


A latent profile analysis of romantic attachment anxiety and avoidance

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Abstract

We conducted latent profile analyses on community ($n = 1663$) and clinical ($n = 575$) samples to determine whether continuous scores of attachment anxiety and avoidance would lead to the identification of theoretically consistent and clinically useful profiles. We then compared these profiles according to gender, relationship status, psychological distress, and relationship satisfaction. Analysis on the community sample yielded four profiles: secure, preoccupied, dismissive, and fearful individuals; whereas, the clinical sample yielded three profiles: secure, preoccupied, and fearful individuals. In the community sample, there was a higher proportion of women under the preoccupied profile and a higher proportion of men under the dismissive profile compared with the other profiles. Overall, insecure individuals reported higher levels of relationship dissatisfaction and psychological distress, and a relationship status reflecting lower commitment. Our findings suggest that the Experiences in Close Relationships scale could be useful in assisting therapists in conceptualizing their cases according to their patients' attachment profile.

KEYWORDS

attachment anxiety, attachment avoidance, latent profile analyses, psychological distress, relationship satisfaction, romantic attachment

Bowlby's (1969) attachment theory posits that attachment styles, developed in the child–caretaker relationship, instill beliefs about the self and others, which then shape the dynamics of interpersonal relationships in adulthood. The clinical research literature has shown the prominent role of adult attachment in the development and functioning of interpersonal relationships, in particular, romantic relationships. For instance, attachment insecurity is related to poor relationship quality, more frequent conflicts and violence, and higher rates of breakups (see Mikulincer & Shaver, 2007; Shaver & Mikulincer, 2006 for reviews). In the couple therapy field, attachment styles are clinically very useful as an increasing number of evidence-based couple treatments rest, partially or completely, on an attachment perspective to explain relational disorders, describe the core mechanisms of therapeutic change, and assess treatment effectiveness (Johnson et al., 2016; Moser et al., 2016). Furthermore, clinicians are now better trained and more frequently recruited to collaborate in outcome monitoring efforts designed to produce more ecologically valid outcome data and practice-based evidence (Hewison et al., 2016). In this context, attachment security is likely to become a routine target of efforts for change.

Hazan and Shaver (1987) examined adult romantic attachment and proposed a three-category organization in which individuals were classified as secure, avoidant, or anxious. Following a string of taxometric analyses on large samples of adults, the proposal that couple attachment dynamics can be conceptualized from a categorical perspective has been empirically discarded (Fraley & Waller, 1998; Fraley et al., 2015). Along with Brennan et al. (1998), Fraley et al. (2015) concluded that, when dimensional assessment is available (i.e., continuous scores instead of categories), categorization of research participants into attachment styles (e.g., secure, avoidant, anxious) is less reliable and valid.

Whereas these research findings are largely indisputable, the dimensional diagnosis of adult attachment is complex and difficult to implement in clinical settings. When based on an attachment perspective, case conceptualizations are generally conducted and most useful when making categorical judgments, and people are assessed as being either more or less secure, or as secure, preoccupied, dismissive, or fearful (Levy et al., 2011; Slade, 2004). Clinicians do not tend to think about attachment patterns as a specific region in a two-dimensional anxiety-by-avoidance space (Brennan et al., 1998). Indeed, well-researched self-report questionnaires assessing attachment anxiety and avoidance are readily available, and despite being brief, they are underused in most clinical settings (Fraley et al., 2011). Thus, despite the fact that attachment should be studied using a dimensional framework from a research standpoint, from a clinical perspective, the usefulness of continuous scores of attachment is debatable as some clinicians would find the categories more clinically informative.

Of great clinical relevance would be the use of a well-validated scale of adult attachment which yields two continuous subscales to classify people into discrete attachment categories that are in line with their clinical presentation and with the attachment theory. However, more evidence is needed to evaluate whether continuous scores of attachment dimensions can be used to form profiles that represent the different attachment styles. In this study, we employed a rigorous statistical approach to determine whether continuous scores of attachment anxiety and avoidance can lead to the identification of clinically useful, specific categorical attachment profiles. Afterward, based on past literature reporting that individual and relationship characteristics and levels of distress differ between attachment styles (e.g., Del Giudice, 2011; Kirkpatrick & Davis, 1994; Li & Chan, 2012), we compared these profiles on gender, relationship status, relationship satisfaction, and psychological distress in community and clinical samples.

Adult attachment models

Using the adult attachment scale (AAS), Collins and Read (1990) were among the first to empirically assess the clinical utility of integrating dimensional and categorical attachment models on adults. Using

a sample of 406 undergraduates, they first extracted attachment dimensions through a factor analysis (closeness, dependency, and anxiety). After applying a cluster analysis to a subsample of 133 undergraduates and a replication sample of 118 undergraduates, they concluded that attachment dimensions clustered into three attachment styles: secure, avoidant, and anxious. These three profiles were in line with the original attachment categories (i.e., secure, avoidant, and anxious/ambivalent) proposed by Hazan and Shaver (1987), based on Ainsworth's infant-mother attachment styles (Ainsworth et al., 1978). A few other studies have attempted to replicate Collins and Read's three-category attachment typology using the AAS and yielded mixed results. In clinical samples of individuals with social anxiety, a cluster analysis indicated only two profiles: secure and anxious-preoccupied (Eng et al., 2001). In a sample of Danish trauma victims, latent profile analyses (LPA) yielded secure, preoccupied, and fearful profiles (Armour et al., 2011). Outside of the important age differences between these samples (approximately 18, 33, and 43 years old in Armour et al., 2011; Collins & Read, 1990; Eng et al., 2001, respectively), these differences may reflect the use of diverse clinical samples versus undergraduate students samples, suggesting that typical attachment profiles found in the general or students' population may differ from those in clinical settings. Indeed, attachment profiles found in clinical samples differ from nonclinical samples with overall lower proportions of secure attachment and dismissive/avoidant attachment (Armour et al., 2011; Eng et al., 2001; Scharfe, 2016), as individuals with dismissive or avoidant attachment may not be inclined to seek therapy.

Despite the relevance of these past findings using the AAS which included three subscales, there is now a consensus that adult attachment is best measured using two dimensions in which low scores on both dimensions would represent the secure category. Indeed, Brennan et al. (1998) found in their large-scale study of several attachment scales that factor analyses produced two general attachment dimensions: fear of abandonment (anxiety) and avoidance of intimacy (avoidance). *Attachment anxiety* refers to a negative model of self, characterized by fear of relational rejection and abandonment, combined with the lack of a sense of self-worth. It involves a strategic hyperactivation of the attachment system, which is sensitive to signals that the relationship might be threatened and in need of love and reassurance. *Attachment avoidance* refers to a negative model of others and is characterized by emotional suppression, self-reliance, and discomfort with closeness and interdependence because of expectations that the partner will be unavailable. It involves a strategic deactivation of the attachment system to reduce negative emotional states as well as increasing vulnerability to rejection and neediness (Mikulincer & Shaver, 2016). This bi-dimensional conceptualization has been confirmed in various samples through exploratory and confirmatory factor analyses of the Experiences in Close Relationships scale (ECR; Lafontaine et al., 2016; Sibley & Liu, 2004). Studies also showed that the ECR has better psychometric properties than the other attachment scales (Fraley et al., 2000). Using a sample of 4184 adults, Brassard et al. (2012) findings increased the clinical utility of the ECR as they used receiver operating characteristic curve techniques to determine clinical thresholds for these two subscales (i.e., cut-off scores maximizing sensitivity and specificity). Their results showed that a score higher than 3.5 for attachment anxiety and 2.5 for attachment avoidance are indicative of high levels of these attachment dimensions. However, these cut-off scores are based on the attachment dimensional model and do not suggest underlying attachment categories. Given the strong research results supporting the validity and reliability of the two dimensions organization and the ECR, this scale is largely preferred in research settings compared to the three-dimensional model suggested in the AAS by Collins and Read (Graham & Unterschute, 2014).

Based on traditional cluster analyses, Brennan et al. (1998) used the two dimensions of the 36-item ECR to form four groups that conceptually corresponded to Bartholomew's attachment styles (Bartholomew, 1990). Secure individuals had low scores on attachment anxiety and avoidance, preoccupied individuals reported high scores on attachment anxiety and low scores on attachment avoidance,

dismissive/avoidant individuals scored low on attachment anxiety and high on attachment avoidance, and fearful individuals show high scores on both dimensions (Brennan et al., 1998). Cluster analysis randomly assigns persons to a specified number of clusters, and subsequently reassigns them to minimize the distance to the cluster centroid based on distance measures (Aldenderfer & Blashfield, 1984). Thus, data-driven exploratory approach may be biased by the researcher's subjectivity given the lack of statistical indices to assist in the choice of a final solution (DiStefano, 2012). The clustering of the two attachment dimensions has not been replicated using a rigorous up-to-date statistical approach. A consensus emerged that latent profile/class analyses, considered a model-based confirmatory person-centered approach, are superior statistical methods to cluster analysis. Latent profile/class analyses derive "profiles" or "classes" (profile will be used throughout the text) using a probabilistic model that describes the distribution of the data, determines the optimal number of categories of an underlying latent variable, and based on this model, assesses probabilities that individuals are members of this latent profile (Vermunt & Magidson, 2002). The fit indices of the different models are useful information, along with the theoretical appropriateness, which help researchers to identify the best solution. While each participant can be classified into one profile, the model also captures uncertainty in the classification (Vermunt & Magidson, 2002). Given these major advantages, LPA have been shown to yield different, usually more parsimonious, classification solution compared to cluster analyses, (DiStefano & Kamphaus, 2006). Thus, the four attachment profiles obtained with cluster analyses should be replicated with this updated statistical method and using the ECR brief version.

Correlates of attachment profiles

Further investigation of these attachment profiles' corollaries may also help clinicians better understand the overall intra- and interpersonal functioning of individuals who fall under these profiles and offer guidance as to which treatment orientation may be best suited for them. Thus, the examination of potential differences across profiles in terms of gender, relationship status, relationship satisfaction, and psychological distress might help to further explore the clinical utility of the obtained attachment profiles. Even if the attachment theory is thought to be gender-neutral (Hazan & Shaver, 1987), a large cross-cultural study reported that in Western cultures, men are more dismissive than women (Schmitt et al., 2003), and a meta-analysis indicated that men showed higher attachment avoidance and lower attachment anxiety than women (Del Giudice, 2011). As gender differences were also found in terms of each individual's ability to relate in an intimate context (Reis, 1998), which is highly associated with one's attachment pattern, how different attachment profiles may manifest according to individuals' gender also needs to be examined. As avoidant attachment behaviors are associated with lower commitment and emotional distance, whereas anxious attachment behaviors are related to more heated arguments and breakups, individuals in the dismissive, preoccupied, and fearful attachment profiles should be overrepresented among single and dating individuals (Campbell et al., 2005; Kirkpatrick & Davis, 1994; Kirkpatrick & Hazan, 1994; Klohnen & Bera, 1998). Indeed, past research has reported secure individuals were more highly represented in samples of committed couples and had the lowest breakup rate over 4 years (Kirkpatrick & Davis, 1994; Kirkpatrick & Hazan, 1994).

People with different adult attachment orientations also have different ways of managing distance and conflicts in romantic relationships, and different affect-regulation strategies when faced with stressors (Brennan & Shaver, 1995; Mikulincer & Shaver, 2016). Thus, it is unsurprising that numerous studies reported that attachment insecurity is related to poor relationship functioning and to psychopathology (Feeney, 2008; Mikulincer & Shaver, 2012). A meta-analytic review reported that higher levels of attachment anxiety or avoidance were related to lower cognitive, emotional, and

behavioral aspects of relationship quality (Li & Chan, 2012). Secure attachment is usually related to greater life and relationship satisfaction as well as better adjustment and psychological well-being relative to insecure attachment (Brennan & Shaver, 1995; Zhang & Labouvie-Vief, 2004). If individuals in the obtained profile differ based on their gender and relationship status as well as their relationship and psychological adjustment, it supports the usefulness of categorical attachment profiles in clinical settings for case conceptualizations.

The present study

The main purpose of this study was to provide empirical support for a person-centered, clinically useful assessment model of romantic attachment in community and clinical samples of adults. As past studies using the AAS yielded inconsistent attachment profiles, in part due to dissimilar samples, we examined attachment profiles in community and clinical samples to identify whether clinicians should expect different profiles in a clinical setting. Our *first aim* was to determine whether continuous scores of attachment anxiety and avoidance would lead to the identification of distinct profiles of individuals through latent profile analysis. Based on the clusters obtained by Brennan et al. (1998), we hypothesized that four specific profiles of individuals corresponding to secure, preoccupied, dismissive, and fearful attachment styles would emerge in the community and clinical samples, with a lower proportion of individuals in the secure and dismissive profile in the clinical sample. Our *second aim* was to evaluate differences between obtained profiles in terms of the distribution of men and women, relationship status, and the mean levels of relationship satisfaction and psychological distress. Based on past research, we expected that the proportion of men would be higher in the dismissive profile, whereas women would be more prevalent in the preoccupied profile compared with the other profiles. Informed by previous research on attachment and relationship and psychological adjustment, we postulated that the proportion of single and dating individuals would be higher in the dismissive, preoccupied, and fearful profiles; whereas the proportion of cohabiting and married individuals would be higher in the secure profile. Finally, we hypothesized that individuals in the dismissive, preoccupied, and fearful profiles would report lower levels of relationship satisfaction and higher levels of psychological distress compared with individuals in the secure profile.

METHOD

Participants and procedures

Community sample

A convenience sample of French-Canadians who were at least 18 years old were recruited from the community through social media, online advertisements, and university electronic lists. This study was part of a larger research project on sexuality and couple functioning in which participants were invited to complete an online survey. Interested participants signed a consent form electronically and then accessed the online survey. The study protocol was approved by the related university's Institutional Review Board. Of the 2592 eligible participants who began the survey, 1663 (64.2%) provided usable data (i.e., completed at least 50% of items used to compute at least one of the attachment dimensions) and were included in this study. Sociodemographic characteristics are presented in Table 1.

TABLE 1 Sociodemographic characteristics

	Community sample <i>n</i> = 1663	Clinical sample <i>n</i> = 575	Comparisons between the samples
	<i>M</i> (<i>SD</i>) or %(<i>n</i>)	<i>M</i> (<i>SD</i>) or %(<i>n</i>)	<i>t</i> test or χ^2 test
Sex			
Women	73.9% (1229)	67.1% (386)	$\chi^2(1) = 9.76$
Men	26.1% (434)	32.9% (189)	$p = .002$
Age (years)			
	26.26 (8.57)	33.85 (11.46)	$t(2233) = -14.51$; $p < .001$
Education			
No diploma	0.1% (1)	2.1% (12)	$\chi^2(4) = 142.82$
High school or vocational diploma	6.8% (113)	21.6% (124)	$p < .001$
College degree	47.9% (796)	32.3% (186)	
Undergraduate degree	30.3% (504)	28.3% (163)	
Graduate degree	14.8% (246)	14.6% (84)	
Occupation			
Worked full- or part-time	28.4% (472)	64.2% (369)	$\chi^2(4) = 418.95$
Homemaker	0.5% (9)	0.9% (5)	$p < .001$
Full time students	69.3% (1152)	22.4% (129)	
Unemployed	0.9% (15)	8.0% (46)	
Retired	0.5% (9)	3.5% (20)	
Annual income (Can\$) community sample/clinical sample			
\$0–\$10,000/0\$–\$15,000	37.1% (617)	20.5% (118)	$\chi^2(6) = 205.76$
\$10,000–\$29,999/\$15,000–\$25,000	35.4% (588)	16.7% (96)	$p < .001$
\$30,000–\$49,999/\$25,000–\$45,000	13.1% (218)	31.0% (178)	
\$50,000–\$69,999/\$45,000–\$65,000	7.3% (122)	15.3% (88)	
\$70,000–\$89,999/\$65,000–\$85,000	3.5% (58)	5.4% (31)	
\$90,000–\$109,999/\$85,000–\$95,000	1.2% (20)	1.9% (11)	
\$110,000 and over/\$95,000 and over	1.7% (29)	3.5% (20)	
Relationship status			
Single	32.8% (545)	31.0% (178)	$\chi^2(3) = 36.20$
Dating	26.1% (434)	15.5% (89)	$p < .001$
Cohabiting	32.8% (546)	38.6% (222)	
Married	8.3% (138)	13.2% (76)	
Relationship duration (years)			
	4.85 (6.49)	5.83 (6.47)	$t(1440) = -2.42$ $p = .016$

Clinical sample

A convenience sample of French-Canadian men and women was recruited at their first assessment session in a psychology university clinic. Most individuals consulting at this clinic sought help for interpersonal difficulties. If they agreed to participate, they signed a consent form and completed a

series of questionnaires at home which they brought back at their second assessment session. The study protocol was approved by the related university's Institutional Review Board. This study was part of a larger ongoing project aimed at evaluating the interpersonal functioning of individuals consulting at this clinic. Of the 604 eligible participants who began the survey, 575 (95.2%) provided usable data (i.e., completed at least 50% of items used to compute at least one of the attachment dimensions) and were included in this study. Sociodemographic characteristics are presented in Table 1, along with comparisons between the community and the clinical samples, which significantly differed on all sociodemographic characteristics.

Measures

Attachment

Attachment anxiety and avoidance were measured using the French-Canadian 12-item version of the ECR questionnaire (Brennan et al., 1998; Lafontaine & Lussier, 2003; Lafontaine et al., 2016). The ECR-12 is based on the two dimensions of adult romantic attachment with two six-item subscales that, respectively, assess attachment anxiety (e.g., "I worry about being abandoned") and attachment avoidance (e.g., "I don't feel comfortable opening up to romantic partners"). Items were scored on a 7-point Likert scale ranging from 1 = *strongly disagree* to 7 = *strongly agree*. Items were averaged for each subscale, with higher scores indicating higher attachment anxiety or higher attachment avoidance. The ECR-12 clinical thresholds for these two subscales have been determined to be 3.5 for attachment anxiety and 2.5 for attachment avoidance (Brassard et al., 2012). The two-dimension factor structure, gender invariance, internal consistency, convergent and predictive validity, and test-retest reliability over a 1-year period of the ECR-12 have been shown to be adequate in community and clinical samples (Lafontaine et al., 2016). In the community sample, Cronbach's α was .88 for the attachment anxiety and the attachment avoidance subscales; in the clinical sample, Cronbach's α was .86 for both subscales.

Sociodemographic questionnaire

Sociodemographic information was assessed using questions about gender, age, relationship status, relationship duration, education, occupation, and annual income.

Relationship satisfaction

The French-Canadian version of the Dyadic Adjustment Scale (DAS; Baillargeon et al., 1986; Spanier, 1976) was used to assess the quality of current romantic relationship. In the clinical sample, participants currently involved in a romantic relationship completed the 32-item version, whereas those from the community sample completed the shortened four-item version (Sabourin et al., 2005). The DAS-4 was constructed using items under the satisfaction factor of the 32-item scale and provides comparable information on couple satisfaction (Sabourin et al., 2005). A sample item included in both versions is "In general, how often do you think that things between you and your partner are going well?". Items were rated on six-point and seven-point Likert type scales (0 = *all the time*; 5 = *never*; 0 = *extremely unhappy* and 6 = *perfect*), and then summed to obtain a total score ranging from 0 to

151 for the DAS-32 and from 0 to 21 for the DAS-4. Higher scores indicated greater relationship satisfaction. The DAS-4 and DAS-32 both showed good internal consistency (respectively, Cronbach's $\alpha = .91$ and $.96$) as well as adequate predictive validity and temporal stability (Sabourin et al., 2005; Spanier, 1976). In the community sample, the DAS-4 Cronbach's α was $.80$ and in the clinical sample, the DAS-32 Cronbach's α was $.93$.

Psychological distress

The French-Canadian 14-item version of the Psychiatric Symptoms Index (Boyer et al., 1993; Ilfeld, 1976; Prévaille et al., 1992) was used to assess participant's psychological distress in the previous 7 days including depression, anxiety, anger, and cognitive disturbance. Respondents rated their answers to the 14 items on a four-point Likert-type scale (0 = *never*; 3 = *very often*), the results of which were summed and then transformed in a total score ranging from 0 to 100. Higher scores indicated higher psychological distress. The ISP has good internal consistency (Cronbach's $\alpha = .91$) and concurrent validity with other scales indicating emotional distress (Ilfeld, 1976). The Cronbach's α was $.91$ for both the community and the clinical sample.

Analytic plan

Latent profile analyses, which are an extension of latent class analyses of continuous observed variables, were performed with *Mplus* version 8.0 using the robust maximum likelihood estimation (Muthén & Muthén, 1998–2015). LPA, a model-based person-centered approach, was conducted to identify naturally occurring homogenous latent profiles of participants based on the two observed attachment variables (i.e., mean scores of the six-item attachment anxiety and attachment avoidance subscales were entered in the LPA). As the study's aim was to examine if the same profiles were obtained in a clinical sample versus a community sample, two LPA were conducted separately in the community and the clinical samples. When the optimal number of profiles was identified, within-profile mean scores for attachment anxiety and avoidance were examined to determine whether they corresponded to clinical cut-offs (2.5 for avoidance and 3.5 for anxiety; Brassard et al., 2012) and they were used to label the obtained profiles. One to eight solutions were extracted with 1000 random start values for each model, with the 250 bests retained for the final optimization. The best-fitting classification model was determined by a combination of fit indices, parsimony, size of profiles, and interpretability (Nylund et al., 2007). Regarding the fit indices, the smallest log-likelihood (LL), the smallest Akaike information criterion (AIC), the smallest Bayesian information criterion (BIC), a significant Lo-Mendell-Rubin likelihood ratio test (VLR), and a significant bootstrap likelihood ratio tests (BLRT) point toward the best-fitting classification model (Morgan, 2015; Nylund et al., 2007). A non-significant VLR and non-significant BLRT indicate that, as compared to a more parsimonious model with one less profile, improvements in model fit obtained by adding another profile should be rejected. Model fit criteria are one of the advantages of LPA over traditional cluster analyses. However, as profiles are added, model fit tends to naturally improve. The selected optimal solution should be the one with the smallest number of profiles possible while achieving an acceptable model fit, and the obtained profiles should include a significant number of participants (i.e., all profiles should include more than 5% of the sample) and theoretically represent interpretable profiles. The precision of individual classification was assessed using an entropy value ranging between 0 and 1, with a high entropy corresponding to a clear class separation. Because individuals may belong to more than

one latent class, the quality of class allocation was examined through the average latent class probabilities, with values above .80 indicating satisfactory classification. Missing data on the attachment subscales were treated using the full information maximum likelihood method.

Once the best number of profiles was identified, the most likely latent profile membership was exported to SPSS 27 to examine the differences between the community and the clinical samples using a chi-square test with a Cramer's V as an indication of effect size. Afterward, to examine the correlates of the obtained attachment profiles, the automated three-step method in *Mplus* (DU3STEP for continuous outcomes and DCAT for categorical outcomes) was used to compare the proportion of men and women, the distribution of relationship status and the mean levels of relationship satisfaction and psychological distress across profiles (Asparouhov & Muthén, 2014; Lanza et al., 2013; Vermunt, 2010). This method tests the equality of the means or probabilities across the latent profiles using Wald chi-square tests and is robust to unequal means and variances across profiles. It also allows for the estimation of a second model without affecting the latent profile membership of the previous model and permits a more accurate examination of outcomes by accounting for inaccuracies in profile separation (Asparouhov & Muthén, 2014).

RESULTS

Identification and description of latent profiles

Community sample

The fit indices for the one- to eight-profile solutions in the community sample are presented in Table 2. An examination of fit indices indicated that the best fitting model was the four-profile solution which was also theoretically coherent. In comparison to the one-, two-, and three-profile solutions, the four-profile model showed lower LL, AIC, and BIC values, as well as a significant VLRT and BLRT p -values. Even though the five- and six-profile solutions had similar fit indices with significant VLR and BLRT p -values, in all solutions with more than four profiles, the proportion of some profiles was too small (below 5%). Moreover, the theoretical and clinical significance of the three- and five-profile solutions was difficult to interpret (i.e., in the three-profile solution there were one preoccupied profile and two fearful profiles; in the five-profile solution there were two preoccupied profiles, two fearful profiles, and one dismissive profile). Thus, the four-profile solution was selected as the best fitting and more parsimonious solution. The value of entropy for the four-profile solution was 0.70 and the average latent class probabilities for the most likely latent class membership were satisfactory, ranging from 0.80 to 0.85.

The proportion of participants in each profile along with the means and standard errors of attachment avoidance and anxiety in each profile are presented in Table 3. According to the most likely latent profile membership, the first profile, designated as the *secure* profile, included 34.5% of the sample and was characterized by low scores (below clinical threshold) on attachment avoidance and anxiety. The second profile, labeled as the *preoccupied* profile, defined 41.8% of the sample and was represented by high levels of attachment anxiety and low levels of attachment avoidance. The third profile, named as the *dismissive* profile, comprised 7.6% of the sample and was characterized by high levels of attachment avoidance and low levels of attachment anxiety. The fourth profile, designated as the *fearful* profile, included 16.2% of the sample and was represented by high scores on attachment avoidance and anxiety.

TABLE 2 Fit Indices for latent profile analysis within community and clinical samples

	LL	AIC	BIC	VLRT <i>p</i> -value	BLRT <i>p</i> -value	Entropy	Proportion of sample size in profile
Community sample <i>n</i> = 1663							
1 profile	-5795.62	11,599	11,620	NA	NA	NA	1.00
2 profiles	-5673.04	11,360	11,398	<.001	<.001	0.76	0.76/0.24
3 profiles	-5619.13	11,258	11,312	<.001	<.001	0.80	0.65/0.07/0.28
4 profiles	-5603.39	11,233	11,303	.013	<.001	0.70	0.34/0.16/0.08/0.42
5 profiles	-5574.97	11,182	11,269	.023	<.001	0.81	0.03 /0.36/0.29/0.22/0.10
6 profiles	-5552.22	11,142	11,245	<.001	<.001	0.73	0.34/0.09/0.18/ 0.03 /0.31/ 0.05
7 profiles	-5546.65	11,137	11,256	.121	.036	0.72	0.32/0.08/0.19/ 0.05 / 0.02 /0.2 6/0.07
8 profiles	-5538.39	11,127	11,262	.179	.004	0.73	0.24/0.11/ 0.02 /0.07/0.19/0.06/ 0.02 /0.30
Clinical sample <i>n</i> = 575							
1 profile	-1991.13	3990	4008	NA	NA	NA	1.00
2 profiles	-1960.56	3935	3966	<.001	<.001	0.73	0.71/0.29
3 profiles	-1946.99	3914	3958	<.001	<.001	0.65	0.59/0.12/0.28
4 profiles	-1942.56	3911	3968	.129	.116	0.65	0.18/0.54/0.13/0.16
5 profiles	-1934.27	3901	3970	.032	.004	0.71	0.36/0.09/0.12/0.24/0.20
6 profiles	-1931.29	3901	3983	.532	.347	0.66	0.06/0.09/0.29/0.17/0.14/0.25
7 profiles	-1926.66	3897	3993	.133	.132	0.71	0.09/0.16/0.10/ 0.03 /0.29/0.0 8/0.26
8 profiles	-1923.50	3897	4006	.360	.314	0.71	0.11/0.20/0.09/ 0.04 /0.11/0.08/ 0.24/0.13

The row that is shaded represent the best solution in this sample. Class proportions reflect the proportion of the total sample in each profile. Class proportions in bold represent <5% of the total sample.

Abbreviations: AIC, Akaike information criterion; BIC, Bayesian information criterion; BLRT, bootstrap likelihood ratio test; LL, loglikelihood; VLRT, Vuong-Lo-Mendell-Rubin likelihood ratio test.

Clinical sample

The fit indices for the one- to eight-profile solutions in the clinical sample are presented in Table 2. An examination of fit indices indicated that the best fitting model was the three-profile solution. This model showed the lowest value for the BIC as well as significant VLRT and BLRT *p*-values. In contrast, the four, six-, seven-, and eight-profile models yielded slightly lower LL and AIC indices, but a slightly higher BIC value and non-significant VLRT and BLRT *p*-values which suggest that the *k* - 1 solution should be retained. Thus, we considered the three- and five-profile solutions. Compared with the three-profile solution, the five-profile solution showed lower LL and AIC indices and significant VLRT and BLRT *p*-values, but a higher BIC value. Moreover, the theoretical or clinical significance of the five-profile solution was difficult to interpret (i.e., there were one secure profile, one preoccupied profile, and three fearful profiles with different levels of avoidance). Thus, the three-profile solution was selected as it was the more parsimonious solution, had a lower BIC, and this solution theoretically represented interpretable profiles. The value of entropy was 0.65 in the three-profile

TABLE 3 Proportion of participants in each profile and means and standard errors of attachment avoidance and anxiety across attachment profiles in the community and the clinical samples

	Community sample <i>n</i> = 1663			Clinical sample <i>n</i> = 575		
	% (<i>n</i>)	Avoidance <i>M</i> (<i>SE</i>)	Anxiety <i>M</i> (<i>SE</i>)	% (<i>n</i>)	Avoidance <i>M</i> (<i>SE</i>)	Anxiety <i>M</i> (<i>SE</i>)
Secure profile	34.5% (573)	1.90 (0.05)	2.79 (0.07)	12.2% (70)	1.87 (0.15)	2.67 (0.20)
Preoccupied profile	41.8% (695)	2.15 (0.06)	4.97 (0.06)	59.5% (342)	2.40 (0.07)	4.90 (0.14)
Dismissive profile	7.6% (126)	4.64 (0.16)	2.43 (0.13)	—	—	—
Fearful profile	16.2% (269)	4.27 (0.11)	5.12 (0.10)	28.3% (163)	4.52 (0.10)	4.26 (0.12)

solution and the average latent class probabilities for the most likely latent class membership were satisfactory, ranging from 0.78 to 0.88.

The proportion of participants under each profile along with means and standard errors of attachment avoidance and anxiety in each profile are presented in Table 3. According to the most likely latent profile membership, the first profile, designated as the *secure* profile, included 12.2% of the sample and was characterized by low scores on attachment avoidance and anxiety. The second profile, labeled as the *preoccupied* profile, defined 59.5% of the sample and was represented by high levels of attachment anxiety and low levels of attachment avoidance. The third profile, designated as the *fearful* profile, included 28.3% of the sample and was represented by high scores on attachment avoidance and anxiety. A dismissive profile did not emerge as a distinct attachment pattern in this latent model.

Clinical sample versus community sample

Results of a chi-square test, $\chi^2(3) = 179.04, p < .001$, Cramer's $V = 0.28$, indicated that the proportion of individuals in the secure profile was smaller in the clinical sample (12.2%) compared with the proportion in the community sample (34.5%). The proportions of individuals in the preoccupied and the fearful profiles were higher in the clinical sample (59.5% and 28.3%, respectively) compared with the proportions in the community sample (41.8% and 16.2%, respectively). No dismissive profile emerged in the clinical sample, whereas the proportion of individuals in this profile reached 7.6% in the community sample.

Comparisons of profiles on gender, relationship status, psychological distress, and relationship satisfaction

Community sample

Results of comparisons between attachment profiles in the community sample according to gender, relationship status, relationship satisfaction, and psychological distress are presented in Table 4. The Wald chi-squared test indicated gender differences among the profiles. Compared with the three other profiles, women were more likely to be classified under the preoccupied profile whereas men were more likely to be classified under the dismissive profile. Results of the Wald chi-squared test also indicated differences regarding relationship status among the profiles, and significant differences

TABLE 4 Probabilities or means of gender, relationship status, relationship and psychological distress across attachment profiles in the community and clinical samples

	Secure		Preoccupied		Dismissive		Fearful		Wald χ^2 test	p
	M (SE)	Prob (SE)	M (SE)	Prob (SE)	M (SE)	Prob (SE)	M (SE)	Prob (SE)		
Community sample n = 1663										
Gender										
Men	0.30 (0.02) ^a		0.16 (0.02) ^b		0.55 (0.05) ^c		0.31 (0.03) ^a		42.36	<.001
Women	0.70 (0.02) ^a		0.84 (0.02) ^b		0.45 (0.05) ^c		0.69 (0.03) ^a			
Relationship status									158.30	<.001
Single	0.20 (0.02) ^a		0.27 (0.03) ^b		0.45 (0.05) ^c		0.63 (0.03) ^d			
Dating	0.25 (0.02) ^a		0.34 (0.02) ^b		0.22 (0.04) ^{a,c}		0.12 (0.02) ^c			
Cohabiting	0.42 (0.03) ^a		0.34 (0.02) ^b		0.23 (0.04) ^c		0.19 (0.03) ^c			
Married	0.13 (0.02) ^a		0.05 (0.01) ^b		0.11 (0.03) ^{a,b}		0.06 (0.02) ^b			
Relationship satisfaction	17.50 (0.14) ^a		16.86 (0.16) ^b		13.75 (0.50) ^c		11.72 (0.39) ^d		282.16	<.001
Psychological distress	17.04 (0.64) ^a		35.88 (0.93) ^b		29.64 (2.38) ^c		44.29 (1.94) ^d		481.67	<.001
Clinical sample n = 575										
Gender										
Men	0.72 (0.07)		0.69 (0.03)		0.60 (0.04)		0.60 (0.04)		3.43	.180
Women	0.28 (0.07)		0.31 (0.03)		0.40 (0.04)		0.40 (0.04)			
Relationship status									24.96	<.001
Single	0.15 (0.06) ^a		0.32 (0.03) ^b		0.41 (0.04) ^b		0.41 (0.04) ^b			
Dating	0.11 (0.05) ^a		0.19 (0.03) ^a		0.12 (0.03) ^a		0.12 (0.03) ^a			
Cohabiting	0.53 (0.08) ^a		0.41 (0.04) ^a		0.29 (0.04) ^b		0.29 (0.04) ^b			
Married	0.21 (0.06) ^a		0.09 (0.02) ^b		0.18 (0.03) ^a		0.18 (0.03) ^a			
Relationship satisfaction	120.98 (4.19) ^a		105.84 (1.67) ^b		87.21 (2.16) ^c		87.21 (2.16) ^c		76.46	<.001
Psychological distress	24.28 (1.90) ^a		45.63 (1.39) ^b		46.43 (2.06) ^b		46.43 (2.06) ^b		94.11	<.001

Note: Means or probabilities with different superscript letters (a vs. b vs. c) differ at p < .05.

between each profile are reported in Table 4. Overall, single individuals were more likely to be classified under the fearful profile followed by the dismissive profile, whereas dating individuals were more likely to be classified under the preoccupied profile followed by the secure profile. Cohabiting individuals were more likely to be classified under the secure and the preoccupied profiles and married individuals were more likely to be classified under the secure and the dismissive profiles. Results of the Wald chi-squared test indicated significant differences between all profiles in terms of relationship satisfaction. The secure profile had the highest levels of relationship satisfaction, followed by the preoccupied profile, the dismissive profile, and lastly, the fearful profile had the lowest levels. Results of the Wald chi-squared test indicated significant differences between all profiles for psychological distress. The secure profile had the lowest levels of psychological distress, followed by the dismissive profile, the preoccupied profile, and the fearful profile had the highest levels.

Clinical sample

Results of comparisons among attachment profiles in the clinical sample according to gender, relationship status, relationship satisfaction, and psychological distress are presented in Table 4. Results of the Wald chi-squared tests indicated no significant gender differences among the profiles, but differences in terms of relationship status were observed, and significant differences between each profile are reported in Table 4. Overall, single individuals were more likely to be in the fearful and preoccupied profiles, whereas cohabiting individuals were more likely to be in the secure and the preoccupied profiles, and married individuals were more likely to be in the secure and the fearful profiles. Results of the Wald chi-squared test indicated significant differences among all profiles in terms of relationship satisfaction. Participants from the secure profile reported the highest levels of relationship satisfaction, followed by participants from the preoccupied profile, and those from the fearful profile reported the lowest levels. There were also significant differences among the profiles in terms of psychological distress. Participants from the secure profile had significantly lower psychological distress compared with the preoccupied and the fearful profiles, which did not differ significantly from one another.

DISCUSSION

Taken together, the present findings provide support for using the two continuous attachment dimensions, attachment anxiety, and avoidance, to classify people into discrete attachment categories that are in line with attachment theory and clinical presentations. The findings from LPA suggest that attachment anxiety and avoidance levels can be reliably evaluated and combined to identify meaningful profiles of secure, preoccupied, dismissive, and fearful individuals in a community sample. Three of these four attachment profiles also emerged in participants from the clinical setting, whereas there was no specific profile formed for dismissive individuals. As expected, insecure attachment types prevailed in the clinical sample, with higher rates of preoccupied and fearful individuals along with a lower number of secure persons.

In line with our hypothesis and attachment literature, we obtained a four-profile solution in the community sample which replicated the results of the pioneering cluster analysis study conducted by Brennan et al. (1998). As cluster analysis is a data-driven exploratory approach that has been shown to yield classification solutions which differ from those of superior statistical methods, it was therefore important to confirm past results using up-to-date data analyses practice and using the

brief ECR version (DiStefano, 2012; DiStefano & Kamphaus, 2006). The results are also in line with Bartholomew theoretical suggestions about romantic attachment styles (Bartholomew, 1990), which postulated that the two attachment dimensions ultimately form four categorical profiles. In addition, this study was based on the 12-item ECR (Brennan et al., 1998; Lafontaine et al., 2016). This brief version of the ECR, which preserves the essential psychometric properties of the original 36-item ECR used by Brennan et al. (1998), can more easily be included in contemporary diagnostic and screening protocols to enrich case conceptualization and treatment planning.

Partly in line with our hypothesis, we obtained a three-profile solution in the clinical sample. This result supported previous studies using the AAS on clinical samples that yielded two (secure and anxious-preoccupied; Eng et al., 2001) or three attachment profiles (secure, preoccupied, and fearful; Armour et al., 2011). As in our results, these studies indicated a secure profile, but no dismissive profile. Indeed, our finding that 12% of participants in the clinical sample were securely attached and formed a distinct profile is interesting and either suggests that these individuals are not valid observers of their attachment dynamics or that they may seek professional help in reaction to external stressors unrelated to attachment issues. In clinical practice, therapists should confirm if the self-reported profile is representative of observed attachment strategies. Past studies have reported discrepancies between self-reports and observational data that can shed light on attachment-relevant issues such as defensive self-presentation and emotional control (Feeney, 2002; Jacobvitz et al., 2002). As most attachment-focused treatments aim to establish a secure attachment (Johnson & Greenman, 2006), they might benefit by expanding to conceptualize psychological and relational issues of secure individuals. Likewise, our finding that dismissive participants did not form a distinct attachment profile in the clinical sample suggests that attachment anxiety is particularly salient in individuals consulting for interpersonal difficulties. Previous studies found that dismissive individuals are less likely to have a history of engaging in psychotherapy (Riggs et al., 2002). Furthermore, as dismissive individuals are less likely to exhibit help-seeking behaviors and are more inclined to deny their own psychological distress, they may only seek help when pressured by external sources, rather than seeking for professional help for personal or interpersonal problems (Vogel & Wei, 2005). Individuals under the dismissive profile may be more easily identified in specialty clinics treating patients with avoidant, schizoid, or antisocial features.

The validity of the obtained profile was further supported as their associations with gender, relationship status, relationship dissatisfaction, and psychological distress were in line with previous literature and theoretical expectations. Gender differences in the community sample replicated past meta-analytic results (Del Giudice, 2011); women were overrepresented in the preoccupied profile showing higher attachment anxiety, whereas men were more likely to be included in the dismissive profile, showing higher attachment avoidance. These gender differences are in line with stereotypical gender roles in which femininity is related to the need for approval and intimacy seeking behavior, whereas masculinity is related to self-reliance and low-commitment mating strategies (Ciocca et al., 2020; Del Giudice, 2019). However, these gender differences were non-significant in the clinical sample. Individuals seeking therapy typically present higher levels of attachment anxiety and lower levels of attachment avoidance (Vogel & Wei, 2005), which may muddle the gender difference observed in the general population. Traditional gender-role and masculine attributes may also explain why men are less likely than women to seek therapy (Robertson & Fitzgerald, 1992). Men seeking therapeutic help in our clinical sample might show higher attachment anxiety or lower attachment avoidance than men from the community, partly explaining the lack of gender differences in this sample.

Our findings also showed that insecure individuals, specifically individuals in the dismissive and fearful profiles, when compared with secure individuals, reported a relationship status reflecting lower commitment as well as higher levels of relationship dissatisfaction and psychological distress. This is

in line with numerous studies that showed that individuals who are securely attached to their partners experience higher relationship satisfaction and stability as well as better personal well-being and life satisfaction, whereas those who are less securely attached reported decreased levels of satisfaction, are less likely to stay with their partner, and are more likely to report psychological difficulties (see Mikulincer & Shaver, 2012; Shaver & Mikulincer, 2006, for reviews). Interpersonal strategies used to regulate attachment-related distress by insecure individuals may strain their romantic relationships, leading to more relationship dissatisfaction and more instability in couples (Shaver & Mikulincer, 2006). Difficulties in emotion regulation experienced by individuals with more insecure attachment profiles may also lead them to use maladaptive coping strategies which ultimately result in greater psychological distress, when compared with individuals with a more secure inclination (Mikulincer & Shaver, 2016). Even if these hypotheses are in line with past studies on the two attachment dimensions, more research is needed to support that the obtained profiles are in line with the various indicators of interpersonal and intrapersonal functioning. Difficulties in romantic relationships as well as psychological distress were particularly salient in the fearful profile. Fearfully attached individuals may experience ambivalence in their intimate relationships as they may feel uncomfortable with being close to their partner, but also fear abandonment when feeling emotionally distanced. This may subsequently be related to higher distress and dissatisfaction. These findings may help clinicians have a better understanding of patients' relationships and psychological well-being based on their attachment profiles.

Clinical implications

From a clinical standpoint, our observations that the two continuous attachment dimensions can be used to classify individuals into distinct categorical attachment profiles that are in line with the attachment theory and clinical presentations have important implications for assessment and treatment. This bi-dimensional assessment of romantic attachment based on the ECR-12 can be applied in a cost-effective manner to clinical settings and may be useful in assisting therapists in their case conceptualization and treatment planning according to their patients' attachment profile. The ECR-12, an inexpensive, brief, and well-validated measure of attachment, could be systematically included in assessment strategies (items and scoring described in Lafontaine et al., 2016). The two subscale scores, attachment anxiety and avoidance, may then be computed (averaging the items on each subscale) and clients may be classified into four attachment profiles (or attachment styles: secure, preoccupied, dismissive, or fearful). Indeed, clients' scores on the two attachment dimensions could be compared with the average levels of attachment anxiety and attachment avoidance in each of our obtained profiles. However, future studies are needed to determine the optimal clinical thresholds that would allow classifying individuals into the four attachment categories. The available unpublished cut-offs are based on the attachment dimensional model and do not suggest underlying attachment categories (Brassard et al., 2012). Once our results are replicated and clinical cut-offs for the four attachment groups are confirmed, more ready-to-use and user-friendly clinical tools and materials should be developed to close the research-to-practice gap.

From a psycho-educational perspective, offering the clients a description of their attachment style as opposed to their scores on the attachment anxiety and avoidance subscales may help them discuss and understand potentially overwhelming intrapersonal and interpersonal issues through non-threatening, easy-to-understand, and non-pathological formulations. Open discussions about attachment difficulties may promote the exploration of the impact of early developmental family-of-origin events on present-day relational patterns and reactions, which may help effectively treat and heal distressed relationships and create more secure bonds between intimate partners.

Finally, therapists may benefit from their assessment of the attachment styles of their patients as this information provides cues about commitment levels, relationship satisfaction, and psychological distress. Based on past research, it may also inform them on what can be expected within the therapeutic relationship (e.g., countertransference dynamics, breaches in therapeutic alliance, patient commitment toward therapy; Diener & Monroe, 2011; Lafrenaye-Dugas et al., 2020). This information can be crucial in the implementation of early interventions aimed toward deepening therapists and patients' understanding of severe trust issues and intimacy problems, and to soften rigid and negative patterns of interaction. In turn, these interventions may promote treatment efficiency and lower the rate of treatment dropout (Burgess Moser et al., 2016; Johnson et al., 2016; Moser et al., 2016; Wiebe & Johnson, 2017).

Strengths, limitations, and future directions for further study

This study used rigorous up-to-date person-centered analyses to replicate the clustering of the two continuous attachment dimensions in different profiles in community and clinical samples. Moreover, we confirmed the validity and clinical utility of these profiles by examining how they are related to important indicators of personal and relational distress. However, some limitations should be considered when interpreting the results. First, even though the ECR-12 is a widely used validated measure of adult romantic attachment, self-reported assessment of anxiety and avoidance in romantic relationships may be biased due to social desirability or restricted insight. Thus, from both a clinical and research viewpoint, self-reported attachment should ideally be compared to partner-reported or therapist-reported assessments of attachment anxiety and avoidance. Second, the generalizability of our results is potentially limited due to convenience sampling. Both samples included more women than men, and students with post-high school education were overrepresented in the community sample. Moreover, we have no information regarding the cultural background of participants. However, as this study was conducted in Quebec, Canada, the sample was most likely influenced by Western culture, and literature shows that attachment representations are related to cultures (Schmitt et al., 2003). Future studies with larger representative samples are necessary to confirm the present findings. Third, the associations between the obtained profiles and the covariates did not control for any confounding factors that could explain the significant associations. Fourth, despite falling within the acceptable range, entropy levels, and average latent class probabilities for most likely latent class memberships suggested that our classifications are not perfectly accurate. Finally, the current findings are based only on cross-sectional data. Longitudinal follow-up studies of individuals would allow to examine if specific profiles of attachment evolve over time and how these are related to trajectories of individual and couple well-being, both in the current population and in clinical settings.

CONCLUSION

Taken together, the present findings support using the ECR-12 as a bi-dimensional measure of romantic attachment to form clinically useful, valid, and meaningful profiles of secure, preoccupied, dismissive, and fearful individuals in a community sample, and of secure, preoccupied, and fearful individuals in a clinical sample. In line with theoretical understanding and past research, our results showed that insecure individuals tend to report higher levels of relationship dissatisfaction and psychological distress, and for their relationship status to reflect lower commitment. We suggest that the short form ECR offers a cost-effective tool when administered in clinical settings to assess

attachment representations, enhance case conceptualizations especially regarding attachment-related relational disorders (Mikulincer & Shaver, 2015), and promote alliance and treatment effectiveness (Wiebe & Johnson, 2017).

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