

Interpersonal Skills, Intelligence, and Personality in Older People

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ABSTRACT

This study presents the results of the assessment of interpersonal skills (IS) in the aged (search for alternatives, identification of feelings, predicting consequences, causal attribution, and segmentation), and their relationships with other personality and intelligence factors (work motivation, locus of control, and g factor). The stability of all the assessed factors is also analysed. A training program was implemented to increase IS. A quantitative analysis clearly shows the improvement experienced by the 34 older people (low in IS) whose performance after training reached the level of 68 older people who were considered normal. The qualitative analysis highlights a temporal consideration of responses given to two items of IS: causal attribution and predicting consequences. The theoretical, methodological, and procedural aspects are based on the general personality model developed by Pelechano in Spain, including a model of multiple intelligences.

Keywords: older, interpersonal skills, work motivation, locus of control, stability, training programs

RESUMEN

Se presentan los resultados obtenidos tras la evaluación de las habilidades interpersonales (HI) en la población de ancianos (búsqueda de alternativas, asunción de perspectivas, delimitación de consecuencias, atribución causal y segmentalización), y sus relaciones con otros factores de personalidad e inteligencia (motivación de rendimiento, locus de control y el factor g). Se analizó también la estabilidad de todos los factores evaluados. Además se puso en práctica un programa de entrenamiento con el objetivo de promover las HI. Los análisis cuantitativos muestran con claridad que los 34 ancianos (bajos en HI) entrenados, mejoraron sus puntuaciones hasta el punto de no presentar diferencias significativas con el grupo control formado por 68 ancianos cuyas puntuaciones eran consideradas normales. Los análisis cualitativos respecto a una consideración temporal de las respuestas apareció en dos tipos de HI: atribución causal y delimitación de consecuencias. Los aspectos teóricos, metodológicos y procedimentales están basados en el modelo general de personalidad desarrollado por Pelechano en España que además incluye un modelo múltiple de inteligencias.

Palabras clave: habilidades interpersonales, motivación de rendimiento, locus de control, estabilidad, programas de entrenamiento

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There are two main approaches to the study of social intelligence in psychology of processes. The first one, the isoprocedural tradition, considers that those processes involved in the solution of abstract problems are the same as those involved in the solution of interpersonal situations. Sternberg's triarchic theory of human intelligence (Sternberg, 1985, 1986a, 1986b, 1990) is an example of this approach. Social intelligence is the implicit knowledge of relationships among three basic tenets: the individual's internal world, experience, and external world. Sternberg states that tacit knowledge is associated with occupational performance and it is defined as knowledge about managing oneself, managing others, and managing a career. Eysenck (1987) considered that Sternberg (1985) was using the "intelligence b" concept, which Eysenck named social intelligence. When Eysenck defined intelligence in terms of social adjustment, he was using the concept of social intelligence, largely dependent on biological intelligence, but also introducing variables that had little or nothing to do with intelligence as it was normally understood in 1987. Some of these variables, finally incorporated into his model (Eysenck, 1988) are personality, education, coping strategies, cultural factors, nutrition, health, and so on. Therefore, social intelligence is IQ transferred to the social world, influenced by the environment, biological bases, and personality features, but without qualitative differences between them, and part of social intelligence is creativity and genius (Eysenck, 1995). A third isoprocedural model is presented by two personality psychologists, Cantor and Kihlstrom (1987), who combined motivational and cognitive perspectives on personality to analyze social intelligence. Their interest focuses on the pragmatics of intelligence, that is, strategies for handling life tasks.

The second approach is an heteroprocedural point of view. The researchers defend the existence of qualitative differences between processes required for abstract problem-solving and for interpersonal problem-solving. Spivack's group (Spivack, Platt, & Shure, 1976) has been working on social skills as social intelligence for the last twenty years or so. This author, using a rational analysis, studied the strategies and tactics that people use in interpersonal problem-solving. These strategies and tactics are cognitive abilities, but a person does not use them to solve abstract problems.

An alternative theory (an integrative model) is presented by Gardner (1993a), who proposed an intelligence model which was nonhierarchical and made up of seven independent types of intelligence: linguistic, logical-mathematical, musical, spatial, bodily-kinesthetic, and intra-personal and inter-personal intelligences. The model, based on rational analysis, calls on biological and social aspects to explain why the different dimensions appear and are maintained.

Another alternative corresponds to the work developed by Pelechano (1991a, 1994, 1996b) in Spain. This author's model, although complex, is similar to Gardner's position regarding the tradition of multiple intelligences (although with hierarchies in groups of intelligences, depending on social-cultural contexts). Pelechano also posits the existence of different processes for solving interpersonal problems as against nonpersonal problems. However, Pelechano's model places more emphasis on the role of learning processes in problem-solving than does Gardner's (1993a). It accounts for his insistence on social intelligence in such important issues as the social-cultural context, comprehension of human history, and popular beliefs about intelligence and

wisdom (i.e., sayings).

Within Pelechano's basic model, three general types of intelligence can be distinguished: linguistic, mechanic, and social. Social intelligence is made up of a social-institutional intelligence (economic, political, and historical intelligences) and a social-personal intelligence that consists of some coping skills and styles, interpersonal skills (IS), and interpersonal wisdom. The IS would be more similar to interpersonal competence (with dimensions such as wisdom, trustworthiness, empathy, assuming different perspectives to a problem) than to social competence (social success, social acknowledgement, and economic gain). We have defined IS as various cognitive skills that a person uses to solve interpersonal problems in pair and micro-group situations (Pelechano, 1994). Empathy, solidarity, honesty, tolerance, discretion, and collaboration are perhaps the most relevant attributes by which others perceive a skilled person as having moral and ethical authority. The first operationalization was based on Spivack's work. Five scales were elaborated to assess the five rational factors (means-ends thinking, alternative thinking, causal thinking, consequential thinking, and perception of feelings), using relevant interpersonal situations for each stage of the life-span. We created fifteen situations corresponding to each rational construct for use with older individuals. Using factor analysis for each one (in a sample of 124 aged people ranging from 57 to 94 years old), five factors were extracted, eliminating the items that did not load in the factor (Pelechano, 1991b). The reliability coefficients were acceptable (see below).

The parameter model of Pelechano comprises the following systems: temperament, motivation, competence-intelligence, attitudes, beliefs, and self-systems. The relationships among those personal functioning areas are not always interdependent or lineal (Pelechano, 1996), nor are they found in a specific development stage.

Referring to intelligence and personality, Brody (1992) reported agreement about lack of relationship between academic intelligence, as assessed by IQ tests, and social intelligence, considered as the ability to function intelligently in everyday life. Epstein and Meier (1989) created the Constructive Thinking Inventory (CTI) to assess dimensions of thought related to the effectiveness of the ability to control one's emotional life and to cope with problems of living. They found that scores for university students in the CTI were unrelated to intelligence as IQ. Intelligence assessed by the CTI was a better predictor of life success than IQ, whereas IQ was more predictive of academic achievement than CTI scores.

From the viewpoint of the multiple intelligence model, functional differences between general intelligence (measured by Raven or other similar tests) and IS factors (theoretically belonging to sociopersonal intelligence) may be observed. Results referring to prior developmental stages (children in compulsory education, pupils between 12 and 14 years of age, and adults) have shown that either there are no statistically significant correlations between the series of variables, nor the correlation is greater than 14% of the common variance. When Pelechano used a multifactor intelligence test (PMA by Thurstone) in samples of adolescents in order to test Cronbach's hypothesis, proposed some decades ago, about intelligence and IS ("IS are really subfactors of verbal fluency"), coefficients of a similar magnitude were found between fluency and IS, and between fluency and the verbal reasoning factor from the PMA ($r = .40$, $n = 190$; Joly, 1988).

This means that IS share no more than 16% of common variance with verbal fluency and verbal reasoning. IS should be differentiated from verbal fluency and verbal reasoning and general intelligence, at least in adolescents. In this work, IS and their relationship with general intelligence in the aged are considered. I attempted to contrast some of the results found in other developmental phases, knowing that the level of intelligence efficiency is less in the aged, which could lead to a greater indifference. Primary educational level and also the score criteria for the interpersonal tests may now be more refined than previously.

Based on the nucleus of this multiple-intelligence model, the following hypotheses are posited:

- (1) General intelligence as measured by usual tests (such as Raven) can be distinguished from IS as measured with paper-and-pencil tests.

Brody (1992) proposed four types of relationships between personality and intelligence: (a) personality as a moderator of relationships between academic performance and intelligence; (b) personality as an influential factor in the development of intellectual skills; (c) personality as a codeterminant of performance on an intellectual test; and (d) personality and intelligence as personality traits. However, all the relationships refer to IQ, not to social intelligence. There are few studies of personality traits and their relationships with intelligent social functioning. Conceptualizing social intelligence as expertise, Carver and Scheier (1994) found that motivation and anxiety were related to behavior in social situations, for example, debilitating with hopelessness, or immobilizing with anxiety. D'Zurilla and Goldfried (1971) argued that anxiety could impede successful problem solving in social situations. And Miller and Cantor (1982) evaluated the utility of expertise in terms of its motivating value. From a constructional point of view, Cantor and Kihlstrom (1987) attempted to analyze the relation between personality characteristics and the contexts that people construct and the ways their expertise is intelligent/functional or dysfunctional. In older people, there is no information on this topic. The second hypothesis attempts to throw some light on this matter.

- (2) The relations between IS and motivational factors (involving achievement and locus of control) are significant, but these psychological nuclei can also be distinguished in the aged.

After 15 years of work on this model, this research group has developed successful assessment instruments and intervention programs in various populations such as schoolchildren with social withdrawal, aggressive behaviors, or social anxiety problems (Pelechano, 1987, 1988), women prison inmates (Beleña, 1993), attitudinal changes towards the normalization of blind children (Pelechano, García & Hernández, 1994), personality and family problems in chronic patients suffering terminal kidney disease, diabetes, or cancer (Pelechano & Hernández, 1996; Pelechano & de Miguel, 1994; Pelechano, Matud & de Miguel, 1993). These outcomes justify the third hypothesis.

- (3) Training in interpersonal problem-solving procedures causes changes in IS, and also in the structure of the relations between the above-mentioned domains. The changes will show progressive independence of the meaningful psychological domains.

To extend the scope of this work, we present some of the main results obtained in older people. Partial results both for the psychometric properties of the assessment instruments (Pelechano, 1991b; Pelechano & de Miguel, 1991) and the broad quantitative effects of training programs on IS (de Miguel, 1999; Pelechano & de Miguel, 1994) have been published elsewhere. In this article are included (a) the correlational analyses among IS and some motivational factors, and *g* factor; (b) the main results of training programs applied to older people and in order to increase their IS; and (c) an alternative-qualitative-temporal code to analyze the answers.

From the rational viewpoint, the last point is based on the statement by Immanuel Kant that the time parameter is a basic element for organizing the psychological world (one of the two *a priori* forms of sensitivity). From the viewpoint of empirical support, in the three batteries developed for compulsory education (5-14 years) in Spain, Pelechano's group has found, for each dimension, separate factors for proximal and distal response categories (García, 1995; González, 1993; Hernández, 1995). This leads to a fourth hypothesis.

- (4) Temporal consideration of responses corresponding to a dimension/construct of IS is as functionally important as the content of the dimension/construct, so that cause attribution and prediction of consequences (according to the data from children, young people, and female adult delinquents) belong to different empirical factors, as a function of a proximal or distal time interval rather than being due to causal or consequential issues.

A fifth hypothesis was posited concerning the issue of stability in personality factors and their differential change potential. Since 1968, the search for "basic" elements in personality functioning has become a main concern in personality research, with much controversy about the "Big Five" and alternative models in the description of personality structure, and the results are conclusive only for the researchers of each school (Cattell, 1990; Costa & McCrae, 1992; Eysenck, 1991, 1992; Goldberg, 1990; Guilford, 1975; McCrae, 1989; Royce & Powell, 1983; Tellegen, 1985; Zuckerman, 1992; Zuckerman, Kuhlman, Joireman, Teta, & Kraft, 1993). A number of criteria have been proposed (Eysenck, 1991) but an important criterion has not been considered: "resistance" to change. Pelechano (1986) proposed a continuum in stability, its end points being traits and states, and not a dichotomy between them. This continuum, named "consolidation-generalization" considers at least three consolidation levels. The first one is similar to basic dimensions, has a high test-retest coefficient, is difficult to change, and is practically independent of situational features. The second one is an intermediate level, with intermediate test-retest coefficients, and

in which dimensions are contextualized in work, academic, social, and family settings. The last one, named “situational reactivity,” is similar to the traditional conceptualization of state, very dependent on situational features, and with high test-retest coefficients in similar conditions and low test-retest coefficients when conditions are different. This consolidation continuum can be superimposed on the resistance to change continuum. Thus, basic factors reveal high resistance to change, contextualized factors have an intermediate level of resistance to change, and situational reactivity factors have low resistance to change.

In order to confirm this notion, designs are required using more than one group, more than one consolidation level, and with several assessments on different occasions. For example, one group could be treated after routine activities; another could be treated to change specific variables. The present study was developed according to these conditions: no treatment was applied to the control group (no intervention was oriented to modify the IS scores). In older people, the results of temporal stability (2, 4, and 6 months) could be understood as “natural fluctuations” in these dimensions in the time periods. Temporal coefficients corresponding to the experimental group could be interpreted as fluctuations in stability in the case of intervention specifically focused on modifying IS. Accordingly, the last hypothesis is as follows.

- (5) Not all IS measured are at the same consolidation level; that is, some dimensions are at an intermediate-contextualized level and others at an situational level and so, the latter can be changed more easily.

METHOD

Participants

The total group comprised 102 older individuals divided into two subgroups. The control group was made up of 68 individuals between 58 and 85 years old (mode interval 60-64 years, mean age= 68.66, SD= 9.39). There were 42 women (38.29%) and 26 men (61.71%); 18% were single, 38% were married, 40% were divorced, and 4% were widowed. A little more than 50% had been unskilled workers during their professional life (before 65 years old) and 75% received some economic aid. 42.64% of them were taking medication (for headaches, rheumatism, arthritis, diabetes, hypertension, cancer; mean *medication ingestion*= .43, SD= .50) and 20% lived in special nurse homes. The experimental group was made up of 34 participants with the same interval of chronological age although the mode-interval was between 80-85 years (mean age= 75.12, SD= 10.45). One in five was male and almost all of them had been unskilled workers or housewives. 82.35% received some economic aid (state or private retirement schemes). More than 90% were single or divorced. The place of residence was usually nurse homes (80%). 82.35% took some medication (mean *medication ingestion*= .83, SD= .39). According to these descriptors, the control group was not as old ($t = -3.15$, $p = .002$) and was

healthier (taking medication: $t = -4.07$, $p = .0001$) than the experimental group. The control group was also obtained superior scores in psychological factors (see below). Our goal was to aid the experimental group, enhancing psychological changes that would bring this group to the level of the control group.

Instruments and Scoring

The assessment instruments were administered individually and in various sessions with an interview format, usually in the nurse home. Motivational factors and cognitive functioning were measured.

Motivational Factors. Two questionnaires were used to measure motivational factors: the LUCAN questionnaire and the MAEAN questionnaire. The LUCAN questionnaire (Pelechano & de Miguel, 1991) was used to measure locus of control in older people. Three factors were obtained by factor analysis (using principal factors and varimax rotation; SPSS 9.0):

1. *"Today-ism" and mistrust.* This factor had 21 items ($\alpha = .85$). Examples of the items are: "You have to live for today as if tomorrow does not exist – and that is how I normally lead my life," "When thinking about the failure of many people in our society, I would say the blame lies with only on a few who pull the strings," and "If I have to do some work I do not like having to do it through necessity -whether it comes out well or badly depends on the circumstances and not on me."
2. *Lack of perseverance in goal-attainment and external-generalized control in decision-making.* This factor had 24 items ($\alpha = .8$). For example: "When I have tried my best at doing some work and obstacles have begun to appear, I have quickly stopped doing it," "When something does not turn out well, I become demoralized easily because things have almost always turned out badly," and "Normally, when through necessity I have to choose between two alternatives, I usually toss a coin instead of considering which may have better consequences in the future."
3. *Self-exoneration in failures and self-attribution in success.* This factor had 12 items ($\alpha = .70$). Examples are: "The misfortunes and success I have had throughout my life are the direct result of my own actions," "The surest way to achieve professional success is to work hard and to have a clear idea about what one wants to do." Participants responded on a 4-point Likert type formatted scale: 0 (*never*), 1 (*sometimes*), 2 (*frequently*), and 3 (*always*).

The MAEAN questionnaire (Pelechano & de Miguel, 1991) is a measure of anxiety and achievement for older adults (with 43 items and yes/no alternatives). Under the general name of motivation towards work and action, three factors (obtained by factor analysis using principal factors and varimax rotation, SPSS 9.0) were identified:

1. *Withdrawal reaction in stress situations.* This factor has 17 items ($\alpha = .86$). Examples are: "After a test or having faced a problematic decision on an important issue, I am under stress until I get to know the outcome," "I often abandon my plans because I have not enough self-confidence to put them into practice," and "One of my main difficulties is the anxiety I feel when faced with a difficult situation."
2. *Arousal reaction in stress situations and "workaholism."* This factor has 17 items ($\alpha = .81$). Some items were: "A feeling of tension before a test or difficult situation helps me to be more prepared," "Slight feelings of anxiety speed up my thought processes," and "Even without receiving the adequate remuneration for my work, I am quite prepared to work."
3. *Ambition as self-image but indifference to work.* This factor had 11 items ($\alpha = .70$). For example: "I believe I am quite ambitious," "I sometimes happily put things aside to enjoy myself," and "I happily stop whatever I'm doing if the opportunity arises".

For measuring *cognitive functioning* we used the Raven test on general intelligence (general scale) (Raven, 1956) and a battery of IS for older people with five independent scales (as a result of previous independent factor analysis for each one, Pelechano, 1991b; Pelechano, de Miguel & Peñate, 1991). These scales were (all include an appropriate set of social situations for older people):

1. *Search for alternatives.* This scale presented 15 situations ($\alpha = .89$). For example, "Ferdinand has decided to go and live in a guest-house. There, he must share a room with another older person. Ferdinand is going to try to be his friend. What could Ferdinand do to get on well with his roommate?" Or "Charles was walking along the street and saw a child of about 5 who was crying. He went up to the child and asked why he was crying. The child told him that he was lost. What could Charles do to cheer up the child? What could Charles do so that the child could find his mother?"
2. *Identification of other's feelings.* This scale presented 11 situations ($\alpha = .83$) that assessed cognitive empathy. For example: "Henry invited an old work colleague at home for lunch. While Henry's wife was clearing the table, she stumbled over the rug and spilt a glass of wine over Henry's friend, staining his clothes. How do you think Henry did feel? How do you think Henry's wife did feel? How do you think Henry's friend did feel?" Another situation was: "One day, while Bob was watching TV at home, his grandchild appeared on TV together with other young children from the town. His wife was out shopping and could not see her grandchild on TV. How do you think Bob did feel? How do you think Bob's wife did feel when he told her he had seen their grandchild on TV?"
3. *Segmentation.* This scale had 11 problem-situations ($\alpha = .81$). Some examples are: "Beginning of story: One day, Mr. and Mrs. O'Hara visited their neighbors to have a chat. While they were talking, there was a power cut and the

room went dark. Mr./Mrs. O'Hara had always been frightened of the dark and started to shout. End of story: Mr/Mrs O'Hara is calm. Question: How did the others manage to calm Mr/Mrs O'Hara down?" "Beginning of the story: Imagine you belong to a club for older people in your town. Peter and Louis (or Mary and Adele) are always arguing. You want them to get on well. End of story: Peter and Louis (or Mary and Adele) are playing whist in a very friendly fashion. Question: How did you get Louis and Peter (or Mary and Adele) to be friends?"

4. *Cause attribution*. This scale had 10 items ($\alpha = .85$). Two examples are: "Lillian works as domestic help who has now reached retirement age. However, Lillian does not want to retire. Why do you think Lillian does not want to retire?" or "Rebecca's granddaughter is 20 years old and always gets back at dawn when she goes out with her friends. Rebecca does not like her granddaughter doing this. Why do you think Rebecca does not like her granddaughter to arrive home late?"
5. *Predicting consequences* was assessed by 14 items ($\alpha = .84$). For example: "Susanne's youngest son is 29 years old and is going to get married. But Susanne doesn't get on with her future daughter-in-law, and two days before the wedding, she tells her son that she isn't going to the ceremony, that that woman is not the right one for him, and that he could do better for himself. What will happen after this?" or "Mr. and Mrs. Phelan's neighbors are two teenagers. These boys (or girls) usually play their music very loud and bother all the families in the building. One day, Mr. Phelan calls them to order. What will happen after this?"

For this study the responses to the IS battery were coded in two ways: the first one was quantitative (relevant/plausible and nonaggressive responses to each question on all items were added to make up one score for each scale α for more specifications, see Pelechano, 1991b); and the second one was according to a system of categories such as time dimension (distal/proximal), and type of response (relevant/non-relevant/aggressive) on a total of 38 categories for the analysis of the data from the IS scales. Two expert judges corrected the IS battery according to this qualitative code, and the between-rater agreement was 98%. The responses to tests were scored according to a simple code.

Procedure and Design

A multivariate correlational design with repeated measures and two groups (control and experimental) was employed. The participants filled in all the cognitive and motivational instruments three times: pretest (before training), posttest (after two months), and at a 4-month follow-up. Between pretest and follow-up, some participants dropped out (only 14 out of the original 34 from the experimental group, and 19 out of the original 68 from the control group were assessed at follow-up). There are several explanations for this high dropout rate: death, being ill during the re-test or follow-up,

Table 1. Control and Experimental Group Correlations between the Interpersonal Skills (IS) Factors and the g Factor at the Three Time Intervals

IS Factors	Control Group			Experimental Group		
	Pretest (n=67)	Posttest (n=40)	Follow-up (n=19)	Pretest (n=31)	Posttest (n=31)	Follow-up (n=14)
Segmentation	.35**	.35*	.21	.31	.43*	.78***
Identification of others' feelings	.01	.28	.10	.21	.25	.55*
Cause attribution	.01	.33*	-.07	.29	.56***	.76**
Predicting consequences	.32**	.24	.07	.26	.27	.62*
Search for alternatives	.37**	.39*	.06	.39	.50**	.71**
Total IS Score	.14	.34*	.07	.34	.45**	.73**

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

and changing residence. In order to ensure the similarity of the groups into the three measurements, we calculated ANOVAs for test measurements among three subgroups for the control group, and among two subgroups for the experimental group, according to their level of participation. The results showed that only one of the 12 F s was significant for the experimental group and none for the control group (see Appendix). Therefore, we used data from all available participants in each measure.

The experimental group participated in a training program aimed at increasing IS (de Miguel, 1990; de Miguel & Pelechano, 1996; Pelechano & de Miguel, 1996). Two therapists applied the program during 21 forty-minute sessions, three times a week, and to groups of 2-4 individuals in the residence or old people's home. During these two months, therapists maintained no contact with individuals from the control group.

RESULTS

The results are shown referring to the above-mentioned hypotheses. Because the number of participants was not the same in both groups and also because of the high dropout rate, correlational data and multivariate analyses should be interpreted from both statistical and clinical points of view.

General intelligence and interpersonal skills

Six IS scores (one for each scale and another for the total battery) and one g factor score were calculated. According to the Raven test, at the first measurement, the control group was more intelligent ($M= 25.48$, $SD= 11.29$) than the experimental group

($M = 15.65$, $SD = 8.39$), and this difference was significant, $t = 4.32$, $p < .001$. Analysis of the relationship of the IS scores and g factor on the three occasions (pretest, posttest, and at 4-month follow-up) was carried out. Table 1 shows the Pearson coefficients of these analyses.

At pretest, the correlation between the g factor and the total IS score was near zero (.14) for the control group ($n = 67$), and for the experimental group ($n = 31$), although somewhat higher, it was nonsignificant ($r = .34$). This indicates that the relationship between these variables (general-academic intelligence and IS) accounts for about 7% of common variance (between 2 and 11.56% according to the samples), and consequently the variables are related although these relations point to a differentiation between the variables (more than 80% of specific variance).

The g factor score for both groups did not change across the three measures. The repeated measures ANOVA, with one dependent variable (g factor), time as Factor 1 (with three levels: pre- and posttest and follow-up) and group as Factor 2 (with two levels: experimental and control) revealed a nonsignificant Time x Group interaction $F(2, 30) = 0.58$, $p = .57$.

Table 2. Pretest Correlations between Interpersonal Skills (IS) and Motivation towards Action/Locus of Control in Total Group

	Interpersonal Skills				
	Search for alternatives	Identification of others' feelings	Cause attribution	Segmentation	Predicting consequences
<i>Motivation towards Work & Action (n = 99)</i>					
Withdrawal reaction in stress situations	-.18	.05	-.02	-.08	-.06
Arousal reaction in stress situations and "workaholism"	-.03	.11	.10	.08	.05
Ambition as self-image but indifference towards work	-.36***	-.09	-.08	-.22*	-.23*
<i>Locus of Control (n = 102)</i>					
Today-ism and mistrust	-.28**	.03	-.01	-.33***	-.38***
Lack of perseverance in goal-attainment and external-generalized control in decision-making	-.27**	.04	-.01	-.20*	-.13
Self-exoneration in failures and effort in success	.05	.09	.06	.05	.02

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

Table 1 also shows the correlation coefficients between the five IS subscales and the Raven test. In the control group, there were statistically significant pretest correlations (ranging from .32 to .37, $p < .01$) between g factor and three IS scores (segmentation, predicting consequences, and search for alternatives), but no correlation with identification of others' feelings or with cause attribution ($r = .01$). In contrast, in the experimental group, there were medium pretest correlations between g factor and all IS scores (ranging

from .21 to .39) but none of them was statistically significant.

The evolution of correlations across the time interval for both groups is also different. The tendency for the control group in all dimensions seems clear: At the second measurement, all coefficients were higher, including that with the total IS score, and four were statistically significant. However, at the 4-month follow-up, there was no relation between both groups of intelligence factors (*g* factor and social intelligence). In the experimental group, the tendency was the opposite (also for the total IS score). Relationships were higher and statistically significant, and at follow-up, the total IS score accounted for 53% of variance in the *g* factor. Tentatively, it appears that participation in IS training programs increased the relationship between the cognitive processes involved in general-academic intelligence and in socio-personal intelligence processes (these results refer to a group with low general intelligence scores). These results also suggest that the relation between sociopersonal intelligence and general intelligence disappears unless individuals participate in training programs for improving IS.

Interpersonal skills and motivation

Two motivational domains were sampled: (a) that involved in locus of control of interpersonal relationships, and (b) that involved in motivational factors related to work. Table 2 shows the correlations between IS and these motivational domains for

Table 3. Means, Standard Deviations (in Brackets), and Outcomes of MANOVAs between Control and Experimental Groups at Pretest, Posttest, and Follow-up in Motivation towards work and Locus of Control

	Pretest		Posttest		Follow-up	
	Control	Experimental	Control	Experimental	Control	Experimental
<i>Motivation towards Work & Action</i>	<i>n</i> = 65	<i>n</i> = 34	<i>n</i> = 41	<i>n</i> = 34	<i>n</i> = 18	<i>n</i> = 14
Withdrawal reaction in stress situations	11.31 (4.49)	12.15 (3.87)	11.10 (3.71)	11.53 (3.87)	12.06 (2.84)	12.07 (2.56)
Arousal reaction in stress situations and "workaholism"	7.14 (3.85)	8.94 (4.38)	6.12 (4.24)	8.35 (3.82)	5.00 (3.27)	9.15 (2.54)
Ambition as self-image but indifference towards work	4.23 (2.54)	4.44 (2.52)	4.44 (2.16)	4.65 (2.37)	5.50 (1.89)	4.93 (1.94)
MANOVA Outcomes	$F(3, 95) = 1.60, p = .146$		$F(3, 71) = 1.92, p = .134$		$F(3, 28) = 5.97, p = .003^a$	
<i>Locus of Control</i>	<i>n</i> = 68	<i>n</i> = 34	<i>n</i> = 41	<i>n</i> = 34	<i>n</i> = 19	<i>n</i> = 14
Today-ism and mistrust	55.24 (11.3)	55.94 (11.0)	53.88 (10.4)	57.59 (10.9)	51.32 (5.85)	56.71 (9.83)
Lack of perseverance in goal-attainment and external-generalized control in decision-making	51.01 (11.9)	52.26 (10.8)	52.49 (11.8)	53.5 (11.05)	54.21 (6.91)	56.14 (10.8)
Self-exoneration in failures and effort in success	34.19(5.91)	32.20(6.82)	32.15(4.99)	32.74 (4.57)	30.63 (4.52)	31.79 (7.93)
MANOVA Outcomes	$F(3, 98) = 1.25, p = .296$		$F(3, 71) = 1.69, p = .177$		$F(3, 29) = 0.99, p = .408$	

Note. ^a Significant difference for arousal reaction in stress situations and work aholism, $F = 15.26, p = .0001$.

the total group because there were no statistically significant differences in the subgroups of participants (control and experimental).

In locus of control, the three factors assessed external locus of control. The results show a clear, statistically significant and negative correlation pattern between two locus of control scores and three IS factors: Today-ism and mistrust, and lack of perseverance and external generalized control both correlated with search for alternatives, with segmentation, and with predicting consequences (correlations ranging from $-.20$ to $-.38$, at least $p < .05$). These results are coherent with the theoretical definition of those dimensions and, at the same time, expand the meaning of IS. The bipolar factor (self-exoneration in failures and self-attribution in success), perhaps because of the bidirectionality of its components, had near-zero coefficients. The magnitude of these coefficients suggests that the relation between IS and internal locus of control is similar

Table 4. Repeated Measures ANOVAs for the Motivation and Locus of Control Factors

	Control Group <i>F</i> (2, 17)	Experimental Group <i>F</i> (2, 12)
<i>Motivation towards Work & Action</i>		
Withdrawal reaction in stress situations	0.47	2.27
Arousal reaction in stress situations and workaholism	0.74	0.52
Ambition as self-image but indifference towards work	1.38	0.82
<i>Locus of Control</i>		
Today-ism and mistrust	1.32	3.82*
Lack of perseverance in goal-attainment and external-generalized control in decision-making	1.46	0.04
Self-exoneration in failures and effort in success	3.57*	0.17

* $p < .05$

to that found previously between IS and general-academic intelligence. Moreover, in the control group, those relations with *g* factor occurred with the same three IS factors (see Table 1).

As locus of control, motivation towards work and action also seems to be a different domain from IS. There were only correlation between the third motivational factor (ambition as self-image but indifference to work) and three IS factors: search for alternatives, segmentation, and predicting consequences ($r = -.33$, $-.22$, and $-.23$, respectively).

From these results, it can be concluded that, although there were statistically significant relations between certain factors of motivation at work and locus of control and IS in older people, these three domains of psychological functioning should be distinguished with clarity in this population, and thus should be studied separately.

In Table 3, between-group MANOVA outcomes are shown for the three intervals (pre- and posttest and at 4-month follow-up). Locus of control and motivation towards work factors were dependent variables. Only one statistically significant difference was

found for the second motivation factor (arousal reaction in stress situations and workaholism) at follow-up. The other five multivariate and 17 univariate tests were not statistically significant. Therefore, both groups are similar in those factors, and this similarity is stable, at least for the 6-month interval during which they were observed.

Another analysis is possible: there were no indirect effects of training on locus of control and motivational factors. Table 4 shows the results from repeated measures ANOVAs for both groups of factors and for both samples. In the experimental group, only one F (today-ism and mistrust), was statistically significant, at the level of $p < .05$, but this must be interpreted as a marginally significant result. Neither did the control group undergo any change in motivation across time (only the F for self-exoneration in failures and effort in success was significant, at $p < .05$).

Functional Specificity and Time Dimensions of Analysis

My fourth hypothesis posited a pattern of functional covariance between categories used for the analysis in each dimension, according to a temporal reference of the responses to the IS battery. Furthermore, I hypothesized greater relations for the temporal categories of analysis between different dimensions than between the temporal categories of analysis within each dimension. In order to contrast this hypothesis in older people, I conducted a new correlational analysis and a new factor analysis (varimax rotation from principal components) with 6 categories: proximal and distal causes (within cause attribution), immediate and distal consequences (within predicting consequences), and immediate and long-term alternatives (within search for alternatives).

1. Cause attribution dimension: (a) the number of proximal causes attributed to the actions (usually, confused with “motives,” “reasons,” or “action-releasers,” i.e., responding to the question about why someone does not visit his/her family, “Because he has not a present to take along”); (b) the number of distal causes of the action, for example, to the question “Why does he/she defend his/her ideas so well”, responding “Because he/she believes in himself/herself”.

2. Predicting consequences dimension: (a) immediate or proximal consequences, i.e., in conflictive situations, the response “They fight”; and (b) distal consequences, i.e., the following response to the question about the consequences of an accident during a trip: “Never go on a trip again.”

3. Search for alternatives dimension: (a) immediate alternative, i.e., “Ask a friend” in response to a question about what to do; and (b) long-term alternative, such as “To get on well together” in response to a question about what to do in a conflictive situation.

Correlational data (total sample, $n = 102$) partially tended to support the hypothesis: The correlational mean for the short-term category of causes-consequences-alternatives was .46 (.76 if causes was eliminated); in long-term categories, the coefficients were .42 (causes), .06 (consequences), and .03 (alternatives).

We believe these results partially confirm the proposed hypothesis. Moreover, we expected to obtain at least three different factors, the first referring to consequences, another to alternatives (long-term), and a third, a mixture in which cause attribution and

Table 5. Factor Loadings for the Time-Categories in Three Interpersonal Skills

Variable	Factor I	Factor II	Factor III	h ²
Proximal causes	.45	---	-.61	.69
Distal causes	.65	---	---	.61
Proximal consequences	.89	---	---	.81
Distal consequences	---	---	.84	.80
Proximal alternatives	.91	---	---	.82
Distal alternatives	---	.89	---	.82
Eigen value	2.36	1.18	1.02	
% Variance accounted for	39.4	19.7	16.9	

Note. Loadings < 0.45 are omitted. $n = 102$ older people.

Factor I = Search for alternatives and consequences; Factor II = Search for long-term alternatives; Factor III = Search for consequences and causes.

short-time alternatives and causes should be also present. The factor solution is shown in Table 5.

Three factors explain 76% of the total variance. The first one is basically a proximal factor, referring to search for alternatives and consequences. In this factor, long-term causal attributions are also present, although with lower loadings (.45). This factor explains nearly 40% of the total variance (39.4%). The second factor is search for long-term alternatives (loading .89) and accounts for 19.7% of the total variance. And the third factor also seems to be a distal factor, referring to consequences (loading .84) and with a negative but significant weight of proximal cause (-.61). An interpretation of this factor may be the prediction of distal consequences, together with a denial of causal attribution. This factor accounts for 16.9% of the total variance.

These results could lead to many hypotheses about the temporal issue in interpersonal problem-solving dimensions and processes: Short-term alternatives and consequences are grouped in one factor. If these dimensions are analysed according to distal interval responses, they split and become two independent factors. Finally, the analysis of the results of cause attribution do not totally confirm the hypothesis because there is an overlapping between both kinds of responses. Although when working with older individuals, the time-dimension of actions may be disturbed, nevertheless, the scarce number of responses and their elliptic style make their classification difficult in one or another time-dimension (although the between-rater agreement was 98%), and this might account for the structural results of the cause attribution.

These results show the need to take into account the time-dimensions of responses in interpersonal problem-solving factors because these time-dimensions are independent. This independence suggests the need to study the functional separation of the behavioral correlates of both time-dimensions in each one of the general dimensions.

Table 6. Group Comparisons of Training Effects on Interpersonal Skills at Pretest, Posttest, and Follow-up

	Pretest	Posttest	Follow-up
MANOVA F^a	2.95** ^b ($df = 5, 96$)	2.06 ($df = 5, 69$)	2.60* ^c ($df = 5, 24$)
	t	t	T
Segmentation	-2.54**	1.31	-0.76
Identification of others' feelings	-2.57**	0.15	0.86
Cause attribution	-2.19*	0.66	0.94
Predicting consequences	-2.44**	1.88	-0.18
Search for alternatives	-4.12***	0.44	-0.26
Total score in interpersonal skills	-3.50***	0.91	0.56

Note. t -test and p values always refer to experimental-control comparisons

^a The five interpersonal skills factors are dependent variables; Group is Factor 1 (2 levels: experimental and control)

^b Significant univariate tests ($p = .01$) for search of alternatives, segmentation, and predicting consequences. Identification of others' feelings and cause attribution were marginally significant ($p = .06$).

^c Significant univariate tests ($p = .05$) for search for alternatives, and segmentation.

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

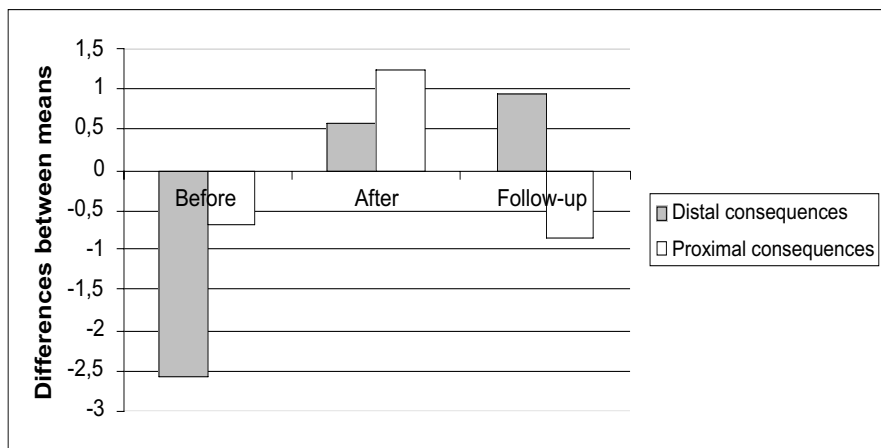


Figure 1. Training effects in predicting consequences in three measurements. Always experimental-control. Negative values (horizontal bars to the left of zero) indicate that the control groups scored higher than the experimental group. Positive values indicate higher scores in the experimental group. * $p < .05$, ** $p < .01$

Direct Effects of the Training Programs on Interpersonal Skills

As mentioned above, the control group scored higher on the positive factors than the experimental group and, thus, a realistic goal was to aid the experimental group in achieving the level of the control group as a consequence of the training program in IS

(the control group was similar to the representative group used in the validation process of the development of this battery, Pelechano, 1991b; Pelechano, de Miguel & Peñate, 1991). In this paper, data are presented about total effects of the program (comparisons between control and experimental groups), the results obtained comparing each scale (main score), and also the effects on several relevant scales (causal attribution and predicting consequences).

I calculated mean between-group differences on the IS factors at pre- and posttreatment, and at follow-up). In the first place, a repeated measures MANOVA for the control group with the five IS factors revealed statistically significant main effects for time, $F(2, 28) = 7.39$, $p = .003$, and for IS factors, $F(4,26) = 111.8$, $p = .0001$, but the Time x Skill interaction was nonsignificant, $F(8,22) = 1.25$, $p = .317$. The experimental group's results were similar, $F(2,13) = 9.89$, $p = .002$ for time, and $F(4,11) = 47.1$, $p = .0001$ for IS, and for the Time x Skill interaction, a nonsignificant and marginal $F(8,7) = 3.30$, $p = .067$.

In the second place, Table 6 shows the t -values for each between-group comparison at pre- and posttest and at follow-up. Due to the fact that the experimental group was always the criterion in the comparisons, negative results indicate a significantly higher score in the control group (positive t -values mean the opposite: higher scores in the experimental group). Before the intervention (pretest), all comparisons were significant, favoring the control group. Immediately after the intervention (posttest), the experimental group's scores were higher than those of the control group, but none of the differences were statistically significant. At follow-up, the differences found at pretest had disappeared.

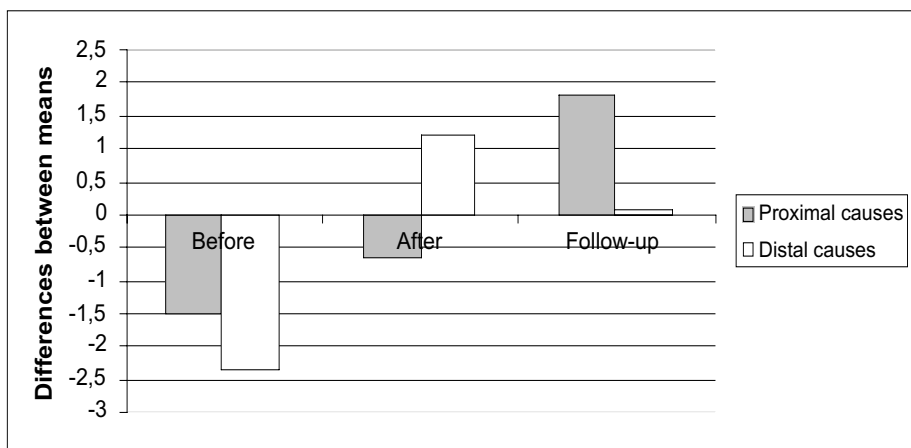


Figure 2. Training effects in cause at pre-, posttest, and follow-up. Always “experimental-control”. Negative values (horizontal bars to the left of zero) indicate that the control groups scored higher than the experimental group. Positive values indicate higher scores in the experimental group. $**p < .01$.

Closer analysis leads to detection of the skills that were enhanced the most by the program, from a clinical rather than a statistical point of view. At pretest, the main difference was in search for alternatives, followed by segmentation, identification others' feelings, and predicting consequences, with minor differences in cause attribution. After training, the main difference was in predicting consequences, followed by segmentation. At follow-up, the differences disappeared. Therefore, the variables most affected by training, at short-term interval, were predicting consequences, segmentation, and search for alternatives; in the intermediate interval, cause attribution and identification of

Table 7. Stability of the Five Interpersonal Skills Factors in the Control and Experimental Groups

Interpersonal Skills Factors / Groups	Comparisons					
	pre-posttest		posttest-follow-up		pretest-follow-up	
	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>	<i>n</i>	<i>r</i>
Search for alternatives						
Control group	41	.80***	17	.62**	17	.42
Experimental group	32	.40**	15	.75***	15	.37
Identification of others' feelings						
Control group	41	.67***	18	.36	18	.46*
Experimental group	32	.60***	15	.24	15	.47*
Predicting consequences						
Control group	41	.77***	20	.55**	20	.60**
Experimental group	32	.12	15	.64***	15	.39
Cause attribution						
Control group	38	.69***	20	.74***	20	.47*
Experimental group	32	.14	15	.60**	15	.00
Segmentation						
Control group	40	.68***	20	.63***	20	.42*
Experimental group	32	.53**	14	.63**	14	.06

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

others' feelings.

The effects of training on predicting consequences can be seen in Figure 1, with the value of mean differences in proximal/distal consequences at the three time intervals.

At the beginning of the program, there were significant differences favoring the control group in distal consequences ($p < .03$). This trend was completely reversed as result of the training program: The experimental group scored higher than the control group both in distal and proximal consequences. However, these differences were statistically nonsignificant. And, at follow-up, there were again no significant differences, although there was an increased difference in distal consequences favoring the control group, together with an increased difference in proximal consequences in favor of the experimental group. In short, the gains observed were only maintained in distal consequences, precisely where the pretest differences were greater.

In Figure 2 is shown the same analysis referring to the cause attribution factor. Before intervention, the control group scored higher than the experimental in both distal ($p < .009$) and proximal causes ($p < .01$). At posttest, there were no statistically significant differences and at follow-up (four months after the end of intervention), attribution of human actions to proximal causes was higher (but not statistically significant) in the experimental group and the attribution to distal causes was similar in both groups.

The Consolidation Continuum of Interpersonal Skills.

The main results about temporal stability of the dimensions are shown in Table 7, which compares pre- and posttest, posttest and follow-up, and pretest and follow-up. The number of subjects in each group and time-interval does not allow us to explain the results completely. Although the level of statistical significance suggests a real relation between time intervals, the transformation of direct coefficients into z-scores would not reveal changes in individual scores.

Some results may be highlighted. None of the studied dimensions had a high level of stability similar to general intelligence. Only in the case of short time intervals (2 months) did the factors search for alternatives and predicting consequences seem stable (without intervention). In this same time interval, the picture changed drastically if results of the experimental group were analyzed: Only the identification of others' feelings and segmentation factors remained stable between pre- and posttest measurements; in the rest, the coefficients indicated situational reactivity.

There were different tendencies in temporal stability. For instance, at follow-up in the control group, there was a decrease of stability in search for alternatives, cause attribution, and segmentation. Stability of identification of others' feelings and predicting consequences dropped at four months and rose slightly at six months. However, in the experimental group, except for identification of others' feelings, the stability of all the factors rises at posttest and drops at follow-up. The opposite trend was observed in identification of other's feelings, which is similar to the control group's.

DISCUSSION

Five hypotheses were proposed about IS, general-academic intelligence, and motivation in older people. I will comment upon this in more detail.

IS and general-academic intelligence are related in less intelligent older people, even though the percentage of common variance does not allow for overlapping. The results of two posttest measurements suggest that the IS-g factor relation gradually strengthens. These results were not observed in older people of normal intelligence: There was no relation between these variables either in the first or in the third measurement and the relation was minimal in the second. Empirically, IS cannot be assimilated with verbal fluency because their correlation is lower than the one between general reasoning and IS.

These results have implications for different psychological domains. In basic

research, these results show the need to study the specific cognitive processes in interpersonal relations. From this point of view, there is a partial confirmation of the existence of several intelligences, which are functionally independent. In gerontopsychology, and from a theoretical and operational framework, it is possible to distinguish a domain of IS, sensitive to training, with various dimensions. This domain does not overlap with other areas of cognitive functioning. The training programs implemented are a possible alternative for clinical psychologists working with older populations. We have shown that these programs are possible, efficient, and not very difficult to put into practice, even in the case of people with low educational status.

In spite of the fact that there are some significant relations between motivation (locus of control and motivation towards work and action) and IS in older people, these factors do not overlap. An increase in IS is accompanied by an increase in internal locus of control of actions and responsibilities in personal relations. IS did not show any significant coefficients with inhibition when faced with stress situations, nor for arousal reaction in stress situations. Locus of control, motivation towards action, and IS in older people seem to be psychological domains which are basically independent of each other. The programs for intervention with older people should take into account the fact that these three domains are different.

Temporal considerations about cause attribution, predicting consequences and search for alternative solutions to daily problems are more important than their functional differences across the life-span although, in the period of old age, a more complex structure is found. This coherence in the results has implications for the study of memory of personal events, and the "reconstruction" of people's psychological reality. This, in turn, should be related to the study of personal resources applied to problem-solving. The differentiation between immediate and mediate cause-consequence-alternative is an important differential criterion to be considered in special populations (delinquents, women, addicts) and in legal decisions about social policy. These results suggest that the training programs should help older people to look further into the past for the causes of their interpersonal problems, but also to predict possible long-term consequences. "Long-term" does not mean predicting consequences for this population for the next 50 years, but the need to withdraw from hour-by-hour daily demands that are an important focus of stress for older people in their personal relations.

The current results show that IS can be enhanced and increased. The main effect of the programs was the reversal of the differences between the experimental group (defined as a "deprived" group regarding general intelligence, motivational factors, health status, and IS) and the control group. At the end of the intervention and at 4-month follow-up, the results significantly favored the experimental group. Greater effects were observed in the dimensions of search for alternatives and predicting consequences (precisely in the scores of the more relevant categories of time delay or willingness to consider time beyond the immediate demands of situations). Referring to general-academic intelligence, participation in the programs increased its relationship with IS, which suggests that the third hypothesis was not entirely confirmed.

One might conclude that the increased IS scores caused a generalized increase of all the dimensions studied and, in addition, greater functional indifferenciation in a

population such as older people. However, the results do not corroborate this: The experimental group's scores in general-academic intelligence did not increase during the study, and similar results were registered in the control group. The difference was in the relationship between general-academic intelligence and IS. And the same refers to motivational and locus of control domains. The results of training programs should be analyzed not only the change in the direct scores (before/after, experimental/control) but also with regard to the relations between the variables. This possibility ("structural diagnosis") has been defended by Pelechano for 20 years and the results obtained cannot be explained as a function of the unreliability of the instruments. This line of thought can be developed on the basis of the multivariate experimental psychology of personality.

Finally, and seen from the perspective of Pelechano's model, the results regarding different relations between IS, such as results of time reliability (with and without intervention) suggest that IS by itself does not follow only one pattern of change, and to use a "second order" unifactor solution is misleading and conceals relevant information for selecting ways and points of intervention (Pelechano & de Miguel, 1992). Short time intervals (2 months) without intervention revealed stability coefficients similar to those of intelligence. But if the interval is increased and IS intervention is implemented, almost all of this "stability" disappears, and differences in the IS scores appear. We believe that these results aren't only applicable to IS and can be generalized for other domains in personality research. The results suggest that the reaction to a psychological intervention should be taken into account before elaborating a concrete model of the basic structure of human personality. Perhaps with these obstacles, many arguments about basic dimensions in personality would change from rhetorical theoretical analysis to empirical, and thus experimental testing would be more likely. The relevance and power of prediction of the isolated/proposed dimensions/processes should not end with comparisons of factor structure, but should also include the study of resistance to change, given the results obtained in the specific intervention programs aimed at changing precisely these dimensions.

Only in the case of the same factors, with similar consolidation and resistance to change (biological and psychological interventions) and, also, when the same results are observed in different cultures (power of prediction and explanation of work, family, health, and personal behaviors) could one conclude that a true basic structure of personality is isolated, which, moreover, would be common to all human beings at some stage of development. Psychology still has a long way to go before achieving such a state of affairs.

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Appendix

Similarity of groups according with degree of participation.

Univariate ANOVAs. Group sizes vary according to degree of participation.

Control group: Factor= degree of participation with three levels: A, B, and C

A: only pretest, n= 27; B: pretest and posttest, n= 22; C: pretest, posttest and follow-up, n= 19.

Experimental group: Factor= degree of participation with two levels:

A: pre- and posttest, n= 20; B: pre- and posttest, and follow-up, n= 14.

Dependent variable in pretest:	Control group		Experimental group	
	<i>F</i> (2, 66)	<i>p</i>	<i>F</i> (1, 33)	<i>p</i>
<i>Interpersonal Skills</i>				
Search for alternatives	2.04	ns	1.20	ns
Identification of others' feelings	0.61	ns	0.03	ns
Predicting consequences	1.04	ns	0.03	ns
Cause attribution	0.88	ns	3.41	ns
Segmentation	0.75	ns	1.33	ns
<i>Motivation towards Work & Action</i>				
Withdrawal reaction in stress situations	2.80	ns	3.09	ns
Arousal reaction in stress situations and workaholism	1.93	ns	0.14	ns
Ambition as self-image but indifference towards work	1.07	ns	0.00	ns
<i>Locus of Control</i>				
Today-ism and mistrust	2.10	ns	2.39	ns
Lack of perseverance in goal-attainment and external-generalised control in decision-making	1.18	ns	3.40	ns
Self-exoneration in failures and effort in success	3.80	.05	0.01	ns
<i>Raven</i>	1.69	ns	0.11	ns