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Construct Validation of Mexican Empathy Scale Yields a Unique Mexican Factor

Roque V. Mendez*[I], Reiko Graham*, Heidi Blocker**, Janine Harlow & Adriana Campos
* Texas State University, ** University of Denver

Abstract

An empathy scale developed in Mexico (Diaz-Loving, Andrade –Palos & Nadelsticher-Mitrani, 1986) was translated and validated in a U.S. sample. The Mexican and Davis' Interpersonal Reactivity Scales shared conceptually similar constructs. However, there were differences. In particular, a unique Mexican factor, Empatía Cognoscitiva and which we called Prescience had not been identified in empathy scales. It appeared to measure empathic accuracy, an individual's purported knowledge of others' feelings and moods. In a second study, we tested individuals' sensitivity in detecting subtle changes in emotional expressions, and found that individuals who scored highly in this characteristic were not necessarily more accurate at detecting emotions, but took significantly more time to look at fearful and angry faces. The results of a third study suggest that this was not due to enhanced attentional capture by negative emotional faces. In a final study, we found that purported accuracy was based on self-presentational concerns. Validation of this factor provides a clearer understanding of its cognitive and motivational properties and future uses.

Keywords: Empathy, Scale, Empathic accuracy, Self-monitoring, Cultural differences.

Validación de Constructo de la Escala Mexicana de Empatía

Resumen

Una escala de empatía desarrollada en México (Díaz-Loving, Andrade-Palos & Nadelsticher-Mitrani, 1986) fue traducida y validada en una muestra americana. La escala mexicana y la Escala de Reactividad Interpersonal de Davis compartieron constructos conceptualmente similares. Sin embargo, se presentaron algunas diferencias. En particular, un factor único mexicano, Empatía Cognoscitiva, al cual se le llamó Anticipación (Prescience, en inglés), no había sido identificado en escalas de empatía. Este factor parece medir precisión empática, un conocimiento individual que implica conocimiento sobre los sentimientos y estados de ánimo de los demás. En un segundo estudio, se probó la sensibilidad individual en la detección de cambios sutiles en expresiones emocionales, y se encontró que individuos que puntúan alto en esta característica no fueron necesariamente más precisos en la detección de emociones, pero que les toma más tiempo el atender caras con expresiones temerosas y enojadas. Los resultados de un tercer estudio sugieren que esto no se debe a la captura atencional facilitada por caras emocionales negativas. En un estudio final, se encontró que la precisión implicada se basó en preocupaciones auto-presentadas. La validación de este factor provee un mejor entendimiento de sus propiedades cognoscitivas y motivacionales así como usos futuros.

Palabras clave: empatía, escala, precisión empática, auto-monitoreo, diferencias culturales.

[I] Email: rm04@txstate.edu

Construct validation of a Mexican and an American empathy scale yields a unique Mexican factor Empathy is thought to be a critical process in social functioning (Batson, 2009; Cottrell & Diamond, 1949; Hoffman, 2000; Hogan, 1969). Empathy has been called it the "spark of human concern for others, the glue that makes social life possible" (Hoffman, 2000, p. 3). Empathy has been linked with helping, moral behavior and concern for others (Batson, 2009, Hoffman, 2000). The lack of it has been linked to psychopathology, autistic spectrum disorders and antisocial behaviors (Baron-Cohen & Wheelwright, 2004; Blair, 1995; Lauterbach & Hosser, 2007). Psychologists have strived to develop reliable and valid instruments that measure individual differences in empathy (Davis, 1996). Given the need for diagnosing and improving impairments in psychological functioning, a worthwhile aim has been to develop instruments with clinical applications (Berthoz, Wessa, Kedia, Wicker & Grezes, 2008; Kagan & Schneider, 1987; Lauterbach & Hosser, 2007). An equally important aim has been to develop instruments that can help appraise therapeutic awareness and proficiency in counselors working with a racially and ethnically diverse clientele (Wang et al., 2003).

The conceptualization and measurement of individual differences in empathy have mostly been the domain of American psychologists. The empathy scales of Mehrabian & Epstein (1972), Hogan (1969) and Davis (1983), developed in the United States, have been widely translated and validated in several languages (Koller, Camino & Ribeiro, 2001; Poirier & Michaud, 1992; Sakurai, 1986; Susuki 1992; Tobari 2003; Watanabe & Takiguchi, 1986). Of the three, Davis' Interpersonal Reactivity Index (IRI; Davis, 1996) is the most widely translated and adapted internationally. It can be found in Spanish, Dutch, Chinese, Swedish, Polish and Portuguese (Cliffordson, 2001; DeCorte, Buysse, Verhofstadt, Roeyers ponnet & Davis, 2007; Escriva, 2004; Kazmierczak, Plopa & Retowski, 2007; Siu & Shek, 2005). The IRI consists of four subscales that reflect different factors of empathy: personal distress, fantasy, empathic concern and perspective taking.

Empathy measures developed abroad have yielded factors that are similar, but also different from American ones. The emotional quotient (EQ) scale (Baron-Cohen & Wheelwright, 2004), which measures the lack of empathy correlates with the IRI empathic concern and perspective taking subscales and has been translated and applied clinically in several countries (Berthoz, Wessa, Kedia, Wicker, & Grezes, 2008; Lawrence, Shaw, Baker, Baron-Cohen & David, 2004). However, other empathy measures developed abroad have yielded factors that are quite different from those in American subscales. For example, a measure developed in Japan found other and self emotional reactivity factors (Suzuki & Kino, 2008). Another Japanese scale taps into the ability to feel or not feel others' positive and negative feelings (Hashimoto & Shiomi, 2002). Indeed, distinct concepts of empathy exist (Batson, 2009) and new constructs reflecting different cultural understandings of empathy may still be found. Moreover, measures derived from these constructs may prove to be useful diagnostic tools for identifying empathic differences and deficits and for improving the therapeutic process.

Of particular interest is an empathy scale developed in Mexico (Diaz-Loving, Andrade-Palos & Nadelsticher-Mitrani 1986). Two of its factors, perturbación and Compasión Empática appear to be conceptually similar to the Distress and Empathic Concern subscales, respectively, in the Interpersonal Reactivity Index, but two others, Indiferencia and Empatía Cognoscitiva, appear uniquely different from any of Davis' IRI subscales. Of these two factors, Empatia cognoscitiva consists of items that appear to measure the ability to read others' feelings and thoughts. To know "when someone is angry" or "when others are scared" is to have key insight or empathic accuracy. And, while an individual may be accurate without being empathic or empathic and inaccurate (Davis, 1996), a reliable association between social sensitivity and empathic accuracy exists, although the effect size is small (Davis & Krause, 1997).

Self-reported measures of accuracy have not fared well in predicting performance in actual accuracy tasks (Ickes, 1993). More elaborate paradigms that measure concurrence between the inferred feelings and thoughts of two interacting individuals are more commonplace (Decey & Ickes, 2009). Nevertheless, self-reported measures that may distinguish those who are able to "read" minds from those that are unable to do so are still being designed and tested (Lawrence, Shaw, Baker, Baron-Cohen & David, 2004). The Mexican construct had not previously been identified in the any scale developed in the U.S. and its testing may prove useful in making distinctions among those that purport to "read" other persons accurately from those who do not. For example, is self-reported accuracy linked to what and how information about others is processed? Do these individuals take more time or are they more selective in the social cues they process? Thus, validating the Mexican empathy scale and this construct in particular may provide a better understanding of the empathic process and its potential uses.

More often, attempts have been made to establish universal constructs by adapting and validating Western empathy measures in different languages and countries. However, few if any attempts have been made to translate and validate empathy measures developed abroad and in other languages in the U.S. Specifically, we were interested in testing whether an empathy scale developed in Mexico would yield the same factors in the U.S. Would the constructs found in Mexico also be found in the U.S.? More importantly, we were interested in testing a validating an instrument that would provide us a clearer understanding of its cognitive and motivational properties and clinical uses.

Method

The Mexican Empathy scale (Diaz-Loving et al., 1986) was translated into English using the back translation method. This process continued until discrepancies between the Spanish versions were eliminated. Additionally, two bilingual college graduate students from Mexico who lived in the region for at least five years independently checked and verified the English translations for accuracy and vernacular usage. All items were scaled with a five point Likert scale ranging from "does not describe me well" to "describes me very well". The 49 and 28 items

that comprised the Mexican Empathy and the Davis' Reactivity scales, respectively, were administered to 131 male and 344 female undergraduate students. The variables ethnicity, gender, age, socioeconomic background, college classification were also measured.

Results

The Mexican and IRI empathy scales were factor analyzed separately using principal components method (PCA) with a varimax rotation solution. Only those factors with Eigenvalues above 1.0 and with at least three item coefficients with absolute values above .4 were accepted. The point of inflexion on a screen plot was also used to confirm the final number of factors determined by PCA. The analysis yielded four factors after which, explained variance waned considerably. The proportion of variance explained by each of the four factors was 21%, 14%, 5.9% and 3.2%, respectively. The first factor, Compasión Empática drew 13 items from three subscales of the original Mexican scale (see table 1). Examples of the items, "It bothers me to see others in pain", "I feel bad if others are depressed" and "I feel like crying when I see others cry" indicate an emotional reaction to seeing others suffer. The second and fourth factors consisted of six Indiferencia, and six Perturbacion (personal affliction) items, respectively. The third factor, Empatia cognoscitiva, was comprised of seven items that at face value appear to measure individuals' self reported accuracy of what others are feeling (I know when someone is angry, I can tell when others are scared, etc.). Negatively weighted items were reversed, and reliability analyses were performed on each of the factors. The factors Compasión Empática, Indiferencia, Empatía cognoscitiva and Perturbacion (personal affliction) yielded alpha coefficients of .91, .79, .85, and .79, respectively.

Davis' IRI scale was also factor analyzed similarly. The four factors of the IRI scale with coefficients with absolute values above .4 were reliably supported. Distress, Empathic Concern, Fantasy and Perspective Taking explained 18.66, 11.96, 7.71 and 5.86 percent of the variance, respectively. Only one Fantasy item failed to load (.25) with its respective factor and was not included in the subsequent reliability analysis. Negatively weighted items were reversed, and reliability analyses on each of the factors Distress, Empathic Concern, Fantasy and Perspective Taking yielded alpha coefficients of .79, .76, .78, and .75, respectively (table 2).

Table 1
Factor loadings, item means and standard deviations

ITEM	Factor 1	Factor 2	Factor 3	Factor 4	Mean	SD
pr46 I feel bad if others are depressed	**.775**				3.8004	.95284
ce55 It bothers me to see others in pain	**.757**				4.1410	.87704
pr45 I feel bad when I see someone crying	**.741**				3.9393	.92113
ce56 It worries me to see someone hurting	**.735**				3.9588	.95350
ce78 I feel grief when I see others suffer	**.711**				3.8482	.99496
ce67 I worry about others	**.654**				3.8134	.94173
ce40 I get upset when others are treated unfairly	**.618**				3.9414	.94802
pr69 Seeing others cry does not make me feel sorry for them	**-.614**				2.0499	1.08332
i52 I do not care about other people's problems	**-.560**				1.7028	.88990
pr68 I feel like crying when I see others cry	**.536**				3.0738	1.29505
ce54 I take into account the feelings of others	**.514**				4.0521	.81394
ce53 I am a sensitive person	**.431**				4.0108	.99667
ce77 I enjoy seeing others happy	**.425**				4.6486	.58805
i63 I stay calm when someone gets hurt		**.751**			3.5575	.97549
i64 I am calm even though the people around me are worried		**.744**			3.3015	1.00118
i51 I stay calm in unpleasant emotional situations		**.727**			3.2972	1.04703
i88 I stay calm in emergency situations		**.701**			3.5987	.99647
i87 I feel calm when someone is sad		**.477**			2.9935	.90767
i76 I do not get nervous when someone suffers an accident		**.462**			2.5163	1.22575
cg48 I know when someone is angry			**.777**		4.0304	.77119
cg62 I can tell when someone does not get along with others			**.743**		3.9653	.73639
cg72 I can tell what mood people are in			**.705**		3.6725	.89387
cg61I can tell when others are scared			**.692**		3.6399	.86001
cg49I know when I am disliked			**.646**		3.8048	.91418
cg84 I can sense when someone is having problems			**.625**		3.8482	.82537

Table 1
Factor loadings, item means and standard deviations (continued)

ITEM	Factor 1	Factor 2	Factor 3	Factor 4	Mean	SD
cg73I can tell when someone is sentimental			**.600**		3.7592	.85500
pr83Movies and TV shows with bloody scenes do not bother me				**-.731**	3.4685	1.39471
pr70 I look away when someone bleeds				**.693**	2.3124	1.31465
pr71I feel anxious if someone gets hurt				**.563**	2.7419	1.11928
pr47Thinking of violence frightens me				**.527**	2.9631	1.22508
pr82 I get scared when I see others fighting				**.438**	2.7701	1.28167
pr44Emergencies upset me				**.415**	2.6638	1.15616

Table 2
Factor means and Standard deviations

Variable	Mean	Std. Deviation	N
Compasión Empática	3.9544	.64931	457
Empatía Cognoscitiva	3.8103	.61031	457
Indifencia	3.2042	.71889	457
Perturbación	2.6740	.88009	457
Empathic Concern	3.9162	.63222	457
Perspective Taking	3.5477	.63527	457
Distress	2.5499	.70332	457
Fantasy	3.3939	.75504	457

Intercorrelations among the Mexican factors showed that the factor Compasión empática correlated moderately with the other Mexican factors (Table 3). Indiferencia and perturbación were inversely related with each other, $r\ (457) = -.59$, $p < .001$. Concurrent validity tests among the Mexican and IRI factors showed that Compasión Empática was highly correlated with: Empathic Concern, $r\ (457) = .77$, $p < .001$; Perspective Taking, $r\ (457) = .38$, $p < .001$; and Fantasy, $r\ (457) = .41$, $p < .001$ (Table 4). Indiferencia, $r\ (457) = -.72$, $p < .001$ and perturbación, $r\ (457) = .65$, $p < .001$ were highly correlated with the IRI factor Distress. Empatía Cognoscitiva showed the weakest correlations (-.13 to .26) with the IRI scales.

Table 3
Intercorrelations among Mexican scale factors

	Compasión Empática	Empatia Cognositiva	Indiferencia	Perturbación
Compasión Empática	1			
Empatia Cognositiva	.327**	1		
Indiferencia	-.284**	.171**	1	
Perturbación	.444**	-.039	-.597**	1

Note. N = 457, ** $p < .01$

Table 4.
Intercorrelations between Mexican and IRI factors

	Empathic concern	Perspective taking	Distress	Fantasy
CompasionEmpatica	.766**	.382**	.283**	.412**
EmpatiaCognositiva	.257**	.264**	-.127**	.213**
Indifencia	-.167**	.163**	-.717**	-.065
Pertubacion	.309**	.010	.650**	.197**

Note. N = 457, ** $p < .01$

Discussion

The empathy scales developed in Mexico and the U.S. were conceptually similar. Three factors in the Mexican empathy scale correlated strongly with Davis' IRI subscales and explained a substantial proportion of the variance. Compasión Empática correlated strongly with the IRI subscales Empathic Concern, Perspective Taking and Fantasy. And, Pertubacion (personal affliction) and Indiferencia were postitively and inversely correlated, respectively, with Distress. However, three key differences were apparent. First, the factor Compasión Empática consisted of items from three of the original Mexican factors, perturbación, Compasión Empática and Indiferencia. The factor contained items that were combinations of concern, reactions to others' distress, and perspective taking when seeing others suffer: "It bothers me to see others in pain", "I get upset when others are treated unfairly", and "I take into account the feelings of others". Attempts were made to be conceptually faithful to the original construct, but a loss in the original meaning of the words may have occurred in the translation and contributed to these relationships. Nevertheless, the items show coherence and convey the meaning of one's experience in seeing another in distress.

Moreover, Indiferencia and perturbación were inversely and positively related, respectively, with the IRI subscale Distress. Indiferencia items convey calmness, and perturbación items reflect extreme distress. Although they are inversely correlated, they were still relatively independent factors, much as they

were established in Mexico, although they were less correlated with each other (-.22) in Mexico (Diaz-Loving et al., 1986) than they were in the U.S. (-.59). The presence of two rather than one factor related to distress may reflect cultural differences in beliefs about what constitutes empathy. For example, European-Americans perceive emotions as diametrically opposed, as being either positively or negatively valenced (Rodgers, Peng, Wang & Hou, 2004). Distress or its absence represents a unidimensional concept. In contrast, Asian-Americans tend to believe in the coexistence of positive and negative emotions whose balance provides the experience of well-being. Indiferencia and perturbación are separate and coexisting concepts, although they more strongly correlated with each other in the U.S. than in Mexico perhaps reflecting a greater tendency in Americans to see the constructs as uni-dimensional.

The factor Empatia cognoscitiva had not been identified in scales developed in the U.S. It's correlations with the IRI subscales were among the weakest, and thus, it stands out as unique among constructs. The factor consists of items that measure a perceptive ability or anticipatory knowledge of what others feel, are thinking or will do. The construct appears to measure empathic accuracy. The factor may distinguish among those who are able from those that are unable to "read" other persons accurately. We renamed Empatía Cognoscitiva Prescience and explored this factor further in the two studies that follow.

Study 2

Empathic accuracy has been the subject of past and recent investigations (Davis, 1996; Decety & Jackson, 2006; Ickes, 1997). Individual differences in accuracy have been of particular interest (Davis & Krass, 1997). While the search for self-reported accuracy measures has been an elusive one (Ickes, 1993), early meta-analysis showed "affective empathy" to have a weak, but reliable effect on accuracy (Davis & Krass, 1997). The empathic quotient (EQ) that measures lack of empathy was found to be marginally predictive of the ability to decipher mental states from pictures of eyes alone (Lawrence, et. al., 2004). Recently, high scores on the Davis' Interpersonal Reactivity Index (IRI) empathic concern subscale were linked to the activation of brain areas involved in shared representations (Singer, Seymour, O'Doherty, Kaube, Dolan & Frith, 2004). And, behavioral results also support the notion that the IRI may be an index of more regulatory frontal lobe-mediated processes associated with empathy (Blocker, Morales, Mendez & Graham, 2007). In Study 2, we examined the relationship between Prescience (Empatía Cognoscitiva) and accuracy in detecting changes in angry and fearful emotional expressions. We hypothesized that those with stronger reported Prescience will be more accurate in detecting subtle changes in emotional expressions.

Method

Participants consisted of 102 female and 34 male undergraduates, ages 18 to 45 years, recruited from undergraduate classes in a central Texas university.

Each participant completed three sets of two-alternative forced-choice identification tasks consisting of 180 incremental morphed facial expressions adapted from representative emotions (Ekman & Friesen, 1976). All facial expressions were grayscale photos of the same ten actors. The faces were full frontal poses and cropped to eliminate extraneous clues such as hair, ears, and neckline. Images were presented in a gray background and normalized for contrast and luminance. Prototypical expressions of fear and neutral, anger and neutral, and fear and anger were morphed together to create three different morph progressions. The morphs were created using the methods described in LaBar, Crupain, Voyvodic, & McCarthy (2003) and Graham, Devinsky & LaBar (2007).The three sets of morphed progressions (neutral to fear, neutral to anger, fear to anger) each consisting of 60 faces (10 different models, each with 6 emotion morphs) were created. Thus, a total of 180 images were used in this experiment, each was 315 pixels high and 220 pixels wide (table 5).

A trial consisted of a neutral fixation stimulus (a black cross presented centrally, superimposed on a scrambled face, presented for 1000ms) followed by a morphed expression (500 ms), followed by a response screen which remained on the computer screen until a response was made (see Figure 1). Participants were instructed to respond quickly to one of two alternate choices, e.g. neutral or fear, which appeared on a response screen that appeared after the presentation of each emotion morph. The Prescience (Empatía Cognoscitiva) subscale consisting of those items identified in the factor analysis was administered after the completion of the tasks. The composite of items measuring Prescience was used. Items were summed and averaged.

Table 5
Study 2 Means and SD in three progressions, neutral to fear, neutral to anger and fear to anger

Variable	Mean	SD
Prescience	30.82	4.06
Neutral to fear pse	3.95	.885
Neutral to fear avgd	2.059	.573
Neutral to fear medrt	409.93	136.35
Neutral to anger pse	3.77	.719
Neutral to anger avgd	3.09	.744
Neutral to anger medrt	416.32	186.17
Fear to anger pse	4.73	.846
Fear to anger avgd	1.79	.821
Fear to anger medrt	553.127	205.47

Note. N= 132. Prescience is *Empatía Cognoscitiva*. Reaction time is in milliseconds. Progression 1 is neutral to fear, progression 2 is neutral to anger and progression 3 is fear to anger.

Sensitivity in detecting subtle expression changes (average d' and d' slope), point of subjective equality (PSE), the increment at which guessing is most likely, and median reaction times (RT) were measured. Corrected d' scores for two-alternative forced-choice tasks (MacMilllan & Creelman, 1991) were computed for each morph increment and then were summed according to morph increment to create the average d' score. The average d' represented the average sensitivity of participants over the 6 morph increments. The slope of these points was also computed (d'slope).

The point of subjective equality (PSE) was calculated for each of the three morph types for each person. As the emotion on the face progresses from neutral to fear (or neutral to anger or fear to anger) participants shift from endorsing the facial expression of neutral to endorsing the depiction of fear. The PSE gives an estimate of the categorical boundary and represents the morph increment at which the subjects are most likely to be guessing (i.e., the expression is most ambiguous to them). Finally, median reaction times were calculated for each individual for each morph type to determine average response latency for each morph type.

Figure 1. Details of the Experimental Procedure

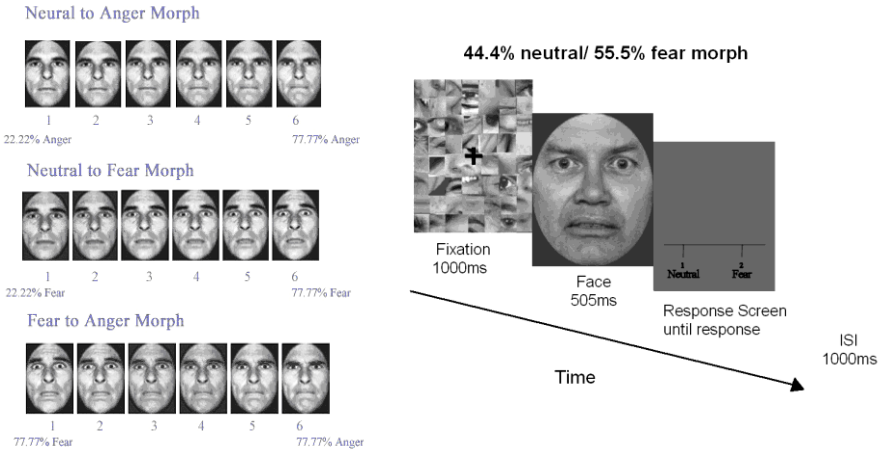

Figure 1. Grayscale photos showing different facial expressions. A black cross presented centrally, superimposed on a scrambled face, followed by a morphed expression, followed by a response screen which remained on the computer screen until a response was made

Results

Prescience correlated significantly with reaction time (RT) in the neutral to fear ($r(132) = .18$, $p < .05$) and neutral to anger ($r(132) = .23$, $p < .05$) progressions (Table 6). There were no other significant findings. Individuals who purport to know are not necessarily more sensitive to others' facial expressions, but do take more time to look at fear and angry expressions.

Table 6.
Study 2 correlations between Empatía Cognoscitiva, PSE (point of subjective equality), Average d' sensitivity and reaction times

Factor	PSE	Average d'	RT
Neutral to Anger	.023	.055	233*
Neutral a Fear	-.077	-.006	181*

Note. N = 132. * $p <$ .05.

Discussion

We found a positive relationship between Prescience scores and reaction times to identify fearful and angry face morphs. When considered in conjunction with the finding of no systematic differences in sensitivity or biases in identifying face morphs, this result suggests that individuals high in Prescience are no less efficient than those low in Prescience at processing facial expressions of emotion. However, the reason for this result was unknown. One possibility is that reaction times were mediated by differences in attentional capture by the emotional faces that, in turn, were moderated by individual differences in Prescience. The objective of Study 3 was to further examine the main finding in Study 2.

Study 3

As emotional stimuli, faces may activate motivational systems and capture attention, which can then either interfere with or enhance subsequent stimulus evaluation and/or decision-making (Compton, 2003). Emotional faces draw far more attention than neutral ones and may improve and maintain the perception of independent tasks or events that follow in time (Vuilleumier & Huang, 2009). Negative faces (angry or fearful) tend to enhance attentional focus while positive ones (happy faces) tend to broaden the scope of attention to stimuli (Fredrickson & Branigan, 2005). These emotional effects are considered to serve adaptive purposes in response to potential threats (angry or fearful faces) or protective tendencies (Vuilleumier & Huang, 2009).

There is evidence that these attentional mechanisms may be mediated by differences in personality. For example, research suggests that highly anxious individuals are slower to disengage attention from fearful faces, resulting in slower responses (Fox, Russo, & Dutton, 2002; Georgiou, Bleakley, Hayward, Russo, Dutton, Eltiti & Fox, 2005; Mogg & Bradley, 1999). Other research has found that individuals high in anxiety (Fox, Mathews, Calder, & Yiend, 2007), trait fearfulness (Tipples, 2006) and those low in self-esteem (Wilkowski, Robinson & Friesen, 2009) are faster to deploy attention or orient to targets spatially cued by centrally presented gazing faces. These findings imply that while there are general

attentional mechanisms that are recruited by emotional stimuli across most people, the degree to which these are recruited may depend on individual differences in personality, as well as past experience and context (Vuilleumier, 2005). The objective of Study 3 was to examine attentional capture/distraction to emotional faces and whether this was systematically related to individual differences in Prescience. We predicted that those higher in Prescience would have faster attentional capture to emotional faces as measured by reaction times.

Method

Participants consisted of 79 healthy undergraduate volunteers (29 males, 50 females) aged 18 to 35 years (M = 20.3 years old), recruited from undergraduate classes in a central Texas university. All participants gave informed consent prior to participation in the study. All procedures were approved by the Institutional Review Board at Texas State University.

All participants completed the Prescience subscale items and a target detection task called the Emotional Interrupt Task, which was administered using SuperLab Pro V.2.0 (Cedrus Corporation, San Pedro, CA). Task order (questions vs. computer task) was counterbalanced across participants. This paradigm was adapted from Mitchell et al. (2006) and modified to fit the parameters of this study (i.e., using emotional faces rather than pictures of emotional scenes). The stimuli in this task were similar to those used in Study 2, except only full intensity expressions were used (10 different individuals depicting neutral, happy, angry and fearful expressions). For this task, subjects were seated in front of a computer and ask to respond to a shape (circle or diamond; 225 x 225 pixels) that was flanked by emotional facial expressions (neutral, happy, angry and fearful faces, also 225 x 225 pixels). A trial was completed by pressing either “1” or “2” on the numeral key pad of the keyboard for the corresponding shape. Individuals were instructed not to respond to the emotional faces, but were ask to pay close attention to them because they may be asked questions about them later. Thus, this procedure allowed us to test the extent to which emotional expressions captured attention to an independent target detection task. Key presses were counterbalanced across subjects.

Each participant completed a total of 400 trials (i.e. 100 for each of the four emotional conditions). These trials were administered in 5 blocks of 80 trials (20 of each facial expression, each paired with a different target; randomized) with short breaks in-between to help reduce habituation and fatigue. Timing for each trial was as follows: 1) fixation point- 800ms, 2) emotional face-200ms, 3) circle/square shape- 150ms, 4) emotional face again-400ms, and 5) a response screen (until a response was made; see figure 2). Each emotional condition presented equal numbers of diamond and circle stimuli (i.e., 100 trials for each expression = 50 diamond trials + 50 circle trials; randomized). Response latencies to identify the targets and accuracy were recorded for analyses.

Figure 2. Details of the Experimental Procedure

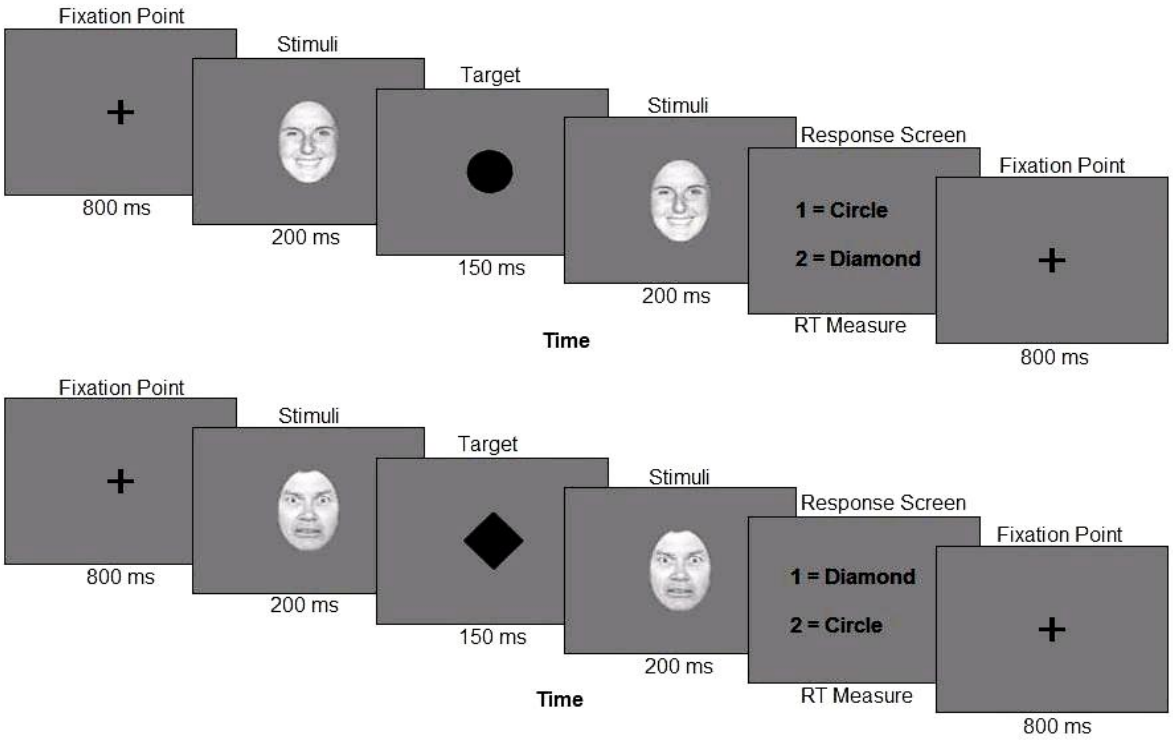

Figure 2. Schematic of the Emotional Interrupt Task trial sequence including timing and order of each screen.

Results

Overall, target identification accuracy was high and approached ceiling (99.0% accuracy overall); therefore, this variable was excluded from further analyses due to a lack of variability. Furthermore, no gender differences were observed for reaction times or self-report scales. Reaction times were analyzed initially with a repeated measures analysis of variance (ANOVA), with emotion (neutral, happy, angry and fearful faces) as a within-subjects variable. This ANOVA revealed a main effect of expression; $F(3,234) = 2.75$, $p < .05$. Reaction times to identify targets flanked by happy faces were the shortest (265.2 ms), followed by fearful, neutral and angry faces (268.0, 271.9, and 272.9 ms, respectively). In order to clarify this effect and isolate effects due to facial expression alone, facilitation/distraction to each expression was estimated by subtracting RTs to targets with neutral distractors from RTs to targets with expressive distractors (happiness, anger, fear). Bonferroni-corrected paired t-tests were then conducted on these distraction estimates. These tests showed that there was a facilitation to identify targets with happy distractors (-6.67 ms facilitation effect) relative to those flanked by angry distractors (0.99 ms distraction effect); $t(78) = -2.52$, $p = .014$. Reaction time indices were correlated with Prescience scores using Pearson correlations. No significant relationships were observed.

Discussion

Our findings from Study 2 revealed that individuals scoring highly on the Prescience scale do not show systematic differences in their sensitivity in detecting subtle expressive changes. In other words, individuals who self-reported that they had a heightened sense of what others were feeling were no more sensitive to changes in facial expression than those who did not. People do not know how accurate they really are. However, these individuals spent more time looking at fearful and angry faces when morphed with neutral faces. When fear morphed into anger (i.e., the fear to anger condition), no systematic relationships with the Prescience subscale were observed. People may be taking longer to establish the presence or absence of emotion rather than establishing which emotion is present (anger or fear). The results from Study 3 showed that although there was a general facilitatory effect of happy faces on target identification, there was no evidence that individuals high in Prescience experienced more attentional capture by emotional faces. This suggests that the longer reaction times observed in Study 2 were not due to differences in attentional capture by the emotional faces. Still, longer reaction times suggest that there may be motives that underlie attempts at reading faces. Attempts at reading others' faces and emotions well may provide advantages.

Study 4

Careful monitoring of interpersonal cues and others' expressions do prove useful in regulating behavior to suit situational demands (Snyder, 1974; Lennox & Wolfe, 1984). There are individual differences in self-monitoring. Those higher in self-monitoring are more highly responsive to social and interpersonal cues, have more self-presentational concerns, and are better at regulating their behavior to suit a given situation. Thus, individuals concerned about the propriety of their actions are more likely to attend carefully to the expressive behavior of others in order to modify their behaviors accordingly (Lennox & Wolfe, 1984). Those higher in Prescience may also be higher in self-monitoring. To test whether those higher in Prescience may be more inclined to be attentive to social cues and to behavioral change and regulation, we tested this factor's correlation with the Self-Monitoring scale (Snyder, 1974) and two subscales of the Revised Self-Monitoring Scale (Lennox & Wolfe, 1984). We predicted positive correlations between Prescience and each, self-monitoring, sensitivity to emotional expressions and ability to modify behaviors.

Method & Results

We administered the Prescience scale, the 18 item Self Monitoring scale (Gangestad & Synder, 1986) and two subscales of the Revised Self-Monitoring Scale (Lennox & Wolfe, 1984) to 59 male and 104 female undergraduates, 18 to 22 years of age at a central Texas university. The 18 item Self-monitoring scale

(Gangestad & Synder, 1986) measures three factors: expressive self control which involves being a good actor; social stage presence, which is a propensity to perform and attract attention; and other directedness, displaying behaviors that others expect (Snyder & Gangestad, 1986, p 126). The Revised Self-Monitoring Scale (Lennox & Wolfe, 1984) is comprised of two subscales: the ability to modify self-presentation, and sensitivity to the expressive behavior of others. These two subscales were proposed additions to the older Self-Monitoring scale (Synder, 1974). Sample items of the 7 item subscale Ability to modify self-presentation include: "Once I know what the situation calls for, it's easy for me to regulate my actions accordingly"; "I have the ability to control the way I come across the people, depending on the impression I wish to give them". Sample items of the 6 item subscale Sensitivity to the expressive behavior of others include: "I can usually tell when I've said something inappropriate by reading it in the listener's eyes"; and, "I am often able to read people's true emotions correctly through their eyes". Our reliability analyses showed Self-monitoring, Ability to modify self-presentation and Sensitivity the expressive behavior of others to have internal consistencies of .69, .81, and .70, respectively. These alphas are fairly reliable. The composite of items for each of the factors was created for this analysis (table 7).

Table 7
Study 4 Variable Means and SD

	Mean	SD	N
Prescience	37.2901	5.44045	162
Modify Self Presentation	26.1728	4.91238	162
Sensitivity to Expressions	21.6481	3.66530	162
Self Monitoring	10.7222	3.41762	162

Correlation analyses showed that Prescience correlated significantly with Sensitivity to expressive behavior of others ($r(162) = .64$, $p < .001$) and with Ability to modify self-presentation ($r(162) = .36$, $p < .001$; see table 8). Prescience did not correlate with the 18 item Self Monitoring scale.

Table 8.
Study 4 Intercorrelations between variables

	1	2	3	4
Prescience	1			
Modify Self Presentations	.361**	1		
Sensitivity to Expressions	.639**	.393**	1	
Self Monitoring	.138	.404**	.163*	1

Note. N = 162. * $p < .05$, ** $p < .01$

Discussion and Conclusion

Our findings show that the Mexican and the Davis IRI factors share similarities, but also differences in how they are conceptualized. For example, in Study 1, the factor Compasión Empática is strongly related to the Empathy, Fantasy and Perspective Taking, and appears to tap into the same constructs as this combination of IRI subscales. In contrast, Indiferencia, and perturbación were independent constructs that were inversely related with each other, but strongly related to the IRI subscale Distress. The most notable finding of Study 1 was that Prescience (Empatia cognoscitiva) was the most unique and independent of the factors having the weakest correlations with the IRI subscales. Thus, this subscale appears to tap into an aspect of empathy that is not indexed by the IRI: the ability to understand the feelings and predict the actions of others.

Our studies on the factor Prescience showed that individuals who purport to know what others are feeling are not necessarily more accurate at detecting social emotional displays, as evidenced in Study 2. Specifically, individuals who believe themselves to be accurate are no more sensitive to subtle changes in facial expression than those who report being less capable in detecting others' emotions. However, these individuals devote more time looking at the emotional expressions of others, an effect that does not appear to be due to differences in selective attention (Study 3).

One possibility is that this increased inspection time was driven in part by self-presentational concerns to be more attentive to others. The results of Study 4 revealed significant relationships between Prescience and both Sensitivity to expressive behavior of others and Ability to modify self-presentation. It is possible that individuals high in Prescience inspect faces more thoroughly before making decisions because they have higher self-regulatory concerns to act appropriately and to modify their behavior to suit the situation. Their particular sensitivity to the expressions of others may provide the relevant cues that help them regulate self-presentation (Lennox & Wolf, 1984). However, Prescience did not correlate with Self-monitoring. Those higher in Prescience do not have a propensity for performance and for attracting attention to themselves. To what extent individuals high in Prescience are serving the interests of others or their own interests in their attempts to be accurate are unknown. Future research should clarify these motives.

Greater reaction times could also be explained by other variables. As mentioned previously, high trait compared to low trait anxious individuals take longer to disengage their attention from angry and fearful faces (Fox et al., 2002; Georgiou et al., 2005; Mogg & Bradley, 1999). Anxiety combined with a greater latency in recognizing singular than compound expressions (LaPlante & Ambady, 2000) may explain longer reaction time in the two progressions studied. Moreover, the two subscales sensitivity to expressive behavior of others and the ability to modify self-presentation have been linked to social anxiety (Lennox & Wolfe, 1984). Thus, future studies could also test and clarify these links and alternate explanations.

In summary, the factor Prescience which had not been identified previously in scales developed in the U.S. was replicated in a U.S. sample. Our validity tests

show this factor to be quite independent, and thus, unique among the empathy constructs. Our criterion related validity tests also showed that individuals higher in Prescience took longer to look at faces, but the longer reaction time was not linked to accuracy or due to differences in attentional capture by the emotional faces. Still, individuals higher in Prescience do have self-presentational concerns, and their purported interests in knowing others' feelings may disclose their willingness to understand and adapt to others and situations. The construct, thus, may prove useful in identifying individuals who wish to improve their counseling skills and the therapeutic process with an ever increasing ethnically diverse clientele (Wang, Davidson, Yakushko, Savoy, Tan & Bleir, 2003).

As research on empathy continues in several countries, we may yet see new factors that contribute to our understanding of the empathic experience. For example, current diagnostic instruments measuring sensitivity to emotions need continued refinement, and new factors could improve their measurement validity. In addition, new factors could enhance the predictability of pro-social behaviors. A number of dispositional variables may operate together or interactively to elicit helping behaviors (Knight, Johnson, Carlo & Eisenberg, 1994). Thus, contributions from scholars abroad may go a long way toward our understanding of empathy and the development of measures that may prove to be useful diagnostic tools for clinical applications.

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