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Abstract

The present study investigates empathic capacity during life span from young adulthood to old age, by using the Italian version of the Interpersonal Reactivity Index (IRI, Davis, 1980, Italian version: Albiero, Ingoglia, & Lo Coco, 2006), a widely used questionnaire for the evaluation of empathic responsivity. The IRI has been administered to 509 participants divided in three age groups, young adults (18-34 years of age), adults (35-64 years) and elderly people (65-85 years), equally represented by females and males. The results of the exploratory and confirmatory analyses support the hypothesized four-factorial model (empathic concern, personal distress, fantasy and perspective taking), as seen in previous studies (Albiero et al., 2006; Davis, 1980) although a far more extended age group has been considered. Moreover, gender and some other personal and contextual factors seem to influence the empathic capacity of the participants.

Key words: Empathy, Life span, Interpersonal Reactivity Index, Four-factorial model of empathy, Exploratory and Confirmatory Factor Analyses

Introduction

Development of the concept of empathy

The term "empathy" is commonly used to indicate the human capacity to participate in the experiences of others, to put oneself in someone else's shoes, to identify oneself with the other person's frame of mind, their suffering, their emotions, ... to feel with them. Despite the immediate and ordinary nature of these experiences, the definition of the concept of empathy lacks consensus. Among the first researchers who focused their attention on this psychological phenomena, some conceived it as a process alike to the so-called "perspective taking" or "role taking", pointing out its cognitive aspects (e.g. Borke, 1971; Hogan, 1969); others considered it as a primary affective process based on the sharing of perceived feelings and affective states of another (Bryant, 1982; Feshbach, 1978; Hoffman, 1982a, 1982b; Mehrabian & Epstein, 1972; Zahn-Waxler, Radke-Yarrow, & King, 1979).

In the 1990s, the sharp separation between the affective and cognitive approach has been challenged in favour of a multidimensional conceptualisation of empathy (Davis, 1996). As sustained by Davis (1983a), the unidimensional perspective is too reductive and poorly explanatory of the complex mechanisms and processes implied in the generation of emphatic responsiveness: affect and cognition have to be considered jointly. Nowadays, there is indeed a wide consensus among theorists that only by taking into account both, the cognitive and the affective aspects of empathy, it is possible to extend and deepen the knowledge about this psychological process (e.g. Albiero, Ingoglia, & Lo Coco, 2006; Cliffordson, 2002; Davis, 1983a, 1994, 1996; Lietz et al., 2011).

The dawning of a new orientation in the study of empathy requested also the development of new instruments suitable to measure the revised conception of the construct. Indeed, during the last decades, starting from the unidimensional Emotional Empathic Tendency Scale by Mehrabian and Epstein (1972), and the more cognitively oriented scale developed by Hogan (1969), different instruments have been created with the aim of capturing the multidimensional nature of empathy (e.g. Davis, 1994, Jolliffe & Farrington, 2006; Lietz et al., 2011). Davis (1994), for example, defining a prototypical empathic situation as entailing the presence of an observer, a person who is living an emotional experience, and an emotional response of the observer, suggested that this situation can be analyzed and assessed by considering the following four aspects: (1) the characteristics of the observer, the observed person, and the situation; (2) the observer's

cognitive capacities to put him/herself in someone's shoes; (3) the observer's response in front of the observed person, which can be affective (vicarious participation) or cognitive (capacity to apprehend another person's thoughts, emotions and feelings); (4) the observer's prosocial actions. Based on this theoretical framework, Davis (1980) created the Interpersonal Reactivity Index (lRI), one of the most commonly used instruments to measure empathy, which entails two subscales tapping the affective components of empathy: Empathic Concern (EC), i.e. the person's tendency to experience feelings of sympathy and concern in response to distress of others, and Personal distress (PD), i.e. the personal uneasiness and anxiety in reaction to negative experiences of others; and two subscales tapping the cognitive components of empathy: Perspective taking (PT), i.e. the individual's capacity to adopt the psychological point of view of others, and Fantasy (FS), i.e. the person's tendency to transpose him/herself imaginatively into the feelings and actions of fictitious characters of films, stories, etc.

Development of empathic capacity during life span

Only a few studies analysed the development of empathic capacity during life span, focusing mostly on adolescents and young adults. Retuerto Pastor (2004), for example, administered the IRI questionnaire (Davis, 1980, 1983a) to 556 adolescents and young adults of both genders with the aim of analysing the development of empathy during a critical age phase ranging from 13 to 23 years old. As expected, the scores on the Perspective Taking (PT), Fantasy (FS), and Empathic Concern (EC) subscales increased when age increased, whereas there was no significant effect of age on the Personal Distress (PD) subscale. Growing up, adolescents and young adults seem to be more effective in adopting the point of view of others (PT), in transposing themselves into the feelings of characters of films, books, etc. (FS), and in experiencing compassion and feelings of tenderness for others who are living difficult situations (EC).

With the aim of validating the Italian version of the IRI, Albiero, Ingoglia, and Lo Coco (2006) administered this questionnaire to 828 adolescents of both genders, divided in 3 groups: 352 preadolescents (10 -13 years of age), 213 adolescents (14 - 16), and 263 late adolescents (17-20). Also in this case, preadolescents had significantly lower scores than late adolescents on the subscales of PT, FS, and EC.

These results support the hypothesis of Hoffman (1990), according to whom empathy can be considered as a motivational process which pushes the individual at helping another person who is in difficulty and which is expected to develop *pari passu* with the socio-cognitive development of the

individual. Moreover, the results of these studies are coherent with the hypothesis that the increasing capacity "to put oneself in the shoes of others", transforms gradually the personal distress experienced in front of the misfortunes of another person, in a reaction of sympathy and compassion for the other (Hoffman, 1990).

As anticipated above, studies mostly addressed the development of empathic capacity in adolescents and young adults. A considerable exception is the study by Schieman and Van Gundy (2000), which involved 1567 people aged from 22 to 92 years old. This study aimed to test the influence of age on empathic capacity by also considering the possible influence of other personal and contextual factors. To reach this aim, participants had to fill in a questionnaire entailing an exhaustive demographic schedule and an empathic questionnaire composed by some items extracted from the IRI (Davis, 1980, 1983a), and by some items of the unidimensional scale by Mehrabian and Epstein (1972).

Results showed a negative relation between age and empathic capacity. Nonetheless, this negative relation was moderated by some individual and contextual factors, in particular being a woman, having a high level of education, being widowed, being in the phase of retirement. Being a woman and having a high level of education had a positive impact on empathy; being widowed and/or in the phase of retirement had a negative impact on empathy. Regarding gender, the results obtained by Schieman and Gundy (2000) are supported by several other studies which show that women are more empathic than men (e.g. Albiero et al., 2006; Bonino, Lo Coco, & Tani, 1998; Eisenberg & Lennon, 1983; Retuerto Pastor, 2004). Some researchers (e.g. Karniol, Gabay, Ochion, & Harari, 1998; Parsons & Bales, 1955) attribute this gender difference to the traditional gender roles: since women are expected to maintain harmonic relations among family members and to embrace their maternal function, empathy and concern for others are essential. Regarding education, this variable enhances socio-cognitive, perspective taking, emotion interpretation, and moral problems solution abilities (Franks et al., 1999; Herzog & Marcus, 1999). Indeed, the study by Schieman and Van Gundy (2000) showed that there is a positive correlation between higher education level and empathic responsivity, and also that, with increasing age, education level decreases. Finally, to be widowed or in the phase of retirement, had an additional negative effect on the relation between age and empathy.

To sum up, the study by Schieman and Van Gundy (2000) suggests that there is a negative relation between age and empathic capacity, but that this general tendency can be influenced by several individual

and contextual factors. Moreover, the cited research suggests that the study of empathy during life span cannot neglect considering critical "bio-sociological" life phases, such as transition from infancy to adolescence, from adolescence to adulthood, from adulthood to third age, or from considering critical "social" life phases such as entry into, or retirement from, professional life.

Aims and hypotheses

Based on the reviewed literature, the present study aims to investigate the development of empathy from young adulthood to third age in Italian people by using the Italian version of the IRI questionnaire (Albiero et al., 2006). In particular, the study aims to investigate whether the multidimensional model of empathy underlying the creation of IRI and supported by the factors found by Davis (1980, 1983a, 1983b) and Albiero et al. (2006), will still be valid when considering different age groups, and whether empathy increases or decreases with age. Indeed, in the studies cited above, which measured empathy with the IRI, the samples were constituted by adolescents and young adults of both genders, whereas, in the present study, participants' age ranged from 18 to 85 years. Furthermore, the possible relation between empathy and personal and contextual factors will be explored.

In more detail, the study had four objectives:

(1) To analyse the dimensions of IRI by performing exploratory and confirmatory factor analyses and by considering as a reference the four factor model suggested by Davis (1980, 1983a, 1983b), and later confirmed by Albiero et al. (2006) for the Italian version of the IRI. We hypothesized that the factorial model could result slightly different, since the sample considered includes age groups which, to our knowledge, were not considered in other studies where IRI has been used.

(2) To explore the relations between the subscales of IRI. If, in the present study, we should find factors similar to the ones evidenced by Davis (1980, 1983a, 1983b) and Albiero et al. (2006), then we expect to observe similar relations among these factors as the ones evidenced in previous studies. More in detail, as predicted and empirically confirmed by Davis (1983a, 1983b), we expected a positive correlation between PT and EC and a null or a negative correlation between PT and PD. Furthermore, considering the empirical results of Davis (1983a, 1983b) and Albiero et al. (2006), we expected that FS will be positively related to the other subscales.

(3) To examine the effects of gender, age, education and some personal and contextual factors on the mean scores of the subscales of the IRI resulting from our confirmatory factor analyses. On the basis of the literature, we hypothesized that women would have higher scores than men (Bonino et al., 1998; Eagly & Crowley, 1986; Fabes & Eisenberg, 1996), and that there would be a negative relation between empathy and age (Looft, 1972; Neugarten, 1964; Schieman & Van Gundy, 2000). Moreover, we expected to observe a positive relation between the level of education and PT, since according to some authors a higher level of education may enhance the capacity to adopt another's point of view (Franks et al., 1999; Herzog & Marcus 1999). On the contrary, we expected that some contextual factors such as remaining alone, or passing a transition phase in professional life (youngest who enter, or elderly who leave, professional life) could have a negative influence on empathy (Carstensen et al., 1996; Eisenberg & Fabes, 1991; Schieman & Van Gundy, 2002).

Method

Participants

The sample was constituted by quotes (Ortalda, 1999), i.e. we decided a priori the main characteristics the sample should have: it had to be composed by three age groups: young adults (range: 18-34 years), adults (range: 35-64 years), elderly (range: 65-84 years), with an approximately even proportion of males and females in each age group. On the basis of these criteria, we selected a sample of 509 Italian adults, aged from 18-85 years ($M = 44.73$; $SD = 19.24$). 49.5% of the participants were males, 13.8% lived alone and 31.1% were in a period of professional transition. Regarding education, 30.8 % of the participants had a low one (5-8 years of education), 48.7 % had a medium one (13 years of education), 20.4 % had a high education level (18 or more years). With respect to the three age groups, young adults (mean age = 24.8; $SD = 4.9$) represented 40.9% of the whole sample, 48.6% were males; adults (mean age = 52.1; $SD = 8.6$) represented 39.7% of the whole sample, 50.5% were males; elderly (mean age = 71.5; $SD = 5.7$) represented 19.4% of the whole sample, 49.5% were males.

Participants were recruited among university students, among their relatives and friends and among elderly people attending lectures of the university of third age. More in detail, most of the participants of the first age group (18-34 years) were recruited at the University of Turin during lecture time. Other young adults, adults and elderly people were contacted by students of the Faculty of Psychology of the

University of Turin, who voluntarily agreed to find people willing to participate in the study. Finally, other elderly people were recruited at the University of Third Age of Turin. Inclusion criteria with respect to all participants, and especially with respect to the elderly, were autonomy, no severe pathologies and living in their own home.

Measures

Empathy was measured by using the Italian version of the IRI questionnaire (Albiero et al., 2006). This self-report questionnaire entails 28 items associated with 5-point scales (1 = never true, 5 = always true), which measure dispositional tendencies to react to the observed experiences of others. Both the original English version of the IRI (Davis, 1980) and the Italian version (Albiero et al., 2006), entail four subscales, each composed by 7 items (Table 1), created to measure Perspective Taking (PT), Fantasy (FS), Empathic Concern (EC), and Personal Distress (PD). These four subscales, although related because they all concern responsivity to others, should measure four clearly discriminable facets of empathy (Davis, 1983a, 1983b). The FS and PT scales tap the more cognitive aspects of empathy, whereas the EC and PD scales measure the emotional reactions to experiences of others.

Procedure

Participants filled out the questionnaire autonomously and individually. They received instructions and explanations about the aims of the study either individually, either in groups in the case of students contacted during university lectures. They were informed that the questionnaire investigated people's capacity to "put oneself in someone's shoes". Furthermore they were informed that the questionnaire was anonymous and that collected data will be used for research purposes only.

Data analysis

The main objective of the present study was to test whether the multidimensional model of empathy underlying the creation of the IRI questionnaire and empirically supported by Davis (1980), as well as by Albiero et al. (2006) for the Italian version, will hold when considering a sample including also older participants. Therefore, we decided to use a data analysis strategy similar to the one used by these authors.

First we computed Exploratory Factor Analyses (EFA) to test whether the four factor model evidenced by Davis (1980) and by Albiero et al. (2006) can be replicated in the present study.

Second, competing models resulting from the EFAs were subject to a Confirmatory Factor Analysis (CFA) performed by using LISREL (Jöreskog & Sörbom, 2005). Goodness-of-fit of the models were evaluated by several indexes. Two global fit measures (χ^2 and SRMR) were used to indicate the degree of discrepancy between the sample covariance matrix and the covariance matrix implied by the model. A comparative fit measure (CFI) was used to compare the fit of the hypothesized model with that of the null model. Finally, RMSEA was used to evaluate the approximation of the model-implied matrix to that of the population. We used the following criteria for evaluating a model as acceptable: $\chi^2/df < 3$ (Ullman, 2001); SRMR < .10 (Schermelleh-Engel, Moosbrugger & Müller, 2003); CFI > .93 (Byrne, 1994); RMSEA < .08 (Hu & Bentler, 1998).

Third, retaining the best fitting model, we tested the structure of the scale computing Pearson correlations between the resulting factors by considering the whole sample, and the three age groups separately.

Finally, through a multiple regression analysis (General Linear Model (GLM) procedure), we tested whether the mean scores of the subscales of the IRI evidenced by the CFA can be predicted by the following individual and contextual factors: age, gender, level of education, living alone or not, and living in a transition phase of professional life.

Results

Exploratory Factor Analyses (EFA)

By considering the data of the whole sample and all items of the IRI, an EFA was computed with principal axis factoring extraction method, oblique rotation of the axes (Oblimin method), and extraction of factors with Eigenvalues greater than 1. A solution explaining 34,95 % of the total variance and entailing 5 factors was obtained. The results are reported in Table 1.

Insert Table 1 about here

Four of the extracted factors correspond to the ones found in the models by Davis (1980, 1983a, 1983b) and Albiero et al. (2006), i.e., EC, PD, FS and PT, whereas one factor is constituted by reversed items pertaining to PT, EC and FS. However, only some reversed items loaded on this factor, in particular, the ones containing an explicit negations (e.g. item 14: "Other people's misfortunes **do not** usually disturb me a great deal").

On the basis of this solution, we hypothesized that the reversed items with explicit negations could represent some difficulties, especially for the elderly who were not considered in previous studies conducted with IRI. Therefore we computed a second EFA (extraction: principal axis factoring, rotation method Oblimin), excluding the following reversed items with explicit negations: 14, 18, 15, 4. Item 12, although loading on the factor of reversed items, was not excluded because it did not present an explicit negation. This analysis resulted in a five-factor solution explaining 36.43% of the total variance. Only two reversed items, expected to measure FS (7, 12), loaded on the fifth factor (Eigenvalue = 1.21). Thus we decided to restrict the extraction to four factors, in order to reach a more parsimonious solution and to approach the models proposed by Davis (1980, 1983a, 1983b) and Albiero et al. (2006). This further analysis yielded a solution where the two reversed items loaded on the expected factor FS and which explained 33.17 % of the total variance. Results are reported in Table 2.

Insert Table 2 about here

Eliminating the four reversed items with explicit negations, we obtained the same four-factor solution than the one obtained for the English version of IRI by Davis (1980, 1983a, 1983b), and for the Italian version by Albiero et al. (2006), by considering a sample aged from 18-85 years

Confirmatory Factor Analyses (CFA)

On the basis of the results obtained by the EFAs, the fit between our data and two competing models was tested with CFA. The first tested model entails the four correlated factors hypothesized by Davis (1980,1983a, 1983b), and the whole set of 28 items; the second tested model entails the same four correlated factors, but, on the basis of the previously conducted EFAs, excludes the 4 negative reversed items (4, 14, 15, 18) (Figure 1).

Insert Figure 1 about here

As shown in Table 3, the model by Davis (1980, 1983a, 1983b), including the whole set of 28 items, did not fit our data very well. The second model (24-items model), in which the reversed negative items 4, 14, 15 and 18 were excluded, presented a better fit, although the CFI was still slightly lower than .93. On the basis of the modification indexes, the covariances between the measurement errors of the following indicators were set free: 24-27 (both PD, error covariance = .19), 7-12 (both FS, error

covariance = .25), 23-26 (both FS, error covariance = .18). With this adjustment, the 24-item model fitted our data in a satisfactory manner (cf. 24-items model adjusted).

<center>Insert Table 3 about here</center>

Intercorrelations between the IRI subscales

To explore the relations between the subscales of IRI, we computed Pearson correlations between the four factors evidenced by the CFA on the 24-items adjusted model by considering the whole sample, and the three age groups separately. Results are reported inTable 4. Regarding the whole sample, PT and EC were significantly and positively related, whereas PT and FS were significantly and negatively correlated. Furthermore, FS was positively correlated with all other subscales and EC was positively correlated with PD. Very similar patterns of correlations were found for the three age groups considered separately. These results confirm the hypotheses of Davis (1983a) and replicate the results found by Davis (1983a) and Albiero et al. (2006).

<center>Insert Table 4 about here</center>

Personal and contextual factors related with empathic responsivity

Through a multiple regression analysis (GLM procedure), we tested whether the mean scores obtained on the subscales of the IRI evidenced by the CFA (24-items model adjusted) are related to the following individual and contextual factors: age (1 = young adults, 2 = adults, 3 = elderly), gender (0 = male, 1 = female), level of education (1 = low, 2 = medium, 3 = high), living alone (1) or not (0), and living (1) or not (0) in a transition phase of professional life. The results showed a significant effect of age ($F_{(4,500)} = 12.67$, $p < .001$, $\eta p^2 = .092$), gender ($F_{(4,500)} = 10.83$, $p < .001$, $\eta p^2 = .080$), education ($F_{(4,500)} = 3.24$, $p < .05$, $\eta p^2 = .012$), and transitional life phase ($F_{(4,500)} = 4.25$, $p < .01$, $\eta p^2 = .033$). No significant effect for living alone was observed ($F_{(4,500)} = 0.83$, $p = .506$).

More in detail, univariate statistics showed that age had a significant effect on PD ($F_{(1,503)} = 5.11$, $p < .05$, $\eta p^2 = .010$), and FS ($F_{(1,503)} = 25.31$, $p < .001$, $\eta p^2 = .048$). The estimated parameters reported in Table 5 indicate that PD increases with age, whereas FS decreases. Regarding gender, univariate statistics showed a significant effect on EC ($F_{(1,503)} = 21.63$, $p < .001$, $\eta p^2 = .041$), PD ($F_{(1,503)} = 20.98$, $p < .001$, $\eta p^2 = .040$), and FS ($F_{(1,503)} = 18.45$, $p < .001$, $\eta p^2 = .035$). Estimated parameters indicate that being women predicts higher scores on these three subscales. The effect of

education was significant only on PT ($F(1,503) = 10.19$, $p < .01$, $\eta p^2 = .020$), a higher level of education predicts higher scores on PT. Finally, living a transition phase in professional life predicts enhanced PD ($F(1,503) = 7.54$, $p < .01$, $\eta p^2 = .040$), and reduced FS ($F(1,503) = 4.00$, $p < .05$, $\eta p^2 = .008$).

Discussion

Starting from the premise that empathy is a multidimensional construct, Davis (1980) developed the IRI questionnaire which measures four correlated dimensions of empathy: Empathic Concern (EC), Perspective Taking (PT), Fantasy (FS), and Personal Distress (PD). This questionnaire was validated with a group of adolescents in its English version by the same author. Results confirmed the hypothesized four-dimensional model postulated by the author. Furthermore, Albiero et al. (2006), by administering the Italian version of the IRI to a group of adolescents, were able to confirm a very similar four-dimensional model of empathy (although three items- FS7, FS12, EC20 - were eliminated from the model to reach a good fit).

The main objective of the present study was to verify whether the multidimensional model of empathy evidenced by Davis (1980, 1983a, 1983b) and Albiero et al. (2006), will still be valid when using the Italian version of the IRI and by considering a sample of Italians aged from 18 to 85 years.

The exploratory and confirmatory analyses suggest that the four-dimensional model can be replicated by considering almost the entire life span, from young adulthood to old age. This result supports the multidimensional nature of empathy, i.e. the presence of several correlated but not equivalent dimensions within the more general concept of empathy. Moreover, this result suggests that the IRI is a rather robust instrument which allows researchers to measure the same four dimensions of empathy in individuals with very different ages. Nonetheless, it should be pointed out that some items had to be eliminated to reach a satisfactory fit of the four-dimensional model. In particular, we eliminated the reversed items entailing a negation (EC4, EC14, EC18, PT15).

The second aim of the study was to explore the relations between the subscales of the IRI. Results showed that the correlational patterns correspond to the ones obtained by Davis (1983a, 1983b) and, later, by Albiero et al. (2006) when considering the whole sample, as well as when considering the three age groups separately. In particular, as hypothesized on the basis of literature (Davis, 1994; Feshbach, 1987, Hoffman, 1977, 2001) there is a positive relation between the person's ability to put him/herself in the

shoes of another (PT) and his/her propensity to feel worry, compassion and affect for another who is experiencing a situation of distress (EC). Still in accordance with previous studies (Davis, 1983a, 1983b), FS shows positive correlations with the other three subscales, and the two affective subscales (EC and PD) are positively related. Finally, as expected, PD has a negative relation with PT.

The third objective of the present work was to investigate whether some personal and contextual factors could predict the mean scores obtained on the four subscales of the IRI. Results showed a significant effect of age on the subscales of PD and FS. In particular, PD increased with increasing age, whereas FS decreased. With respect to gender, in accordance with previous studies (e.g. Albiero et al., 2006; Bonino et al., 1998; Eagly & Crowley, 1986; Fabes & Eisenberg, 1996), females reported significantly higher scores than males on EC, PD, and FS, but not on the more cognitive subscale of PT. Still in accordance with literature (Franks et al., 1999; Herzog & Marcus 1999), the higher the education level, the higher the scores on PT. Finally, in the present study, particular attention has been paid to transitional "social" life phases which could be critical in influencing empathic capacity (Schieman & Van Gundy, 2000). In more detail we focused on two transition phases: the entry in professional life, which for many young Italians is by now postponed after the exit from university, and the retirement from professional life. Results showed that living in a transition phase predicted higher scores on PD, conceived as the perception of, and attention towards, the own states of anxiety and worry when observing a person in a situation of distress. It can be assumed that living a transition phase of professional life constitutes a stressful event which could hamper the person's emotion regulation capacities when confronted with another who is suffering. Living a professional transition predicted also lower scores on FS. One possible explanation of this last result could be that an unstable working situation does not leave very much space for fantasizing and day dreaming.

To conclude, the IRI questionnaire seems suitable to be used also for a sample which includes almost the entire life span, from young adulthood to old age, maintaining the four-dimensional structure proposed by Davis (1980, 1983a, 1983b) and later confirmed for the Italian version by Albiero et al. (2006). Nonetheless, it should be pointed out that the sampling method used in the present study was not random and, therefore, it is not possible to determine how representative the obtained results are. In particular, regarding the elderly participants, probably their education level was higher than the one in the general

population, since 20.2% among them were recruited at the University of Third Age. In future research it would be interesting to ascertain if the same model can be replicated by considering another, possibly random, sample covering the whole life span. Moreover, in future research it would be interesting to reintegrate the four reversed items with explicit negation, maybe rewording them in a positive form, and hopefully in a more accessible and easier format.

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Table 1.

Results of the EFA considering all items

	EC	PD	FS	EC PT FS	PT
% of explained variance	13.7	8.7	5.15	4.07	3.32
Cronbach's alpha	.71	.73	.71	.54	.72
Eigenvalues	4.44	3.07	2.05	1.75	1.6
9. When I see someone being taken advantage of, I feel kind of protective towards them. (EC)	.627				
22. I would describe myself as a pretty soft-hearted person. (EC)	.584				
2. I often have tender, concerned feelings for people less fortunate than me. (EC)	.512				
20. I am often quite touched by things that I see happen. (EC)	.495				
6. In emergency situations, I feel apprehensive and ill-at-ease. (PD)		.685			
24. I tend to lose control during emergencies. (PD)		.634			
13. When I see someone get hurt, I tend to remain calm. (PD)[a]		.573			
17. Being in a tense emotional situation scares me. (PD)		.557			
19. I am usually pretty effective in dealing with emergencies. (PD)[a]		.486			
27. When I see someone who badly needs help in an emergency, I go to pieces. (PD)		.434			
10. .I sometimes feel helpless when I am in the middle of a very emotional situation. (PD)		.430			
23. When I watch a good movie, I can very easily put myself in			.811		

the place of a leading character. (F)

26. When I am reading an interesting story or novel, I imagine how I would feel if the events in the story were happening to me. (F)	.711		
16. After seeing a play or movie, I have felt as though I were one of the characters. (F)	.683		
5. I really get involved with the feelings of the characters in a novel. (F)	.457		
1. I daydream and fantasize, with some regularity, about things that might happen to me. (F)	.352		
7. I am usually objective when I watch a movie or play, and I don't often get completely caught up in it. (F)[a]	.323		
14. Other people's misfortunes do not usually disturb me a great deal. (EC)[a]		.577	
18. When I see someone being treated unfairly, I sometimes don't feel very much pity for them. (EC)[a]		.558	
15. If I'm sure I'm right about something, I don't waste much time listening to other people's arguments. (PT)[a]		.385	.322
4. Sometimes I don't feel very sorry for other people when they are having problems. (EC)[a]		.360	
12. Becoming extremely involved in a good book or movie is somewhat rare for me. (F)[a]		.349	
28. Before criticizing somebody, I try to imagine how I would feel if I were in their place. (PT)			.578
25. When I'm upset at someone, I usually try to "put myself in his shoes" for a while. (PT)			.574
11. I sometimes try to understand my friends better by imagining how things look from their perspective. (PT)			.564

8. I try to look at everybody's side of a disagreement before I make a decision. (PT)	.546
21. I believe that there are two sides to every question and try to look at them both. (PT)	.522
3. I sometimes find it difficult to see things from the "other guy's" point of view. (PT)[a]	.469

Notes.

EC = Empathic Concern, PT = Perspective Taking, PD = Personal Distress, FS = Fantasy.

Factor loadings <.30 are not reported.

[a] Reversed items.

Table 2.

Results of the EFA eliminating the 4 reversed negative items (4, 14, 15, 18)

	EC	PD	FS	PT
% of explained variance	14.94	9.61	5.24	3.39
Cronbach's alpha	.71	.73	.71	.72
Eigenvalues	4.19	2.96	1.85	1.49
9. Feel protective seeing someone taken advantage of. (EC)	.664			
22. Describe myself as soft-hearted. (EC)	.618			
2. Feel concerned for less fortunate people. (EC)	.529			
20. Touched by what is happening. (EC)	.524			
6. Feel apprehensive in emergency situations. (PD)		.658		
24. Lose control in emergency situations. (PD)		.646		
17. Scared in tense situations. (PD)		.555		
13. Seeing someone get hurt, remain calm. (PD)[a]		.536		
19. Effective in dealing with emergency situations. (PD)[a]		.467		
27. Seeing someone who badly needs help, go to pieces. (PD)		.434		
10. Helpless in emotional situations. (PD)		.416		
23. Seeing a movie, put myself in the leading character. (F)			.783	
26. Reading a story, imagine feelings if happening to me. (F)			.703	
16. Seeing play/movie, feel as being one of the characters. (F)			.661	
5. Involved with feelings of novel characters. (F)			.423	
1. Daydream and fantasize things that might happen to me. (F)			.344	
7. Watching a movie/play, don't get caught up in it. (F)[a]			.320	
12. Rarely involved in a book or movie. (F)[a]			.297	
28. Before criticizing, imagine how feel in their place. (PT)				.599
25. When upset, put myself in his shoes. (PT)				.580

11. Understand friends, look things from their perspective. (PT)	.545
8. Disagreement, look at everybody's side before decision. (PT)	.544
21. Two sides of a question, look at both. (PT)	.529
3. Difficult seeing from others' point of view. (PT)[a]	.447

Notes.

For reasons of space, the items are reported in an abbreviated manner. (Abbreviations are similar to the ones used by Cliffordson, (2001)).

Factor loadings <.30 are not reported.

[a] Reversed items.

Table 3.

Fit indexes of the tested models

	df	χ^2_{scaled}	χ^2_{scaled}/df	SRMR	CFI	RMSEA
Davis' model	344	957.08***	2.78	.071	.87	.059
24-items model	246	580.86***	2.36	.066	.92	.052
24-items model adjusted	242	503.11***	2.01	.062	.94	.046

Note. ***$p < .001$

Table 4.

Correlations between the subscales of IRI for the whole sample and each age group separately

Whole sample ($N = 509$)	FS	PT	EC	PD
FS	-	-	-	-
PT	.278**	-	-	-
EC	.274**	.397**	-	-
PD	.245**	-.180**	.188**	-
Young adults ($n = 208$)	FS	PT	EC	PD
FS	-	-	-	-
PT	.365**	-	-	-
EC	.396**	.337**	-	-
PD	.248**	-.115	.245**	-
Adults ($n = 202$)	FS	PT	EC	PD
FS	-	-	-	-
PT	.199**	-	-	-
EC	.209**	.369**	-	-
PD	.223**	-.263**	.150*	-
Elderly ($n = 99$)	FS	PT	EC	PD
FS	-	-	-	-
PT	.263**	-	-	-
EC	.440**	.589**	-	-
PD	.287**	-.135	.170	-

Note. **$p < .01$

Table 5.

Personal and contextual factors predicting the mean scores on the four subscales of IRI

	EC		PD		FS		PT	
	β	t	β	t	β	t	β	t
Age	.104	1.91	.111*	2.26	-.243***	-5.03	.039	0.82
Gender	.228***	4.65	.202***	4.58	.187**	4.30	.080	1.86
Education	-.014	-0.36	-.016	-0.46	.018	0.53	.104**	3.19
Transition	.045	0.56	.195**	2.75	-.140*	2.00	.052	0.76

Notes.

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

Figure captions

Figure 1. Standardized parameters of the four-factor correlational model considering 24 items.
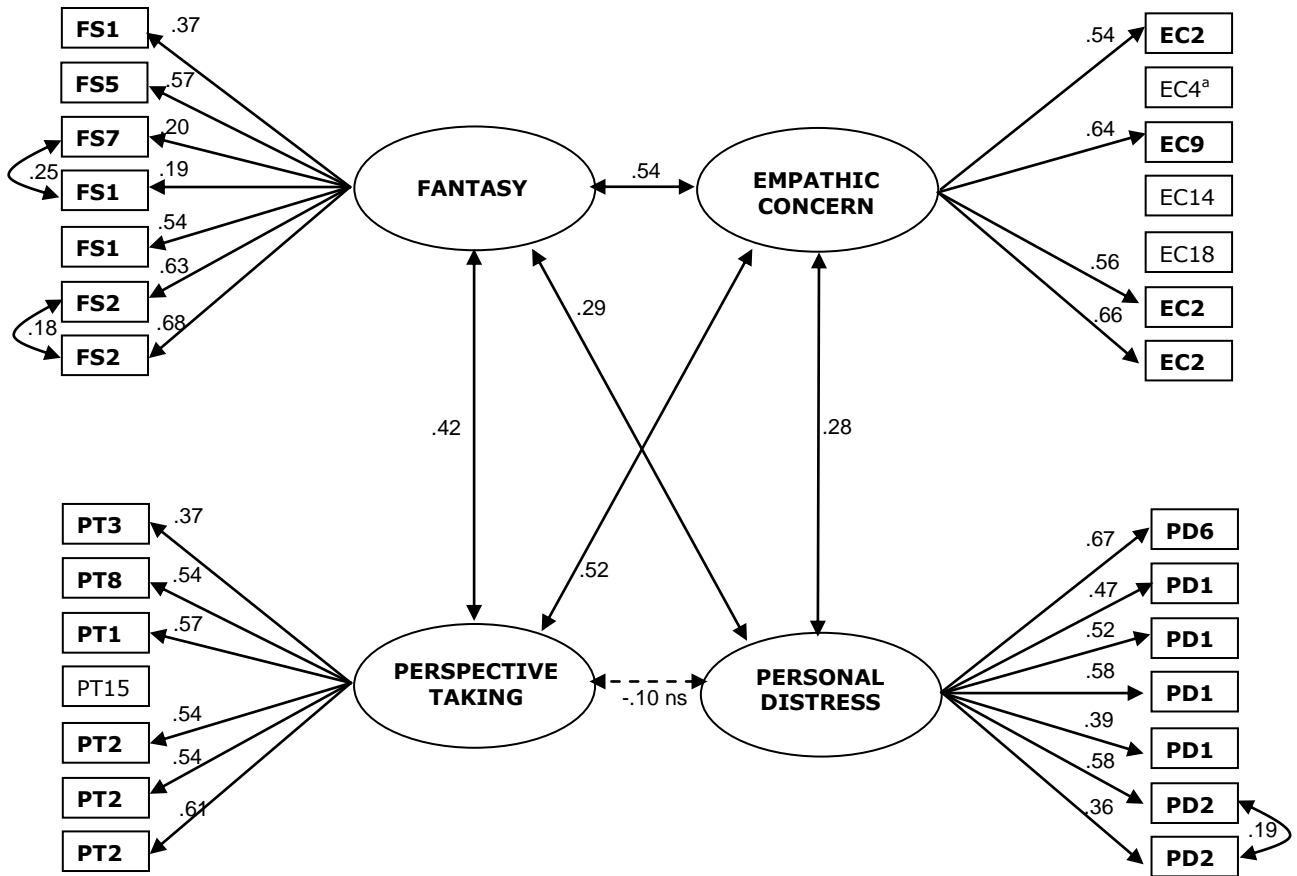
Notes.

[a] Reversed negative items that were not considered in this model.

If not indicated otherwise, all relations are significant at $p <.05$.

The error variances are not reported in the model.