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Motivational versus Volitional Mediation of Passivity in Institutionalized Older People

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The relationship between perceived loss of control and passivity in social activities in a non-handicapped institutionalized elderly population was assessed. Perceived loss of control was assessed from three different types of expectancies: low action-outcome expectancies, high situation-outcome expectancies, and low efficacy expectancies. Passivity scores were reported by the staff. The effect of these three types of expectancies on passivity was analyzed in terms of motivation and volition, which were treated as mediating variables. Overall analysis of the structural equations, as well as partial hierarchical regression analyses, showed that efficacy expectancies were good predictors of passivity, but this was not the case for the action-outcome and situation-outcome expectancies. These results lend more support to a volitional rather than to a motivational interpretation of the effect of control on passivity. The implications of these results for intervention and for a differentiated conception of expectancies are discussed.
Key words: motivation, volition, aging, control

Se evaluó la relación entre pérdida de control percibido y pasividad en actividades sociales en una población de personas mayores institucionalizadas no discapacitadas. La pérdida de control percibido se evaluó a partir de tres tipos diferentes de expectativas: bajas expectativas de acción-resultado, altas expectativas de situación-resultado y bajas expectativas de eficacia. El personal proporcionó las puntuaciones de pasividad. Se analizó la influencia de estos tres tipos de expectativas sobre la pasividad en términos de motivación y volición, que se consideraron variables mediadoras. El análisis global de ecuaciones estructurales y los análisis de regresión jerárquica parciales mostraron que las expectativas de eficacia eran un buen predictor de la pasividad, no así las expectativas de acción-resultado y de situación-resultado. Estos resultados apoyan una interpretación volitiva más que motivacional del efecto del control sobre la pasividad. Se comentan las implicaciones de estos resultados para la intervención y para una concepción diferenciada de las expectativas.
Palabras clave: motivación, volición, envejecimiento, control

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Contrary to the traditionally maintained view of older people as a homogeneous human group, the current outlook highlights the considerable degree of heterogeneity in the processes of aging and longevity. This new point of view has generated wide-ranging empirical research into the biological, generational, social, and psychological factors involved in the differential rhythms of aging (See reviews in Baltes & Baltes, 1990; Maddox & Lawton, 1988; Nelson & Dannefer, 1992).

Among the psychological factors of accelerated functional losses in aging, loss or deprivation of control has received the most attention from researchers. This interest stems from a series of studies carried out in the late seventies with institutionalized older people (e.g., Rodin & Langer, 1977; Schulz, 1976). The results revealed the negative effects of deprivation of control on both physical and psychological well-being. Older people who were experimentally induced to have greater control over their lives improved considerably in physical health and psychological well-being and a pronounced decrease in mortality rates was observed. Since then, a large number of correlational and experimental works have broached the study of the parameters and the conditions involved in this relationship (for recent works, see Chen, 2001; Chou & Chi, 2001; Krause & Shaw, 2000; Shaw & Krause, 2001). All of this has generated much debate on the interpretations of the phenomenon (see reviews in Arbuckle, Pushkar, Chaikelson, & Andres, 1999; Baltes & Baltes, 1986; Fry, 1989; Perrig, 2000; Rodin & Timko, 1991).

As Kuhl (1986) pointed out, there seems to be a common implicit notion in these works, observed in the following causal chain of events: (a) deprivation of control, (b) perceived loss of control, (c) motivational deficit, (d) performance deficit, (e) accelerated aging. This sequence, which assumes a motivational mediation between perceived control and performance, may have been accepted rather uncritically. The present study offers an empirical analysis of phases b, c, and d of this sequence. In particular, we have attempted to analyze the relationship between perceived control and activity-passivity in institutionalized older people, as well as the alleged motivational mediation of this relationship.

The first problem in this analysis involves the dimensionality of control. It has become increasingly clear that the construct of perceived control is not unidimensional (e.g., Abeles, 1991; Lachman, 1986). The construct of control has been defined in different ways by different investigators, leading to confusion as regards both concepts and the measurements used to define them. In an integrative revision, Skinner (1996) emphasized that any conceptualization of control must take into account both beliefs regarding agent-means relations and beliefs regarding means-ends relations. An agent-means belief relates the self—as an agent—to the behavior required to attain the desired outcome. Means-ends beliefs relate either the behavior itself or the situation—as a means to achieve (or avoid) the desired (or undesired) outcome—to the result or outcome. Control can thus be defined by three types of expectancies: efficacy, action-outcome, and situation-outcome. Whereas Bandura (1977,1986) differentiated between the first two, Heckhausen (1977) differentiated between the second two.

Based on the above classification of expectancies, we refer to perceived loss of control when: (a) Efficacy expectancies (E_{eff}) are low (the lack of resources or opportunities causes older people to believe that they are incapable of performing the necessary action to achieve the desired outcome); (b) Action-outcome expectancies ($E_{a\text{-}o}$) are low (older people do not believe that their action will produce the desired results; that is, they do not believe that there is a contingency between their action and the outcome); (c) Situation-outcome expectancies ($E_{s\text{-}o}$) are high (older people believe that the situation will lead to the desired outcome even if no action is performed).

Even though all three forms of perceived control affect behavior, they cannot be expected to do so by means of the same mechanisms. Using different theoretical frameworks, we propose two possible mediations between perceived control and behavior: motivational mediation and volitional mediation. More specifically, we propose a motivational mediation between low $E_{a\text{-}o}$ and passivity and a volitional mediation between low E_{eff} and passivity. We have no theoretical interpretation concerning the mediation between high $E_{s\text{-}o}$ and passivity.

The above-mentioned motivational mediation seems evident in the case of loss of control through low $E_{a\text{-}o}$. In the so-called expectancy-value motivational models (Feather, 1982), motivation depends on the $E_{a\text{-}o}$ and on the values assigned to the outcome. Thus, low $E_{a\text{-}o}$ could have negative effects on behavior as motivation decreases. In fact, for $E_{a\text{-}o}$ to have an effect on behavior, the expected outcomes must be important and relevant. Therefore, strictly speaking, the product of low $E_{a\text{-}o}$ $\times$ the value ($E_{a\text{-}o} \times V$) is what can have negative effects on motivation and behavior. That is, motivational mediation of passivity implies lack of interest in engaging in some kind of behavior, which in turn is based on low valuation of the consequences anticipated from such behavior and the scant subjective likelihood of those consequences resulting from the behavior in question.

Low E_{eff} can also have negative effects on behavior. However, the idea of self-efficacy as used by Bandura (1977, 1982) —confidence in one's own abilities— has been linked more to notions of self-regulation and volition (Bandura, 1991; Karoly, 1993) than to motivation. Since Heider (1958), many theorists have analyzed behavior in terms of these two variables: motivation (*Try*) and confidence in one's own capacity (*Can*). The theory of planned behavior developed by Ajzen (1988; see also Ajzen & Madden, 1986) provides a broader theoretical framework that relates these constructs.

Intention, defined as the individual's disposition to attempt to engage in a certain type of behavior, is a key concept of the theory of planned behavior. Intention is an immediate antecedent of the actual behavior. In turn, intention depends on several parameters, two of which are attitude towards the behavior and perceived behavioral control, which are similar to the constructs of motivation and self-efficacy, respectively.

However, the theory assumes that intention alone is not sufficient to determine behavior when not under total volitional control. This situation can become especially frequent in old age. For an intention to be carried out, the individual must have the necessary personal resources, and the right circumstances must prevail. Otherwise, self-efficacy (the prospective estimation of the difficulty in dealing with possible impediments) is considered to be a direct predictor of behavior, in addition to intention. To predict behavior, the estimation must be as similar as possible to the real difficulties and problems involved in carrying out the behavior. This overall belief in self-efficacy is based on more specific beliefs about resources and opportunities: the efficacy expectancies themselves. Similarly, motivation or attitude towards a behavior are based on more specific beliefs about the probability and desirability of achieving certain results by means of that behavior: what is referred to as $E_{a\text{-}o}$ x V.

According to the planned behavior theory and to recent theoretical developments in European motivation psychology (Gollwitzer, 1991, 1993; Heckhausen, 1991; Kuhl, 1985; for a review, see Mateos, 1996), passivity can be more the result of volitional deficits (anticipation of a high level of difficulty) than of motivational deficits (little interest in the activity). Therefore, the problem of older people may not be forming intentions but rather, once formed, carrying them out. This volitional mediation has received little attention in research on control and passivity in old age.

Lastly, high $E_{s\text{-}o}$ can also have negative effects on behavior. As in the case of $E_{a\text{-}o}$, the expected outcomes (in this case, from the situation itself) must be important and relevant. Therefore, strictly speaking, negative effects on behavior can be expected from a high $E_{s\text{-}o} \times$ value ($E_{s\text{-}o} \times V$). Some high $E_{s\text{-}o}$ may be characteristic of the institutional environment, in which the staff attends to and rewards dependent behavior more than independent behavior (Baltes & Reisenzein, 1986). In this sense, rather than a loss of control, this is passive or secondary control (Rothbaum, Weisz, & Snyder, 1982; Schulz, 1986; Wrosch, Heckhausen, & Lachman, 2000), characterized by accommodative modes of coping (Brandtstädter & Renner, 1990).

As regards mediation, there is no theoretical basis from the point of view of motivation psychology for the notion that high $E_{s\text{-}o}$ may affect behavior motivationally. Nor are there clear predictions for volitional mediation. Baltes & Reisenzein (1986) found that dependence could coexist with high expectancies, of both the $E_{a\text{-}o}$ and the E_{eff} types.

Research has shown that older people's feelings of control are quite specific to the various periods of life (Krause, 1994; Nurmi, Pulliainen, & Salmela-Aro, 1992; Schulz, Heckhausen, & Locher, 1991). Accordingly, instead of making a global estimation of the degree of activity, we chose a more specific measurement relating to the area of social contact. Our definition of activity is determined by the particular characteristics of older people (described in the following section) and their possibilities for remaining occupied during their free time in the institution in which they live.

Regarding how available free time is employed, passive behavior, such as wandering in the hallways, staying in rooms, or dozing in the armchairs on the main floor, is frequent. In this context, activity (in the social rather than in the physical sense) is defined as going to meeting rooms where some type of contact or social interaction may take place. Among the activities carried out in the institution, there were two that specially favored social contact among the residents: going to a reading room equipped with newspapers and magazines, and attending showings of videos as a group on weekends.

Other studies have shown that these types of activities are positively valued by older people in institutions (Tickle & Yerxa, 1981). Furthermore, Madigan, Mise, and Maynard (1996) suggested that such activities provide older people not only with personal satisfaction but also with the social contact necessary for giving meaning to their lives.

Figure 1 shows the hypothetical relationships among the variables considered in this study. The three types of expectancies ($E_{a\text{-}o} \times V$, $E_{s\text{-}o} \times V$, and E_{eff}) are defined as exogenous variables of the model. Activity, together with the mediating variables (motivation, self-efficacy, and intention), is defined as endogenous.

The upper part of Figure 1 shows motivational mediation between perceived control and activity/passivity (henceforth, the term *activity* will be used because of the positive form in which this construct was measured). We predicted the following relationships: The lower $E_{a\text{-}o} \times V$, the lower will be motivation, and, in turn, the lower the motivation, the less activity will be undertaken. This last relationship may be direct or mediated by the explicit intention to act. As mentioned, this motivational mediation is implicit in many of the works on control.

The lower part of Figure 1 shows the volitional mediation between perceived control and activity. The predicted relationships are: The lower the E_{eff}, the less self-efficacy the person will have, and, in turn, the less self-efficacy, the less activity will be undertaken.

Regarding loss of control as defined by high $E_{s\text{-}o} \times V$, we suggest that it will affect activity negatively but there are no clear predictions as to its mediation. Therefore, with regard to this construct, Figure 1 includes arrows pointing to all the endogenous variables of the model.

Thus, this model proposes a relation between perceived control and activity within a single framework that integrates three forms of perceived control. These three forms of perceived control are defined on the basis of differentiations

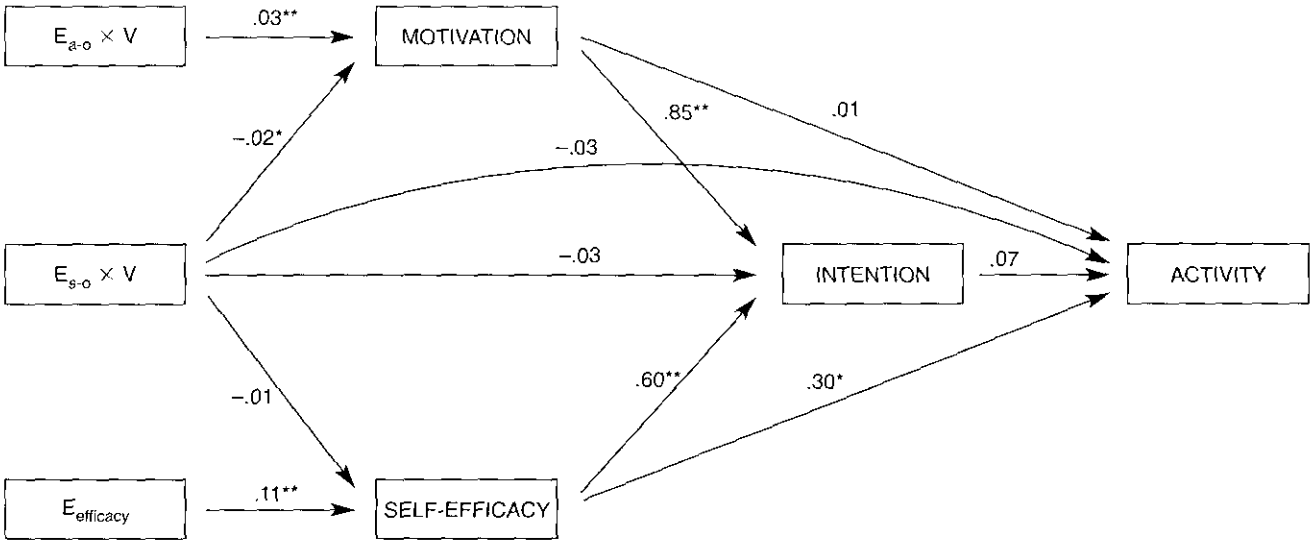

Figure 1. Principal predicted associations among all the determinants, direct and indirect, of activity.

between expectancies, drawn from the literature (Bandura, 1986; Heckhausen, 1977). This integrating framework interprets the theory of planned behavior (Ajzen, 1988; Ajzen & Madden, 1986) in the light of recent developments in motivational psychology (Gollwitzer, 1991; Heckhausen, 1991; Kuhl, 1985). Such work has established marked differences between motivation and volition as determinants of behavior.

The present research pursues two aims. The first is to verify the differential contribution of each of the three modalities of perceived loss of control (low $E_{a\text{-}o}$s, high $E_{s\text{-}o}$s, and low E_{eff}s) to the degree of social activity engaged in by institutionalized older people. The second aim is to analyze the mediating role of motivation and volition in the effects of perceived control on action.

Method

Participants

From a total of 118 older persons, having no physical or mental handicaps, medium-to-low socioeconomic status, and institutionalized in a public old people's home in Salamanca (Spain), 102 were selected at random. Out of these, 20 participated in a prior phase of elaboration of questionnaires to be employed in the current study. The 82 remaining individuals participated in the data gathering phase. Of these, 56 (22 men and 34 women) filled in the questionnaire (70% response level). The age of the participants ranged from 68 to 98, with a mean age of 82.02 (SD = 6.24). All respondents had been institutionalized for 1-3 years; 34% lived in the institution with their spouse, whereas the remaining 66% were single or widowed.

Materials and Procedure

The procedures for developing the scales and collecting data were those reported by Ajzen and Madden (1986). All the theoretical variables shown in Figure 1 were measured using 7-point semantic differential scales. All items were written in Spanish. To develop the items, a questionnaire was applied in a prior phase of the study in order to delimit the most frequent or modal beliefs. For this purpose, 20 older individuals from the same center as the final sample were selected at random. The questionnaire items referred to: (a) the beliefs most frequently held by the older population with respect to outcomes (advantages and disadvantages) resulting from use of the reading room and attendance at the video sessions, and (b) their beliefs with respect to what facilitates or impedes them from carrying out these activities. Once the idiosyncratic or nonspecific answers had been excluded, seven outcomes (to amuse oneself, eyes become tired, to get informed, to give others the chance to annoy one, to learn something, to observe or find out about somewhat indecent matters, and not to think about sad things) and five aids/impediments (problems with eyesight, other activities, health problems, good health, and feeling sad) were obtained from the responses to this questionnaire.

Using these outcomes and aids/impediments, we elaborated the items corresponding to the following constructs: $E_{a\text{-}o}$s, $E_{s\text{-}o}$s, V, and E_{eff}s. Each item was rated on a 7-point bipolar differential semantic scale, with different poles for each construct. (a) For the $E_{a\text{-}o}$ items, we asked: "Attending the reading room regularly and the video sessions organized weekly will help you to ... (each of the seven outcomes)." These items were rated on a scale ranging from *very probable* (+3) to *very improbable* (–3); (b) For the $E_{s\text{-}o}$ items, we asked: "Here, even if you don't do anything, you ... (each of the

seven outcomes)." These items were also rated from *very probable* (+3) to *very improbable* (–3); (c) For the items corresponding to the values assigned to these results (V), we asked:: "For you, to (each of the seven outcomes) is ..." These items were rated on a scale ranging from *very good* (+3) to *very bad* (–3); and (d) For the E_{eff} items, we asked: "How frequently do/does (each of the five aids/impediments) help you to go/impede you from going to the reading room or to the video session?" These items were rated on a scale ranging from *very frequently* (+3) to *very infrequently* (–3).

Each of the E_{a-o}s was multiplied by the corresponding value (V) and the sum of the products became the measure of the construct $E_{a-o} \times V$. Likewise, each of the E_{s-o}s was multiplied by the corresponding value and the sum of the products was a measure of the construct $E_{s-o} \times V$. The sum of efficacy expectancies scores served as a measure of the construct E_{eff}. As some E_{eff}s referred to possible impediments and others to aids, the score of the former was reversed before adding them up.

The procedure followed by Ajzen & Madden (1986) was also used to measure the remaining variables. Thus, to measure motivation or attitude towards participating in the indicated activities we asked the older people to evaluate the act of participation itself on four items. These items were also rated on 7-point scales (ranging from *very good* (+3) to *very bad* (–3); *very harmful* (–3) to *very beneficial* (+3); *very pleasant* (+3) to *very unpleasant* (–3); and *very wise* (+3) to *very foolish* (–3)). The mean scores of these items served as a measure of the motivation construct. The internal consistency of this set of items was Cronbach's $\alpha = .78$.

In order to measure self-efficacy, we asked the subjects to evaluate the degree of overall control they believed they had over attendance at these activities. Two items were posed at two different places in the questionnaire: "For you, going to the reading room and the video sessions is ..." was rated on a scale ranging from *very easy* (+3) to *very difficult* (–3). "If you want to, there is nothing to stop you from going" was rated on a scale ranging from *very probable* (+3) to *very improbable* (–3). The mean score from these two items was the measure of the self-efficacy construct (Cronbach's $\alpha = .52$).

Behavioral intentions were also evaluated with three items that appeared at different places in the questionnaire: "In spite of the fact that no one will oblige you to go, you intend to regularly go to the reading room and attend the weekly video sessions"; "Will you try to go to the reading room and video sessions regularly?"; and "How often do you intend to carry out these activities?" These items were rated on a scale ranging from *very probable* (+3) to *very improbable* (–3). The mean score of these three items was the measure of the intention construct (Cronbach's $\alpha = .91$).

To measure the activity variable, six members of the staff were asked to evaluate the true degree of participation of the older people in the criterion activities. The probability of each person's future participation was evaluated on a 7-point continuum ranging from very probable (+3) to very improbable (–3). The mean score of these six estimations was the measure of the activity construct (Cronbach's $\alpha = .87$). As a second measurement, we also asked the six staff members to assess the degree of general activity, from *very active* (+3) to *very passive* (–3), of each of the older individuals in the social activities of the center. As predicted, this second measurement of more global activity did not afford any significant result. It will therefore not be taken into account in either the analyses or the discussion of the results.

Results

As a first step towards determining the relationship of the independent variables with the degree of activity, Pearson's product-moment correlations were calculated. The intercorrelations of the variables of the study are shown in Table 1.

Table 1
Intercorrelations, Means, and Standard Deviations for Variables

Variables	1	2	3	4	5	6	7
1. $E_{a-o} \times V$	—						
2. $E_{s-o} \times V$	–.07	—					
3. E_{eff}	.39	.16	—				
4. Motivation	.39	–.27	.16	—			
5. Self-Efficacy	.11	0	.48	.10	—		
6. Intention	.28	–.27	.45	.49	.46	—	
7. Activity	.22	–.27	.29	.16	.38	.33	—
M	9.36	7.11	6.64	1.57	1.68	0.76	0.56
SD	13.59	12.10	6.26	0.98	1.45	2.08	1.31

Note. $N = 56$. E_{a-o} = Action-outcome expectancies; E_{s-o} = Situation-outcome expectancies; E_{eff} = Efficacy expectancies; V = value. Correlations greater than .26 are significant at $p < .05$.

Structural equation analysis for directly observed variables was used to confirm whether the path model shown in Figure 1 fitted our data. To estimate the structural parameters, we used the maximum likelihood method (Jöreskog & Sörbom, 1988).

Regarding goodness of fit, the following indexes indicate a good fit: $\chi^2 = 10.12$, df = 7 ($p = .18$); χ^2 /df = 1.45, goodness-of-fit index (GFI) =.95. Adjusted goodness-of-fit index (AGFI) =.81, indicating a moderate fit. Thus, most of these goodness-of-fit indexes indicate that the path model of activity was supported fairly well by the data. The model accounted for 45% of the variance, although, as commented upon below, not all the ecuations have the same explanatory power.

Table 2 shows the parameter estimates corresponding to the structural model. We confirmed the predicted influence of the exogenous variables on the endogenous ones. Thus, the $E_{a\text{-}o} \times V$ expectancies significantly affected motivation, and E_{eff} significantly affected self-efficacy. As regards the $E_{s\text{-}o} \times V$ expectancies, for which we did not find any clear predictions in the literature, these affected motivation but had no effect on self-efficacy. Nor did this variable either significantly affect intention or activity. Motivation accounted for 21% of the variance, and self-efficacy, 24%.

With respect to the endogenous variables of the model, motivation and self-efficacy both significantly affected intention, accounting for about 40% of its variance. In turn, self-efficacy affected activity but not intention or motivation.

Taken as a whole, the pattern of results seems to support a volitional mediation of perceived behavioral control over activity, rather than a motivational mediation. The greater the perceived behavioral control, defined in terms of high expectancies of efficacy, the greater the older person's self-efficacy, and more social activity will be engaged in. In turn, perceived behavioral control, defined in terms of $E_{a\text{-}o}$ and $E_{s\text{-}o}$, affects motivation: the higher the $E_{a\text{-}o}$ or the lower the $E_{s\text{-}o}$, the higher will be the older person's motivation towards such activities. However, greater motivation does not correspond to more activity: Motivation did not significantly affect activity.

Strangely, the explicit intention to engage in an activity did not prove to be a good predictor of the older person's actual behavior, which means that the activities studied here, although simple, do not seem to be under their volitional control. Taken together, the endogenous variables and the variable $E_{s\text{-}o} \times V$ accounted for 22% of the total variance of activity.

As the previous statistical analyses were somewhat questionable, given the small size of the group, complementary analyses were carried out using the same data. Specifically, we used hierarchical regression models to test our hypotheses concerning the relations presented in Figure 1. Guided by these hypotheses, we performed three different hierarchical regression analyses. Firstly, we analyzed the contribution of the motivational path to account for activity. For this purpose, the independent variables were included in the following steps: (a) $E_{a\text{-}o} \times V$, (b) motivation, and (c) intention. Secondly, we analyzed the contribution of the volitional path to account for activity. For this purpose, the independent variables were entered in the following

Table 2
Path Coefficients and Goodness-of-Fit Indexes for the Model Depicted in Figure 1

Independent Variables	Dependent Variables			
	Motivation	Self-Efficacy	Intention	Activity
Endogenous				
Motivation			.85**[a]	.01
Self-Efficacy			.60**	.30*
Intention				.07
Exogenous				
$E_{a\text{-}o} \times V$	.03**[b]			
$E_{s\text{-}o} \times V$	−.02*	−.01	−.03	−.03
E_{eff}		.11**		
R^2	.21[c]	.24	.43	.22
R^2 = .45[d]				
χ^2 (7) = 10.12				
χ^2/df = 1.45				
GFI = .95				
AGFI = .81				

Note. [a]Beta coefficients; [b]Gamma coefficients; [c]Squared multiple correlations for each structural equation; [d]Total coefficient of determination for all structural equations. GFI = goodness-of-fit index; AGFI = adjusted goodness-of-fit index; $E_{a\text{-}o}$ = Action-outcome expectancies; $E_{s\text{-}o}$ = Situation-outcome expectancies; E_{eff} = Efficacy expectancies; V = value.
*$p < .05$. **$p < .01$.

Table 3
Hierarchical Regression Analysis Predicting Activity with E_{a-o}, Motivation, and Intention

Step and Predictor Variable	*B*	*SE*	*β*	R^2	ΔR^2
Step 1					
$E_{a-o} \times V$	0.02	0.01	.22	.05	.05
Step 2					
$E_{a-o} \times V$	0.02	0.01	.19		
Motivation	0.11	0.19	.09	.05	.00
Step 3					
$E_{a-o} \times V$	0.01	0.01	.15		
Motivation	–0.07	0.21	–.05		
Intention	0.19	0.09	.31*	.13	.07*

Note. E_{a-o} = Action-outcome expectancies; V = value.
*$p < .05$.

steps: (a) E_{eff}, (b) self-efficacy, and (c) intention. Thirdly, we analyzed whether the explanatory capacity of the model increases when E_{s-o}s are introduced in an equation in which the mediating variables of the model were included (intention, self-efficacy, and motivation). This involved entering the independent values in the following steps: (a) intention, self-efficacy, and motivation; and (b) $E_{s-o} \times V$. In each of the hierarchical regressions, the changes in the R^2 and the β values were verified.

The results obtained were similar to those described previously. As shown in Table 3, the E_{a-o}s did not significantly account for the variability in activity, $F(1, 54) = 2.73$, p = *ns*. Entering motivation in the second step did not add predictive power, F_{change} (1, 53) = 0.35, p = *ns*. Entering the intention variable in the third step, however, did contribute significantly, F_{change} (1, 52) = 4.30, $p < .05$, although the equation with the three independent variables did not reach significance, $F(3, 52) = 2.51$, p = *ns*. The variables of the motivational path accounted for 13% of the total variance, of which 7% corresponded to intention and the remaining 5% corresponded to the variables E_{a-o} x V and Motivation.

As can be seen in Table 4, the second hierarchical regression showed that the variables comprising the volitional path significantly predicted activity, $F(3, 52) = 3.78$, $p < .05$. The self-efficacy variable contributed especially to this prediction, its entry into the second step having increased the prediction power of E_{eff} alone, F_{change} (1, 53) = 4.73, $p < .05$. Both variables contributed significantly to variability in activity, $F(2, 53) = 5.01$, $p < .05$. Comparison of the regression coefficients obtained in the first and second steps reveals the mediating role of self-efficacy between E_{eff} and activity. In other words, the effects of E_{eff} on activity are indirect, via the self-efficacy variable. Lastly, entering intention in the third step did not add predictive power to the equation, F_{change}(1, 52) = 1.26, p = *ns*. The variables of the volitional path accounted for 18% of the total variance. This percentage is almost entirely due to the variables E_{eff} and self-efficacy (16%), with a negligible contribution of the variable intention (2%).

Table 4
Hierarchical Regression Analysis Predicting Activity with E_{eff}, Self-efficacy, and Intention

Step and Predictor Variable	*B*	*SE*	*β*	R^2	ΔR^2
Step 1					
E_{eff}	0.06	0.03	.29*	.08*	.08*
Step 2					
E_{eff}	0.03	0.03	.14		
Self-efficacy	0.28	0.13	.31*	.16*	.08*
Step 3					
E_{eff}	0.02	0.03	.09		
Self-efficacy	0.23	0.14	.26		
Intention	0.10	0.09	.16	.18*	.02

Note. E_{eff} = Efficacy expectancies.
*$p < .05$.

The third hierarchical regression analysis (see Table 5) showed that the three mediating variables in the theoretical model (intention, self-efficacy, and motivation) significantly predicted activity, $F(3, 52) = 3.67$, $p < .05$. Entering the E_{s-o}s in the second step only marginally increased the predictive power of the variables in the equation, $F_{change}(1, 51) = 3.26$, $p = ns$. The total accounted-for variance in the measure of activity was 22%, to which the endogenous variables contributed 17% and $E_{s-o} \times V$ only added 5%.

Thus, with a statistical analysis that is not so dependent on the size of the sample, we obtained results similar to the structural equation model. The regression equation of activity on the motivational variables ($E_{a-o} \times V$, motivation, and intention) was not significant. However, the regression of activity on the volitional variables (E_{eff}, self-efficacy, and intention) was significant, but intention did not contribute anything to the equation. Hence, it seems that self-efficacy has direct effects on activity and no indirect effects via intention. Lastly, the inclusion of $E_{s-o} \times V$ in the regression of activity on the endogenous variables of the model did not add predictive value to the equation.

Discussion

This research contributes new data in favor of the relationship between perceived control and the degree of participation in social activities among institutionalized older people. Many empirical studies have shown that this kind of participation contributes to their physical and mental well-being (Lai & McDonald, 1995; Menec & Chipperfield, 1997; Yamada, 2000). More important, this research shows that not all types of perceived control affect behavior equally, thus having implications for possible mediation.

The results obtained are contrary to a motivational mediation between perceived control and activity. Motivation does not seem to have any effect on activity, either direct or mediated by intention. The variability in activity cannot be explained by the differences in motivation towards the activity. That is, the greater or lesser interest shown by the older individuals towards the activities in question did not prove to be a good predictor of their involvement in these activities.

According to the predictions of the model, motivation depends in turn on the $E_{a-o} \times V$ products and also on the $E_{s-o} \times V$ products, about which we had no clear prediction, although in the second case, the relation was negative. Therefore, the definition of loss of perceived control that affects motivation (low E_{a-o}) does not seem to have any consequences on behavior. All of this is contrary to the assumed sequence of perceived loss of control → motivational deficit → performance deficit.

However, the results are in accordance with a volitional mediation between perceived control and activity. Self-efficacy, as the estimated capacity for carrying out the activities under consideration, proved to be a good predictor of involvement in these activities. It is a direct effect, not mediated by intention. This means that the activities in question are not under total volitional control. The performance of the activities depends not so much on intention as on limitations that are beyond the individual's control. These limitations, as we shall discuss shortly, are reflected in the beliefs underlying self-efficacy (i.e., in the E_{eff}). Furthermore, it is reasonable to assume that perceptions of efficacy correspond more or less accurately to the real efficacy that the older person has in this situation. After all, these were daily activities about which the older people had precise knowledge and could therefore estimate their degree of efficacy with a fair degree of accuracy.

Self-efficacy in turn depends on the E_{eff}, according to the prediction of the model. On the other hand, self-efficacy has no relation with the $E_{s-o} \times V$ products. Therefore, loss of perceived control, understood as low E_{eff}, did seem to affect activity. These expectancies mainly revolve around one's physical limitations (e.g., illness, sensory loss, etc.) and emotional upsets (e.g., grief over the loss of a loved

Table 5
Hierarchical Regression Analysis Predicting Activity with E_{eff}, Motivation, Intention, and $E_{s-o} \times V$

Step and Predictor Variable	*B*	*SE*	β	R^2	ΔR^2
Step 1					
Self-efficacy	0.27	0.13	.30*	.08*	.08*
Motivation	0.06	0.20	.04		
Intention	0.11	0.10	.17	.17*	.17*
Step 2					
Self-efficacy	0.30	0.13	.33*		
Motivation	0.11	0.19	.01		
Intention	0.07	0.10	.11		
$E_{s-o} \times V$	−0.03	0.01	−.24	.22*	.05

Note. E_{s-o} = Situation-outcome expectancies; V = value.
*$p < .05$.

one). In other words, older people worry about things that are beyond their control, as other researchers have pointed out (e.g., Nurmi et al., 1992). The present study furthermore shows that this concern may have negative effects on behavior, as it reduces older people's belief in their own capacities. Such effects are especially notable because they become generalized to activities that are unrelated to the areas, resulting in a loss of volitional control over apparently simple activities.

An interesting result from this research was the lack of association between the intention of carrying out activities and their actual performance. Thus, although motivation and self-efficacy both contribute to forming an intention, only self-efficacy contributes to the action itself. That is, whether or not the intention formed is translated into a manifest activity seems to depend on the older people's confidence in their own capacities and not on motivation or interest in the activity.

Based on the criterion of the proportion of accounted-for variance, the best defined relation is that found between the three most global constructs: motivation, self-efficacy, and intention. The first two account for about 40% of the variance in the intention to participate. However, we obtained more modest percentages in the remaining relevant relations of the model. On the one hand, only 21% of the variability in motivation and 24% of the variability in self-efficacy are accounted for by a set of more specific beliefs about participation. On the other hand, only 22% of the variance in activity is accounted for by the variables of the model. This percentage drops to 16% if we only consider the two variables with the highest predictive power for activity: E_{eff} and self-efficacy. Doubtless, a larger number of participants and more refined assessment instruments would have increased the precision of the proportions of accounted-for variance. Nevertheless, we believe that the model's elegance, with a reduced number of variables, must forfeit some accounted-for variance, especially when the model is applied to such complex behavior.

It can be concluded from the present study that motivating older people towards social activities is not a very useful way to get them involved. On the contrary, it is clear that interventions aimed at making the most of older people's abilities are more useful.

When human factors are analyzed, a similar conclusion is drawn. In this sense, Czaja (1997) pointed out that the difficulty that older people have in functioning effectively in a residential environment might be related to the disparity between the environmental demands and their ability to meet those demands. Such a disparity could increase in institutional environments. At least, the level of activity in general and of participation in social behavior in particular observed in institutional environments is less than in noninstitutional environments. (Madigan et al.,1996).

Skinner (1996) expressed regret that expectancies of efficacy and of action-outcome were rarely measured in the same research work. From the point of view of intervention, she argued, it is fundamental to take into account the way that both aspects affect behavior. Only then can the implications for a correct intervention aimed at optimizing control be drawn. In this sense, the data from our study suggest that intervention should be aimed at affecting beliefs related to self-efficacy and not so much at beliefs related to the contingency between behavior and its results.

The same thing can be said of the $E_{s\text{-}o}$s. These are rarely studied simultaneously with the $E_{a\text{-}o}$s (or with the E_{eff}s), and hence, very little is known about them. In the present study, into which they were introduced for exploratory purposes, they had no effect either on behavior or on self-efficacy, although they did show an effect on motivation. Another consideration is the joint effect of both types of expectancies, although this was not analyzed in the present study. Indeed, separately, low $E_{a\text{-}o}$s or high $E_{s\text{-}o}$s both imply a lack of perceived control and low motivation. However, taken together (low $E_{a\text{-}o}$s and high $E_{s\text{-}o}$s), they form a type of passive control whose relation with behavior (and even with motivation) may be different from the mere lack of contingency (i.e., low $E_{a\text{-}o}$s). What effects could the belief that "it is easier to obtain what I want by not acting rather than by acting" have on behavior?

There has been some controversy over whether such passive control is beneficial for older people. Baltes and Wahl (1992) identified a type of passive control that is very frequent in institutional environments: that established between the older person's dependent behavior and the staff's social attention and support. Dependent behavior could help the older individual to build a more manageable and predictable social/affective environment. In contrast, however, this behavior could, in the long run, favor decline as the skills that the older person still has fall into disuse. In this sense, one of the factors limiting the benefits of passive forms of control may be the older person's own level of confidence (Baltes & Wahl, 1992; Parmelee & Lawton, 1990).

Beyond the implications for intervention, the results of this research have theoretical relevance. In the first place, they have implications for a differential conception of efficacy and $E_{a\text{-}o}$s. In an educational context, it has been pointed out that both $E_{a\text{-}o}$s and E_{eff}s affect the choice between alternatives, but E_{eff}s also affect the individual's effort and willingness to persist in the face of difficulties (Pintrich & Schunk, 1996). The results of the present research corroborate this differentiation in a completely different sphere from the educational one. Both types of expectancies affected willingness to behave in a certain way, but only high E_{eff}s determined whether this behavior, which required some effort on the part of the person, was carried out.

Secondly, the results of this research have implications for $E_{s\text{-}o}$s (Heckhausen, 1977). These affected motivation negatively, but had no effect on self-efficacy. That is, the belief that they can obtain valued results without having to do anything seems to de-motivate persons but does not seem

to affect their belief in their capacity to behave as required. Thus, this type of expectancy had no effects on types of behavior that required some competence on the part of the person. However, and given the scarcity of research on this type of expectancy, several considerations might be taken into account for future studies. On the one hand, it is possible that the relation between $E_{s\text{-}o}$s and E_{eff}s is not one of all-or-none, but rather a gradual relation, according to the older person's current degree of dependence on the staff or on other people. Alternatively, $E_{s\text{-}o}$s may be related to agent-end beliefs when the causal agent of the result does not refer to the self but to other persons. On the other hand, it is possible that the relation between $E_{s\text{-}o}$s and activity may depend on the type of activity considered.

Thirdly, the results of this research provide support for a general theoretical model whose sphere of application is not limited to the type of behavior studied here. The model, which takes into account three beliefs related to control and two possible mediational paths, could be used to study other types of behavior and in different contexts. Thus, for example, the variables of the model could function in a different way from the way they functioned here with types of behavior that are under volitional control. In this sense, it would be interesting to analyze the role of motivation and its antecedents ($E_{a\text{-}o}$s and $E_{s\text{-}o}$s) in that type of behavior.

Summing up, the loss of perceived control seems to affect activity-passivity, but this occurs when the loss of control occurs as a consequence of low self-efficacy expectancies, which produce low self-efficacy. In contrast, the loss of control caused by low $E_{a\text{-}o}$s and high $E_{s\text{-}o}$s, which produce low motivation, does not seem to affect passivity. This pattern of results eliminates the assumed motivational mediation of the effects of perceived control on passivity, supporting instead a volitional mediation between control and passivity.

In all, these conclusions are provisional in that they do not eliminate alternative interpretations of the data. First, it is possible that some of the variables of the model did not appear to affect activity because of the way in which the variable was measured. It is likely that the staff, when estimating the degree of the older person's involvement in the activities studied, would be considering relatively long periods of time and not necessarily the interval immediately following questionnaire response. Therefore, in order to eliminate this possibility, new data should be obtained in which the expressions of beliefs were unequivocally prior in time to the activity studied.

Second, the habitual mistrust of institutionalized older people may have affected their responses to the questionnaire. However, given that the items referred to noncompromising issues (beliefs about daily behavior), this is unlikely.

Lastly, a clarification is in order regarding the role of motivation that we have outlined above. In this research we refer exclusively to extrinsic motivation, that is, motivation caused by the outcome that a person hopes to achieve. This kind of motivation has no incidence on the behavior measured. However, there is another form of motivation, intrinsic motivation (Deci & Ryan, 1985), whose role has not been explored in this study. Intrinsic motivation depends on the degree of self-determination, competence, and challenge that an activity arouses in the person. Some studies have, in fact, shown that the intrinsic motivation felt by older people in leisure activities contributes to psychological welfare (Caltabiano, 1995; Iso-Ahola & Park, 1996) and to life satisfaction (Guinn, 1999). Thus, planning intervention strategies aimed at inducing intrinsically motivated participation opens up interesting alternative paths other than those considered here. It would be a matter of generating activities to produce feelings of autonomy and competence in older people while, at the same time, comprising a challenge.

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