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Attachment in cultural context

Polek, Elzbieta

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Chapter 2

Evaluating the Replicability of the Bartholomew and Horowitz Model of Attachment in one Native Dutch and Four Immigrant Samples

Introduction

Attachment theory and measurement

Attachment theory has spawned a large number of theoretical and empirical studies in developmental and social psychology. Originally formulated by Bowlby (1973, 1969/1982), attachment theory conceptualizes the universal human need to form affectional bonds with others. Within this theory, attachment is described as a behavioral system which is based on hereditary motivation (Bowlby, 1969/1982). It has emerged as a result of genetic selection, which favored attachment behavior because it increased the likelihood of child-mother proximity and, consequently, of offspring survival. The function of the attachment system is to provide children with a sense of security. Through interactions with caregivers the child develops internal "working models", which include expectations and beliefs about the care and responsiveness of the caregivers, and also beliefs about whether the self is worthy of care and attention (Ainsworth, Blehar, Waters, & Wall, 1978). Thus, early in life an individual acquires a certain attachment style, or characteristic manner of developing bonds with others (Becker, Billings, Eveleth, & Gilbert, 1997). Attachment theory underlines that attachment is a lifespan phenomenon (Hazan & Zeifman, 1999), existing "from the cradle to the grave" (Bowlby, 1969/1982, 1973, 1980; Hazan & Zeifman, 1999, p. 336). Bowlby (1969/1982) argued that an infant's relation with a caregiver is internalized as a working model and therefore generalized to new relationships. Bowlby also suggested that working models are the main source of continuity between the infant's relationship with a caregiver and later relationships (Mikulincer & Nachshon, 1991).

A number of adult attachment styles have been proposed. For example, Hazan and Shaver (1987), drawing on the work of Ainsworth et al. (1978), specified three attachment styles: a secure, an avoidant and an anxious/ambivalent style. Individuals with secure attachment are able to form close bonds with others and are comfortable with interdependent relationships, while individuals with an avoidant attachment are distrustful of others and afraid of intimate relationships. Anxious/ambivalent individuals

want close relationships, but they suspect that other people do not truly care about them. The instrument used by Hazan and Shaver (1987) to assess attachment styles consists of three vignettes – descriptions of the three attachment styles. Respondents indicate which of the three characterizes them best. Although the Hazan and Shaver instrument has been widely adopted by researchers (e.g., Baldwin, Fehr, Keedian, Seidel, & Thomson, 1993; Feeney & Noller, 1990; Mayseless, 1993; Mikulincer, Florian, & Tolmacz, 1990), it has also met abundant criticism. First, the Hazan and Shaver measure assumes that all individuals can be classified into one and only one category of attachment. As a result, the extent to which a chosen category characterizes respondents is ignored, as are potential individual differences in attachment profiles (Becker et al., 1997). These psychometric limitations of Hazan and Shaver's instrument have led to the development of other measures. Based on Bowlby's claim that early attachment experiences are internalized as working models of self and others, Bartholomew and Horowitz (1991) proposed that the models of self and models of others can be either positive or negative. The combination of the model of self and others thus yields a four-category model of attachment styles (Figure 2-1). These are the secure style with positive models of both self and others, the fearful style with negative models of both self and others, the preoccupied style with a positive model of others and a negative model of self and the dismissing style with a positive model of self and a negative model of others. The structure of the Bartholomew and Horowitz model implies that the secure and fearful styles, as well as the preoccupied and dismissing are each other's conceptual opposites (Figure 2-1).

Drawing on the four-category model, Bartholomew and Horowitz (1991) measured attachment styles by means of vignettes, including descriptions of each attachment style (Table 2-1). Other researchers have separated the Bartholomew and Horowitz vignettes into individual items and derived scales to measure attachment styles with factor analysis methods (Collins, & Read, 1990; Simpson, Rholes, Nelligan, 1992). In some factor analysis studies, evidence was found for a four-factor structure corresponding to a four-category model (Kobak, Cole, Fleming, Ferenz-Gillies, & Gamble, 1993; Hofstra, Van Oudenhoven, Buunk, 2005). Other studies, however, did not support a four-category model (Ng, Trusty, & Crawford, 2005; Brennan, Clark & Shaver, 1998; Kurdek, 2002).

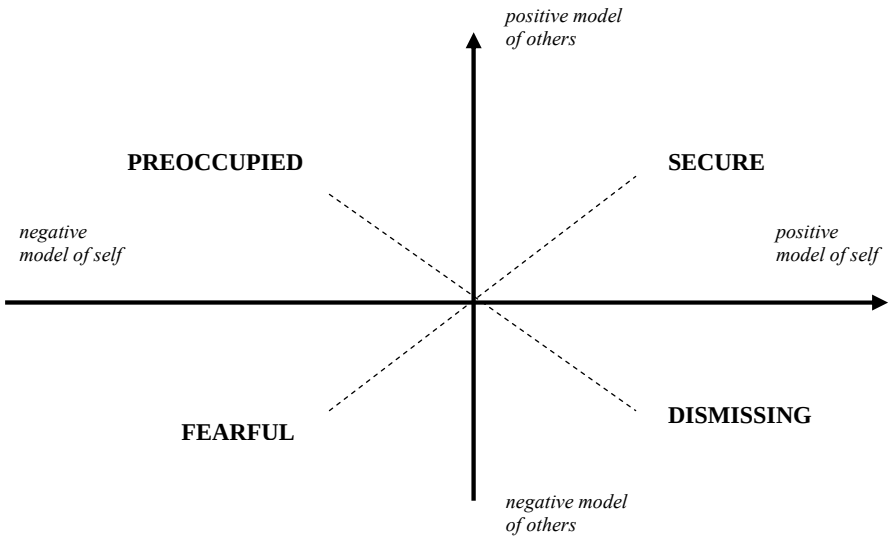

Figure 2-1. The four-category model of attachment styles proposed by Bartholomew and Horowitz (1991).

Table 2-1. Attachment Style Prototypes (Bartholomew & Horowitz, 1991).

Secure	It is relatively easy for me to become emotionally close to others. I am comfortable depending on others and having others depend on me. I don't worry about being alone or having others not accept me.
Dismissing	I am comfortable without close emotional relationships. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on others or have others depend on me.
Preoccupied	I want to be completely emotionally intimate with others, but I often find that others are reluctant to get as close as I would like. I am uncomfortable being without close relationships, but I sometimes worry that others don't value me as much as I value them.
Fearful	I am somewhat uncomfortable getting close to others. I want emotionally close relationships, but I find it difficult to trust others completely, or to depend on them. I sometimes worry that I will be hurt if I allow myself to become too close to others.

Most studies on attachment measures report the structure obtained in one sample only, and do not examine the replicability of factors in a number of samples (e.g., Hofstra et al., 2005, Sibley, Fischer, Liu, 2005). Despite the advances in attachment measurement, the question as to whether or not the four-category model proposed by Bartholomew and Horowitz is supported by factor analysis is still open. The present study on the cross-sample replicability of factors obtained in a multi-item measure of attachment could provide an answer to this question.

The Attachment Style Questionnaire (ASQ, see Appendix 1) by Van Oudenhoven, Hofstra and Bakker (2003) was originally developed in Dutch and used in samples of Dutch students and in a midlife sample. Authors of the ASQ started with an initial set of 35 items which were generated on the basis of the Bartholomew and Horowitz model, and probed both a specific type of attachment (quadrant) (e.g., "I feel at ease in emotional relationships") and an underlying dimension (e.g., "I presume that others are trustworthy"). Based on the Principal Component Analysis in the Dutch sample they chose 23 items, which best represented four factors, and left out 12 items. In the present study we removed one more item, and used the 22-item Attachment Style Questionnaire, see Table 2.3.

The solution found in the Dutch sample corresponded to the Bartholomew and Horowitz model. Four oblique factors matching the four theoretical attachment types were found in the original version of the ASQ (Hofstra et al., 2005). The ASQ assesses attachment through multiple scores (on each dimension separately), allowing the description of individuals along each of the four attachment dimensions: secure, fearful, preoccupied and dismissing. Most attachment measures assess only relationship specific attachment. The ASQ is unique in that it measures general attachment to other people, thus allowing assessment of the general sociability of a respondent. Respondents give answers on a 5-point scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

First we examine whether or not the four factors obtained in the two Dutch samples are replicated in samples of Polish, Russian, Moroccan and Hungarian immigrants. If the four factors are replicated across the studied samples, it will provide support for the four attachment types postulated by the Bartholomew and Horowitz model. Second, we are interested if the correlations between factors support the structure of the model; this would imply that preoccupied attachment is the conceptual opposite of dismissive attachment and that secure attachment is the conceptual opposite of fearful attachment.

Method

Procedure

A translation of the ASQ from the Dutch language into the Polish, Russian, and Hungarian target languages was made, and these were then translated back into Dutch. We compared the return translations with the original version in order to check the accuracy of the translations. We consulted Russian and Hungarian-born psychologists who have spent more than 15 years in the Netherlands and are fluent in the Dutch language, in order to eliminate the few discrepancies that emerged between the return translations and the Dutch version of the questionnaire. The final version of the questionnaires in Polish, Russian and Hungarian respectively, as well as the Dutch version, were presented once again to other translators who were asked to evaluate the equivalence of each translated item with the original version. We also asked translators to tell us if they would give the same responses to the Dutch items as to the corresponding translated items. The translators rated the equivalence of the original and translated items as high.

Samples

We conducted the study on six samples: first year Dutch students and a Dutch midlife cohort (Van Oudenhoven et al., 2003) and four samples of immigrants living in the Netherlands: from Russia, Morocco, Poland and Hungary. The ASQ was administered to Polish, Russian and Hungarian first generation immigrants in their native languages. Moroccan first and second-generation immigrants received the ASQ in Dutch.

Immigrants from Poland, Russia and Hungary were approached in places where they usually meet: communities, clubs, Sunday schools and parishes. Apart from the questionnaires and pre-paid envelopes, they were provided with a letter containing brief instructions and an explanation of the aim of the study. We asked participants to complete their questionnaires and also to distribute them among friends of the same nationality living in the Netherlands. Additionally, we sent questionnaires by e-mail to some of the participants through organizations in the Netherlands. Through the e-mail survey we obtained a total of 196 respondents, which accounted for 20, 5, and 18 percent of our Polish, Russian and Hungarian respondents respectively.

The Moroccan participants were obtained using the snowball procedure. The Dutch first-year psychology students filled in the questionnaire as a course requirement. The Dutch midlife participants were obtained via a mail survey. Because there were no major differences in factor

structure between the samples of the Dutch students and the midlife cohort, we merged them. Through the rest of the paper we will use the name "Dutch sample" to refer to the merged Dutch samples. Missing data were treated using variable mean replacement, and in this way a total of 84 missing data were replaced. Table 2-2 gives a brief description of the samples. Participants from immigrant samples and the Dutch midlife sample filled in the questionnaires voluntarily and without any monetary compensation.

Table 2-2. Description of the Samples under study.

		Male	Female	Age		Years of residence in the Netherlands	
	N	%	%	M	SD	M	SD
Dutch students	923	27	73	21.56	6.87	-	-
Dutch midlife cohort	175	30	70	50.10	4.70	-	-
Polish sample	409	32	68	33.50	10.93	6.54	7.58
Russian sample	100	21	72*	36.71	11,93	6.20	5.12
Moroccan sample	111	42	58	26.50	9.32	20.25	6.77
Hungarian sample	116	76	24	36.51	14.23	13.79	15.52

*Seven respondents from Russian sample did not specify their gender

Analyses

Confirmatory analysis – Multiple Group Method

To assess the replicability of four factors across samples, a confirmatory method termed Multiple Group Method (MGM) was employed (Gorsuch, 1983; Nunnally, 1978; Nunnally & Bernstein, 1994). MGM is a method to test the researcher's assumption that a given item represents a given factor. When a theory states that certain items will impact on the same factor and others on another factor, MGM is particularly appropriate. Items defining a particular factor are given weights of 1 (or -1 if the item is reversely keyed) and items defining other factors are given weights of zero to define the factor. The same is done for each of the other factors. In other words, in

MGM "the factor is defined as the sum of the scores from a group of variables accepted as defining the factor with each variable given equal weight. For example, the standard scores from all the defining variables may be simply added together and this total score is considered the factor" (Gorsuch, 1983, p.80). The correlation of an item with a factor which the item represents indicates how much the item contributes to this factor (Gorsuch, 1983, p. 88).

However, the correlation of an item with the particular factor it is assigned to is spuriously high because the item correlates perfectly (r=1) with itself, and this self-correlation inflates the correlation between the item and any factor the item is assigned to. One way of countering self-correlation artifacts in MGM is to have large numbers of items per factor, so that the impact of self-correlation is negligible. In the ASQ the number of items per factor is small, so correction for self-correlation is imperative. The correlation between item and factor, corrected for self-correlation, is the correlation of the item with the score calculated by summing up the *remaining* variables assigned to the factor. As a requirement for correct assignment to a factor, one may demand that each variable correlates higher with the sum of the remaining variables in the factor than with any other factor (Gorsuch, 1983; Nunnally, 1978). Since an identical, binary weight matrix is used to define factors in all five samples, MGM can be seen as a form of cross-validation of component weights (Ten Berge, 1986).

MGM does not rely on a formal statistical test, such as the chi-square test used in Maximum-Likelihood factor analysis. However, recent simulation studies (Stuive, Kiers, Timmerman, ten Berge, 2005) showed that in some cases MGM was more accurate than Confirmatory Factor Analysis (CFA) in indicating whether or not the suggested assignment of items to subscales is supported by the data. Hence, MGM although rarely used, is still an interesting alternative method to CFA in Lisrel.

Exploratory stage: Simultaneous Component Analysis

In order to further examine the structure of the ASQ, we performed Simultaneous Component Analysis (SCA) (Kiers & ten Berge, 1989). In SCA, common weights are used to define factors in all the samples subjected to analysis and loadings are computed for each sample separately. The program used to perform SCA (Kiers, 1990) allows us to find optimal weights, such that the sum of the squared elements of residual matrices over samples is minimal. It is noteworthy that common weights are computed in this program based on correlation matrixes that are calculated for each sample separately. Thus, the problem of response tendencies in cultural samples is accounted for, as the calculations are performed on the data

standardized within samples (Fischer, 2004; Van de Vijver & Leung, 1997). After computing the common weight matrix it was rotated by Varimax following the oblique procedure of the SCA program. This option tends to optimize simple structure for the weights matrix (Kiers, 1990). Imposing the constraints of common components is reasonable if the amount of variance accounted for by SCA factors does not differ much from the amount accounted for by the factors found in separate PCA.

Regarding the questionnaire used in our study, we wanted to see if items show a consistent pattern of primary and secondary loadings across all five samples. SCA enables us to see how a given item correlates with a given factor in each sample, as factor loadings are calculated for each sample separately. This is not possible in PCA performed on the merged samples, because factor loadings are then calculated for the merged samples, not for each sample separately. Thus in PCA performed on merged samples we cannot see if a given item switches factors across samples, so we lose information about how the relation between an item and a factor differs across samples. In SCA a given item is assigned to a given factor across all samples, due to common weights, and thanks to this, factors have equal interpretations. This gives an advantage of SCA over Principal Component Analysis (PCA) performed on each sample separately, because the equal interpretation of the factors in SCA is assured across all samples included in the analysis.

Results

Confirmatory stage

We performed computations for the MGM with a special option of the computer program Simultaneous Component Analysis (SCA) (Kiers, 1990). Corrected item-total-correlations were obtained in reliability analysis performed with SPSS. Items were assigned to the factors based on the original version of the ASQ. Primary loadings indicate that the secure, fearful and preoccupied factors proved to be relatively replicable across the five samples, while the dismissing factor was less replicable (Table 2-3).

The four-category model of Bartholomew and Horowitz defines attachment style based on two underlying dimensions: the model of self and the model of others. Secure attachment is characterized by a positive model of self and others, while fearful attachment is characterized by a negative model of self and others. Thus, secure and fearful attachments are, to a large extent, opposite concepts, as are preoccupied and dismissing attachment

(Griffin & Bartholomew, 1994). Therefore, one can expect negative intercorrelations between the secure and fearful, and between the preoccupied and dismissing scales. One can also expect negative secondary loadings (i.e. second highest factor loadings) of items representing the secure scale on the fearful factor (and vice versa) and negative secondary loadings of items representing the preoccupied scale on the dismissing (and vice versa). As we can see in Table 2-3, the pattern of secondary loadings of items from the secure and fearful scales are consistent with the model; items representing the secure scale had negative secondary loading on the fearful scale, and items from the fearful scale had negative secondary loadings on the secure scale. However, we did not observe the expected pattern of secondary loadings for items from the preoccupied scale. Instead, most items from the preoccupied scale had their secondary loadings on the fearful rather than on the dismissing factor. The possible explanation for this may be that both fearful and preoccupied attachment styles are defined by an underlying negative model of self. Items from the dismissing scale, in their turn, did not show any clear pattern of secondary loadings in any of the three samples. Moreover, in the Russian sample the dismissing factor failed to emerge. Medium negative correlations between the secure and fearful scales (Table 2-4) in the five samples indicated that secure and fearful attachment styles are opposites as predicted by the model.

The correlations between preoccupied and dismissing were negative and close to zero. These correlations and patterns of secondary loadings did not support the structure of the Bartholomew and Horowitz model that implies that preoccupied attachment is the conceptual opposite to dismissing attachment.

Relatively high correlations between the secure and fearful factors entail secondary cross-loadings of items representing these scales. Although relatively high correlations between fearful and secure factors are conceptually legitimate, they become methodologically troublesome, because in some samples items assigned to the secure scale load higher on the fearful factor, and vice versa.

Exploratory stage

First, we compare variances explained in SCA and separate PCA for each sample, to see if imposing the constraint of common component does not cause a big decrease in the explained variance. The central and right-hand panels of Table 2-5 display the amounts of variance explained by the four factors obtained in SCA and PCA, respectively. The amount of variance explained by each factor separately is presented in the bottom row of Table 2-6. We remind the reader that the variances explained by oblique factors cannot be added up. The explained variances from Table 2-6 merely convey

how much variance each factor would explain if it were the only factor. Table 2-5 shows that the explanatory power of the common components of SCA is only slightly inferior to that of separate PCA for all data sets. The largest loss of explanatory power was found in the Russian and Moroccan samples, 2.25% and 2.47%, respectively. Common components describe all the samples fairly well.

Table 2-6 shows factor loadings, defined as correlations between variables and factors, in the five samples. The dismissing factor now proved to be more replicable as compared to the results of the MGM; only item 17 from the dismissing scale loaded on different factors in four samples.

Table 2-3. Factor Loadings for the ASQ items and Explanatory Power of Factors Across Five Samples (MGM)

	Dutch sample				Polish sample				Russian sample				Moroccan sample				Hungarian sample			
	S	***F***	***P***	***D***	***S***	***F***	***P***	***D***	***S***	***F***	***P***	***D***	***S***	***F***	***P***	***D***	***S***	***F***	***P***	***D***
Secure (S)																				
1. I feel at ease in emotional relationships	**.54**	***-.27***			**.47**	***-.27***			**.50**	***-.38***	-.20		***.18***	**-.21**			**.41**	***-.23***		
3. I feel uncomfortable when relationships with other people become close	**-.57**	***.46***			***-.38***	**.44**	.25		***-.32***	***.49***			**-.25**	**.25**	***.22***		**-.40**	***.30***		.20
7. I avoid close ties	**-.61**	***.39***			**-.54**	***.44***		.22	**-.40**	***.33***			***-.38***	**.42**	.20		**-.55**	***.43***		.20
9. I trust other people and I like it when other people can rely on me	**.49**	***-.37***			**.52**	***-.39***			**.47**	***-.24***			**.46**	***-.34***			**.46**	***-.41***	-.21	
12. I find it easy to get engaged in close relationships with other people	**.51**	***-.38***			**.42**	***-.20***			**.26**		***.17***		**.43**	***-.15***			***.34***	**-.43**	-.30	
13. I feel at ease in intimate relationships	**.65**	***-.31***			**.52**	***-.31***			**.44**	***-.24***	***-.24***		**.51**	***-.24***			**.66**	***-.36***		
16. I think it is important that people can rely on each other	**.36**	***-.11***			**.33**	***-.09***			**.43**	***-.26***			**.30**	***-.02***	***.02***		**.37**	***-.15***		
20. I trust that others will be there for me when I need them	**.45**	***-.31***			**.42**	***-.37***			**.35**	***-.42***	-.24	-.33	**.34**	***-.23***			***.43***	**-.50**		
Fearful (F)																				
2. I would like to be open to others but I feel that I can't trust other people	***-.27***	**.50**			***-.37***	**.55**			***-.36***	**.64**	.35	.20	***-.32***	**.48**			***-.51***	**.68**	.36	
4. I would like to have close relationships with other people but I find it difficult to fully trust them	***-.36***	**.63**	.24		***-.35***	**.60**	.29		***-.39***	**.53**	.32	.21	***-.34***	**.60**			***-.38***	**.60**	.34	
18. I am afraid that I will be deceived when I get too close with others	***-.43***	**.59**	.28		***-.33***	**.51**	.31		***-.29***	**.37**	.23		-.24	**.40**	***.29***		***-.53***	**.61**	.29	
21. I am wary to get engaged in close relationships because I am afraid to get hurt	***-.47***	**.60**	.29		***-.51***	**.51**	.25		**-.53**	***.50***	.38		**-.30**	*.28*	.24		***-.45***	**.60**		
Preoccupied (P)																				
6. I often wonder whether people like me		***.25***	**.71**			***.23***	**.51**		-.40	***.53***	**.35**			***.31***	**.41**			***.22***	**.62**	
8. I have the impression that usually I like others better than they like me	-.21	***.33***	**.51**		-.22	**.46**	***.41***			**.47**	*.44*			***.27***	**.46**	***-.27***	***-.41***	**.44**	.37	
10. I am often afraid that other people don't like me	-.21	***.34***	**.73**		-.26	***.30***	**.55**		-.23	***.39***	**.51**			***.25***	**.60**		-.32	***.40***	**.67**	
15. I don't worry whether people like me or not			**-.55**	***.18***			**-.31**	***.15***		***.17***		**.24**		**.23**		**.23**			**-.49**	***.20***
19. I usually find other people more interesting than myself		***.17***	**.38**			***.22***	**.36**			***.34***	**.45**			***.24***	**.30**		***-.20***		**.37**	
22. It is important to me to know if others like me		***.14***	**.52**	***-.14***			**.44**	***-.15***	***.26***		**.30**	-.25		***.15***	**.45**			***.19***	**.63**	
Dismissing (D)																				
5. I prefer that others are independent of me and I am independent of them	***-.22***			**.39**		***.18***		**.35**	***-.27***	**.32**		.20	**-.19**	***.17***		**.19**		***.22***		**.34**
11. It is important to me to be independent			***-.09***	**.45**			***-.14***	**.40**			***-.16***	**.42**			**-.24**	***.21***			***-.14***	**.55**
14. I like to be self-sufficient	***.10***		***-.10***	**.36**		***.10***		**.36**			**-.18**	***.14***	***.09***		***-.09***	**.25**			***-.14***	**.47**
17. I don't worry about being alone: I don't need other people that strongly	-.23		***-.26***	**.33**		***.08***	**-.11**	***.08***	**-.21**	***.07***			**-.26**		***-.08***				***-.22***	**.20**
Explained variance	4.31	3.69	3.49	2.06	3.78	3.64	2.85	1.96	3.81	3.96	2.88	1.89	3.00	2.92	2.70	1.65	4.11	4.11	3.55	2.18

Table 2-3. *Note.* The loadings on the factors the items were assigned to were corrected for self-correlation. For each variable (the highest) primary loading in a sample is in bold type and the secondary (second highest) in bold italics. Only primary, secondary, and loadings equal or above .20 or below -.20 are displayed.

Table 2-4. Intercorrelations of Scales in the Five Samples.

	obtained from MGM														
	Dutch sample			Polish sample			Russian sample			Moroccan sample			Hungarian sample		
ASQ scales:	S	F	P	S	F	P	S	F	P	S	F	P	S	F	P
Secure (S)	-			-			-			-			-		
Fearful (F)	-.49	-		-.52	-		-.53	-		-.43	-		-.59	-	
Preoccupied (P)	-.13	.31	-	-.16	.34	-	-.15	.44	-	-.08	.27	-	-.23	.37	-
Dismissing (D)	-.14	.10	-.18	-.10	.18	-.14	-.16	.22	-.10	-.08	.16	-.23	-.12	.10	-.16
	obtained from SCA														
Secure (S)	-			-			-			-			-		
Fearful (F)	-.52	-		-.47	-		-.47	-		-.34	-		-.60	-	
Preoccupied (P)	-.04	.32	-	-.04	.30	-	-.04	.30	-	-.02	.24	-	-.09	.36	-
Dismissing (D)	-.05	.09	-.14	-.01	.16	-.16	.01	.17	-.18	-.12	.06	-.20	-.03	.08	-.15

Intercorrelations between the secure and fearful factor ranged between -.34 and -.60, and between the preoccupied and dismissing factor ranged between -.20 and -.14 (Table 2-4).

Table 2-5. Variances Explained by Four Factors Jointly in MGM, SCA and PCA in the Dutch, Polish, Russian, Moroccan and Hungarian samples.

	MGM		SCA		PCA	
		%		%		%
Dutch sample	11.15	50.67	11.17	50.78	11.32	51.46
Polish sample	9.82	44.63	10.08	45.83	10.25	46.59
Russian sample	9.61	43.66	10.29	46.78	10.79	49.03
Moroccan sample	8.84	40.17	9.30	42.29	9.85	44.76
Hungarian sample	10.74	48.99	10.83	49.22	11.20	50.93
Total Variance Accounted for	50.19	45.63	51.68	46.98	53.41	48.55

Note. The number of items in the questionnaire is 22.

Similarly to MGM, intercorrelations between the secure and fearful scales, as well as the pattern of secondary loadings of items from the secure and fearful scales, were consistent with the Bartholomew and Horowitz model. Most items from the a priori preoccupied scale had their secondary loadings on the fearful factor.

Low intercorrelation between the preoccupied and dismissing factor (Table 2-4) and the lack of secondary loadings of the items from the preoccupied scale on the dismissing factor (Table 2-6) indicate that, contrary to the assumption of the model, preoccupied attachment is not the conceptual opposite of dismissing attachment. Correlations between the preoccupied and fearful factor, which ranged between .24 and .36, and medium and positive secondary loadings of items from the preoccupied factor on the fearful factor, suggest that the preoccupied attachment and fearful attachment are positively rather than negatively related.

Internal consistency

We used SPSS-reliability procedure to compute the internal consistency of the scales. Items were assigned to the scales based on the SCA results. Alpha coefficients are displayed in Table 2-7. Item 17 was removed from the questionnaire.

Table 2-6. Factor Loadings for the ASQ Items and the Explanatory Power of Factors Across Five Samples (SCA Solution Obtained after Varimax Rotation of the Weight Matrix).

	Dutch sample				Polish sample				Russian sample				Moroccan sample				Hungarian sample			
	S	***F***	***P***	***D***	***S***	***F***	***P***	***D***	***S***	***F***	***P***	***D***	***S***	***F***	***P***	***D***	***S***	***F***	***P***	***D***
Secure (S)																				
1. I feel at ease in emotional relationships	**.67**	***-.32***			**.62**	***-.29***			**.68**	***-.36***			**.38**	***-.19***			**.51**	***-.24***		
3. I feel uncomfortable when relationships with other people become close	**-.62**	***.54***			***-.44***	.54			***-.38***	**.59**			***-.33***	**.40**			***-.45***	.46		
7. I avoid close ties	**-.67**	***.52***			**-.62**	***.52***		.20	**-.49**	***.46***			*-.47*	**.53**			**-.59**	***.54***		
9. I trust other people and I like it when other people can rely on me	**.64**	***-.40***			**.66**	***-.40***			**.63**	***-.23***			**.63**	***-.31***			**.62**	***-.44***		
12. I find it easy to get engaged in close relationships with other people	**.64**	***-.40***			**.57**	***-.22***			**.48**		***.19***		**.62**	***-.11***			**.53**	***-.43***	-.28	
13. I feel at ease in intimate relationships	**.78**	***-.35***			**.70**	***-.29***			**.68**	***-.24***	-.21		**.73**	***-.21***			**.79**	***-.38***		
16. I think it is important that people can rely on each other	**.60**	***-.11***			**.56**			***.14***	**.62**	***-.21***			**.58**			***.22***	**.56**	***-.14***		
20. I trust that others will be there for me when I need them	**.59**	***-.38***			**.57**	***-.36***			**.54**	***-.44***		-.33	**.50**	***-.26***	.28		**.60**	***-.50***		
Fearful (F)																				
2. I would like to be open to others but I feel that I can't trust other people	***-.24***	**.67**			***-.32***	**.72**			***-.27***	**.78**	.20		***-.23***	**.66**			***-.49***	**.79**	.26	
4. I would like to have close relationships with other people but I find it difficult to fully trust them	***-.32***	**.77**			***-.28***	**.77**			***-.31***	**.75**			***-.24***	**.79**			***-.33***	**.75**	.27	
18. I am afraid that I will be deceived when I get too close with others	***-.40***	**.75**	.23		***-.29***	**.70**	.23	.22	***-.26***	**.56**				**.65**	***.23***		***-.51***	**.75**	.23	.20
21. I am wary to get engaged in close relationships because I am afraid to get hurt	***-.46***	**.73**	.25		***-.51***	**.66**			***-.53***	**.66**	.33		***-.31***	**.50**	.21		***-.48***	**.69**		
Preoccupied (P)																				
6. I often wonder whether people like me		***.36***	**.82**			***.35***	**.68**		-.35	**.67**	***.46***			***.43***	**.58**		**.**	***.29***	**.78**	
8. I have the impression that usually I like others better than they like me		***.51***	**.57**			**.61**	***.49***			**.60**	***.51***			***.45***	**.53**	-.37	***-.38***	**.59**	***.47***	
10. I am often afraid that other people don't like me	-.21	***.46***	**.82**		***-.28***	***.41***	**.70**	***-.20***	-.25	***.47***	**.68**			***.37***	**.76**		***-.30***	***.49***	**.79**	
15. I don't worry whether people like me or not			**-.75**	***.11***			**-.62**	***.08***		***.29***	**-.54**	.23		***.33***	**-.49**				**-.71**	***.15***
19. I usually find other people more interesting than myself		***.30***	**.46**			***.33***	**.47**			***.45***	**.53**	-.27		***.37***	**.40**			***.28***	**.45**	
22. It is important to me to know if others like me		***.16***	**.74**		***.18***		**.70**		***.27***		**.65**	-.20		***.24***	**.71**			***.27***	**.81**	
Dismissing (D)																				
5. I prefer that others are independent of me and I am independent of them	***-.23***			**.65**		***.22***		**.70**	-.25	***.41***		**.57**		***.23***		**-.57**		***.25***		**.64**
11. It is important to me to be independent			***-.12***	**.82**			***-.18***	**.81**			***-.18***	**.87**	***.20***		***-.20***	**.76**			***-.16***	**.84**
14. I like to be self-sufficient	***.15***			**.72**			***-.10***	**.74**	***.20***			**.63**	***.15***			**-.68**			***-.16***	**.79**
17. I don't worry about being alone: I don't need other people that strongly	**.67**	***-.32***			**.62**	***-.29***			**.68**	***-.36***			**.38**	***-.19***			**.51**	***-.24***		
Explained variance	4.19	4.17	3.34	1.89	3.59	3.97	2.58	1.97	3.60	4.48	2.38	1.90	2.85	3.32	2.50	1.72	3.94	4.50	3.33	2.07

Table 2-6. *Note.* For each variable (the highest) primary loading in a sample is in bold type and the secondary (second highest) in bold italics. Only primary, secondary, and loadings equal or above .20 or below -.20 are displayed.

Table 2-7. Alpha Coefficients for SCA-derived Scales of the ASQ in the Dutch, Polish, Russian, Moroccan and Hungarian samples.

	Dutch sample	Polish sample	Russian sample	Moroccan sample	Hungarian sample
scale: Secure attachment (items: 1, –7, 9, 12, 13, 16, 20)	0.78	0.74	0.68	0.65	0.71
scale: Fearful attachment (items: 2, 3, 4, 18, 21,)	0.79	0.76	0.75	0.64	0.77
scale: Preoccupied attachment (items: 6, 8, 10, –15, 19, 22)	0.81	0.70	0.62	0.64	0.78
scale: Dismissing attachment (items: 5, 11, 14)	0.58	0.63	0.49	0.41	0.65

Note: A minus sign preceding an item number means that the item has been keyed reversely

Discussion

Let us now address two central issues we put forward at the end of the introduction.

1. Is the factor structure obtained in the original version of the ASQ replicable in the four immigrant samples?

The answer is: to some extent. We found four factors similar to the original version of the ASQ across the five samples. However, a number of items did not load on the hypothesized factor. Thus, the replicability was at best fair.

In general, the SCA factor structure obtained in the five samples was more stable than that of the MGM. This is not surprising, since SCA is designed to find a more stable structure across analyzed samples. In both MGM and SCA we observed that items switched factors. In particular, items from the a priori secure scale switched to the fearful scale and vice versa. This was due to intercorrelations of these scales. In the next three studies described in this book we used the scales obtained in the SCA.

Bartholomew and Horowitz (1991) proposed that denial of the need of others, characteristic of dismissing individuals, is expressed by an excessive self-sufficiency and an avoidance of relationships with others. Accordingly, two types of items – measuring excessive self-sufficiency and measuring avoidance of relationships – were included in the dismissing scale. However, the items of the two types yield one factor only in the Dutch sample. Remarkably, in none of the immigrants' samples items probing the avoidance of relationships loaded on the dismissing factor. This indicates

that dismissing attachments of immigrants surface mainly through self-sufficient behavior. A first possible explanation is that the lack of a familiar social network imposes a high degree of self-sufficiency on immigrants, which is not really connected to an avoidance of closeness, as is the case in the native Dutch sample. In another study (Polek, Van Oudenhoven, Ten Berge, 2007) a positive relation was found between length of residence and the dismissing attachment of immigrants, which means that the circumstances of immigrant life may strengthen dismissing behavior. A second possible explanation is that self-sufficiency is unrelated to immigrants' avoidance of closeness. Immigrants from collectivistic cultures may adapt to the more individualistic Dutch culture and become more self-sufficient, but not more closeness-avoidant. Third, it is possible that immigrants are simply a pre-selected sample of individuals with high self-sufficiency and an independence that caused them to immigrate in the first place. The fourth option is that avoidance of closeness and self-sufficiency might be related, but still empirically clearly distinguishable concepts. Such an explanation is also suggested by the results of Duggan and Brennan (1994) who found two distinguishable factors: fearful avoidance related to shyness (social inhibitions, anxiety) and dismissing avoidance (low sociability and affiliation needs). As the dismissing factor comprising of items expressing excessive self-sufficiency in the present study was negatively correlated to secure, and almost uncorrelated with a fearful attachment, it seems that self-sufficiency is more related to dismissing avoidance and low affiliation needs, than to fearful avoidance.

2. Do we find support for the four attachment types proposed by the model of Bartholomew and Horowitz and the structure of the model?

In the present study, we found four factors, which clearly corresponded to the attachment types (quadrants) postulated by the model. However, we found only partial support for the structure of the model. The structure of the Bartholomew and Horowitz model implies that secure and fearful - as well as preoccupied and dismissing - attachment styles should be considered as conceptual opposites. The correlations between factors obtained in SCA, as well as the patterns of secondary loadings, supported this assumption only for the secure and fearful attachment styles. Similarly to the findings of Schmitt et al. (2004), in the present study the correlations between preoccupied and dismissing factors did not support the opposed relation between preoccupied and dismissing attachments styles presumed by the model. Rather, the low correlations suggest that the preoccupied and dismissing attachment should be considered as independent. Our results are consistent with recent models of attachment system dynamics which operationalize anxiety (related to preoccupied attachment) and avoidance

(related to dismissing attachment) as independent dimensions (Mikulincer & Shaver, 2003).

The model also assumes that preoccupied attachment has one underlying dimension – a positive model of others – in common with secure attachment. Therefore, one should expect that preoccupied attachment is positively correlated with secure attachment and, consequently, that items from the preoccupied factor would have positive secondary loadings on the secure factor, especially when the secure scale consists of items testing the model of others (as in the ASQ). We did not observe this. Correlations between preoccupied and secure attachment were close to zero in SCA, whereas between preoccupied and fearful they were positive and medium. Subsequently, items from the preoccupied scale had positive secondary loadings on the fearful factor, and not, as the model would predict, on the secure factor. This suggests that preoccupied attachment, similarly to fearful attachment, is characterized by a negative model of self and also that both concepts relate to behavior earlier classified by Hazan and Shaver (1987) as anxious-ambivalent. Our findings are consistent with earlier studies in which a positive correlation was found between preoccupied attachment measured with ASQ and distrust (Hofstra et al., 2005). However, we are not in favor of merging the fearful and preoccupied factors. Differentiating between fearful and preoccupied attachment allows for a wide range of correlations with third variables, e.g., fearful attachment is more strongly negatively related to the psychological and sociocultural adjustment of immigrants than preoccupied attachment (Polek et al., 2007).

There are several limitations to this study. First and foremost, we conducted the study in a sample of native Dutch and samples of immigrants. Therefore, similarities in factor structure may be due to contact with Dutch culture. On the other hand, the differences we found cannot be unequivocally attributed to cultural diversity. Possibly, differences in factor structure are due to a situation specific to immigrants, as we found in the dismissing scale. To clarify this it is necessary to conduct a follow-up study on samples of respondents living in their country of origin.

Second, the initial set of items in the original version of the ASQ was not large enough to guarantee that items represent attachment prototypes exhaustively. In most studies on attachment assessment, the initial set of items was much larger (e.g., Sibley, Fischer, Lin, 2005). Still another problem is the presence of double-barreled items. It is not certain what a respondent will answer if he or she agrees with only one part of the item and not with the other. In addition, several items in the initial set of items contained statements with negations, which may have confused respondents and therefore produce conceptually irrelevant variance caused by different

language abilities of respondents (Holden & Fekken, 1990) or the ambiguity of an item (Angleitner, John, & Lohr, 1986).

Third, the snowball recruitment approach may have meant that individuals with certain (insecure) attachment styles may have been underrepresented. In particular, those with a dismissing style may be less interested in participating or less connected to other people, and therefore less likely to be recruited.

The above limitations notwithstanding, the methods used in this study represent a more rigorous test of psychometric properties than has been employed in most previous studies of attachment instruments (Griffin & Bartholomew, 1994; Hazan & Shaver, 1987). The ASQ appears to be original in so far as it combines theory driven attachment prototypes with an empirically based dimensional approach and that it allows the assessment of general, non relationship-specific attachment.