



Italian Validation of AAS-R: Assessing Psychometric Properties of Adult Attachment Scale—Revised in the Italian Context

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Abstract The Adult Attachment Scale-Revised (Collins and Read in *J Person Soc Psychol* 58(4):644, 1990. <https://doi.org/10.1037/0022-3514.58.4.644>) measures the dimensions of the attachment style of adults through the degree to which the individual feels comfortable in intimacy and closeness with the partner (Close), with dependence on the partner (Depend) and worrying about being rejected or unloved (Anxiety). Dimensions measured by the AAS can capture the core of the structure that determines adults' differences in attachment styles. This study aimed to evaluate the factorial structure of the AAS-R among a sample of Italian adults. The Italian translation of AAS-R was administered to the sample of 1546 Italian adults ($M = 27.4$; $SD 9.35$). Exploratory factor analysis and confirmatory factor analysis were performed to examine the validity of the Italian version of the AAS-R measure. The present study showed that the Italian version of the AAS-R has a clear factorial structure and good psychometric properties. Clinical and research implications were discussed.

Keywords Adult attachment style · Adult attachment scale · Italian validation · Psychometric properties

Introduction

The attachment theory formulated by Bowlby (1969, 1973, 1980) and developed by Ainsworth et al., (1978) can be considered the most pervasive theory of early emotional development, placing itself at the center of growing interest in the field of developmental, clinical and research psychology (e.g., Castellano et al., 2014; Dazzi & De Coro, 2001; Dazzi & Zavattini, 2011; Gilath et al., 2019; Mikulincer & Shaver, 2007; Miranda et al., 2019; Smith & South, 2020; Sutton, 2019). It is based on the assumption that the experience of relationships with a significant adult (typically a parent or caregiver) is necessary for a child's psychobiology, and the quality of these primary experiences will affect the internalization of the attachment pattern with consequences on relationships in adulthood.

Starting from the quality of the relational experiences of childhood, a secure, insecure (insecure or ambivalent) or disorganized attachment model will be made (Main & Solomon, 1990). This process would lead to the development of internal work models (IWM, Bowlby, 1973, 1980), which will become the behavioral guide for the relational experience of the individual. Primary care relationships are considered central to the development of IWM (Bowlby, 1988), but peer and romantic relationships are also potentially important (Davila & Sargent, 2003; Fraley et al., 2013; Hazan & Shaver, 1987; Pierce & Lydon, 2001).

Over the years, the attachment theory has interacted with the construct of reflective function by deepening how attachment allows the development of mentalization (Bateman & Fonagy, 2012; Fonagy, 2001, 2003; Fonagy & Target, 1997; Freda et al., 2019; Slade, 2007; Steele, 2003). Also, research on attachment styles has explored the different stages of the individual's life cycle, expanding into adolescence (Cacioppo et al., 2019; Schimmenti et al., 2012) and

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adulthood (Bennet & Nelson, 2010; Wallin, 2007), and in the field of romantic relationships (Feeney & Monin, 2008; Mikulincer & Goodman, 2006; Rholes & Simpson, 2004; Velotti et al., 2018; Zavattini, 2010), and social and labor relations (Lanciano & Zammuner, 2014).

The literature suggests that internalized attachment styles prove to be fundamental in adult love relationships (Bartholomew & Horowitz, 1991; Hazan & Shaver, 1987); however, the link between the dynamic internal work patterns of childhood and adulthood is not entirely clear and continues to be debated. There is a consensus on the stability of the attachment style during adulthood that may not match that one observed in childhood (Shaver et al. 1988).

Several authors have underlined how, despite the similarities between the attachment style in childhood and adulthood, there are also elements of difference, such as the nature of reciprocal relationships established in adulthood, compared to the complementary nature of relationships binding established in infancy (Stevenson-Hinde, 2007; Weiss, 1991). By “reciprocity” we mean the autonomous and individual interest of the single parts of the couple to maintain the relationship, while by “complementarity” the dimension of dependence of one party on the other.

Measuring Tools

Since the 1980s, the research on models of attachment, along with the interest and curiosity that the subject aroused, has been followed by a proliferation of measuring instruments. These evaluation tools often have different theoretical and approach references, with the risk of making it difficult to compare the results of empirical studies that use different validation tools (Rholes & Simpson, 2004; Shaver & Mikulincer, 2002; Waters et al., 2002). However, in relation to the thematic areas that make up the different tools, we can distinguish between (a) tools that evaluate the representative dimensions in the adult of the attachment relationships they had with parents in childhood and (b) tools that assess current attachment relationships in adolescents and adults with attachment figures (peers, parents or partners).

In both groups, we can detect tools that use narratological interviews (Zavattini & Santona, 2008) or self-assessment questionnaires that investigate the representations of oneself and others (RQ, Bartholomew & Horowitz, 1991; ECR-R., Brennan et al., 1998; ASQ, Collins & Read, 1990; CRI, Crowell & Owens, 1996; RSQ, Griffin & Bartholomew, 1994; Style Questionnaire, Hazan & Shaver, 1990; AAQ, Simpson et al., 1992, 1996).

In the debate between the use of self-report questionnaires and narratological interviews, it should be emphasized that the interviews evaluate the unconscious processes in adults for the regulation of emotions. In contrast, the self-report tools will instead capture adults' conscious evaluations of

themselves in romantic relationships (Velotti & Zavattini, 2011). Whether, from a clinical perspective, qualitative tools such as interviews allow an in-depth investigation, self-report questionnaires, from a research perspective, allow us to analyze the socio-cognitive, affective and behavioral aspects observed by the individual in the here and time of detection, with a speed of administration and decoding.

In the Italian context, among the narratological interviews, we find:

- (a) Adult Attachment Interview (AAI—George et al., 1985), aimed at detecting the mental state of the adult in relation to infantile attachment.
- (b) The interview with Carli and Mantovani (ISAC—1994), which explores current emotional relationships.

Among the self-report questionnaires, however, we can find:

- (a) tools that investigate childhood attachment experiences in parental relationships such as the Parental Bonding Instrument (PBI—Parker et al., 1979), the Attachment Style Questionnaire (ASQ—Feeney et al., 1994), the Egna Minnen Beträffande Uppfostran - My memories of education (EMBU—Perris et al., 1980);
- (b) tools that explore the attachment styles that adults implement in a current relationship such as the Adult Attachment Questionnaire (AAQ—Hazan & Shaver, 1987), the Adult Attachment Questionnaire (QAA-SC—Salvo & Cusinato, 1996. and the questionnaire Experiences in close relationships (ECR, Brennan et al., 1998) which is one of the most used in Italy (Picardi et al., 2000; Agostoni & Manzoni, 2007) also in its revised version (ECR- R, Busonera et al., 2014).

In the literature, attachment in adults seems to be conceptualized in three distinct forms (Sperling and Berman 1994): (1) attachment as a state, which emerges in stressful situations, (2) attachment as a trait, a tendency to form similar relationships of attachment across the whole life, and (3) attachment as a process of interaction in the context of a specific relationship. These aspects have implications for adult bonding assessment procedures.

There are three main types of reference approaches: those based on categorical or typological concepts; those based on dimensional concepts; and, finally, those based on the prototype (Bartholomew & Shaver, 1998). The categorical or typological approaches find their origins in the original model of Ainsworth et al. (1978) and on the evaluations made through the experimentation of the Strange Situation, which includes the attachment styles "safe," "avoidant" and "anxious/ambivalent". Hazan and Shaver (1987), influenced by Ainsworth's work on attachment in childhood, have tried

to translate the same classification system for adulthood into three categories for evaluating adult romantic relationships through a self-report questionnaire. Although this tool has had a strong impact on the development of empirical research (Fraley & Waller, 1998), it has limitations (Collins & Read, 1990; Hazan & Shaver, 1987; Simpson, 1990) as it does not allow the evaluation of the degree and extent of attachment style.

Dimensional approaches have emerged to overcome the methodological problems of categorical measures using continuous rating scales. The possibility of placing the individual along continuous dimensions has some advantages: It presupposes greater variability between subjects, it does not impose rigid boundaries of belonging to groups, and it requires the operationalization of the basic components of attachment, also allowing more accurate psychometric studies (Fraley & Waller, 1998; Griffin & Bartholomew, 1994).

However, many authors who use the dimensional approach explicitly discourage researchers from abandoning typological models, because of the loss of information that a purely dimensional method will imply, as the dimensional method excludes typical aspects that cannot be grouped within of larger dimensions (Brennan & Shaver, 1995; Collins & Read, 1990; Hazan & Shaver, 1987).

To remedy this situation, prototypical approaches emerge, trying to reconcile the previously exposed approaches: identifying, then, the characteristics of a group of subjects and assuming, at the same time, the existence of individual variability in belonging to the group.

Bartholomew's model (Bartholomew, 1990; Bartholomew & Horowitz, 1991) is considered the main reference for this type of approach. According to this model, the four attachment types are found in a two-dimensional space defined by positive or negative positioning in the self-other relationship.

Considering the need to develop useful tools for the study of psychotherapeutic processes and outcomes with a dynamic approach (Bateman & Fonagy, 2012; Esposito et al., 2017; Gelo & Salvatore, 2016; Margherita et al., 2018; Troisi, 2018), the AAS-R is presented as a useful measure for monitoring the clinical intervention and its relationships with the results of the process.

Adult Attachment Scale and Adult Attachment Scale-Revised

The Adult Attachment Scale (AAS) was created by Collins and Read (1990) to overcome the limitations inherent in the single-item scale developed by Hazan and Shaver (1987). The latter was a categorical single-item measure aimed at detecting the attachment style of respondents. It was developed starting from the types of infantile attachment identified by Ainsworth et al. (1978) and transformed

in such a way as to describe the romantic attachment between adult partners. The request addressed to the respondent is to carefully read the three descriptions of the attachment styles and mark the one that according to him best describes his way of feeling and behaving in couple relationships. Despite its extremely widespread use, the results of numerous researches report poor reliability of the instrument (Hammond & Fletcher, 1991; Levy & Davis, 1988; Pistole, 1989; Shaver & Brennan, 1992; Vacha-Haase et al., 1994). The major disadvantage in the use of the single-item measure was related to the categorical form of forced choice of the self-report, which did not permit the recognition of the degree to which a given category of attachment characterized the single subject or the potential individual differences between classified subjects within the same category.

Collins and Read extracted 15 items from Hazan and Shaver's (1987) measure descriptions, five for each attachment style. To these, six new items were added to include two critical aspects of bonding, not included in the Hazan and Shaver (1987) measure: (a) beliefs about the partner's availability and response in case of need (3 items, one for each attachment style) and (b) reactions to the partner's separation (3 items, one for each attachment style). The preliminary version of the scale was composed of 21 items, seven for each attachment style. Following psychometric analyses, three items were dropped, arriving at the current version of 18 items, with the presence of three dimensions, each of which composed of six items and with response modalities on a 5-point Likert scale from 1 (= not describing me at all) to 5 (= describes me perfectly). The first dimension, called Close, measures the degree to which the individual feels at ease when establishing relationships of intimacy and closeness with the partner. The second dimension, Depend, evaluates how individuals feel they can rely on their partner in case of need. Finally, the third dimension, Anxiety, measures the degree to which the individual is worried about the possibility of being abandoned or rejected by his/her partner. These three scales showed an adequate internal consistency (alpha coefficients ranging from 0.69 to 0.75) and moderate temporal stability over a two-month interval (r between 0.52 and 0.71; $N=101$). Despite several studies having shown good construct and criterion validity of the AAS (Mikulincer, 2007), in 1996, Collins revised the original AAS to the so-called AAS-R, to increase the internal consistency (alpha coefficients between 0.78 and 0.85). Moreover, due to understanding problems, two items of the Anxiety dimension of the original form were replaced with items that refer to ambivalence on the relationship instead of items that referred to the fusion in relationships. Regarding the relationship between dimensions, Close and Depend subscales were correlated quite strongly, in both the original and revised versions.

According to Collins and Read (1990), the dimensions measured by the AAS-R can capture the core of the structure that determines the differences in the attachment styles of adults and can be considered the basis of how the attachment system manifests itself in adult relationships. The dimensions can be linked to the category of attachment style, which provides information about how individuals form and establish their relationships. Collins and Read (1990) suggested that individuals with the highest Closeness than Anxiety and Dependence are categorized as secure attachment. Individuals with low Closeness and high levels of Anxiety and Dependence are categorized as anxious attachment styles. Finally, individuals with the highest Anxiety than Closeness and Dependence are categorized as avoidant attachment styles.

To our knowledge, there are no Italian validation studies of the AAS-R. Therefore, this study aims to evaluate the factor structure of the AAS-R among a sample of Italian adults.

Methods

Participants and Procedure

The sample consisted of 1546 Italian adults (26.2% males and 76.8% females), aged from 18 to 74 ($M=27.4$; $SD 9.35$). Participants were recruited online. Recruitment advertisements included a link placed on the main social network to reach a large number of people across the country. The inclusion criteria were: 18 years old minimum age and Italian-speaking subjects. The participants were distributed in the Italian context as follows: 25.2% Northwest; 16.2% Northeast; 15% Center; 35.6% South; 4.5% Islands; and 3.5% participants who lived outside the Italian borders during the survey.

Participants completed a demographic information form and the Italian AAS-R. Following the guidelines (Beaton et al., 2000; Van De Vijver & Hambleton, 1996) and previous Italian validation studies (Manzoni et al., 2021; Parola et al., 2022; Pietrabissa et al., 2020), the AAS-R was translated by two Italian expert psychologists (step 1) and back-translated by two English translators (step 2) to ensure cross-cultural equivalence. Precisely, in step 1, AAS-R was translated from English into Italian to retain its original concepts. Translations were done independently by two native Italian speakers, who then compared their respective versions. Step 1 ended when a single version was agreed on. Then, in the second step, two English native speaker translators back-translated the agreed Italian text into English. Finally, back-translations were compared with the Italian version to ensure they reflected the same item contents as the original. Step 2 ended when a final version was agreed on. Finally, in step 3, the final version was submitted to a

review committee composed of psychologists and psychometric experts, and this phase ended with final approval. Finally, the pre-final version was tested with twenty university students of Psychology to verify the precise formulation of the items. The expert committee evaluated the findings, and no changes have been made.

Before starting the online survey, participants were informed of the scope of the study and their agreement was requested. After completing the survey, they were given access to a debriefing page of the study aims and methodology and received contact details for support services. This study was carried out following the recommendations of the ethical guidelines for research of the Italian Psychologists Association. The study was approved by the University Research Ethics Committees of University of Naples Federico II.

Measure

The AAS-R consists of 18 items on a five-point Likert scale from 1 (= not at all characteristic) to 5 (= very characteristic). The scale assesses three dimensions of adult attachment: Close (6 items), Depend (6 items) and Anxiety (6 items). Close evaluates the discomfort with closeness and intimacy. Depend evaluates the degree of trusts in others and their availability. Anxiety assesses the anxiety in relationships (i.e., the fear of being abandoned or not being loved).

Data Analysis

For the validation of AAS-R, participants were randomly assigned to two subsamples (respectively, $n=485$ and $n=1061$). First, aiming to verify the adequacy of the data to the three factors proposed by Collins (1996), an Exploratory Factor Analysis (EFA) with the oblique rotation (PRO-MAX) was performed. These analyses were performed by SPSS version 24.

Second, the confirmatory factor analysis (CFA), applying the weighted least squares mean- and variance-adjusted (WLSMV estimator), was performed to assess the structural validity of three factors of the questionnaire. Finally, to test their internal consistency, the reliability of Cronbach's alpha to each of the independent factors was calculated.

Factorial validity was assessed by several fit indexes, including the comparative fit index (CFI), the Tucker–Lewis index (TLI) and the root mean square error of approximation (RMSEA).

The following criteria were used as cutoffs for satisfactory fit: the CFI and the TLI value approximately 0.90 or above (Medsker et al., 1994) and RMSEA approximately 0.08 or less (Byrne, 2010). The CFA was run in Mplus version 8.0.

Results

Exploratory Factor Analysis

Based on the first subsample ($n = 485$), the EFA was performed. The Kaiser–Meyer–Olkin measure confirmed the sampling adequacy for the analysis ($KMO = 0.87$), and Bartlett's test of sphericity $\chi^2(153) = 3130.679$, $p < 0.001$, indicated that the correlations between the items were sufficiently large for EFA. The analysis showed that three components had eigenvalues above Kaiser's criterion of 1 and, in combination, explained 51.38% of the variance. The three-component structure was also confirmed by Cattell's scree test (Cattell, 1966). The items showed factor loadings varying between 0.41 and 0.82 and commonalities between 0.35 and 0.71.

Confirmatory Factor Analysis

Based on the second random subsample ($n = 1061$), the CFA was tested. The tested model considered three latent variables of AAS-R (Close, Depend and Anxiety). This model showed a not adequate fit, $\chi^2(132) = 1308.112$, $CFI = 0.84$; $RMSEA = 0.12$. Seeking to improve the adjustment of the model, the modification indices (MI) were analyzed to identify suggestions of correlation between the error parameters of pairs of items or the crossed loadings. An elevated MI was found in the relationship between Close—Item 5

(= 294.836), Depend—Item 15 (= 266.970), Anxiety—item 8 (= 260.395) and Anxiety—item 17 (= 257.345). The control of this parameter allowed to make a better adjustment and adequacy of the model.

This final model showed a good fit, $\chi^2(128) = 1323.125$, $CFI = 0.92$; $RMSEA = 0.06$. Loadings ranged between 0.471 and 0.950 (Table 1). The Cronbach's α values for AAS-R subscales were 0.82 for Close, 0.78 for Depend and 0.85 for Anxiety, showing good measure reliability. Item–total correlations are shown in Table 2. Furthermore, Table 3 shows the mean and standard deviation of the correlation between dimensions. The analyses showed a positive relationship between Close and Depend scales and a negative association between Close and Anxiety scales and Depend and Anxiety scales.

Discussion

This study aimed to validate an Italian version of the Adult Attachment Scale-Revised (AAS-R) in a sample of Italian adults. The present study revealed that the Italian version of the Adult Attachment Scale-Revised (AAS-R) showed a good factor structure and psychometric properties.

The analyses broadly confirmed the three-factor structure, item adequacy and reliability of the AAS-R. First of all, EFA and CFA suggested that a three-factor solution—Close, Depend and Anxiety—provided the best fit to the data. In

Table 1 Item descriptive statistics and CFA

	Descriptive statistics				Close (λ)	Depend (λ)	Anxiety (λ)	R^2
	Mean	SD	Skewness	Kurtosis				
Item 1	2.79	1.295	0.182	− 1.019	0.533*			0.284
Item 2r	2.58	1.351	0.327	− 1.088		− 0.841*		0.341
Item 3	2.56	1.342	0.421	− 1.009			0.794*	0.630
Item 4	2.06	1.194	0.964	− 0.032			0.587*	0.345
Item 5	2.46	1.121	0.448	− 0.496		0.950*		0.312
Item 6	2.97	1.272	0.046	− 1.011	0.627*			0.383
Item 7r	4.18	1.059	− 1.304	1.074		− 0.701*		0.491
Item 8r	3.81	1.138	− 0.757	− 0.222	− 0.482*			0.497
Item 9	2.17	1.263	0.851	− 0.365			0.888*	0.789
Item 10	2.8	1.316	0.249	− 1.047			0.764*	0.584
Item 11	2.52	1.343	0.48	− 0.951			0.844*	0.713
Item 12	2.9	1.178	0.121	− 0.792	0.718*			0.515
Item 13r	3.65	1.147	− 0.605	− 0.393	− 0.536*			0.287
Item 14	2.92	1.164	0.131	− 0.817		0.587*		0.345
Item 15	2.52	1.292	0.501	− 0.794			0.471*	0.466
Item 16r	2.75	1.285	0.111	− 1.108		− 0.775*		0.600
Item 17r	3.20	1.27151	− 0.357	− 0.883			− 0.723*	0.290
Item 18r	3.10	1.26215	− 0.142	− 0.993		− 0.733*		0.537

SD standard deviation, *r* reverse item, CFA confirmatory factor analysis, λ factor loading

* $p < .001$

Table 2 Item–total correlation

<i>Close</i> ($\alpha = 0.82$)	
Item 1	0.761
Item 6	0.431
Item 8r	0.482
Item 12	0.535
Item 13r	0.315
Item 17r	0.318
<i>Depend</i> ($\alpha = 0.78$)	
Item 2r	0.461
Item 5	0.371
Item 7r	0.494
Item 14	0.43
Item 16r	0.575
Item 18r	0.6
<i>Anxiety</i> ($\alpha = 0.85$)	
Item 3	0.676
Item 4	0.499
Item 9	0.759
Item 10	0.648
Item 11	0.709
Item 15	0.478

Table 3 Descriptive statistics and correlations ($n = 1061$)

	1	2	3	<i>M</i>	<i>DS</i>
1. Close	–			3.38	0.724
2. Depend	0.423*	–		2.85	0.774
3. Anxiety	– 0.270*	– 0.496*	–	2.44	0.971

* $p < .001$

line with the Chilean validation (Fernández & Dufey, 2015), also in this study, a cross-loading of item 5 on the Close dimension in addition to its original load on Depend was found. Besides, in line with the Brazilian sample (Teixeira et al., 2019), a cross-loading of item 15 on the Dependence dimension in addition to its original load on Anxiety was also found.

The cross-loadings of items 5 and 15 align with the previous validations (Fernández & Dufey, 2015; Teixeira et al., 2019). The cross-loading seems to be explained by the formulation of items. Item 5 states, "I find that others are reluctant to get as close as I would like" and individuals can attribute the statement both of Close dimension, which is related to the discomfort with closeness and intimacy, and Depend, like its original loading dimension. Item 15 states, "I am nervous when anyone gets too close," and individuals seem to attribute this statement also to the Depend dimension because it is also related to the degree of trust.

Second, the CFA showed all items adequacy. The reliability analysis confirmed the internal consistency of the scales. These findings do not differ from the reliability of the original AAS-R (Collins, 1996), confirming its adaptation to the Italian context. Moreover, a good representation of Italian adults (North, Center, South and Island), which does not limit the evidence to a single population group, was still held. The sample encompasses inhabitants of all regions of Italy.

Although the study is not focused on understanding the attachment styles of the participants, it is possible to identify the attachment styles based on scores on the three attachment dimensions (close, depend, and anxiety) through the scoring proposed by Collins (1996) and Collins and Read (1990) based on the Bartholomew and Horowitz categorization (1991). For this reason, the Italian validation of the AAS-R can be a useful measure for the study of attachment styles.

The three dimensions measured by the AAS-R (Depend, Close and Anxiety) capture fundamental aspects of adult attachment and provide information concerning the infantile attachment's central elements. The AAS-R Depend and Anxiety scales are mostly linked to expectations regarding the availability of the caregiver and its ability to respond adequately to the individual's needs. The AAS-R Close scale is related to adult relational aspects attributable to the infantile need to remain in close physical proximity to the attachment figure. In light of this, the dimensions measured by the AAS-R can capture the core of the structure that determines the differences in adults attachment styles and can be considered the basis of how the attachment system manifests itself in adult relationships (Collins, 1996). These elements have to do with some fundamental expectations for the "sense of security" in adulthood, for example, with the idea that the partner will prove available and responsive in times of need. Therefore, the AAS-R has theoretical and practical advantages as it can measure the dimensions underlying the attachment styles, allowing to measure longitudinal dimensions and specific characteristics of the attachment styles.

The findings showed good internal consistency and reliability, confirming the AAS-R to be a reliable instrument to evaluate the adult attachment among the Italian population.

This study is not free from limitations. The first limitation is the small number of men in the samples. This probably depends on the participant recruitment procedures, and future studies should ideally include a larger percentage of male in the sample. Moreover, future investigations based and focused on gender differences are needed. The measurement invariance between gender, age, clinical and non-clinical populations should also be tested to ascertain whether the measure is valid to measure attachment in each group separately.

Furthermore, this study does not consider other dimensions related to attachment. Future studies will need to study dimensions linked to adult attachment dimensions, such as romantic relationships, personality factors, depressive and anxiety symptoms.

Conclusions

The present study demonstrated that the Italian version of the AAS-R presents a clear factorial structure and good psychometric properties that allow for its scientific and clinical use intended to investigate the dimensions underlying adult attachment styles toward "significant others," including not only romantic partners but also other affective figures such as family members and friends.

The AAS-R could be useful in understanding therapeutic changes, since giving information about individual relational abilities may provide directions on both the quality of the clinical relationship and the reorganization of the affective relationships. Furthermore, the use of AAS-R allows for the discovery of more contextual factors related to attachment, such as reciprocity in the relationship and the joint analysis of multiple relational contexts.

The possibility of using a self-assessment tool in attachment research, also validated in its use for online detection, allows easier access to data relating to the socio-cognitive, affective and behavioral aspects observed by the individual, useful in the historical scenario caused by the global COVID-19 pandemic. Furthermore, translation of the measure and subsequent investigation of its psychometric properties will facilitate further research on attachment in the Italian context.

Author Contributions All the authors listed have made a substantial contribution to the work. GT developed the theoretical framework of the present study, designed the research project and contributed to the scientific supervision of the study. AP contributed to the methodological approach, the data collection and performed all the analysis and designed tables and figures. GM revised the manuscript and contributed to the scientific supervision of the whole work. All authors discussed the results, commented on the manuscript and gave the final approval of the work.

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Data availability The datasets of the current study are available from the corresponding author on reasonable request.

Code availability Software application or custom code.

Declarations

Conflict of interest The authors have no conflict of interest to declare that are relevant to the content of this article.

Ethical Approval This study was performed in line with the principles of the Declaration of Helsinki. The questionnaire and methodology for this study was approved by the Human Research Ethics committee of the University of Naples Federico II.

Consent to Participate/Publish Informed consent was obtained from all individual participants included in the study.

References

- Agostoni, F., & Manzoni, P. (2007). Il Questionario Experiences In Close Relationship (Ecr) Di Brennan, Clark E Shaver. L. Barone, F. Del Corno (Eds). *La Valutazione Dell'attaccamento Adulto*. Cortina.
- Ainsworth, M. D., Blehar, M., Waters, E., & Wall, S. (1978). *Patterns of attachment*. Erlbaum.
- Bartholomew, K. (1990). Avoidance of intimacy: An attachment perspective. *Journal of Social and Personal Relationships*, 7(2), 147–178. <https://doi.org/10.1177/0265407590072001>
- Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology*, 61(2), 226. <https://doi.org/10.1037/0022-3514.61.2.226>
- Bartholomew, K., & Shaver, P. R. (1998). Methods of assessing adult attachment. *Attachment Theory and Close Relationships*, 1998, 25–45.
- Bateman, A. W., & Fonagy, P. E. (2012). *Handbook of mentalizing in mental health practice*. American Psychiatric Publishing, Inc.
- Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine*, 25(24), 3186–3191. <https://doi.org/10.1097/00007632-200012150-00014>
- Bennet, S., & Nelson, J. K. (2010). *Adult attachment in clinical social work. Practice, research and policy*. Springer.
- Bowlby, J. (1973). Attachment and loss: Volume II: Separation, anxiety and anger. In *Attachment and Loss: Volume II: Separation, Anxiety and Anger* (pp. 1–429). The Hogarth press and the institute of psycho-analysis.
- Bowlby, J. (1969). *Attachment and loss* (Vol. 1). Random House.
- Bowlby, J. (1980). By ethology out of psycho-analysis: An experiment in interbreeding. *Animal Behaviour*, 28(3), 649–656. [https://doi.org/10.1016/S0003-3472\(80\)80125-4](https://doi.org/10.1016/S0003-3472(80)80125-4)
- Bowlby, J. (1988). Developmental psychiatry comes of age. *The American Journal of Psychiatry*, 145(1), 1–10. <https://doi.org/10.1176/ajp.145.1.1>
- Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult attachment: An integrative overview. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 46–76). The Guilford Press.
- Brennan, K. A., & Shaver, P. R. (1995). Dimensions of adult attachment, affect regulation, and romantic relationship functioning. *Personality and Social Psychology Bulletin*, 21(3), 267–283. <https://doi.org/10.1177/0146167295213008>
- Busonera, A., Martini, P. S., Zavattini, G. C., & Santona, A. (2014). Psychometric properties of an Italian version of the Experiences in Close Relationships-Revised (ECR-R) Scale. *Psychological*

- Reports, 114(3), 785–801. <https://doi.org/10.2466/03.21.PR0.114k23w9>
- Byrne, B. M. (2010). *Structural equation modeling with AMOS: basic concepts, applications, and programming* (2nd ed.). Taylor and Francis Group.
- Cacioppo, M., Barni, D., Correale, C., Mangialavori, S., Danioni, F., & Gori, A. (2019). Do attachment styles and family functioning predict adolescents' problematic internet use? A relative weight analysis. *Journal of Child and Family Studies*, 28(5), 1263–1271. <https://doi.org/10.1007/s10826-019-01357-0>
- Carli, L., & Mantovani, S. (1994). Il legame di attaccamento nella coppia: ipotesi di uno strumento di analisi, in "Età Evolutiva", 47.
- Castellano, R., Velotti, P., & Zavattini, G. C. (2014). *What makes us together: Attachment theory and couples outcomes*. Karnac Books.
- Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research*, 1(2), 245–276. https://doi.org/10.1207/s15327906mbr0102_10
- Collins, N. L. (1996). Working models of attachment: Implications for explanation, emotion, and behavior. *Journal of Personality and Social Psychology*, 71, 810–832. <https://doi.org/10.1037//0022-3514.71.4.810>
- Collins, N. L., & Read, S. J. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality and Social Psychology*, 58(4), 644. <https://doi.org/10.1037/0022-3514.58.4.644>
- Crowell, J. A., & Owens, G. (1996). Current Relationship Interview and scoring system. Unpublished manuscript, State University of New York at Stony Brook.
- Davila, J., & Sargent, E. (2003). The meaning of life (events) predicts changes in attachment security. *Personality and Social Psychology Bulletin*, 29(11), 1383–1395. <https://doi.org/10.1177/0146167203256374>
- Dazzi, N., & De Coro, A. (2001). *Psicologia dinamica. Le teorie cliniche*. Gius. Laterza.
- Dazzi, N., & Zavattini, G. C. (2011). Il paradigma dell'attaccamento e la pratica clinica. *Giornale Italiano Di Psicologia*, 38(4), 729–756.
- Esposito, G., Ribeiro, A. P., Gonçalves, M. M., & Freda, M. F. (2017). Mirroring in group counseling: analyzing narrative innovations. *Small Group Research*, 48, 391–419. <https://doi.org/10.1177/1046496417697149>
- Feeney, B. C., & Monin, J. K. (2008). An attachment-theoretical perspective on divorce. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (pp. 934–957). The Guilford Press.
- Feeney, J. A., Noller, P., & Hanrahan, M. (1994). Assessing adult attachment. In M. B. Sperling & W. H. Berman (Eds.), *Attachment in adults: Clinical and developmental perspectives* (pp. 128–152). Guilford Press.
- Fernández, A. M., & Dufey, M. (2015). Adaptation of Collins' revised adult attachment dimensional scale to the Chilean context. *Psicologia: Reflexão e Crítica*, 28(2), 242–252. <https://doi.org/10.1590/1678-7153.201528204>
- Fonagy, P. (2001). The human genome and the representational world: The role of early mother-infant interaction in creating an interpersonal interpretive mechanism. *Bulletin of the Menninger Clinic*, 65(3), 427–448. <https://doi.org/10.1521/bumc.65.3.427.19844>
- Fonagy, P. (2003). The development of psychopathology from infancy to adulthood: The mysterious unfolding of disturbance in time. *Infant Mental Health Journal*, 24(3), 212–239. <https://doi.org/10.1002/imhj.10053>
- Fonagy, P., & Target, M. (1997). Attachment and reflective function: Their role in self-organization. *Development and Psychopathology*, 9(4), 679–700. <https://doi.org/10.1017/s0954579497001399>
- Fraley, R. C., Roisman, G. I., Booth-LaForce, C., Owen, M. T., & Holland, A. S. (2013). Interpersonal and genetic origins of adult attachment styles: A longitudinal study from infancy to early adulthood. *Journal of Personality and Social Psychology*, 104(5), 817–838. <https://doi.org/10.1037/a0031435>
- Fraley, R. C., & Waller, N. G. (1998). Adult attachment patterns: A test of the typological model. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp. 77–114). The Guilford Press.
- Freda, M. F., Savarese, L., Dolce, P., & Picione, R. D. L. (2019). Caregivers' sensemaking of children's Hereditary Angioedema: A semiotic narrative analysis of the Sense of Grip on the Disease. *Frontiers in Psychology*. <https://doi.org/10.3389/fpsyg.2019.02609>
- Gelo, O. C. G., & Salvatore, S. (2016). A dynamic systems approach to psychotherapy: A meta-theoretical framework for explaining psychotherapy change processes. *Journal of Counseling Psychology*, 63(4), 379. <https://doi.org/10.1037/cou0000150>
- George, C., Kaplan, N., & Main, M. (1985). Attachment interview for adults. Unpublished manuscript, University of California.
- Gillath, O., Karantzas, G. C., & Lee, J. (2019). Attachment and social networks. *Current Opinion in Psychology*, 25, 21–25. <https://doi.org/10.1016/j.copsyc.2018.02.010>
- Griffin, D. W., & Bartholomew, K. (1994). Models of the self and other: Fundamental dimensions underlying measures of adult attachment. *Journal of Personality and Social Psychology*, 67(3), 430. <https://doi.org/10.1037/0022-3514.67.3.430>
- Hammond, J. R., & Fletcher, G. J. (1991). Attachment styles and relationship satisfaction in the development of close relationships. *New Zealand Journal of Psychology*, 20, 56–56.
- Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology*, 52(3), 511. <https://doi.org/10.1037/0022-3514.52.3.511>
- Hazan, C., & Shaver, P. R. (1990). Love and work: An attachment-theoretical perspective. *Journal of Personality and Social Psychology*, 59(2), 270. <https://doi.org/10.1037/0022-3514.59.2.270>
- Lanciano, T., & Zammuner, V. L. (2014). Individual differences in work-related well-being: The role of attachment style. *Europe's Journal of Psychology*, 10(4), 694–711. <https://doi.org/10.5964/ejop.v10i4.814>
- Levy, M. B., & Davis, K. E. (1988). Lovestyles and attachment styles compared: Their relations to each other and to various relationship characteristics. *Journal of Social and Personal Relationships*, 5(4), 439–471. <https://doi.org/10.1177/0265407588054004>
- Main, M., & Solomon, J. (1990). Procedures for identifying infants as disorganized/disoriented during the Ainsworth Strange Situation. In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the preschool years: Theory, research, and intervention* (pp. 121–160). The University of Chicago Press.
- Manzoni, G. M., Rossi, A., Pietrabissa, G., Mannarini, S., Fabbriatore, M., Imperatori, C., et al. (2021). Structural validity, measurement invariance, reliability and diagnostic accuracy of the Italian version of the Yale Food Addiction Scale 2.0 in patients with severe obesity and the general population. *Eating and Weight Disorders: Studies on Anorexia, Bulimia and Obesity*, 26(1), 345–366. <https://doi.org/10.1007/s40519-020-00858-y>
- Margherita, G., Gargiulo, A., Troisi, G., Tessitore, F., & Kapusta, N. D. (2018). Italian validation of the capacity to love inventory: Preliminary results. *Frontiers in Psychology*. <https://doi.org/10.3389/fpsyg.2018.01434>
- Medsker, G. J., Williams, L. J., & Holahan, P. J. (1994). A review of current practices for evaluating causal models in organizational behavior and human resources management research. *Journal of Management*, 20(2), 439–464. <https://doi.org/10.1177/014920639402000207>
- Mikulincer, M., & Goodman, G. S. (Eds.). (2006). *Dynamics of romantic love: Attachment, caregiving, and sex*. Guilford Press.
- Mikulincer, M., & Shaver, P. R. (2007). *Attachment in adulthood: Structure, dynamics, and change*. Guilford Press.

- Miranda, M., Molla, E., & Tadros, E. (2019). Implications of foster care on attachment: A literature review. *The Family Journal*, 27(4), 394–403. <https://doi.org/10.1177/1066480719833407>
- Parker, G., Tupling, H., & Brown, L. B. (1979). A parental bonding instrument. *British Journal of Medical Psychology*, 52(1), 1–10. <https://doi.org/10.1111/j.2044-8341.1979.tb02487.x>
- Parola, A., Fusco, L., & Marcionetti, J. (2022). The parental career-related behaviors questionnaire (PCB): Psychometric properties in adolescents and young adults in the Italian context. *Current Psychology*. <https://doi.org/10.1007/s12144-022-02764-1>
- Perris, C., Jacobsson, L., Linnström, H., von Knorring, L., & Perris, H. (1980). Development of a new inventory for assessing memories of parental rearing behaviour. *Acta Psychiatrica Scandinavica*, 61(4), 265–274. <https://doi.org/10.1111/j.1600-0447.1980.tb00581.x>
- Picardi, A., Bitetti, D., Puddu, P., & Pasquini, P. (2000). La scala "Experiences in close relationships" (ECL), un nuovo strumento per la valutazione dell'attaccamento negli adulti: Traduzione, adattamento e validazione della versione italiana. *Rivista di Psichiatria*.
- Pierce, T., & Lydon, J. E. (2001). Global and specific relational models in the experience of social interactions. *Journal of Personality and Social Psychology*, 80(4), 613. <https://doi.org/10.1037/0022-3514.80.4.613>
- Pietrabissa, G., Rossi, A., Simpson, S., Tagliagambe, A., Bertuzzi, V., Volpi, C., et al. (2020). Evaluation of the reliability and validity of the Italian version of the schema mode inventory for eating disorders: Short form for adults with dysfunctional eating behaviors. *Eating and Weight Disorders*, 25(3), 553–565. <https://doi.org/10.1007/s40519-019-00644-5>
- Pistole, M. C. (1989). Attachment in adult romantic relationships: Style of conflict resolution and relationship satisfaction. *Journal of Social and Personal Relationships*, 6(4), 505–510. <https://doi.org/10.1177/0265407589064008>
- Rholes, W. S., & Simpson, J. A. (2004). Attachment theory: Basic concepts and contemporary questions. In W. S. Rholes & J. A. Simpson (Eds.), *Adult attachment: Theory, research, and clinical implications* (pp. 3–14). Guilford Publications.
- Salvo, R., & Cusinato, M. (1996). Il Questionario di Attaccamento tra Adulti. Costruzione e contributo alla sua validità statistica.
- Schimmenti, A., Guglielmucci, F., Barbasio, C. P., & Granieri, A. (2012). Attachment disorganization and dissociation in virtual worlds: A study on problematic Internet use among players of online role playing games. *Clinical Neuropsychiatry*, 9(5), 195–202.
- Shaver, P. R., & Brennan, K. A. (1992). Attachment styles and the "Big Five" personality traits: Their connections with each other and with romantic relationship outcomes. *Personality and Social Psychology Bulletin*, 18(5), 536–545. <https://doi.org/10.1177/0146167292185003>
- Shaver, P. R., & Mikulincer, M. (2002). Attachment-related psychodynamics. *Attachment & Human Development*, 4(2), 133–161. <https://doi.org/10.1080/14616730210154171>
- Simpson, J. A. (1990). Influence of attachment styles on romantic relationships. *Journal of Personality and Social Psychology*, 59(5), 971–980. <https://doi.org/10.1037/0022-3514.59.5.971>
- Simpson, J. A., Rholes, W. S., & Nelligan, J. S. (1992). Support seeking and support giving within couples in an anxiety-provoking situation: The role of attachment styles. *Journal of Personality and Social Psychology*, 62(3), 434–446. <https://doi.org/10.1037/0022-3514.62.3.434>
- Simpson, J. A., Rholes, W. S., & Phillips, D. (1996). Conflict in close relationships: An attachment perspective. *Journal of Personality and Social Psychology*, 71(5), 899–914. <https://doi.org/10.1037/0022-3514.71.5.899>
- Slade, A. (2007). Disorganized mother, disorganized child Attachment theory in clinical work with children: Bridging the gap between research and practice. In D. Oppenheim & D. Goldsmith (Eds.), *Attachment theory in clinical work with children: Bridging the gap between research and practice* (pp. 226–250). New York, NY: Guilford Press.
- Smith, M., & South, S. (2020). Romantic attachment style and borderline personality pathology: A meta-analysis. *Clinical Psychology Review*, 75, 101781. <https://doi.org/10.1016/j.cpr.2019.101781>
- Sperling, M. B., & Berman, W. H. (Eds.). (1994). *Attachment in adults: Clinical and developmental perspectives*. Guilford Press.
- Steele, M. (2003). Attachment, actual experience and mental representation. In V. Green (Ed.), *Emotional development in psychoanalysis, attachment theory and neuroscience. Creating connections* (pp. 86–106). Brunner Routledge.
- Stevenson-Hinde, J. (2007). Attachment theory and John Bowlby: Some reflections. *Attachment & Human Development*, 9(4), 337–342. <https://doi.org/10.1080/14616730701711540>
- Sutton, T. E. (2019). Review of attachment theory: Familial predictors, continuity and change, and intrapersonal and relational outcomes. *Marriage & Family Review*, 55(1), 1–22. <https://doi.org/10.1080/01494929.2018.1458001>
- Teixeira, R. C. R., Ferreira, J. H. B. P., & Howat-Rodrigues, A. B. C. (2019). Collins and Read Revised Adult Attachment Scale (RAAS) validity evidences. *Psico*, 50(2), e29567–e29567.
- Troisi, G. (2018). Measuring intimate partner violence and traumatic affect: Development of VITA, an Italian scale. *Frontiers in Psychology*, 9, 1282. <https://doi.org/10.3389/fpsyg.2018.01282>
- Vacha-Haase, T., Walsh, B. D., Kapes, J. T., Dresden, J. H., Thomson, W. A., Ochoa-Shargey, B., & Camacho, Z. (1994). Gender differences on the Values Scale for ethnic minority students. *Journal of Career Assessment*, 2(4), 408–421. <https://doi.org/10.1177/106907279400200407>
- Van de Vijver, F., & Hambleton, R. K. (1996). Translating tests. *European Psychologist*, 1(2), 89–99. <https://doi.org/10.1027/1016-9040.1.2.89>
- Velotti, P., & Zavattini, G. C. (2011). Intersoggettività e reciprocità nella relazione di coppia: la prospettiva psicoanalitica. *Ricerca Psicoanalitica*.
- Velotti, P., Beomonte Zobel, S., Rogier, G., & Tambelli, R. (2018). Exploring relationships: A systematic review on intimate partner violence and attachment. *Frontiers in Psychology*, 9, 1166. <https://doi.org/10.3389/fpsyg.2018.01166>
- Wallin, D. J. (2007). *Attachment in psychotherapy*. Guilford press.
- Waters, E., Crowell, J., Elliott, M., Corcoran, D., & Treboux, D. (2002). Bowlby's secure base theory and the social/personality psychology of attachment styles: Work (s) in progress. *Attachment & Human Development*, 4(2), 230–242. <https://doi.org/10.1080/14616730210154216>
- Weiss, R. S. (1991). The attachment bond in childhood and adulthood. In C. M. Parkes, J. Stevenson-Hinde, & P. Marris (Eds.), *Attachment across the life cycle* (pp. 66–76). Routledge.
- Zavattini, G. C., & Santona, A. M. R. (2008). Intersoggettività e reciprocità nella psicoterapia di coppia. Franco Angeli.
- Zavattini, G. C., Pace, C. S., & Santona, A. (2010). Attaccamento adulto e matching di coppia. *Infanzia e Adolescenza*, 9(1), 39–52.

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