, some women were very inventive/adaptive. One mother stated, *“I have a cooling vest to wear when I take the children out for walks so that my MS is not so affected by hot weather”*. Another mother took her child to playgrounds only early in the morning when the temperatures were cooler. Rehabilitation psychologists could work directly with mothers to support alternatives and expanded ways of thinking about engagement in parenting activities. In addition, interdisciplinary collaborative care with Occupational Therapists who have expertise in environmental adaptation would be invaluable to promote holistic, individualized and inventive approaches for each mother’s unique strengths or disease-related limitations.

Self-acceptance and purpose in life were both correlated with positive outcomes. Although some women may focus on inadequacies or what they cannot do, for others, the precarious nature of their health may paradoxically make some women more very grateful for their moments of health and appreciation of parenting in the moment. Whereas happiness is present focused and can be hampered by pain or perceived activity limitation, a sense of purpose in life comes from an integration of the past and future (Baumeister, Vohs, Aaker, & Garbinsky, 2013). A rehabilitation psychologist can help mothers reframe their illness or limitations, so she can allow herself to grow from the illness experience, and see possibilities for the future, rather

than feel a victim of forces outside oneself. Focusing on a more agentic identity based on an active, proactive orientation (e.g., resiliency) instead of feeling that one is a victim of outside forces might help mothers foster greater self-acceptance (Polkinghorne, 1996), ultimately leading to great role participation and maternal satisfaction.

Social support was a key environmental factor, especially when combined with positive personal factors. A number of mothers in the parallel qualitative study expressed the importance of such support. For example, one mother noted, *“I rely on the ‘village.’ When I can’t do all that needs to be done... my son really does have a village of people looking out for him. This support is critical in facilitating how positive I feel about mothering.”* This quote demonstrates the importance of social support, but also the interaction of social support and positive feelings about self. Being grateful and gracious in accepting help also engenders further support. Although one mothers described herself as a “pain” (or burden) to her children, another mother noted how she framed/named her son *“my royal footman”* elevating him to a royal position (and elevating herself as a queen). Some women may have more available positive social support and others may be more adept at eliciting healthy support from others. Psychologists might want to explore the woman’s comfort with asking for help or setting up a positive social network, and help women cultivate these skills if needed.

**Limitations.** Several limitations must be acknowledged. We focused on mothers living in the community (versus institutionalized), contacted through the MS society. There could be a self-selection bias, with women who had more energy to respond to the study and not fully representative of all mothers with MS. Most of the mothers had relapse/ remitting MS, not a progressive form. We did not have socioeconomic information; as nearly half the sample was employed full or part time, they may not represent low-income mothers who cannot gain

employment due to disability limitations. Low-income could also affect access to health care and newest MS drugs which could reduce or delay the severity of symptoms. Future studies should examine the extent to which these findings generalize to mothers with differing severities of disability, as well as socio-economic status and ethnicity.

Overall this sample rated themselves on the positive side of the well-being subscales, although their scores remain lower than mothers without MS, and may not represent the greater population of mothers with MS. These positive well-being scores may be related to what Schwartz and Frohner (2005) called the new generation of women with MS, who may be finding ways to be resilient despite challenge. This is a dramatic paradigm shift from prior cohorts of women diagnosed with this disease, who were actively discouraged from having children. These women may benefit from new research findings and treatments, as well as the changing attitudes that allow women more choices to move on with their lives and continue functioning (including having children). Future studies should be sensitive to shifting perspectives and explore factors that will help mothers be more resilient.

Finally, all measures were self-reported and measured at a single time point. Although we noted that psychological well-being and social support predicted role function and maternal satisfaction, associations could be reversed or bidirectional. Longitudinal studies are needed to parse out how personal factors, environmental factors, and function influence one another over time. Studies should include more objective outcomes (e.g., performance on various tasks, partner ratings of function). In addition, in the univariate analyses, the well-being factors and social support strongly correlated with each other and with the three outcomes. The regression analyses identify the unique variance explained by each factor; this may indicate the true variance, but it also may reflect the inter-correlation of the factors. Future studies should further

examine how positive personal factors and environmental factors together influence healthy function and resilience.

### **Conclusion**

This study integrated positive psychology with the ICF framework and empirically tested qualities that could enhance role participation and parental satisfaction for women with MS, as well as theoretically expanded positive psychology “prospects” within rehabilitation psychology (Dunn & Dougerty, 2005, p. 305). By integrating these two internationally heuristic paradigms, our findings demonstrate that both positive personal factors (environmental mastery, self-acceptance and purpose in life) and environmental factors (social support) contribute to fuller participation and satisfaction with parental participation. Our findings suggest the possibility of discovering a larger palette of positive personal factors that may help people not only survive a disease, but to function as optimally as possible within the constraints of their disease or condition.

Motherhood is a salient life role for many women – both for those with and without illness/disability. Finding ways that optimize and maintain role functioning (and avoid or delay disabling outcomes) is crucial to both the mother and her family. As the number of mothers with chronic illnesses like MS is expected to continue to increase, it is vital to develop empirical knowledge of factors that will help mothers be more resilient, and integrate these components into rehabilitation treatment to help mothers (and their families) live as fully as possible, despite the challenges that chronic illness can bring.

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**Table 1***Variable descriptive statistics and correlations with predictor and outcome variables*

	Descriptive Statistics						Correlations					
	N	Mean	SD	Min	Max	SS	EM	PUR	SA	Phys	Emo	Sat
Age	111	37.38	5.76	21.00	56.00	-.08	-.06	-.17	.04	-.30**	-.09	-.15
Employment status	111	0.72	0.82	0.00	2.00	.06	.07	.13	.11	.24*	.20*	-.04
Married/ In a relationship	111	0.86	0.35	0.00	1.00	.35**	.25*	.10	.33**	.18	.30**	.22*
Type of MS	111	0.91	0.29	0.00	1.00	.15	.18	.22*	.25**	.30**	-.02	.36**
Social Support Scale	109	3.89	0.91	1.21	5.00	1.00	.61**	.51**	.67**	.45**	.51**	.57**
Environmental Mastery	111	4.27	1.04	2.11	6.00	.61**	1.00	.69**	.75**	.61**	.58**	.59**
Purpose in Life	111	4.74	0.85	2.22	6.00	.51**	.69**	1.00	.68**	.46**	.44**	.46**
Self-acceptance	111	4.36	1.12	1.22	6.00	.67**	.75**	.68**	1.00	.52**	.55**	.53**
Role Participation (physical)	111	42.31	11.17	17.70	56.90	.45**	.61**	.46**	.52**	1.00	.60**	.45**
Role Participation (emotion)	111	45.59	11.75	9.20	55.90	.51**	.58**	.44**	.55**	.60**	1.00	.38**
Parental satisfaction	110	4.21	0.57	2.24	5.00	.52**	.59**	.46**	.53**	.45**	.38**	1.00

*Note.* SS = social support, EM = environmental mastery, PUR = purpose in life, SA = self-acceptance, Phys = physical role function, Emo = emotional role function, Sat = maternal satisfaction.

\*  $p < .05$ , \*\*  $p < .01$ .

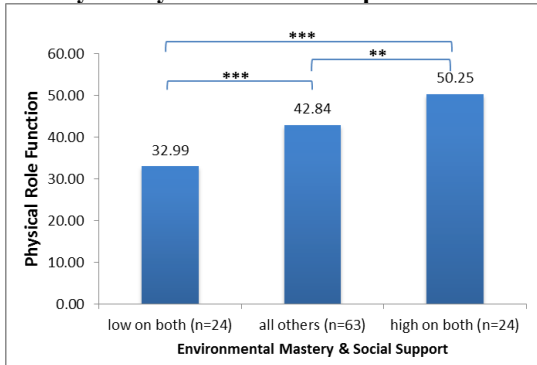
**Table 2**

*Regression models predicting role participation (physical and emotional) and maternal satisfaction from social support (Model 1) and positive personal factors (Model 2).*

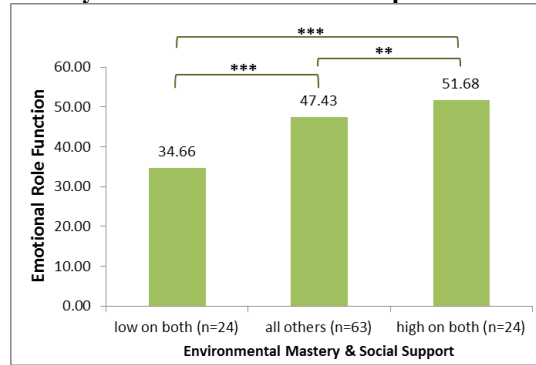
	Role Participation (Physical)				Role Participation (Emotional)				Parental Satisfaction			
	Model 1		Model 2		Model 1		Model 2		Model 1		Model 2	
	$\beta$	p	$\beta$	p	$\beta$	p	$\beta$	p	$\beta$	p	$\beta$	p
Age	-0.26	0.00	-0.28	0.00	-0.10	0.22	-0.12	0.12	-0.07	0.43	-0.07	0.41
Employment status	0.20	0.02	0.19	0.01	0.18	0.03	0.17	0.03	-0.10	0.21	-0.11	0.13
Married	0.06	0.48	0.03	0.74	0.20	0.03	0.17	0.04	0.01	0.88	-0.01	0.95
Type of MS	0.19	0.03	0.14	0.07	-0.14	0.10	-0.20	0.01	0.30	0.00	0.26	0.00
Social Support	0.36	0.00	0.04	0.72	0.44	0.00	0.11	0.30	0.47	0.00	0.22	0.04
Environmental mastery			0.51	0.00			0.33	0.01			0.38	0.00
Purpose in life			-0.11	0.32			0.00	0.98			0.01	0.97
Self-acceptance			0.13	0.31			0.22	0.10			0.04	0.77
R <sup>2</sup>	0.35		0.52		0.33		0.47		0.37		0.47	
R <sup>2</sup> change	0.11		0.17		0.16		0.13		0.18		0.10	
F value	10.95	< .0001	13.29	<.0001	10.17	<.0001	10.84	<.0001	11.92	<.0001	10.94	<.0001

*Note.* For employment status, married, and Type of MS, (Relapse/remit) 1 = yes, 0 = no. R<sup>2</sup> change for Model 1 indicates variance explained by social support, after controlling for demographic variables (age, employment, marital status, and type of MS). R<sup>2</sup> for Model 2 indicates variance explained by the three positive personal factors, controlling for demographics and social support.

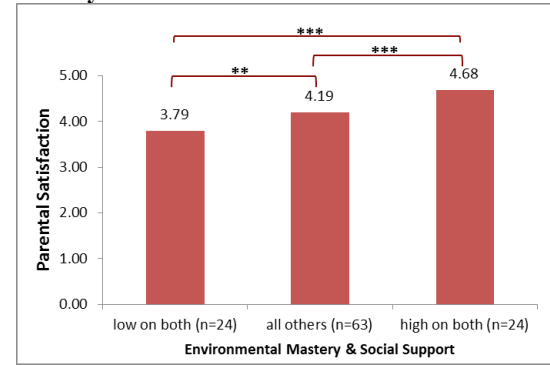
**Mastery & Physical Role Participation**



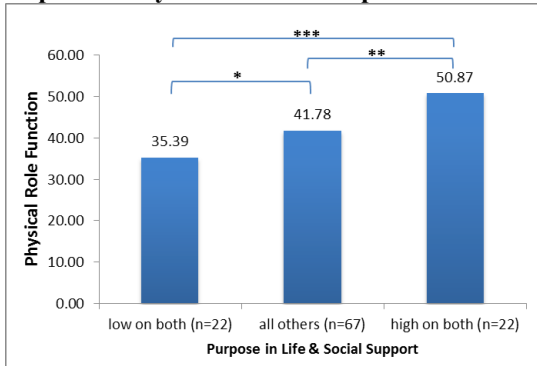
**Mastery & Emotional Role Participation**



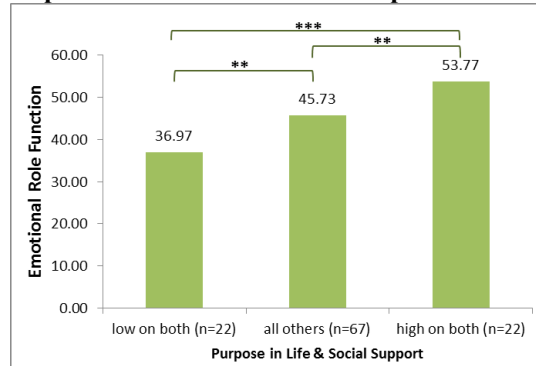
**Mastery & Parental Satisfaction**



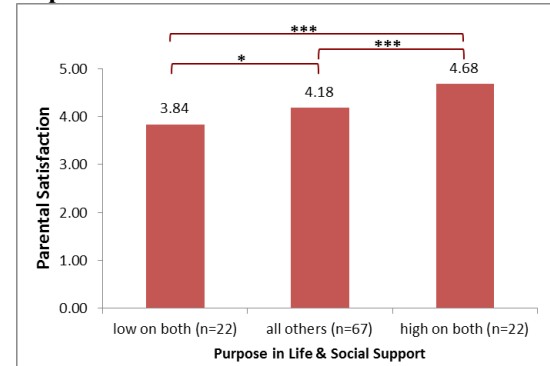
**Purpose & Physical Role Participation**



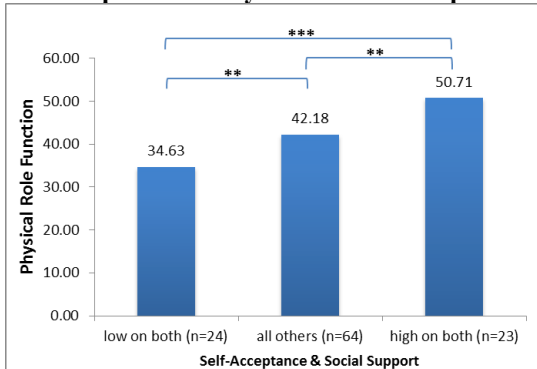
**Purpose & Emotional Role Participation**



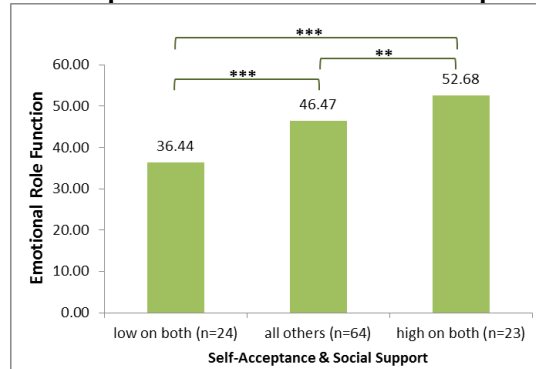
**Purpose & Parental Satisfaction**



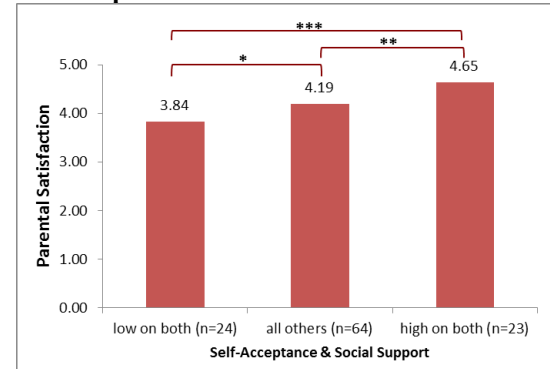
**Self-Acceptance & Physical Role Participation**



**Self-Acceptance & Emotional Role Participation**



**Self-Acceptance & Parental Satisfaction**



**Figure 1.** Combinations of social support and positive personal factors. Responses were broken into three groups (low on social support and each positive personal factor; high on both; all others). Bars display means for each group, stars indicated significant differences (Bonferonni corrected \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ ).