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MOTIVATION IN LATER LIFE: THEORY AND ASSESSMENT

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ABSTRACT

A framework that has been found useful in research on young adults, Deci and Ryan's self-determination theory [1, 2], is suggested as a promising direction for research on motivation in later life. The theory proposes the existence of four types of motivation (intrinsic, self-determined extrinsic, nonself-determined extrinsic, and amotivation) which are assumed to have varying consequences for adaptation and well-being. A previously published French measure of motivational styles which is known to be reliable and valid was translated into English and was tested on seventy-seven nursing home residents (aged 60 to 98 years). It was found that the four motivational styles can be reliably measured; that the intercorrelations between the motivational styles are consistent with theoretical predictions; and that the four types of motivation are related to other important aspects of the lives of elderly people in a theoretically meaningful manner. Suggestions are made for further research using self-determination theory and the present scales.

Why do people engage in daily activities in old age? Where does their motivation come from? The research literature provides relatively few answers to these questions. There has been work on topics such as control, learned helplessness, self-efficacy, and activity and disengagement theories, but little direct research on motivation itself. Yet, motivation among elderly people deserves closer attention

for several reasons. First, a better grasp of motivational processes in later life would help us understand the factors that regulate behavior in one of the most prominent age groups in society. Second, the changes associated with aging sometimes involve perceptions of incompetence or feelings of reduced self-determination—two factors that are known to affect motivation. Third, understanding motivation is necessary for a more complete picture of the psychological processes involved in aging and of the factors that influence physical and mental health in later life. And finally, a better understanding of motivational forces in old age would suggest ways of structuring living environments to enhance motivation and its associated consequences.

Recently, Vallerand and O'Connor [3, 4] described how Deci and Ryan's self-determination theory [1, 2] can be usefully applied to motivation in older adults. A French version of a measure of motivational styles was found to be internally consistent and related to other aspects of the lives of elderly people. In the present article we report similar findings for an English measure of motivational styles, the Elderly Motivation Scales (EMS). We begin by describing self-determination theory and summarize the findings from the initial research conducted by Vallerand and O'Connor. We then report data on the EMS.

MOTIVATION IN LATER LIFE: SELF-DETERMINATION THEORY

Self-determination theory emerged from research on young people and portrays individuals as active organisms striving for effective interactions with the environment in a context of autonomy [1, 2]. Individuals are said to have a need to feel competent, self-initiating and self-regulating in their daily activities. The satisfaction of this need enhances motivation, whereas the thwarting of this need impairs motivation. This theory has roots in the work of White [5] and others, but is more specific about different forms of motivation and about their causes and consequences.

Deci and Ryan proposed the existence of at least four types of motivation that vary along a continuum of self-determination [1, 2]. From high to low-determination, these forms of motivation are: intrinsic, self-determined extrinsic, nonself-determined extrinsic, and amotivation. Intrinsically motivated behaviors are engaged in for the pleasure and satisfaction derived from their performance. They are voluntarily performed in the absence of material rewards or constraints (e.g., exercising for the inherent pleasure derived from doing so). Activities that lead individuals to experience feelings of competence and/or self-determination are intrinsically rewarding and are likely to be performed again.

Extrinsically motivated behaviors are not performed for their inherent experiential aspects but to receive or avoid something once the activity is terminated. It was originally thought that extrinsic motivation referred to nonself-determined behavior, i.e., to behavior that is prompted by external contingencies. However, it has recently been discovered that there are different types of extrinsic motivation, some of which may be self-determined [1, 2, 6]. In this article we distinguish between two broad types of extrinsic motivation: self-determined and nonself-determined.

Nonself-determined extrinsic motivation occurs when behavior is externally regulated (usually through rewards or constraints). For example, elderly persons may exercise because they feel urged to do so by others. In this case, an activity that can or should be fun is performed in order to avoid negative consequences (e.g., criticism from others). The motivation is extrinsic because the reason for participation lies outside the activity itself. Furthermore, the behavior is not chosen or self-determined.

Nonself-determined extrinsic motivation may also be fuelled by a desire for rewards. For example, someone might agree to exercise "because the doctor told me that it would be good for me." In this case the motivation is still extrinsic and nonself-determined, but the instigating factor is the desired reward (e.g., praise from the doctor). Regardless of whether the goal of behavior is to obtain rewards or to avoid sanctions, the individual experiences an obligation to behave in a specific way and feels controlled by the reward or by the constraint.

In contrast, self-determined extrinsic motivation occurs when a behavior is valued by the individual and is perceived as being chosen by oneself. Behavior is internally regulated. An example is someone who exercises "because I feel that it is a good way to stay healthy and happy." The motivation is extrinsic because the activity is not performed for itself but as a means to an end. However, the behavior is nevertheless self-determined: the individual has *decided* that exercising is beneficial. The person experiences a sense of direction and purpose, instead of obligation and pressure, in performing the behavior.

Finally, individuals are said to be "amotivated" when they perceive a lack of contingency between their behavior and outcomes. There is an experience of incompetence and lack of control. Amotivated behaviors are neither intrinsically nor extrinsically motivated: they are nonmotivated and participation will eventually cease. For example, an elderly person might say, "I really don't know why I exercise; I don't see what it does for me." Amotivated behaviors are the least self-determined because there is no sense of purpose, and no expectation of reward or of the possibility of changing the course of events.

A distinction has thus been made between four types of motivation which fall on a continuum of self-determination. Intrinsically motivated behaviors are the most self-determined whereas amotivated behaviors are the least self-determined.

SELF-DETERMINATION, PERCEIVED LOCUS OF CAUSALITY, AND "CONTROL"

Self-determination is the experience that one's actions emanate from oneself, and self-determined individuals are said to have an internal "perceived locus of

causality" [1, 2, 6]. These concepts have obvious counterparts in the extensive research on locus of control, which has been reviewed in Baltes and Baltes [7], Fry [8], Lefcourt [9], and Shupe [10]. But according to Deci and Ryan [11],

> The term locus of causality is not the same as "locus of control" as explicated by Rotter (1966). The term locus of control refers to whether people believe that outcomes are controllable, in other words whether outcomes are believed to be contingent upon behavior. Locus of causality, on the other hand, refers to the perceived source of initiation and regulation of behavior. Locus of control is concerned with what controls a person's outcomes; locus of causality is concerned with why a person behaves as he or she does [12, pp. 113-114].

Besides locus of control, other related constructs in the literature include learned helplessness and perceived control. However, these terms also usually refer to the perceived contingency between one's behavior and the outcomes one receives, whereas perceived locus of causality and self-determination, derived from deCharm's [12] concept of personal causation, refer primarily to the experience of choice and freedom in initiating one's behavior. Control does not ensure self-determination or an internal perceived locus of causality. Individuals may perceive control over outcomes but they will not feel self-determined if they are compelled by interpersonal or intra-individual pressures, as in the case of nonself-determined extrinsic motivation. For example, some individuals may perceive control over their exercise routines and may be "internals" with regards to their beliefs about the reinforcements of exercising, but they will not experience self-determination or an internal perceived locus of causality if they feel pressured to exercise by themselves or others. In support of this distinction is the finding that "traditional beliefs of internal-external control on a Rotter type scale are independent of beliefs in one's self-control of impulses" [13, p. 231].

Although the term "choice" is sometimes used in definitions of perceived control [14], the focus has usually been on the act of distinguishing between available options provided by an experimenter in laboratory research, and not to the experience of freedom in regulating one's behavior. Other researchers sometimes use "choice and control" in the same phrase [15, 16], and although few distinctions are provided the term choice in these contexts seems to have elements of self-determination. In any case, readers are referred to Deci and Ryan [1, 2, 6], Rodin [17], and Reid and Stirling [13] for more extensive comparisons of these constructs. In making these distinctions we are not suggesting that the concept of self-determination is superior, or that other concepts should be abandoned. Instead, we are merely alerting readers to subtle but important differences between various constructs, and to the fact that the focus of our own research is on self-determination.

DETERMINANTS OF THE FOUR KINDS OF MOTIVATION

In self-determination theory two key factors are assumed to affect motivation: perceived locus of causality and perceptions of competence [1, 2, 6, 18]. The latter is closely related to Bandura's notion of self-efficacy, but in the present article we focus on the perceived locus of causality dimension because of its relationship with self-determination. Factors that enhance self-determination lead to an internal perceived locus of causality, which in turn enhances intrinsic motivation. On the other hand, when individuals perceive situations to be controlling, self-determination is diminished, the perceived locus of causality becomes more external, and intrinsic motivation is decreased. For example, providing elderly people with choice regarding if or when to participate in activities should produce an internal locus of causality which should enhance intrinsic motivation. In contrast, urging or forcing people to participate in activities should lead to an external locus of causality which should undermine intrinsic motivation.

Research on children and young adults has consistently supported these predictions regarding the determinants of motivation. Enhancing self-determination through choice increases intrinsic motivation [19], whereas experiences that reduce self-determination (e.g., evaluation apprehension, surveillance, deadlines) lead to an external locus of causality and decreased intrinsic motivation [1, 2, 6].

Autonomy and choice should also enhance self-determined extrinsic motivation: the individual will experience a sense of purpose and direction in the performance of activities that may not be inherently interesting (e.g., exercising, self-care). On the other hand, a decrease in feelings of autonomy and choice should increase nonself-determined extrinsic motivation and eventually amotivation, because the individual may become dependent upon others to provide direction. For example, if personal self-maintenance activities are regularly performed by others without encouragement for self-responsibility there is a risk of inducing an external locus of causality which could enhance nonself-determined extrinsic motivation, dependence on others, and perhaps eventually amotivation. Research by Baltes suggests that dependent behavior in older adults develops and is maintained by such person-environment transactions, although her focus has not been on motivation per se [20]. On the other hand, encouraging responsibility for personal self-maintenance activities among elderly people should lead to an internal locus of causality which should augment self-determinated extrinsic motivation toward these activities.

Much related research on elderly populations supports this view. For instance, providing people with choices, control, or personal responsibility enhances feelings of control or self-determination and has positive effects on adjustment and well-being [7-10]. However, most of the studies have focused on situational factors that affect motivation. Deci and Ryan [1, p. 31] even claim that the operative need in many aging-control experiments was not a need to control the

environment but the need to be self-determined. A more recent concern has been with motivational styles or orientations and emerging findings indicate that motivational styles are associated with the same consequences as situational variables [1, 2, 21-25].

CONSEQUENCES OF THE FOUR KINDS OF MOTIVATION

The hypothesized consequences of the four kinds of motivation are based on the continuum of self-determination, which is associated with psychological adjustment [1, 2, 6]. Intrinsic motivation is presumed to have the most positive consequences, followed by self-determined extrinsic motivation. Nonself-determined extrinsic motivation, and especially amotivation, are assumed to have negative consequences.

These predictions have been confirmed in research on a variety of populations, including elementary-school children [21], high-school children [26], junior- college students [22], university students [1, 2], and married couples [23]. The predictions have also been confirmed in a variety of life domains, including education, sports, the workplace, interpersonal relationships, and leisure activities. The more self-determined forms of motivation lead to a host of positive consequences such as greater cognitive flexibility, enhanced conceptual learning, greater interest, a more positive emotional tone, higher levels of marital happiness, greater life satisfaction, higher levels of creativity, performance, and persistence, and more adaptive reactions to stress (see [1, 2, 6, 27] for reviews). It would therefore seem important to examine the motivation behind daily activities in old age.

DEVELOPMENT OF A FRENCH MEASURE OF MOTIVATIONAL STYLES

A necessary starting point in applying self-determination theory to elderly people was to develop reliable measures of the different kinds of motivation. A review of the literature and our own empirical research [3, 4] revealed six life domains to be most important for both men and women and for elderly people living in different settings: health, religion, biological needs, interpersonal relations, current events, and recreation. Two common situations within each domain were identified through pilot testing and relevant test items were constructed (e.g., for religion: "Why do you go to church?"). A general question for each domain was also constructed (e.g., "In general, why do you practice your religion?"), for a total of three questions from each of the six life domains. A variety of response formats for these questions were tested and psychometric analyses indicated that the best format was to have respondents make four ratings (corresponding to the four kinds of motivation) for each of the eighteen questions.

The four response formats were as follows: 1) "I don't know, I don't see what it does for me" (Amotivation); 2) "Because I am supposed to do it" (Nonself-Determined Extrinsic Motivation); 3) "I choose to do it for my own good" (Self-Determined Extrinsic Motivation); and 4) "For the pleasure of doing it" (Intrinsic Motivation). This response format is analogous to that used in the Attributional Style Questionnaire [28]. In sum, the French scale (the EMPA: "Echelle de Motivation des Personnes Agees") consists of eighteen questions which respondents answer by rating the truthfulness of four motivational statements, for a total of seventy-two ratings.

The EMPA has undergone extensive testing and shows strong psychometric properties [3, 4]. Studies on four samples of elderly individuals revealed high alpha reliabilities for the four kinds of motivation, typically ranging in the mid .80s. Furthermore, the reliabilities for each of the six life domain subscales were reasonably high, indicating that motivation among elderly people can be examined within each domain (e.g., [29]).

The scales also showed evidence of construct and concurrent validity. First, the pattern of intercorrelations among the four kinds of motivation was consistent with the predictions of Deci and Ryan [1]. The correlations indicated a continuum from Amotivation, to Nonself-Determined Extrinsic Motivation, to Self-Determined Extrinsic Motivation, to Intrinsic Motivation. Adjacent scales on this continuum showed positive intercorrelations, whereas scales farther apart showed stronger negative intercorrelations. Second, respondents' scores on the four types of motivation were significantly correlated with interviewers' assessments of their motivation. Third, elderly individuals who perceived their residential settings as supporting autonomy reported higher levels of intrinsic and self-determined extrinsic motivation, but lower levels of nonself-determined extrinsic motivation and amotivation, than individuals who felt controlled by their living environments [4]. Finally, the correlations between the four kinds of motivation and variables such as Satisfaction With Life, Depression, Self-Esteem, Meaning in Life, Residential Constraint, and Locus of Desired Control corresponded to the continuum proposed by Deci and Ryan [1]. The strongest positive outcomes were associated with Intrinsic Motivation, whereas the strongest negative outcomes were associated with Amotivation [3].

In light of the psychometric properties of the scale, the findings it has yielded, and the importance of assessing motivation from a sound theoretical perspective, it was decided to cross-culturally validate the EMPA in English. The present study was designed: 1) to assess the reliability of the Elderly Motivation Scales, an English version of the original EMPA; 2) to determine whether a simplex pattern of correlations exists between the subscales, which would indicate support for the self-determination continuum; and 3) provide further evidence for construct validity by examining the relationships between the four kinds of motivation and psychological adjustment variables, some have which have not been measured in previous research.

METHOD

Participants and Procedure

Participants were obtained from two intermediate-care nursing homes in the greater Montreal area. The head nurse in each home went through the list of residents and crossed out the names of individuals who were not physically or cognitively fit to participate in a research interview. Residents were first informed by the staff that they might be contacted to participate in a study on their attitudes and self-perceptions, and a short time later those residents who agreed to participate were administered the measures interview-style by a trained research assistant. The acceptance rate was approximately 80 percent.

Participants (N = 77) were fifty-eight female and nineteen male nursing home residents whose ages ranged from sixty to ninety-eight years, with a mean of 82.6 years. Although some of the respondents were bilingual, the first language of all respondents was English. Thirty-three were Canadian-born; thirty-seven were born in Britain or Ireland; and seven were born in other places. Forty-four were widowed; twenty-five were single; and eight were married. Respondents were asked to rate their general health on a 7-point scale ranging from very poor ("1") to very good ("7"), and the mean rating was 4.3 with a standard deviation of 1.24.

Measures

Elderly Motivation Scales

The translation was conducted in two phases. First, the scale was translated from French into English following the "parallel back-translation" procedure [30, 31]. A simple back translation involves translating a scale from the original to the target language by a bilingual person. The translated version is then translated back to the original language by another bilingual person without the use of the original scale. The degree of similarity between the original scale and the back-translated version is an indication of the adequacy of the translated version of the scale. In a "parallel" back-translation procedure two independent back translations are conducted. This dual approach helps circumvent biases that could result from the specific bilingual individuals performing the translations. In the present study, four bilingual people (two social psychologists and two graduate students who were familiar with self-determination theory) conducted the parallel back-translation procedure. This produced two preliminary English versions of the EMS that were evaluated in the next phase.

In the second phase, the items produced by the two back-translations were assessed by a committee formed of the individuals who participated in the back translation procedures and the authors of the original French version of the scale. The committee selected those items and response formats that had retained their original meaning. The final English EMS consist of eighteen items that ask elderly individuals why they engage in various activities. Individuals provide their responses on four scales corresponding to the four forms of motivation. The responses are given on 7-point Likert scales ranging from "Strongly Disagree" to "Strongly Agree." In the present study missing values were entered when respondents could not answer a question, and mean scores were computed based on the questions that were answered. Only 5.9 percent of the items (or 332 out of the total 5544 responses) received missing values. The eighteen questions that compose the EMS, and the four response scales, can be found in Table 1.

Other Measures

Respondents were also asked to complete a variety of other measures that should be associated with motivational styles. Some of these measures had been

Table 1. Items and Response Scales of the Measure of Motivational Styles

Items:

1. In general, why do you perform the different activities related to your health?
2. Why do you keep up with your diet/nutrition (watch what you eat)?
3. Why do you see your doctor?
4. In general, why do you perform the different activities related to your biological needs?
5. Why do you eat?
6. Why do you sleep?
7. In general, why do you have relationships with other people?
8. Why do you have relationships with members of your immediate family?
9. Why do you have relationships with your friends?
10. In general, why do you practice your religion?
11. Why do you attend (or listen to) church services?
12. Why do you pray (outside of church)?
13. In general, why do you have leisure activities?
14. Why do you have leisure activities in groups (with one or more other persons)?
15. Why do you have leisure activities alone (personal activities)?
16. In general, why do you follow the news?
17. Why do you follow the local news (of your center or neighborhood)?
18. Why do you follow the world news?

Response Scales:
I don't know; I don't see what it does for me. (Amotivation)
Because I am supposed to do it. (Nonself-Determined Extrinsic Motivation)
I choose to do it for my own good. (Self-Determined Extrinsic Motivation)
For the pleasure of doing it. (Intrinsic Motivation).

Note: Responses are given on 7-point scales ranging from "strongly disagree" to "strongly agree."

used by Vallerand and O'Connor [3], namely the Satisfaction With Life scale [32]; five items from Rosenberg's [33] Self-Esteem scale, three items from the Beck Depression Inventory that are known to be homogeneous and valid [34]; and the two central items from the Locus of Desired Control scale [35]: "How important is it for you to be able to decide on what your everyday behaviors are going to be?" and "How often can you yourself decide what your everyday behaviors are going to be?" (The two ratings are multiplied and the resulting scores indicate the extent to which individuals can exercise control over everyday behaviors for which control is desired.)

In addition, other scales that were not used by Vallerand and O'Connor [3] were also included: the Philadelphia Geriatric Center Moral Scale [36]; five items from the Revised UCLA Loneliness Scale [37]; and two items measuring the degree of fulfillment experienced in daily life ("There is not enough to do to keep myself busy" and "I do not feel needed"). Respondents indicated their degree of agreement with all of the items (except for those of the BDI) on 7-point scales. Not all of the respondents were administered all of the measures due to time constraints.

RESULTS

Scale Means and Internal Consistencies

Internal consistency analyses of the four motivation scales revealed alpha coefficients that were generally high: .91 for Amotivation; .72 for Nonself-Determined Extrinsic Motivation; .92 for Self-Determined Extrinsic Motivation; and .89 for Intrinsic Motivation. The reliabilities for the individual life domains were also satisfactory, especially for three-item scales (the alphas ranged from .67 to .97, with seven values in the .70s and 16 values over .80). The scale means and standard deviations are reported in Table 2. The only gender difference in motivational styles was a tendency for men to score higher than women on Nonself-Determined Extrinsic Motivation ($t = 3.2$, $p = .003$).

Correlations among the EMS Subscales

The correlations among the EMS subscales (see Table 3) indicate support for the self-determination continuum proposed by Deci and Ryan [1]. Adjacent scales on the continuum showed positive intercorrelations (e.g., $r = .64$ for Intrinsic Motivation and Self-Determined Extrinsic Motivation), whereas scales farther apart showed negative correlations (e.g., $r = -.59$ for Intrinsic Motivation and Amotivation). The statistical tool developed by Ryan and Connell [21] was used to evaluate the scale intercorrelations for congruency with the proposed continuum. First, an adjacency index was assigned to the correlations between forms of motivation according to how close the forms of motivation are along the continuum of self-determination. Specifically, a "3" (the highest adjacency score)

Table 2. Means and Standard Deviations for the Four Kinds of Motivation

		Amotivation	Nonself-Determined Extrinsic Motivation	Self-Determined Extrinsic Motivation	Intrinsic Motivation
Cronbach's Alpha		.91	.72	.92	.89
All subjects	*M*	2.3	3.0	3.7	4.3
	SD	1.0	0.7	1.2	0.8
Males	*M*	2.3	3.4	4.0	4.6
	SD	1.0	0.7	1.3	0.8
Females	*M*	2.3	2.8	3.6	4.3
	SD	1.0	0.7	1.1	0.9

Note: Means are on a scale from 1-to-7.

was given to scales that are side-by-side on the continuum (AM-NSDEM, NSDEM-SDEM, and SDEM-IM); a "2" (a moderate adjacency score) was given to scales that are one step removed from each other on the self-determination continuum (AM-SDEM and NSDEM-IM); and a "1" (the lowest adjacency score) was given to the two scales that are furthest removed from one another on the continuum (AM-IM). We then computed the amount of variance accounted for by this adjacency index in the squared correlations among the forms of motivation (squared correlations were used to restore interval scale properties to the data so as to meet the assumptions of a correlational test). This resulted in a congruency coefficient of .78, indicating that the predicted simplex structure was present in the scale intercorrelations. These findings are similar to those obtained in previous studies and provide support for a self-determination continuum ranging from Amotivation to Nonself-Determined Extrinsic Motivation to Self-Determined Extrinsic Motivation to Intrinsic Motivation.

Correlations between EMS Subscales and Psychological Adjustment Variables

The correlations between the four motivational styles and the other psychological variables (whose alpha coefficients ranged from .74 to .94) were also generally in accord with predictions (see Table 3), despite small sample sizes for some measures. In fact, the patterns of correlations for Self-Esteem, Morale, Fulfillment, Locus of Desired Control, and Loneliness were perfect. The most

Table 3. Pearson Correlations

	Amotivation	Nonself-Determined Extrinsic Motivation	Self-Determined Extrinsic Motivation	Intrinsic Motivation
Amotivation ($n = 77$)	—	.12	−.47***	−.59***
Nonself-Determined Extrinsic Motivation ($n = 77$)	—	—	.04	−.08
Self-Determined Extrinsic Motivation ($n = 77$)	—	—	—	.64***
Self-Esteem ($n = 21$)	−.58**	−.28	.31	.53*
Depression ($n = 21$)	.28	−.02	−.44*	−.42*
Satisfaction with Life ($n = 76$)	−.24*	−.28*	.17	.39***
Morale ($n = 44$)	−.12	−.07	.16	.28
Fulfillment ($n = 35$)	−.33*	.11	.32	.43*
Loneliness ($n = 50$)	.23	.03	−.24	−.25
Locus of Desired Control ($n = 34$)	−.35*	−.06	.33*	.45**
General Health ($n = 77$)	−.26*	−.10	.28*	.20
Age ($n = 71$)	.02	−.21	−.25*	.05

*$p < .05$
**$p < .01$
***$p < .001$

negative "outcomes" were for Amotivation, followed by Nonself-Determined Extrinsic Motivation; the most positive outcomes were for Intrinsic Motivation, followed by Self-Determined Extrinsic Motivation. The results for Depression and Satisfaction With Life were similar except for one correlation in each case that did not fit the incremental pattern. Specifically, for Depression the correlation for Self-Determined Extrinsic Motivation, –44, $p < .001$, was stronger than the correlation for Intrinsic Motivation, –.42, $p < .001$; and for Satisfaction With Life the correlation for Nonself-Determined Extrinsic Motivation, –.28, $p < .001$, was stronger than the correlation for Amotivation, –.24, $p < .001$.

DISCUSSION

The present findings provide support for the reliability and validity of an English measure of motivational styles in old age. The results were also very similar to those obtained with the French version: they indicate that four kinds of broad, cross-situational motivational tendencies in elderly people can be reliably measured; that the intercorrelations between the four kinds of motivation are in accord with the self-determination continuum proposed by Deci and Ryan [1]; and that the four kinds of motivation are related to other important psychological aspects of the lives of elderly people in a theoretically meaningful manner. One reviewer of this manuscript suggested that some of the item translations may have been too literal, and that some of the terms in our measure may be vague or confusing. Perhaps the measure should therefore be viewed as a promising first attempt, with a psychometrically sound structure and response format, but with language that could be refined in further research. In any case, the framework derived from research on young people appears quite applicable to the motivation underlying daily activities among both French- and English-Canadian seniors.

The measures of motivational styles provide a basis for examining the regulation of behavior in old age. In the present study the focus was on broad, across-domain motivational styles, but subscales of the measure can be used to examine motivational tendencies within specific life domains. The Cronbach's alpha internal consistency values for the four motivational styles within the six domains varied from .67 to .97. Although there was some variation in the findings across life domains, the results were generally similar to those for the across-domain motivational styles reported above. O'Connor and Vallerand provided an example of domain-specific motivation research using the religion subscale from the French version of the measure [29].

An important issue for further research is to determine whether there are changes in the nature of motivation with age, and whether individual differences in motivation are related to particular patterns of aging. Among the respondents in this study there was a tendency for self-determined extrinsic motivation to decrease with age, but there were no other significant linear or curvilinear relationships. Although there was a considerable age range in the sample (60 to 98 years), a comparison between seniors and younger individuals may yet reveal age differences. The present respondents were also nursing home residents, whose motivational tendencies may differ from those of both non-institutionalized seniors and younger people. If age differences are observed in future research, they will require an explanation, and life events and environmental factors may be important. Deci and Ryan [1] claim that the primary determinants of motivational tendencies are experiences of competence and self-determination. Although these factors are probably important to people of all ages, the specific life events that affect experiences of autonomy and competence may vary with age. Changes in health, sensory capacities and cognitive abilities could make elderly people feel

less competent and more dependent on others. Mandatory retirement and the behavior of younger generations may have similar effects, with potentially negative consequences for motivation. The effects may be most severe among older adults who themselves have negative expectations about aging.

On the other hand, it has been found that life satisfaction and general well-being do not decline with age [38]. Since motivation has repeatedly been found to predict such outcomes [1], this suggests there may be few negative changes in motivation with age. If this proves to be true, the important question then becomes how elderly people "shield" or maintain their motivation while experiencing events that would be detrimental to motivation in younger populations.

Another issue for further research is the relationship between motivation and physical health. In the present study higher ratings of physical health were weakly associated with greater Self-Determined Extrinsic Motivation and with less Amotivation. The intercorrelations between the forms of motivation remained unchanged when partialling out general health, and some of the correlations between the four forms of motivation and the other variables changed slightly when partialling out health. However, physical health is not so much a contaminating variable as it is an important factor in its own right. The clear associations between forms of motivation and the psychological adjustment variables suggests that there could be somatic consequences of various forms of motivation. Such effects were observed in longitudinal research by Maddi and Kobasa, who claim that motivation helps individuals cope with stressful life events and thereby influences physical health [39]. Individuals with more self-determined forms of motivation may also engage in more preventive health behaviors and may deal with health problems more constructively [40]. In contrast, elderly individuals with less self-determined forms of motivation may believe that changes in physical health are due to "normal aging," which may decrease preventive and constructive responses and thereby increase health problems.

In research on other populations motivation is often portrayed as a mediating variable between environmental variables or life events on the one hand, and outcome variables on the other (e.g., school performance, marital happiness, creativity, emotional states). A relevant finding in the present study is the association between locus of desired control and the motivation variables, which were in turn associated with the psychological adjustment variables. This provides tentative support for the causal sequence proposed by Deci and Ryan [1]: perceived self-determination affects motivation, which in turn affects a variety of psychological variables. However, the findings are merely suggestive because they are correlational and because the variables were measured at only one point in time.

Motivation could also play a mediating role in other significant relationships reported in the research on older adults. For example, Lachman reports a relationship between control beliefs and intellectual functioning, and suggests there may be a reciprocal causal relationship between the two [41]. However, the individual's motivational orientation may be a mediating variable. Beliefs in personal control may enhance the development of more self-determined forms of motivation for intellectual activities, the performance of which is beneficial to cognitive functioning. Conversely, the performance of intellectual activities may produce a sense of competence and intrinsic reward which in turn enhances motivation and the sense of personal control.

Self-determination theory also points to a potential problem for those who are concerned with enhancing the well-being of individuals, young or old, who seem apathetic or nonmotivated. Enhancing self-determination and participation in activities are obviously both desirable for such individuals, but they may be difficult to implement simultaneously. Without encouragement, low motivation people may not engage in optimally challenging activities. But when people feel compelled or coerced to engage in particular activities their intrinsic and self-determined extrinsic motivation toward the activities may be impaired. Further research could focus on the development of strategies for encouraging participation in the activities of daily living that are not controlling, but rather instill feelings of choice and self-determination [1, 2]. Social psychologists have been skillful at inducing feelings of self-determination in participants in their research on focused-compliance and insufficient justification [42]. Perhaps some of their subtle techniques can be developed and used by those who work with low motivation populations.

In conclusion, motivation in later life is a research topic with potentially important theoretical and applied benefits. It is hoped that self-determination theory and the EMS will provide some direction for future research on this topic.

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