Redefining object attachment: Development and validation of a new scale

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ABSTRACT

Background and aims: Object attachment is the emotional bond or connection that we have with possessions. Although thought to be ubiquitous, when excessive, object attachment is presumed to contribute to compulsive buying and hoarding problems. Unfortunately, our understanding of this relationship has been limited by the constraints of existing object attachment measures. In this paper, we developed and validated a new self-report questionnaire, called the Object Attachment Security Measure (OASM). *Methods:* We developed an item pool based on previous measures and consultation with 24 experts in the field. After piloting, we administered this measure to a large sample (Final $N = 365$), along with self-report measures of hoarding, compulsive buying, and previous object attachment measures. *Results:* We found that the OASM distinguished between *secure* and *insecure* object attachment. Both subscales showed excellent internal consistency and test-retest reliability over a two-week period. Additionally, they demonstrated excellent convergent and divergent validity, and criterion validity with measures of hoarding and compulsive buying symptoms. We also found that insecure, but not secure object attachment, was uniquely related to hoarding and compulsive buying symptomology. *Discussion and conclusion:* Our findings extend theoretical models, highlighting the role of insecure object attachment. Future research in both clinical and consumer behaviour fields should utilise the OASM, as reducing insecure object attachment and potentially encouraging secure object attachment could decrease maladaptive possession use and increase sustainable consumption.

KEYWORDS

object attachment, hoarding disorder, compulsive buying-shopping disorder, measure development, attachment style, consumer behaviour

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INTRODUCTION

Object attachment is the psychological or emotional connection that unites a person's sense of self with an object (Norberg & Rucker, 2021). Object attachment occurs throughout the lifespan, with the specific objects that a person becomes attached to being determined by their changing developmental needs, interests, and motivations (David, Blonner, Forbes, & Norberg, 2020; Richins & Chaplin, 2021; Yamaguchi & Moriguchi, 2020). Blankets and teddy bears can help children to feel safe and secure when their parents are away, digital objects can help adolescents to try out different identities, and sentimental objects can help older individuals to reminisce about the "good old days" (Dozier & Ayers, 2021; Koles & Nagy, 2021; Lee & Hood, 2021). Attachment to an object increases a person's motivation to devote resources to it, including how much they are willing to pay for it, repair it, and save it (Dommer & Winterich, 2021; He & Anderson, 2021). Although object attachment appears to be a ubiquitous process, some individuals seem to become more attached to objects than others (Norberg, David, et al., 2020).

Excessive object attachment seems to play a role in compulsive-buying shopping disorder and hoarding disorder. Compulsive-buying shopping disorder tends to be characterised by short-lived object attachment, such that a person becomes quickly attached to an object, and

then unattached as soon as the next best object captures their attention. Hoarding disorder, on the other hand, is typified by indiscriminate and long-lasting object attachment (Moulding, Kings, & Knight, 2021). Consequentially, hoarding disorder is characterised by difficulty discarding possessions (American Psychiatric Association, 2013), while compulsive buying-shopping disorder is characterised by excessive shopping (World Health Organization, 2019). Valuing material things and seeing possessions as central to one's life (i.e., materialism) are important aspects of both disorders, as well as using possessions for emotional comfort and security (e.g., Kyrios, Frost, & Steketee, 2004; Steketee, Frost, & Kyrios, 2003). This phenomenology may be a precursor or consequence of object attachment (David et al., 2020).

Researchers have used a handful of instruments to assess object attachment, and inspection of these instruments reveals that measurement of the construct has varied. For example, the Emotional Attachment subscale of the *Saving Cognitions Inventory* attempts to capture hyper-sentimentality to possessions and includes items that reflect identification with possessions (Steketee et al., 2003). The *Object Attachment Questionnaire* extended upon this subscale by also including items about the importance of possessions and anthropomorphism (Grisham et al., 2009). This measure has not been psychometrically validated and its additional items may assess the antecedents and precursors of object attachment rather than object attachment (Norberg, David, et al., 2020). Using factor analysis, Schifferstein and Zwartkruis-Pelgrim (2008) found support for splitting items that gauge self-identification with possessions from items that gauge an emotional connection with possessions on their consumer-product attachment measure. The *Reciprocal Attachment Questionnaire – Adapted*, is based on an interpersonal attachment measure and aims to assess attachment security, attachment patterns, and the use of object attachment relationships (Nedelisky & Steele, 2009). This measure has not been psychometrically validated, but examination of its items suggests that it may be measuring insecure object attachment (e.g., "The further I am from my belongings, the more insecure I feel") in addition to clutter problems (e.g., "The amount of belongings in my home interferes with my life"). Lastly, the *Relationship between Self and Items* instrument relies on a series of Venn-like diagrams to visually assess how connected individuals are to their objects (Dozier, Taylor, Castriotta, Mayes, & Ayers, 2017).

In general, it seems that object attachment measures attempt to capture a person's bond with objects, but differ in considerable ways. Based on the different approaches to assessment taken to date, it appears that object attachment may be secure or insecure in nature. Secure object attachment seems to be characterised by an emotional connection that provides individuals with a sense of comfort, safety, and security, and motivates them to maintain and fix their objects when required. On the other hand, insecure object attachment may involve a maladaptive emotional connection to objects, in which individuals feel that objects are required to derive a sense of self and believe that losing them will make them vulnerable. If true, differentiating between these types of attachment may lead to a better understanding of object attachment and how it might lead to hoarding or excessive shopping behaviour. Based on research using the *Reciprocal Attachment Questionnaire – Adapted,* insecure object attachment may be especially relevant to hoarding disorder (Nedelisky & Steele, 2009; Yap & Grisham, 2019, 2021). In regard to compulsive buying shopping disorder, the limited research suggests that emotional comfort and security gained from purchases is a factor that drives compulsive shopping (Kyrios et al., 2004), but we do not know whether these emotional reactions translate into object attachment, and whether the attachment is secure or insecure.

Comparisons to interpersonal attachment theory

As secure and insecure attachment to objects seems to mirror secure and insecure interpersonal attachment, we will briefly review interpersonal attachment theory to inform our investigation on object attachment. According to attachment theory, when primary caregivers are available and consistently respond to the emotional needs of their children, children develop attachment security (i.e., a secure attachment style; Bowlby, 1982; Mikulincer & Shaver, 2012). On the other hand, when caregivers respond inconsistently to their children's emotional needs, an insecure attachment style can develop. Two styles of insecure attachment are thought to persist into adulthood: avoidant attachment and anxious attachment (Ainsworth, Blehar, Waters, & Wall, 1978). Avoidant attachment is characterised by self-reliance and a reluctance to seek support from partners or attachment figures, whereas anxious attachment is characterised by wanting support but fearing rejection due to uncertainty about being worthy of a partner's love. These two styles are thought to vary on a continuum from securely attached to insecurely attached (Fraley, Hudson, Heffernan, & Segal, 2015), and both have been associated with excessive acquiring and hoarding behaviour, though there seems to be more evidence for the relationship with anxious attachment (Chia et al., 2021; Norberg, Crone, Kwok, & Grisham, 2018; Norberg, Kwok et al., 2020). These interpersonal attachment problems are likely related to difficulties regulating emotions within interpersonal contexts (Chen, McDonald, Wearne, & Grisham, 2022; David, Aluh, Blonner, & Norberg, 2021) and a higher degree of uncertainty about one's self-concept (Frost, Kyrios, McCarthy, & Matthews, 2007).

The current study

Given the limitations of existing object attachment measures, we aimed to develop a psychometrically sound measure that distinguishes between secure and insecure object attachment. First, we reviewed items from existing object attachment measures and used this knowledge to develop items that we thought aligned with secure and insecure forms of object attachment. We focused on developing items we thought would tap into an insecure anxious attachment

style given avoidant object attachment (e.g., reluctance to seek support from objects) is at odds with compulsive buying and hoarding difficulties. We then asked experts to comment on these items for readability and applicability to object attachment, before pilot testing them in a large sample. Then we evaluated the factor structure of our new measure in another large sample, as well as established convergent validity, divergent validity, criterion validity, and test-retest reliability. We hypothesised that the new object attachment measure would be correlated with previous measures of object attachment (convergent validity) while being less related to a measure of quality of life (divergent validity). Second, we hypothesised that the new measure would be related to hoarding severity and compulsive buying severity (criterion validity). Third, we hypothesised that scores on the new measure would be stable over a two-week period (test-retest reliability).

METHODS

Item development and pilot testing

We initially constructed a 17-item pool based on items from previous object attachment measures (Grisham et al., 2009; Nedelisky & Steele, 2009; Schifferstein & Zwartkruis-Pel-grim, 2008; Steketee et al., 2003). A total of 24 experts on object attachment, hoarding disorder, and/or compulsive buying-shopping disorder ($n = 4$ reported up to 5 years of relevant research experience, $n = 10$ reported 5–10 years of experience, $n = 10$ reported over 10 years of experience) rated these items on their readability and relevance to object attachment and provided feedback. After incorporating expert ratings and suggestions, we revised our measure to 16-items, with items representing either secure (i.e., *My possessions are special to me*) or insecure object attachment (i.e., *I would lose my self-identity if I no longer had my possessions*). We then administered this 16-item measure to a large pilot sample (final $N = 433$). After factor analysing the 16 items, we found evidence for a two-factor latent structure, though the distinction between the secure and insecure object attachment could have been clearer. In particular, item 10 (*It would be difficult to part with my possessions*) was written to reflect insecure attachment but loaded onto the secure subscale. Therefore, we added nine items based on previous object attachment measures (most of which we thought represented secure attachment), thus totalling 25 items. See Supplementary Materials for initial item pool with expert ratings (Supplementary Table 1), as well as further details on methods and factor analytic results of pilot testing.

Participants

A total of 450 participants completed this study and were recruited via the Macquarie University undergraduate psychology pool, a research crowdsourcing website (Positly, which recruits Amazon Mturk users), and from the community (advertisements placed around campus, on social media, on the International OCD Foundation website, and by contacting previous participants from our lab studies)[1]. Positly only allows MTurk users with high approval rates to complete studies and blocks suspicious IP addresses and inattentive participants. Undergraduate students were given course credit, Positly participants were paid at a rate of USD7.80 per hour (USD8.50 per hour for the follow-up survey), and community participants were offered the chance to win an AUD75 cash prize (and an AUD50 cash prize for completing the follow-up survey). We combined these three samples to increase the diversity of our sample. We excluded 85 participants because; $n = 19$ survey responses were incomplete, $n = 10$ failed more than one randomly placed attention check (i.e., *Please respond 4 for this item if you are paying attention*), $n = 55$ participants completed the entire battery of surveys too quickly (less than 3 s per item), and $n = 1$ reported that their survey responses were dishonest. In the final sample ($N = 365$), age ranged from 18 to 73 (*Median* = 30, $M = 32.1$, $SD = 13.1$), 60.5% identified as female, 38.2% identified as male, 0.5% identified as nonbinary, and 0.8% preferred not to report their gender. Most participants identified as Caucasian (66.7%), while 19.9% identified as Asian, 4.6% identified as Black/African American, and 8.8% identified as various other ethnicities. Additionally, 64 participants (17.5%) scored above the clinical cut-off for hoarding (39 on the Saving Inventory - Revised; Kellman-McFarlane et al., 2019). We were not able to determine the proportion of our sample with clinically significant compulsive buying symptoms because the measure we used (Excessive Buying Rating Scale) does not have an established clinical cut-off score.

Measures

Object Attachment Security Measure (OASM). The psychometric properties of this 25-item measure were evaluated in the current study. Participants were instructed to think about their possessions and then rate how much they agreed with each statement on a 7-point Likert scale from 1 (*not at all*) to 7 (*very much so*). This 25-item measure was administered twice; first during the main study and then at a two-week follow-up.

Measures for convergent validity. *Saving Cognitions Inventory (SCI) – Emotional Attachment subscale (Steketee et al., 2003).* Participants completed the SCI, which is a 24-item measure of maladaptive hoarding beliefs. We only analysed the emotional attachment subscale in this study. Items are scored on a 7-point Likert scale from 1 (*not at all*) to 7 (*very much*) with higher scores representing a higher level of emotional attachment to objects. This subscale has previously been used as a measure of object attachment

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(e.g., Yap, Eppingstall, Brennan, Le, & Grisham, 2020), and has shown good validity and internal consistency (Steketee et al., 2003). Test-retest reliability was not evaluated by the original authors of this measure. In the current sample, the emotional attachment subscale had good internal consistency at $\alpha = 0.95$.

Relationship between Self and Items measure (RSI; Dozier et al., 2017). The RSI is a one-item visual measure that assesses participants' level of interconnectedness with their possessions. Participants choose from seven Venn-like diagrams, each containing two circles (one representing the self, and one representing a person's items) overlapping at increasing amounts. Higher scores represent higher object interconnectedness. The RSI has demonstrated good validity in both clinical and nonclinical samples (Dozier et al., 2017; Dozier, 2020). Test-retest reliability has not been formally evaluated for this measure (Dozier, 2020).

Reciprocal Attachment Questionnaire – Adapted (RAQ-A; Nedelisky & Steele, 2009). This 38-item questionnaire assesses attachment security and attachment patterns with objects along several subscales: feared loss, proximity seeking, secure bases, separation protest, angry withdrawal, compulsive caregiving, compulsive care seeking, compulsive self-reliance, and comfort. Participants rated each item on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The RAQ-A has previously demonstrated acceptable psychometric properties, but poor internal consistency on the compulsive self-reliance subscale (only two items; Nedelisky & Steele, 2009). Test-retest reliability was not evaluated by the original authors of this measure. The following subscales demonstrated acceptable to good internal consistency; feared loss ($\alpha = 0.79$), proximity seeking ($\alpha = 0.94$), secure bases ($\alpha = 0.90$), separation protest ($\alpha = 0.64$), compulsive caregiving ($\alpha = 0.74$), and compulsive care seeking ($\alpha = 0.86$). However, the compulsive self-reliance ($\alpha = 0.15$) showed very poor internal consistency. The angry withdrawal and comfort subscales were both one-item subscales, and thus internal consistency was not calculated.

Possessions Comfort Scale (PCS; Hartl, Duffany, Allen, Steketee, & Frost, 2005). This 31-item scale measures how much individuals use their possessions for emotional comfort and security. Participants rate each item on a 7-point Likert scale from 1 (*strongly disagree*) to 7 (*strongly agree*). The PCS has previously demonstrated good concurrent validity and internal consistency (Hartl et al., 2005). Test-retest reliability was not evaluated by the original authors of this measure. In the current sample, the PCS had excellent internal consistency at $\alpha = 0.97$.

Measure for divergent validity. *Quality of Life, Enjoyment and Satisfaction Questionnaire – Short Form (Q-LES-Q-SF; Stevanovic, 2011).* The Q-LES-Q-SF (16-items) assesses enjoyment and satisfaction with several aspects of life, such as physical health, mood, work, social/family relationships, and daily functioning. Items are scored on a 5-point Likert scale from 1 (*very poor*) to 6 (*very good*) and then the total score is converted to a percentage of the maximum score, with higher percentages reflecting better quality of life. The Q-LES-Q-SF has shown good validity, internal consistency, and test-retest reliability over a one-week period (ICC = 0.93; Stevanovic, 2011). In the current sample, the total score had good internal consistency at $\alpha = 0.92$.

Measures for criterion validity

Saving Inventory – Revised (SI-R; Frost, Steketee, & Grisham, 2004). The SI-R (23-items) measures hoarding severity using three subscales: excessive acquisition, difficulty discarding, and clutter. Participants score each item on a 5-point Likert scale from 0 (*none*) to 4 (*almost all/complete*), with higher scores indicating greater hoarding severity. The SI-R has demonstrated good validity and reliability (Frost et al., 2004). In a small sample, the test-retest reliability for the total score was found to be acceptable over a 2–4 week period ($r = 0.86$; Frost et al., 2004). In the current sample, the total score, difficulty discarding, excessive acquisition, and clutter subscales had good internal consistencies of $\alpha = 0.94, 0.89, 0.82,$ and 0.94, respectively.

Excessive Buying Rating Scale (EBRS; Kyrios, Fassnacht, Ali, Maclean, & Moulding, 2020). The EBRS (10-items) measures compulsive buying severity with questions derived from McElroy et al.'s (1994) proposed diagnostic criteria. Participants answered the first nine items on a 5-point Likert scale from 1 (*no problem/not at all*) to 5 (*extreme*), with higher scores reflecting greater compulsive buying severity. We slightly revised the tenth item to ask whether participants had experienced a manic or hypomanic episode, and whether excessive buying occurred during a manic/hypomanic episode, when feeling depressed, or when mood was normal. We did this to ensure that compulsive buying was not solely confined to manic mood states. This tenth item was only shown to participants who scored 18 or higher on the first nine items. Following Lawrence and colleagues' (2014) approach, we excluded individuals who reported excessive buying *only* during manic/hypomanic episodes ($n = 5$). The EBRS has previously demonstrated good convergent validity and internal consistency (Kyrios et al., 2020). Test-retest reliability was not evaluated by the original authors of this measure. In the current sample, the EBRS had good internal consistency at $\alpha = 0.94$.

Procedure

Participants completed all self-report measures as part of a larger battery of questionnaires on Qualtrics, which were not all relevant in the current study. The questionnaires were presented in the following order for all participants: EBRS, SI-R, Q-LES-Q-SF, SCI, RSI, RAQ-A, PCS, and OASM. Two weeks later, participants were invited to complete the OASM again. All participants were debriefed at the end of the study.

Data analysis

Item distributions were first examined for the OASM to identify any highly skewed items. Exploratory factor analysis was then conducted using Mplus Version 8 (Muthén & Muthén, 2017) on the OASM to test whether we could replicate the two-factor solution that we found in piloting.

Parallel analysis was used to indicate how many factors to retain (Horn, 1965). We used maximum likelihood estimation with robust standard errors (i.e., MLR estimator) and Geomin rotation (an oblique rotation because we expected the factors to be correlated). We report four indices of model fit; the comparative fit index (CFI), Tucker-Lewis Index (TLI), standardized root-mean-square residual (SRMR), and root-mean-square error of approximation (RMSEA). Model fit is considered acceptable if CFI and TLI are 0.90 or more and SRMR and RMSEA are 0.08 or less (Finch & West, 1997; Hu & Bentler, 1998). Model fit is excellent if CFI and TLI are 0.95 or more and SRMR and RMSEA are 0.06 or less (Hu & Bentler, 1998). To derive subscales, items needed to have a primary factor loading of at least 0.40 and cross-loading on other factors needed to be less than 0.30, and at least 0.20 lower than the primary factor loading. After identifying subscales, we reran the exploratory factor analysis to evaluate model fit in our final scale. We also evaluated internal consistency of derived subscales with Cronbach's alpha and McDonald's omega.

We then confirmed the factor structure of the final scale using follow up data. For confirmatory factor analysis, we also used the MLR estimator. We then assessed for test-retest reliability using intraclass correlation coefficients (ICC) with two-way consistency models. Finally, to test convergent validity, divergent validity, and criterion validity of the OASM, we examined Pearson correlations with all other measures.

Ethics

The study procedures were carried out in accordance with the Declaration of Helsinki. The Human Research Ethics Committee at Macquarie University approved the study. All subjects were informed about the study, and all provided informed consent.

RESULTS

Item distributions

Most OASM items had acceptable distributions. Item 15 was positively skewed (skewness = 1.70) with 62.5% of the sample reporting the lowest score. Item 25 was also positively skewed (skewness = 1.26) with 55.1% of the sample reporting the lowest score. Although this indicates these items may not discriminate between participants well, we decided to retain them in factor analyses as they may be more relevant in clinical samples. See Table 1 for descriptive statistics for each item.
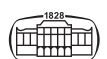
Exploratory factor analysis

We initially ran an exploratory factor analysis on the first 16 items of the OASM to see if the factor structure from piloting would replicate in this study. We found that an almost identical factor structure emerged, except for two items which had previously cross loaded in pilot data.

Table 1. Descriptive statistics for object attachment security measure (All items and final scales)

	M	SD	Min.	Max.	Skewness	Kurtosis
1. I would miss my possessions if I no longer had them.	4.47	1.58	1	7	−0.314	−0.326
2. I feel that I could not live without all of my possessions.	2.56	1.59	1	7	0.855	−0.178
3. I would feel never-ending distress if I no longer had my possessions.	2.47	1.65	1	7	0.999	0.166
4. I would feel lost without my possessions.	2.95	1.63	1	7	0.512	−0.626
5. I need to keep all of my possessions no matter what.	2.41	1.60	1	7	1.064	0.245
6. I love my possessions.	4.15	1.73	1	7	−0.116	−0.815
7. My possessions make me who I am.	2.99	1.79	1	7	0.594	−0.700
8. I would lose my self-identity if I no longer had my possessions.	2.32	1.59	1	7	0.948	−0.298
9. I am attached to my possessions.	3.65	1.74	1	7	0.092	−0.861
10. It would be difficult to part with my possessions.	3.67	1.78	1	7	0.089	−0.954
11. I have a unique bond with my possessions.	2.73	1.78	1	7	0.793	−0.379
12. My possessions are special to me.	4.31	1.67	1	7	−0.253	−0.747
13. I would feel alone without my possessions.	2.57	1.67	1	7	0.859	−0.345
14. It is difficult to be away from my possessions.	2.23	1.54	1	7	1.207	0.499
15. I am more attached to my possessions than the people in my life.	1.88	1.45	1	7	1.703	1.959
16. I feel emotionally connected to my possessions.	2.85	1.79	1	7	0.679	−0.571
17. My possessions are important to me.	4.30	1.70	1	7	−0.308	−0.674
18. I care about my possessions.	4.41	1.66	1	7	−0.305	−0.589
19. My possessions bring me joy.	4.11	1.72	1	7	−0.156	−0.764
20. My possessions bring meaning to my life.	2.90	1.76	1	7	0.650	−0.607
21. Life wouldn't be as good without my possessions.	3.41	1.74	1	7	0.259	−0.863
22. The thought of losing my possessions is unbearable.	2.38	1.59	1	7	1.138	0.506
23. My possessions define who I am.	2.54	1.68	1	7	0.954	0.063
24. My possessions are an extension of myself.	2.95	1.78	1	7	0.541	−0.766
25. I am an extension of my possessions.	2.15	1.60	1	7	1.266	0.508
Final Secure subscale (Items 1, 12, 17, 18, 19)	21.60	7.11	5	35	−0.110	−0.635
Final Insecure subscale (Items 3, 5, 8, 14, 15)	11.32	6.70	5	30	1.059	0.150

Note. N = 365.

See Supplementary Table 5 for a table comparing factor pattern matrices for both studies.

We then ran exploratory factor analysis on all 25 OASM items. Parallel analysis indicated that up to two factors could be extracted. See Table 2 for the factor pattern matrix for the two-factor solution which seemed to capture secure and insecure object attachment (CFI = 0.901, TLI = 0.881, SRMR = 0.039, RMSEA = 0.084). We then revised the scale by removing cross-loading items and reducing each factor to their five highest loadings (see Table 4). Parallel analysis still indicated that up to two factors could be extracted. We reran the exploratory factor analysis to find that the final scale had excellent model fit (CFI = 0.973, TLI = 0.954, SRMR = 0.023, RMSEA = 0.072) and thus was used in subsequent validity and reliability analyses. In the final scale, the secure and insecure subscales also had excellent internal consistency ($\alpha = 0.91$ and $\omega = 0.91$ for both subscales) and were correlated at $r = 0.553$, $P < 0.001$. See Table 1 for descriptive statistics for the final subscales.

Confirmatory factor analysis and test-retest reliability

Two hundred thirty-eight participants completed the 25-item OASM at follow up (65.2% retention; demographic characteristics among follow up completers were similar to full sample as age range = 18–73, Median = 32, M = 34.1, SD = 13.4, 59.7% female, 39.1% male, 0.4% nonbinary, 0.8% preferred not to report gender). On average, participants completed the follow-up survey 16 days later (range = 13–34 days). Using follow up data, we confirmed the factor structure of the final OASM – Secure (5-items) and OASM – Insecure subscales (5-items) and found that the model had good fit (CFI = 0.964, TLI = 0.952, SRMR = 0.086, RMSEA = 0.041). See Fig. 1 for standardised factor loadings. Also, the final OASM – Secure and OASM – Insecure subscales showed good test-retest reliability with ICC = 0.793 and 0.857, respectively.

Validity analyses

See Table 3 for correlations between the OASM subscales and all other measures. As hypothesised, the OASM subscales showed statistically significant small to large correlations with previous measures of object attachment (SCI Emotional Attachment, RSI, RAQ-A subscales, and PCS), thus demonstrating good convergent validity. The OASM Insecure subscale showed larger correlations with the RAQ-A than did the OASM Secure subscale, demonstrating good convergent validity for the OASM subscales. As expected, the OASM subscales had smaller correlations with the Q-LES-Q-SF (nonsignificant correlation for the secure subscale) than with other measures thus demonstrating good divergent validity. Additionally, the correlation between the Q-LES-Q-SF and the OASM insecure subscale was negative. Finally, the OASM subscales showed small to medium correlations with the SI-R and EBRS, demonstrating criterion validity.

Table 2. Two-factor solutions for object attachment security measure (All items and final scale)

	All Items		Final Scale	
	Insecure	Secure	Insecure	Secure
1. I would miss my possessions if I no longer had them.	−0.005	**0.709**	0.073	**0.631**
12. My possessions are special to me.	0.009	**0.840**	0.035	**0.797**
17. My possessions are important to me.	−0.032	**0.895**	−0.009	**0.898**
18. I care about my possessions.	−0.088	**0.896**	−0.081	**0.921**
19. My possessions bring me joy.	0.032	**0.788**	0.045	**0.779**
6. I love my possessions.	0.100	**0.690**		
10. It would be difficult to part with my possessions.	0.152	**0.687**		
9. I am attached to my possessions.	0.268	**0.643**		
14. It is difficult to be away from my possessions.	**0.853**	−0.026	**0.820**	0.029
3. I would feel never-ending distress if I no longer had my possessions.	**0.845**	−0.031	**0.842**	0.001
5. I need to keep all of my possessions no matter what.	**0.837**	0.001	**0.826**	0.031
8. I would lose my self-identity if I no longer had my possessions.	**0.883**	−0.068	**0.823**	−0.012
15. I am more attached to my possessions than the people in my life.	**0.839**	−0.166	**0.806**	−0.113
13. I would feel alone without my possessions.	**0.776**	0.125		
2. I feel that I could not live without all of my possessions.	**0.763**	−0.003		
22. The thought of losing my possessions is unbearable.	**0.772**	0.101		
23. My possessions define who I am.	**0.740**	0.116		
25. I am an extension of my possessions.	**0.777**	0.035		
7. My possessions make me who I am.	**0.643**	0.210		
11. I have a unique bond with my possessions.	**0.633**	0.265		
4. I would feel lost without my possessions.	**0.548**	**0.353**		
20. My possessions bring meaning to my life.	**0.535**	**0.332**		
24. My possessions are an extension of myself.	**0.514**	**0.346**		
16. I feel emotionally connected to my possessions.	**0.366**	**0.483**		
21. Life wouldn't be as good without my possessions.	**0.389**	**0.315**		

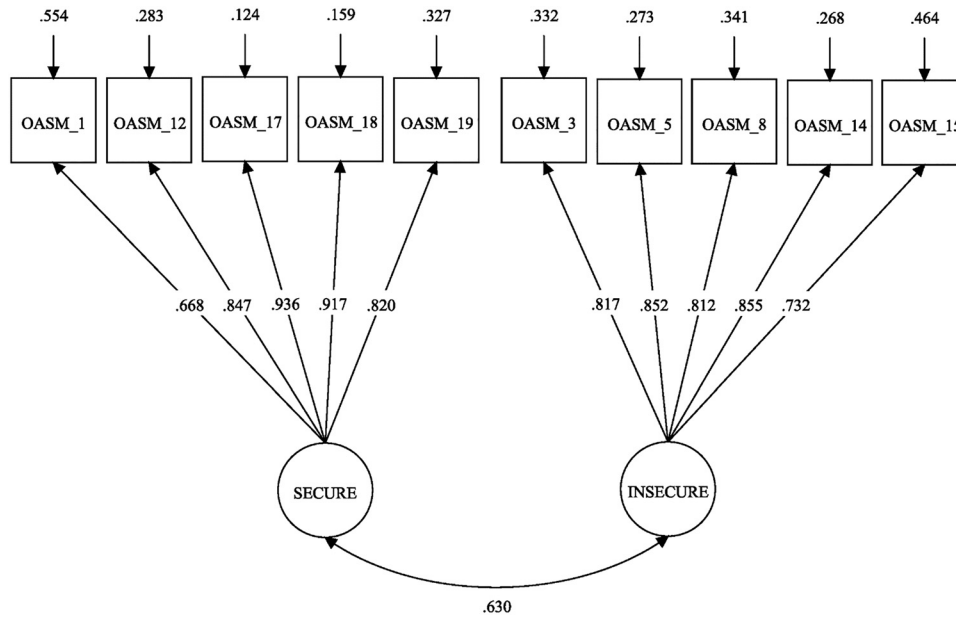*Note.* Rotated loadings >0.3 are written in bold.

Fig. 1. Confirmatory factor model of final OASM scales using follow-up data
Note. OASM = Object Attachment Security Measure. Squares indicate measured variables while circles indicate latent constructs. All path coefficients (correlation between factors and standardised factor loadings) were significant (P's < 0.001). Standard errors are not shown (but were all below 0.05). Residual variances are also displayed for each OASM item

Table 3. Means, standard deviations, and pearson correlations with OASM subscales

	M	SD	OASM-Insecure r	OASM-Secure r
SCI Emotional Attachment	22.97	13.58	0.612***	0.447***
RSI	3.32	1.57	0.551***	0.535***
RAQ-A Feared Loss	12.92	4.23	0.526***	0.363***
RAQ-A Proximity Seeking	7.39	3.81	0.717***	0.342***
RAQ-A Secure Base	7.30	3.60	0.717***	0.371***
RAQ-A Separation Protest	8.30	3.07	0.597***	0.161**
RAQ-A Angry Withdrawal	1.86	1.03	0.540***	0.168**
RAQ-A Compulsive Caregiving	18.84	5.06	0.644***	0.386***
RAQ-A Compulsive Care Seeking	18.34	6.40	0.712***	0.332***
RAQ-A Compulsive Self-reliance	6.73	1.56	−0.494***	−0.371***
RAQ-A Comfort	2.48	1.20	0.609***	0.418***
PCS	102.33	39.54	0.724***	0.621***
Q-LES-Q-SF	70.33	14.38	−0.169**	−0.081
SI-R Difficulty Discarding	9.03	5.80	0.432***	0.307***
SI-R Excessive Acquisition	8.07	4.91	0.487***	0.274***
SI-R Clutter	7.40	7.05	0.469***	0.242***
SI-R Total	24.50	15.34	0.536***	0.315***
EBRS	16.36	7.46	0.427***	0.191***

Note. OASM = Object Attachment Security Measure, SCI = Saving Cognitions Inventory, RSI = Relationship Between Self and Items Measure, RAQ-A = Reciprocal Attachment Questionnaire - Adapted, PCS = Possessions Comfort Scale, Q-LES-Q-SF = Quality of Life, Enjoyment and Satisfaction Questionnaire – Short Form, SI-R = Saving Inventory - Revised, EBRS = Excessive Buying Rating Scale. **P < 0.01, ***P < 0.001.

We additionally ran two exploratory regression models with secure and insecure object attachment as predictors of (1) hoarding severity and (2) compulsive buying severity (see Table 4). When predicting hoarding severity (SI-R Total), the OASM subscales explained 29% of variance (F (2, 362) = 73.20, P < 0.001), and only the insecure subscale was statistically significant. When predicting compulsive buying severity (EBRS), the OASM subscales explained

19% of variance (F (2, 358) = 40.67, P < 0.001), and only the insecure subscale was statistically significant.

DISCUSSION

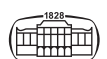In this study, we found that the OASM distinguished between secure and insecure object attachment. We found

Table 4. Predicting hoarding and compulsive buying severity with the OASM

	B	SE	β	t	P
Dependant Variable = SI-R Total					
Constant	9.71	2.16		4.51	<0.001
OASM – Insecure	1.18	0.12	0.52	9.79	<0.001
OASM – Secure	0.06	0.11	0.03	0.51	0.61
Dependant Variable = EBRS					
Constant	12.02	1.14		10.56	<0.001
OASM – Insecure	0.52	0.06	0.46	8.08	<0.001
OASM – Secure	−0.07	0.06	−0.07	−1.15	0.25

Note. EBRS = Excessive Buying Rating Scale, OASM = Object Attachment Security Measure, SI-R = Saving Inventory - Revised.

excellent model fit for the final two-factor solution. Both OASM subscales showed excellent internal consistency and test-retest reliability over a two-week period. As expected, both OASM subscales were related to previous measures of object attachment while being less related to a measure of quality of life, demonstrating convergent and divergent validity. The RAQ-A was more related to the insecure rather than the secure OASM subscale. Interestingly, both OASM subscales were correlated with the RSI at a roughly equal magnitude, indicating that the RSI may not discriminate between insecure and secure object attachment and that secure and insecure object attachment both involve a relationship between the self and one's items. As hypothesised, the OASM subscales demonstrated excellent criterion validity as they were related to hoarding and compulsive buying severity. In addition, we found that hoarding severity and compulsive buying severity were predicted by insecure object attachment scores, and that secure attachment did not add any unique predictive variance.

Theoretical implications

Because we found support for a two-factor model, this may have important implications for the way we define object attachment and how we relate to possessions. Previously, Frost and Hartl's (1996) cognitive behavioural model of hoarding posited two types of emotional attachment to possessions that contribute to hoarding: hypersentimentality and safety. Hypersentimental object attachment is characterised by imbuing objects with significance because of their associations with past events, including those that are not that remarkable. Safety object attachment involves depending upon and turning to possessions during times of need. Both types of attachment were posited to make it difficult to part with possessions. A more recent theoretical model speculated that individuals hoard possessions in order to compensate for an insecure attachment to people, such that possessions become secure attachment figures (Mathes, Timpano, Raines, & Schmidt, 2020).

Our findings indicate that there may be two dimensions of object attachment that underlie both compulsive buying and hoarding problems. These two types of object

attachment may be best conceptualised as secure and insecure attachment. Rather than being two ends of a continuum, secure and insecure object attachment may be separate dimensions. Many people may experience a secure attachment to possessions, and although certain possessions are important to them and bring them joy, not buying these treasured goods or discarding them after they have outlived their purpose does not cause insurmountable distress. On the other hand, relatively few people may experience an insecure attachment to possessions. This type of object attachment shares many similarities with an interpersonal anxious attachment style in that it is characterised by being overly reliant on possessions and finding it difficult to be away from them. In the same way that interpersonal anxious attachment contributes to interpersonal difficulties, insecure object attachment may contribute to possession difficulties (e.g., loss of identity fears may encourage people to buy possessions they cannot afford or hang onto things they do not have room to store). In the absence of an insecure attachment to objects, secure object attachment may not lead to clinically significant acquiring and saving difficulties.

The current findings may also explain why interpersonal issues and uncertainty about self-concept leads to hoarding and compulsive shopping problems. This study showed that insecure object attachment is characterised by believing that possession loss equates to loss of one's identity. It seems that uncertainty about the self (i.e., self-ambivalence) may lead some individuals to rely on possessions to define their self-identity, which may lead to feelings of vulnerability when separated from possessions (i.e., insecure attachment). Therefore, possessions are acquired and saved to ward off aversive thoughts and emotions. Negative views about the self may also lead individuals to become more attached to their possessions than to people. Future research should investigate the relationships between the self, secure and insecure object attachment, and hoarding and compulsive shopping to test this hypothesis. Future research should also examine the relationship between materialism and object attachment, as insecure object attachment may be a consequence or cause of using possessions to elevate social status and compensate for interpersonal problems (i.e., materialism). Previous research found that materialism mediated the link between identity confusion and compulsive buying symptoms, but not for hoarding symptoms (Claes, Müller, & Luyckx, 2016). It also seems important to identify and investigate strategies to decrease insecure object attachment during treatment for both hoarding disorder and compulsive buying shopping disorder. Such strategies may be adapted from interpersonal therapies such as Dialectical Behavioural Therapy (Salsman & Linehan, 2006) or Schema Therapy (Young, Klosko, & Weishaar, 2003, p. 254).

It is possible that the OASM secure subscale could represent a healthy type of attachment, which might motivate individuals to care for their possessions without engaging in hoarding, excessive shopping, or

overconsumption. Secure object attachment may lead to more sustainable use of items; thereby, reducing unnecessary expenditure and replacement behaviour. It may encourage people to use and repair objects when broken, rather than dispose of them prematurely or hang onto them indefinitely without using them (van den Berge, Magnier, & Mugge, 2021; Dommer & Winterich, 2021). Future research should examine the relationships between secure object attachment and how objects are used. If secure object attachment is found to be related to more sustainable use of products, researchers could develop strategies to encourage secure attachment to help the general public reduce overconsumption.

Limitations

Although our study has many strengths (such as the use of large, diverse sample), its limitations should also be considered when evaluating findings. First, we did not employ a sample diagnosed with hoarding disorder or compulsive buying-shopping disorder. Although 17.5% of our sample scored over the clinical cut-off for hoarding, future research should aim to confirm our findings in clinical samples with confirmed diagnoses. Second, the assessment of test-retest reliability may have been biased due to attrition, as more variable participants may not have completed the OASM for a second time. By exploring object attachment among clinical samples and examining test-retest reliability, we may find that test-retest reliability is more variable for those who meet criteria for CBSD as their object attachment is hypothesised to be transitory in nature. Future research could utilise ecological momentary assessment to further our understanding of the role of object attachment in compulsive shopping. Such research may need to use a modified OASM to assess attachment to products which are either recently bought or not yet purchased (rather than possessions in general).

Conclusion

In conclusion, we developed and validated a new scale, called the Object Attachment Security Measure (OASM), which measures secure and insecure forms of object attachment. We also showed that the factor structure of the OASM was replicable across piloting and the main study. Unlike previous measures of object attachment which have not had their psychometrics formally evaluated or have shown poor psychometric performance, the OASM subscales demonstrated excellent internal consistency, test-retest reliability, convergent and divergent validity, and criterion validity. Our findings demonstrate that object attachment is likely not a singular construct. This finding could have important implications for both consumer behaviour and clinical practice. Further investigation of these forms of object attachment might lead to more sustainable product use and could lead to better strategies to help treat individuals with hoarding disorder and compulsive buying-shopping disorder.

SUPPLEMENTARY MATERIAL

Supplementary data to this article can be found online at https://doi.org/10.1556/2006.2022.00058.

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