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MEASURE OF INITIAL ATTRACTION (MIA)

Título: Development and Validation of the Measure of Initial Attraction (MIA)

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Abstract

Unilateral initial attraction (UIA) is a first unilateral awareness towards an unknown person and can be the starting point of an interest in voluntarily initiating an interaction or relationship. In order to create a measure tapping this feeling, Study 1 asked individuals to indicate attributes characterizing UIA (Phase 1), and to rate their centrality (Phase 2). These were used to develop the Measure of Initial Attraction (MIA) comprising one component of arousal and another of unilateral interest. While the former is shared with the love construct, the latter differentiates from measures of passion. The MIA proved to be a valid and reliable instrument with the capacity to discriminate UIA across different relationships (Study 2) and targets (Study 3), with good convergent validity (Study 3). Results are discussed within the framework of personal relationships.

Keywords: unilateral initial attraction (UIA); measure of Initial Attraction (MIA); psychometric properties; validation.

Elaboración y validación de la Medida de Atracción Inicial (MIA)

Resumen

La Atracción Inicial Unilateral (UIA) es una primera toma de conciencia unilateral hacia una persona desconocida y puede ser el punto de partida de un interés en iniciar voluntariamente una interacción o relación. Con el fin de crear una medida para este sentimiento, el Estudio 1 solicita a las personas que indiquen los atributos que caracterizan a la UIA (Fase 1), y clasifiquen su centralidad (Fase 2). Éstos se utilizaron para desarrollar la Media de Atracción Inicial (MIA), que comprende un componente de excitación y otro de interés unilateral.

Mientras que el primero se comparte con el constructo del amor, el segundo se diferencia por las medidas de la pasión. El MIA ha demostrado ser un instrumento válido y fiable, con la capacidad de discriminar la UIA a través de diferentes relaciones (Estudio 2) y personas (Estudio 3), con una buena validez convergente (Estudio 3). Los resultados se discuten en el marco de las relaciones personales.

Palabras clave: atracción inicial unilateral (UIA); medida de atracción inicial (MIA); propiedades psicométricas; validación.

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Interpersonal attraction can be defined as a positive unilateral feeling that promotes interest and interpersonal approach (Miller, Perlman, & Brehm, 2007). Classical views suggest attraction as based on acquired knowledge regarding another person (e.g., Montoya, Horton, & Kirchner, 2008), attractiveness (e.g., Montoya, 2008), or positive interactions (e.g., Finkel & Eastwick, 2008). Some literature suggests all these as necessary premises to develop a relationship (e.g., Sprecher & Regan, 2002).

However, sometimes we do not have information about the target, reciprocity of interest, or prior interaction to feel attracted. Indeed, some theoretical models (Bredow, Cate, & Huston, 2008; Levinger, 1983; Murstein, 1970) explicitly refer the linkage between a first unilateral awareness and the interest in voluntarily initiating an interaction/relationship. We term this unilateral initial attraction (UIA) and assume that, even when no relationship has been effectively started (e.g., Berscheid & Regan, 2005), experiencing UIA is central to promote voluntary interest.

Albeit its relevance, UIA has not been thoroughly studied and measured. This is our focus, presenting the development of a UIA measure and providing empirical evidences regarding its validity and reliability.

The Unilateral Initial Attraction (UIA) Phenomenon

Attraction may be elicited immediately after a unilateral awareness/perception of a target, and promote positive affect, interest, and willingness to engage in a relationship (cf., Afifi & Lucas, 2008; Bredow, et al., 2008; Levinger, 1983; Murstein, 1970). We term this the UIA phenomenon (Rodrigues, 2010). As Levinger and Snoek (1972) suggest, “the beginnings of a relationship appear when one person (*P*) becomes aware of another (*O*)”, and that “it is unimportant whether or not *O* in turn notices *P*. The only pertinent event is that *P* has information that forms a basis for his unilateral evaluation of *O*” (p. 6).

This phenomenon has not been given sufficient attention by researchers, as literature in relationship initiation tends to overlook the importance of UIA and focus on variables associated to romantic/sexual attraction (e.g., Buss & Barnes, 1986; Shackelford, Schmitt, & Buss, 2005). Indeed, some relationships are not initiated by sexual/romantic attraction (Moser, 1994), but rather by a general UIA (e.g., Bredow, et al., 2008). In this sense, understanding the UIA construct and reliably measuring it is extremely important for analyzing relationship initiation/development.

Based on assumptions drawn from literature, the construction and development of the UIA measure is based on two premises: (1) UIA is not necessarily romantic and/or sexual, (2) nor it is necessarily associated with, or a first step in, the search for potential dating/romantic partners. Such conceptualization may confuse UIA with constructs such as liking (e.g., Lamm & Wiesmann, 1997) or desire/lust (e.g., Regan, 2004). In this sense, we assume it to be distinct from these two constructs in two important ways. First, liking is a positive general evaluation (S. Hendrick & Hendrick, 1992) that can take different meanings (e.g., respect, empathy, friendship, love; Rubin, 1970), and does not necessarily signal willingness to voluntarily approach another person with sexual/romantic intent. Hence, liking is not necessarily associated with willingness to interact, contrarily to UIA which is assumed as the first stage for developing voluntary relationships.

Second, a first evaluation of a target is sometimes associated with physical attraction or desire/lust (e.g., Regan, 2004). Indeed, Regan (2000) suggests that desire/lust is mainly associated with passion, and not necessarily with liking or loving (e.g., companionate love). On the other hand, conceptualizations of immediate attraction such as being in love (Regan, Kocan, & Whitlock, 1998), or limerence (Tennov, 1999) assume desire/lust to be associated with the experience of physiological arousal when encountering, being in the presence, and/or thinking about another person. However, UIA is not necessarily associated with

desire/lust, as it may motivate us to simply get to know the other and eventually develop a friendship (not characterized by desire/lust; Moser, 1994).

In short, UIA seems to be associated with willingness for a first approach. Even though this unilateral perception includes liking, it is not necessarily associated with desire/lust. This subtle yet important distinction allows us to argue that UIA underlies different relationships. Nevertheless, it is reasonable to expect different degrees of UIA to be associated with different relationships, as UIA should be complemented with other specific attributes (e.g., friendships vs. love; Moser, 1994). Hence, we expect a valid and reliable measure of UIA to prove not only sensitivity in measuring UIA across relationships, but also to assess this specific feeling, when compared to measures of proximal constructs (e.g., passion).

Overview and Aims

To understand the UIA construct, its associated attributes were analyzed using a prototypical approach (cf., Mervis & Rosch, 1981). In Study 1, individuals were asked to characterize the UIA feeling when first becoming aware of another person (Phase 1). A second set of participants was then asked to analyze each attribute and indicate its perceived centrality to UIA (Phase 2). In Study 2, we present the Measure of Initial Attraction (MIA) and analyze its construct validity and reliability, as well as its ability to discriminate UIA across different relationships. Study 3 focused on convergent validity, as well as on the scale's sensitivity to different targets.

STUDY 1

To operationalize UIA, we first relied on individuals' knowledge. By adopting a prototypical approach (cf., Mervis & Rosch, 1981), we identified the central and peripheral attributes that characterize the subjective experience of UIA. This study was divided into two phases. Phase 1 asked participants to characterize their experience of UIA when first becoming aware of an unknown target, allowing us to identify the more frequently nominated attributes (Buss & Craik, 1983). Phase 2 asked another sample of participants to analyze each attribute according to its importance to UIA, allowing us to identify central and peripheral attributes (e.g., Fehr, 1988).

Method

Participants and Design

In Phase 1, a sample of 124 undergraduates (70.2% females, $M_{\text{Age}} = 22.57$, $SD = 3.06$) was randomly assigned to one of two conditions ($n_1 = 68$; $n_2 = 56$). Ninety-eight undergraduates participated in Phase 2 (73.5% females, $M_{\text{Age}} = 22.00$, $SD = 2.57$).

Procedure

In both phases, participants were asked to freely take part in a study about interpersonal attraction. Participants were handed a booklet for completion. In Phase 1, the first page had two control questions assuring that participants knew UIA (1 = *Don't know what it is*, 9 = *Know what it is*) and had previously experienced it (1 = *Never felt*, 9 = *Already felt*). In the second page, half of the sample was asked to freely remember and write attributes associated

with the experience of UIA, while the remaining participants were asked to write a personal episode where they felt UIA, focusing on their first sensations.

In Phase 2, the first page of the booklet asked participants to think about a situation where they felt UIA. Next, the attributes extracted from Phase 1 were presented and, reporting to such feeling, participants' task was to indicate for each attribute: (a) how characteristic it was for UIA (1 = *Characteristic*, 7 = *Extremely characteristic*), and (b) if it was considered mandatory to experience it (*Yes/No*). The last page presented all the attributes, asking them to choose the ten most important for UIA. In both phases, after completion participants were debriefed and thanked.

Results and Discussion

Participants from Phase 1 evidenced they knew UIA ($M = 7.93$, $SD = 1.38$) and had previously experienced it ($M = 8.20$, $SD = 1.19$), as scores were above the mid-point of the response scale, $t(123) = 23.62$, $p < .001$, $d = 4.26$, and $t(123) = 29.98$, $p < .001$, $d = 5.41$, respectively.

Participants' responses were content analyzed following Fehr's (1988) methodology. Sentences with one attribute were coded directly (e.g., I felt *cold sweats*), while complex sentences were divided in attribute units and coded accordingly (e.g., We *glanced at each other* and then I felt *butterflies in my stomach*). Two independent judges coded the attributes into broader categories (comparison between codings yielded a 95% level of agreement; disagreements resolved through discussion). No differences according to participants' gender were found. Table I summarizes the frequency of nomination for the attributes used in the MIA¹.

¹ A table with all the attributes is available upon request to the first author.

Table I

In Phase 2, for each attribute we computed: (a) the mean score reflecting how *characteristic* it was for UIA, (b) the percentage of participants deeming it as *mandatory*, and (c) the percentage of participants selecting it as *important* (Table 1). Following other approaches (e.g., Fehr, 1988; Regan, et al., 1998), attributes with scores equal/above the median for at least one variable were considered central (i.e., characteristic ≥ 4.81 , mandatory $\geq 56.9\%$, and/or important $\geq 11.2\%$). We identified 36 central and 19 peripheral attributes.

We found a high level of participant agreement, showing consistency in the identification, representation and characterization of the subjective experience of UIA. Indeed, the attributes' frequency of nomination (Phase 1) was correlated to all measures from Phase 2, $.36 > r > .52$, all $p < .001$, suggesting that the most frequently listed attributes of UIA by a first group of participants were perceived as more central by a second independent group of participants. Likewise, more characteristic attributes were considered mandatory, $r = .97$, $p < .001$, and more important, $r = .81$, $p < .001$, and mandatory attributes were considered more important, $r = .76$, $p < .001$.

These results clearly suggest UIA as a specific phenomenon with a shared knowledge structure (Hardin & Higgins, 1996; Fletcher & Thomas, 1996), assuring the development of a Measure of Initial Attraction (MIA) tested for its construct validity and reliability in Study 2.

STUDY 2

In this study we present and analyze MIA's underlying factor structure by using exploratory and confirmatory factor analyses. Apart from focusing on construct validity and

reliability, this study also sought to analyze the measure's capacity to discriminate UIA across relationships.

By assuming UIA as a necessary basis to initiate voluntary relationships, we also assume it as a shared characteristic of such relationships. However, UIA should be experienced differently across relationships. Hence, we expect MIA to be more sensitive in assessing UIA for an unknown other, than for one's romantic partner, friend or work colleague.

Method

Participants and Design

Three-hundred and seventy-four undergraduates (62.60% females, $M_{\text{Age}} = 21.10$, $SD = 2.78$) took part in this study. Two subsamples with approximately 50% of the cases were randomly extracted. The first subsample was composed by 217 participants (129 females, $M_{\text{Age}} = 21.04$, $SD = 2.63$), and was the focus of an exploratory principal components analysis. The second subsample, composed by 183 participants (116 females, $M_{\text{Age}} = 21.08$, $SD = 2.89$), was the focus of a confirmatory factor analysis. Participants were randomly assigned to one of four conditions, defined by the target: (a) initial attraction ($n = 94$), (b) love ($n = 97$), (c) friendship ($n = 94$), or (d) colleague ($n = 89$).

Measure

Thirty-one of the 36 central attributes were selected for the MIA. Four attributes were dropped for their direct reference to UIA (e.g., *immediate attraction*) or sexual desire (e.g., *seduction*). Each selected attribute (see Table 1) was transformed into the sentence "*I felt [attribute] him/her*" (e.g., *I felt interested in him/her*), and associated to a 7-point scale (1 = *Not at all* to 7 = *A lot*).

Procedure

Upon consent to freely take part in a study about relationships, participants were randomly handed a booklet. On the first page they were asked to either think about “an unknown person for whom you felt an immediate attraction” (UIA target), “the person with whom you have/had a romantic relationship” (love target), “a close friend with whom you would not have a romantic relationship” (friendship target), or “a work colleague that you like but with whom you would not have a romantic relationship” (colleague target). While thinking about the target, participants were asked to complete the MIA. After completion, participants were debriefed and thanked.

Results and Discussion

Principal Components Factor Analysis (PCA) and Reliability

A PCA analyses with *Promax* rotation was conducted. The extraction method and rotation used in our analyses were chosen for two main reasons: (a) literature suggests PCA as the preferred method of extraction when reducing the number of items of a new instrument measure (Stoner, Perrewé, & Hofacker, 2011), and (b) since we suspect MIA’s underlying factors to be correlated, *Promax* rotation method allows the factors to correlate while finding the best fit for an orthogonal solution (Hendrickson & White, 1964).

A first PCA resulted in two components sharing the attributes *vivacious*, *fascination*, and *willingness to look*. These ambiguous attributes were discarded. Based on the Kaiser rule (Kaiser, 1960), a second PCA with the 28 remaining items resulted in two correlated components, $r = .74$, $p < .001$. The final solution presented a highly acceptable index of sample adequacy ($KMO = .95$; inclusion of item on component with loading $> .40$), explaining 60.72% of total variance. Also, both components presented high Cronbach’s

alphas, with each item contributing to the respective component's reliability as shown by the corrected item-total correlations (Table II).

Table II

The first component, *Arousal* (16 items) is defined by the experience of arousal (e.g., *desire*) associated with an inexplicable feeling (e.g., *something strange*), physiological reactions (e.g., *butterflies in my stomach*), and intrusive thinking about the other (e.g., *thinking about*). The second component, *Interest* (12 items) is defined by positive feelings (e.g., *joy*), interest (e.g., *curiosity*), and willingness to voluntarily approach the other (e.g., *willingness to know*).

Given the high levels of reliability for the MIA scale and its components, we computed an overall UIA mean score and a mean score for each component. Total mean responses to the MIA were significantly above the mid-point of the 7-point response scale ($M = 4.55$, $SD = 1.25$), $t(373) = 8.44$, $p < .001$, $d = .87$ (Minimum = 1.00, Maximum = 6.86), with a mesokurtic ($kurtosis/std. error = -.63$) and negatively skewed ($skewness/std. error = -4.59$) distribution of scores. For the arousal component, mean response was significantly above the mid-point of the response scale ($M = 4.17$, $SD = 1.43$), $t(373) = 2.32$, $p = .021$, $d = .24$ (Minimum = 1.00, Maximum = 6.75), with a platykurtic ($kurtosis/std. error = -2.53$) and negatively skewed ($skewness/std. error = -3.65$) distribution of scores. For the interest component, mean score was also found to be significantly above the mid-point of the response scale ($M = 5.05$, $SD = 1.22$), $t(373) = 16.50$, $p < .001$, $d = 1.71$ (Minimum = 1.00, Maximum = 7.00), with a leptokurtic ($kurtosis/std. error = 2.51$), and negatively skewed ($skewness/std. error = -6.74$) distribution of scores.

Confirmatory Factor Analysis (CFA)

We ran CFA analyses in the second subsample of participants. Three CFAs were performed, and fit indexes of a two-correlated factors model (our hypothesized model), a two-uncorrelated factors model, and a one-factor model were obtained. This last model was also tested due to the high correlations found between the two components extracted by the PCA. All CFA analyses were conducted using M-plus (Muthén & Muthén, 2010), and both relative and absolute goodness of fit indexes were obtained: (a) chi-squared statistic, (b) comparative fit index (CFI), (c) Tucker–Lewis Index (TLI), (d) root mean square error of approximation (RMSEA), and (e) standardized root mean squared residual (SRMR). Models were estimated using maximum likelihood estimation with the Yuan–Bentler correction for skewness (MLR; Muthén & Muthén, 2010).

Based on the standards established in literature for fit indexes (Bentler, 1990; Browne & Cudeck, 1989; Jöreskog & Sörbom, 1984), our hypothesized two-correlated factors model shows a good fit, $\chi^2 = 616.55$, $\chi^2/\text{df} = 1.82$, CFI = .91, TLI = .90, RMSEA = .07 (CI: .06; .08) and SRMR = .06, with moderate to high standardized regression paths between the items and their latent components (λ s from .39 to .86). The correlation between the two factors was strong and significant ($\phi = .80$). The first alternative model, with two-uncorrelated factors, presented poorer fit indexes, $\chi^2 = 741.01$, $\chi^2/\text{df} = 2.18$, CFI = .87, TLI = .85, RMSEA = .08 (CI: .07; .09) and SRMR = .06. Similarly, the second alternative model, with one factor, also presented poorer fit indexes, $\chi^2 = 833.57$, $\chi^2/\text{df} = 2.44$, CFI = .84, TLI = .82, RMSEA = .09 (CI: .08; .10) and SRMR = .07. Briefly, the hypothesized two correlated factors model showed better fit indexes than the remaining models.

MIA's Sensitivity Analysis

To further test the MIA's capacity in assessing UIA across relationships, we compared MIA's total scores between target conditions. We expect our measure to be more sensitive in assessing UIA for the UIA target, when compared to each of the remaining targets. We also expected no differences according to the participants' gender. A 4 (Target) x 2 (Gender) ANOVA revealed a main effect across targets, $F(3, 366) = 38.61, p < .001, \eta_p^2 = .24$. As expected, neither a gender main effect, $F(1, 366) < .001, p = .99$, nor an interaction between factors, $F(3, 366) = 1.29, p = .28$, reached significance. Planned contrasts show higher MIA scores for the UIA target ($M = 5.46, SD = .74$), compared to love ($M = 4.75, SD = 1.10$), $t(370) = 4.59, p < .001, d = .48$, friendship ($M = 4.25, SD = 1.07$), $t(370) = 7.74, p < .001, d = .80$, or colleague targets ($M = 3.67, SD = 1.31$), $t(370) = 11.27, p < .001, d = 1.17$.

Regarding each MIA component, we expected different patterns. Specifically, and although one may experience UIA (high arousal and interest) towards an unknown target (e.g., attraction at first sight) or one's romantic partner, the UIA for a friend or acquaintance should not be characterized by high arousal (Moser, 1994). Hence, we expected both UIA and love targets to share high arousal (vs. both friendship and acquaintance targets), and UIA target to reveal a higher interest score (vs. each of the remaining targets). As no differences according to the participants' gender were found previously, this factor was discarded in this analysis. A 4 (Target) x 2 (MIA components) repeated measures ANOVA revealed the expected main effect across targets, $F(3, 370) = 43.29, p < .001, \eta_p^2 = .26$. Analyzing more specifically the scores for the arousal component, results reveal that scores were higher for the UIA and love targets combined ($M = 5.10, SD = 1.01$) when compared to the combined scores for both friendship and colleague targets ($M = 3.97, SD = 1.22$), $t(372) = 9.76, p < .001, d = 1.01$.

For the interest component, results show that the UIA target elicited higher interest scores ($M = 5.70$, $SD = .80$) when compared to the love ($M = 5.09$, $SD = 1.23$), $t(370) = 3.70$, $p < .001$, $d = .38$, friendship ($M = 5.02$, $SD = 1.04$), $t(370) = 4.14$, $p < .001$, $d = .43$, and colleague targets ($M = 4.33$, $SD = 1.38$), $t(370) = 8.17$, $p < .001$, $d = .85$. Results also show that interest scores were always higher in each target when compared to arousal component scores (all $p < .001$).

In a nutshell, these results assure the validity and reliability of MIA and support our conceptualization of UIA. The UIA construct seems to be experienced as arousal and interest. However, and given the sensitivity results, both components do not seem to be necessary to experience UIA. Indeed, the arousal component seems to be shared with passionate relationships (e.g., Hatfield, Bensman, & Rapson, 2012; Moser, 1994). The interest component seems to be important for interpersonal approach and relationship initiation (given the scores for the UIA target), as well as for the development of different relationships (given its higher scores for all targets). In Study 3 we aim at further validating the MIA, focusing on convergent validity.

STUDY 3

In the previous study, no empirical evidences were presented regarding MIA's capacity to differentiate UIA from a passion/passionate love feeling (both feelings seem to share an arousal component, see Study 2). Hence, in this study participants were asked to report their feelings of UIA and passion/passionate love for a famous person with whom they never interacted. Half the participants thought of a target associated with UIA, while the other half thought of a neutral target. By doing so, participants reported their feelings solely based on

unilateral personal knowledge about the other person and with no information regarding reciprocity of feelings or interest, thus converging with our conceptualization of UIA.

Based on previous evidences, we expect scores on all measures to be higher for the UIA (vs. neutral) target, with participants reporting higher MIA scores (vs. passion). We also expect MIA's interest scores to be higher (vs. all measures) for the UIA target, with no differences between MIA's arousal, and measures of passion. Similarly, for the neutral target we expect higher MIA scores (vs. passion), especially in the interest component. Again, no differences are expected between MIA's arousal, and measures of passion.

Method

Participants and Design

Two-hundred and five undergraduates (152 females, $M_{Age} = 22.80$, $SD = 5.82$) participated in this study. Participants were randomly assigned to one of two target conditions: (a) UIA ($n = 104$), or (b) neutral ($n = 101$).

Procedure and Measures

Upon consent to freely take part in a study about relationships, participants were randomly handed a booklet for completion. On the first page, they were asked to either think of “an actor/actress with whom they would never interacted before, but for whom they have a crush” (UIA target) or “an actor/actress with whom they had never interacted before and on whom they do not have a crush” (neutral target). While thinking about the target person, participants were asked to complete the MIA, the Passionate Love Scale (PLS; $\alpha = .91$; Hatfield & Sprecher, 1986), and Eros sub-scale ($\alpha = .70$; C. Hendrick & Hendrick, 1986). Responses were given in a 7-point scale (1 = *Not at all* to 7 = *A lot*). Scales had no specific identification

or instructions, and were presented in random order within conditions. After completion, participants were debriefed and thanked.

Results and Discussion

Convergent Validity

We first ran two CFA analyses to test PLS and Eros one-factor models. We used M-plus (Muthén & Muthén, 2010) and obtained relative and absolute goodness of fit indexes. Both models were estimated using maximum likelihood estimation with the Yuan–Bentler correction for skewness (MLR; Muthén & Muthén, 2010). Based on the standards established in literature for fit indexes (Bentler, 1990; Browne & Cudeck, 1989; Jöreskog & Sörbom, 1984), the PLS model shows a good fit, $\chi^2 = 155.11$, $\chi^2/df = 2.01$, CFI = .96, TLI = .95, RMSEA = .07 (CI: .05; .09) and SRMR = .03, with high standardized regression paths between the items and their latent component (λ s from .76 to .91). Similarly, the Eros model also presented good fit indexes, $\chi^2 = 50.68$, $\chi^2/df = 3.62$, CFI = .95, TLI = .92, RMSEA = .11 (CI: .08; .15) and SRMR = .03, with high standardized regression paths between the items and their latent component (λ s from .59 to .93). A mean score for each measure was computed, and convergent validity with MIA was analyzed.

By assuming UIA to have an arousal and an interest component, it was reasonable to expect MIA scores to be correlated with PLS and Eros scores. Indeed, overall MIA scores were moderately correlated with PLS, $r = .68$, $p < .001$, and Eros scores, $r = .53$, $p < .001$. Furthermore, MIA's arousal component was moderately correlated with the PLS, $r = .69$, $p < .001$, and Eros, $r = .54$, $p < .001$, and similarly MIA's interested component was moderately correlated with both PLS, $r = .64$, $p < .001$, and Eros, $r = .50$, $p < .001$. These results suggest that even though these measures tap certain shared attributes of UIA and passion, the

magnitude of correlations also suggests that MIA and its components tap into specific and non-shared attributes characterizing UIA.

MIA's Sensitivity Analysis

To further test MIA's sensitivity in measuring UIA, we compared the scores of MIA and its components, PLS and Eros for the UIA target and for the neutral target. We expected higher scores in all measures for the UIA (vs. neutral) target. For the UIA target we also expected scores on the MIA's interest component to be higher (vs. all measures) with no differences between MIA's arousal component, PLS and Eros. For the neutral target we expected higher scores for the overall MIA and for the MIA's interest component (vs. all measures).

A 2 (Target: UIA; Neutral) x 5 (Measures: MIA; Arousal component; Interest component; PLS; Eros) repeated measures ANOVA revealed a main effect for the type of target, $F(4, 812) = 4.25, p = .003, \eta^2 = .02$. Planned contrasts show higher scores for the UIA (vs. neutral) target on the MIA ($M = 4.10$ vs. $M = 2.49, t(203) = 8.01, p < .001, d = 1.12$), MIA's arousal component ($M = 3.91$ vs. $M = 2.36, t(203) = 7.74, p < .001, d = 1.09$), MIA's interest component ($M = 4.36$ vs. $M = 2.67, t(203) = 7.97, p < .001, d = 1.12$), PLS ($M = 3.45$ vs. $M = 2.26, t(203) = 5.09, p < .001, d = .71$) and Eros ($M = 3.32$ vs. $M = 2.20, t(203) = 4.97, p < .001, d = .70$).

In a more stringent test, we compared scores within each target. Planned contrasts on the UIA target reveal higher scores for MIA, when compared to the combined PLS and Eros scores, $t(203) = 5.72, p < .001, d = .80$. Also, planned contrasts also show MIA's interest component scores to be higher than scores on both PLS and Eros combined, $t(203) = 7.17, p < .001, d = 1.01$. Contrary to our predictions, MIA's arousal component scores were also higher than PLS and Eros scores combined, $t(203) = 4.25, p < .001, d = .60$.

Considering the neutral target, planned contrasts show higher scores on the overall MIA, when compared to PLS and Eros scores combined, $t(203) = 2.02, p = .044, d = .28$. MIA's arousal component scores were not different from PLS and Eros scores combined, $t(203) = .98, p = .327, d = .14$. MIA's interest component scores were also higher than scores on both PLS and Eros combined, $t(203) = 3.16, p = .002, d = .44$.

These results show that the MIA has sensitivity in measuring UIA (vs. measures of passion). Indeed MIA tapped into a feeling characterized by arousal and interest, not exclusively characterized by, and not overlapped with, more intimate and intense feeling of passion. This is especially evident when considering that, for the UIA target, scores on both MIA components were significantly higher (vs. PLS/Eros scores), while for the neutral target no differences were found between MIA's arousal component PLS and Eros. Importantly, MIA's interest component scores for the UIA target were above the mid-point of the 7-point response scale, $t(103) = 2.56, p = .012, d = .50$, while PLS and Eros scores were below the mid-point, $t(103) = -3.34, p < .001, d = -.66$ and $t(103) = -4.22, p < .001, d = -.83$ respectively.

Although the finding that MIA's arousal component was higher than PLS and Eros for the UIA target is contrary to our original hypothesis, this does not question our measure's validity. We believe it strengthens it. Note that in Study 2 we asked participants to think of either an UIA or a love target, and found that both shared MIA's arousal component. This was not the case in the present study. However, this result is not the same as saying that the feeling of UIA is characterized by a component of passion (as measured by PLS and Eros) for a public figure with whom one never interacted before. Indeed, these results suggest that UIA is characterized by a component of arousal that is not necessarily passion, and is also characterized by a component of interpersonal interest that seems to be always present (hence the higher scores for this component in both targets). This evidence stays in line with the

argument that what is tapped by the MIA's interest component is more general and may promote an interest in wanting to know more about the other person, independently of physiological reactions.

GENERAL DISCUSSION

This article is a first step in studying UIA, an innovative concept that fills a gap in literature, clarifying the UIA construct, providing a reliable measure, and opening new lines of research. UIA is experienced unilaterally towards an unknown person, being the base to initiate voluntary relationships (Bredow, et al., 2008; Levinger, 1983; Murstein, 1970). Relying on individuals' knowledge and experience, we analyzed the centrality of UIA's attributes (Study 1) and developed the MIA, a valid and reliable instrument (Study 2), with convergent validity (Study 3) and sensitivity to different relationships/targets (Studies 2 and 3).

Study 1 suggests UIA to have three main characteristics: (a) experience of positivity/affection, (b) personal interest/willingness to interact, and (c) arousal. Indeed, UIA is associated with positivity, a characteristic of attraction, thus not being surprising its overlap with liking (Lamm & Wiesermann, 1997), limerence (Tennov, 1999), falling/being in love (Regan, et al., 1998), and love (Fehr, 1988). UIA is also associated with interest/voluntary willingness to interact, a necessary condition to initiate a relationship shared with liking. However, we question if this is necessary for liking, given that for UIA such interest is associated with *empathy/fascination* and for liking is associated with other's overvaluation. Finally, UIA is characterized by arousal/desire/lust shared with limerence, being in love and love. However, such experience for UIA has less intensity and emerges at a fantasy level,

eliciting desire for reciprocation. Contrarily, limerence and being in love are associated to continued interactions, certainty of reciprocation, and intimacy.

In study 2 we presented the MIA and attested this instrument's construct validity, reliability and sensitivity. Two components underlie the MIA – arousal and interest. Also, MIA distinguished UIA across relationships, with the arousal component shared only with love (characterized by desire/lust), and the interest component differentiated across relationships (higher for the UIA target). This is in line with results from Study 3, where we found moderate correlations between MIA and measures of passion. Furthermore, we showed MIA's sensitivity by differentiating scores across targets. Higher MIA scores were obtained for the UIA target (vs. PLS/Eros), while differences in the neutral target were due to MIA's interest component (vs. MIA's arousal component or PLS/Eros). Hence, our measure tapped a specific feeling not assessed by passion measures.

More empirical data is needed to further validate the UIA construct and MIA. Indeed, we did not address divergent validity, and future studies should compare the MIA with other measures to further support for the differentiation of UIA. Furthermore, we did not address criterion-related validity. Assuming UIA to be the starting point of voluntary interpersonal relationships, it is important to analyze if the MIA can predict such initiation and development. Future studies should ask individuals to recall the initiation of a close relationship (e.g., friendship, love), list the factors that lead them to first approach another person and then report their UIA. To have a comparison basis, individuals could do the same while considering a person with whom they did not develop a close relationship. The differentiation in UIA scores for each target would argue for the predictive value of the MIA. Finally, future studies should also consider developing a shorter version of the MIA in order to reduce eventual redundancy between the items and facilitate its applicability in experimental settings.

REFERENCES

- Afifi, W., & Lucas, A. (2008). Information seeking in the initial stages of relationship development. In S. Sprecher, A. Wenzel & J. Harvey (Eds.), *Handbook of relationship initiation* (pp. 135-151). New York, NY: Psychology Press.
- Bentler, P. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107, 238-246. doi:10.1037//0033-2909.107.2.238
- Berscheid, E., & Regan, P. (2005). *The psychology of interpersonal relationships*. Mahwah, NJ: Prentice Hall.
- Bredow, C., Cate, R., & Huston, T. (2008). Have we met before?: A conceptual model of first romantic encounters. In S. Sprecher, A. Wenzel & J. Harvey (Eds.), *Handbook of relationship initiation* (pp. 3-28). New York, NY: Psychology Press.
- Browne, M., & Cudeck, R. (1989). Single sample cross-validation indices for covariance structures. *Multivariate Behavioral Research*, 24, 445-455.
doi:10.1207/s15327906mbr2404_4
- Buss, D., & Barnes, M. (1986). Preferences in human mate selection. *Journal of Personality and Social Psychology*, 50, 559-570. doi:10.1037//0022-3514.50.3.559
- Buss, D. & Craik, K. (1983). The act frequency approach to personality. *Psychological Review*, 90, 105-126. doi:10.1037//0033-295X.90.2.105
- Fehr, B. (1988). Prototype analysis of the concepts of love and commitment. *Journal of Personality and Social Psychology*, 55, 557-579. doi:10.1037//0022-3514.55.4.557
- Finkel, E., & Eastwick, P. (2008). Speed-dating. *Current Directions in Psychological Science*, 17, 193-197. doi:10.1111/j.1467-8721.2008.00573.x

- Fletcher, G., & Thomas, G. (1996). Close relationship lay theories: Their structure and function. In G. Fletcher & J. Fitness (Eds.), *Knowledge structures in close relationships: A social psychological approach* (pp. 3-24). Hillsdale, NJ: Lawrence Erlbaum.
- Hardin, C., & Higgins, E. (1996). Shared reality: How social verification makes the subjective objective. In E. Higgins & R. Sorrentino (Eds.), *Handbook of motivation and cognition: The interpersonal context* (Vol. III, pp. 28-84). New York, NY: Guilford Press.
- Hatfield, E., Bensman, L., & Rapson, R. (2012). A brief history of social scientists' attempts to measure passionate love. *Journal of Social and Personal relationships*, 29, 143-164. doi:10.1177/0265407511431055
- Hatfield, E., & Sprecher, S. (1986). Measuring passionate love in intimate relationships. *Journal of Adolescence*, 9, 383-410. doi:10.1016/S0140-1971(86)80043-4
- Hendrick, C., & Hendrick, S. (1986). A theory and method of love. *Journal of Personality and Social Psychology*, 50, 392-402. doi:10.1037//0022-3514.50.2.392
- Hendrick, S., & Hendrick, C. (1992). *Liking, loving, & relating* (2nd ed.). CA: Brooks/Cole.
- Hendrickson, A. & White, P. (1964). Promax: A quick method for rotation to oblique simple structure. *The British Journal of Statistical Psychology*, 17, 65-70. doi:10.1111/j.2044-8317.1964.tb00244.x
- Jöreskog, K. G., & Sörbom, D. (1984). *LISREL 6: User's guide*. Lincolnwood, IN: Scientific Software International.
- Kaiser, H. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement*, 20, 141-151. doi:10.1177/001316446002000116
- Lamm, H., & Wiesmann, U. (1997). Subjective attributes of attraction: How people characterize their liking, their love, and their being in love. *Personal Relationships*, 4, 271-284. doi:10.1111/j.1475-6811.1997.tb00145.x

- Levinger, G. (1983). Development and change. In H. Kelley, E. Berscheid, A. Christensen, J. Harvey, T. Huston, G. Levinger, E. McClintock, L. Peplau & D. Peterson (Eds.), *Close relationships* (pp. 315-359). New York, NY: W. H. Freeman & Company.
- Levinger, G., & Snoek, J. (1972). *Attraction in relationship: A new look at interpersonal attraction*. Morristown, NJ: General Learning Press.
- Mervis, C., & Rosch, E. (1981). Categorization of natural objects. *Annual Review of Psychology*, 32, 89-115. doi:10.1146/annurev.ps.32.020181.000513
- Miller, R., Perlman, D., & Brehm, S. (2007). *Intimate relationships* (4th ed.). New York, NY: McGraw-Hill.
- Montoya, R. (2008). I'm hot, so I'd say you're not: The influence of objective physical attractiveness on mate selection. *Personality and Social Psychology Bulletin*, 34, 1315-1331. doi:10.1177/0146167208320387
- Montoya, R., Horton, R., & Kirchner, J. (2008). Is actual similarity necessary for attraction? A meta-analysis of actual and perceived similarity. *Journal of Social and Personal Relationships*, 25, 889-922. doi:10.1177/0265407508096700
- Moser, G. (1994). *Les relations interpersonnelles*. Paris, France: Presses Universitaires de France.
- Murstein, B. (1970). Stimulus-Value-Role: A theory of marital choice. *Journal of Marriage and the Family*, 32, 465-481. doi:10.2307/350113
- Muthén, L., & Muthén, B. (1998-2010). *Mplus user's guide* (6th ed.). Los Angeles, CA: Muthén, & Muthén.
- Regan, P. (2000). The role of sexual desire and sexual activity in dating relationships. *Social Behavior and Personality*, 28, 51-60. doi:10.2224/sbp.2000.28.1.51
- Regan, P. (2004). Sex and the attraction process: Lessons from science (and Shakespeare) on lust, love, chastity, and fidelity. In J. Harvey, A. Wenzel, & S. Sprecher (Eds.), *The*

- handbook of sexuality in close relationships* (pp. 115-133). Mahwah, NJ: Lawrence Erlbaum.
- Regan, P., Kocan, E., & Whitlock, T. (1998). Ain't love grand! A prototype analysis of the concept of romantic love. *Journal of Social and Personal Relationships*, *15*, 411-420. doi:10.1177/0265407598153006
- Rodrigues, D. (2010). "Só de olhar para ti...": *O fenómeno de atracção inicial* ["Just by looking at you": *The initial attraction phenomenon*]. Unpublished doctoral dissertation. Lisbon, Portugal: Instituto Universitário de Lisboa (ISCTE-IUL).
- Rubin, Z. (1970). Measurement of romantic love. *Journal of Personality and Social Psychology*, *16*, 265-273. doi:10.1037/h0029841
- Shackelford, T., Schmitt, D., & Buss, D. (2005). Mate preferences of married persons in the newlywed year and three years later. *Cognition and Emotion*, *19*, 1262-1270. doi:10.1080/02699930500215249
- Sprecher, S., & Regan, P. (2002). Liking some things (in some people) more than others: Partner preferences in romantic relationships and friendships. *Journal of Social and Personal Relationships*, *19*, 463-481. doi:10.1177/0265407502019004048
- Stoner, J., Perrewé, P., & Hofacker, C. (2011). The development and validation of the Multi-Dimensional Identification Scale (MDIS). *Journal of Applied Social Psychology*, *41*, 1632, 1658. doi:10.1111/j.1559-1816.2011.00770.x
- Tennov, D. (1999). *Love and limerence: The experience of being in love*. New York, NY: Scarborough House.

Table I

Attributes of Initial Attraction: Percentage of Nomination (Phase 1) and Centrality Ratings (Phase 2)

Attributes	<i>Phase 1</i>		<i>Phase 2</i>	
	Frequency	Characteristic	Mandatory	Important
	%	<i>M (SD)</i>	%	%
Interest	26.61	5.94 (1.20)	92.8	35.7
Physical attractiveness	23.39	5.62 (1.42)	83.5	56.1
Joy	20.16	5.70 (1.33)	89.8	23.5
Exchange glances	18.55	5.97 (1.12)	92.7	65.3
Willing to meet	16.13	5.81 (1.28)	87.6	34.7
Butterflies in my stomach	15.32	3.90 (1.99)	51.0	17.3
Heart pounding	14.52	4.52 (1.90)	59.4	11.2
Desire	14.52	5.22 (1.75)	61.1	44.3
Willingness to be with	14.52	6.01 (1.20)	92.7	38.8
Thinking about the other	12.90	5.57 (1.34)	84.4	37.8
Willingness to exchange smiles	12.90	5.86 (1.28)	90.7	48.5
Empathy	12.10	5.08 (1.51)	83.3	22.4
Wanting to draw attention	9.68	4.49 (1.86)	56.3	20.4
Chemistry	9.68	5.68 (1.39)	87.5	52.0
Want to spend time with	9.68	5.70 (1.45)	89.7	30.9
Click	8.06	5.26 (1.65)	81.4	29.6
Blushing	7.26	4.18 (1.93)	38.1	11.2
Unexplainable	7.26	4.54 (1.88)	49.5	11.2
Fascination	5.65	5.16 (1.57)	76.3	20.4
Willingness to know more	5.65	5.47 (1.41)	83.7	19.4
Willingness to feel the other	5.65	5.49 (1.73)	80.6	28.8
Reciprocation	4.03	5.36 (1.59)	76.5	18.4
Vivacity	4.03	4.92 (1.71)	69.1	10.0
Curiosity	3.23	5.16 (1.33)	78.1	19.4
Laughing	3.23	5.34 (1.42)	76.0	22.4
Strange feeling	3.23	4.68 (1.68)	59.6	10.2
Pleasant	2.42	5.54 (1.31)	89.8	5.1
Intense	2.42	5.01 (1.72)	62.9	7.1
Willingness to please	2.42	4.81 (1.62)	61.9	9.2
Cheeky	1.61	4.81 (1.74)	58.8	16.3
Affection	1.61	4.39 (1.75)	56.7	16.3

Table II
MIA Principal Components Factor Analysis (Promax Rotation)

<i>Components and items</i>	<i>Arousal</i>	<i>Interest</i>	<i>Corrected item-total correlation</i>
31. Desire	.93	-.10	.83
9. Heart pounding	.90	-.07	.82
7. Butterflies in my stomach	.89	-.20	.72
3. Intense	.89	-.06	.82
8. Interested	.80	.03	.78
27. Thinking about	.80	.08	.82
23. Something strange	.78	-.11	.66
13. Click	.78	.06	.79
26. Physical attractiveness	.78	.004	.74
15. Willingness to feel	.76	.06	.76
24. Unexplainable	.67	.15	.76
30. Blushing	.60	.01	.56
4. Willingness to interact	.59	.25	.72
1. Willingness to draw attention	.54	.07	.55
25. Chemistry	.53	.36	.76
2. Cheeky	.43	.03	.41
10. Affection	-.25	.96	.73
21. Empathy	-.20	.92	.71
19. Joy	-.05	.87	.79
12. Willingness to be with	.003	.84	.80
16. Willingness to laugh with	.05	.78	.78
28. Pleasant	.04	.77	.74
5. Reciprocity of feelings	-.02	.68	.59
29. Willingness to know	.17	.66	.73
22. Willingness to spend time with	.27	.65	.81
11. Willingness to exchange smiles	.24	.64	.78
6. Keen to please	.36	.57	.69
18. Curiosity	.35	.43	.64
Explained variance	52.16%	8.56%	--
Cronbach alpha	.95	.94	--

Note. Study 2, Subsample 1, $N = 217$ (129 females, 88 males).