

DEVELOPMENT OF THE SELF-CURIOSITY ATTITUDE-INTEREST SCALE

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Even though introspection, reflection, and mentalization are important processes in clinical practice, no self-report measure has been developed to address the psychological construct of self-curiosity. This paper addresses this disparity, and provides a new self-report measure on this topic and data on its nomological network. Curiosity about self was initially conceptualized as the desire that people have to explore and understand themselves and their psychological functioning beyond what they already know about themselves. The manuscript presents data from three independent samples used to build the Self-Curiosity Attitude-Interest (SCAI) scale. Data show that the SCAI comprises two dimensions: attitude toward self-curiosity (cognitive propensity toward exploring one's own inner world) and interest in increasing knowledge of self (emotional/motivational pull to understand oneself better). An independent sample shows good internal consistency, test-retest reliability, and evidence of construct validity of the SCAI. This paper discusses the utility of the SCAI in clinical practice and research.

Key words: Curiosity; Self; New scale development; Introspection; Psychological assessment.

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Research has shown that curiosity is important in many contexts. In interpersonal relationships, curiosity promotes positive affect and attractiveness (Kashdan & Roberts, 2004), and represents a resilience against aggression (Kashdan et al., 2013). At school, curiosity is connected with academic performance (Reio & Callahan, 2004; Von Stumm, Hell, & Chamorro-Premuzic, 2011), learning (Reio & Wiswell, 2000), cooperation with peers (Michaelson, Knight, & Fink, 2002), and pleasure in exploration (Litman, 2005). At work, curiosity is connected with the correct prediction of an individual's work performance and socialization-related learning (Reio & Callahan, 2004). In clinical settings, curiosity promotes personal growth (Kashdan, Rose, & Fincham, 2004), the pursuit of sustainable sources of pleasure and meaning (Hayes, Strosahl, & Wilson, 1999; Kashdan & Silvia, 2009; Sheldon & Elliot, 1999), and supports the motivation toward change (Kaczmarek et al., 2013). Curiosity seems to foster adaptation due to its correlations with reflexivity (Trapnell & Campbell, 1999), hope, wellbeing (Kashdan, Rose, & Fincham, 2004), and openness to experience (Connelly, Ones, & Chernyshenko, 2014). Socioeconomic factors are also accruing around curiosity. For example, curiosity about new things decreases with age (Camp, Rodrigue, & Olson, 1984), women are generally more curious about people, and men are generally more curious about objects (Giambra, Camp, & Grodsky, 1992).

THEORETICAL PERSPECTIVES ABOUT CURIOSITY

Decades of research have focused on trying to explain curiosity and curious behaviors, seeing it either as an unpleasant experience, an aversive state that needs to be extinguished (in the “Drive theory” research tradition), or as a pleasant, self-rewarding positive state (in the “Optimal arousal model” research tradition). More recently, studies have expanded on these two theories to form a more flexible model showing that the intensity of curiosity is responsible for the hedonic states experienced by participants and that general curiosity comprises both stable and fluctuating components.

Curiosity as an Unpleasant Experience

Harlow (1953), Berlyne (1954), and Dember (1956) originated the Drive theory. They considered curiosity to be an unpleasant experience of “uncertainty” triggered by “the presentation of new or unusual stimuli (e.g., objects, pictures) [which] elicit approach behavior and sustained attention” (Litman, 2005, p. 794). Curious behavior has the aim of restoring cognitive and perceptual coherence.

Although a great deal of evidence has supported the Drive theory, different research studies suggest that organisms spontaneously seek stimuli to arouse their curiosity (Butler, 1957; Fowler, 1965; Hebb, 1955). Also, Fowler (1965) noticed an apparent incongruence in Drive theory, as it was “forced to ascribe both drive-eliciting and reinforcing properties to the same stimuli” (p. 38). Drive theory was later expanded into the Information gap theory (Loewenstein, 1994), which emphasizes the role of uncertainty in knowledge for curious behaviors. In this framework, curiosity is stimulated by the need to fill the gap between what the subject knows and what the subject would need to know.

Curiosity as a Pleasant Experience

The Optimal arousal model (Berlyne, 1967; Fiske & Maddi, 1961) views curiosity as a rewarding and positive hedonic state that a participant actively pursues. According to this perspective, people are motivated to preserve an optimal level of arousal. When individuals are over-aroused they withdraw from stimuli, when they are under-stimulated they explore the environment, seeking new stimuli that evoke curiosity to increase their arousal to an optimal level (Day, 1982). The Optimal arousal model led to the Optimal stimulation model (Spielberger & Starr, 1994), which proposed that any novelty arouses both a pleasant state of curiosity and an aversive state of anxiety. Curiosity and anxiety are both necessary to create a condition of optimal stimulation, namely one in which moderate levels of curiosity and anxiety are balanced.

Current Understanding of Curiosity

In the last decade, several studies (Litman, 2005; Litman & Jimerson, 2004; Litman & Silvia, 2006) have proposed a new perspective on human curiosity that integrated both approaches:

Curiosity as a feeling-of-interest is aroused when individuals do not consider themselves to be lacking knowledge per se but rather feel that it would be enjoyable to discover something new [...]. In contrast, curiosity as a feeling-of-deprivation is stimulated when people feel they are lacking substantive and meaningful information such as the answer to a complex question, a valuable fact, or a solution to a tough problem. (Litman & Silvia, 2006, p. 320)

Acknowledging the existence of different kinds of curiosity led researchers to study it in terms of a state or trait feature (Kashdan & Fincham, 2004). Trait (or dispositional) curiosity refers to a general tendency to experience interest or curiosity. State (or situational) curiosity “is a temporary state evoked by an ongoing internal or external activity, implying interaction between the person and environment” (p. 483).

DEFINITION OF SELF-CURIOSITY

Self-curiosity is conceptualized as the disposition that people have about exploring themselves and discovering new aspects of their psychological functioning. It is partially overlapping yet different from other related constructs such as reflection, introspection, and mentalization. These constructs represent metacognitive traits that enable the individuals’ self-regulation activities, direct attention toward the inner world, and promote the exploration of mindful feelings and sensations. Self-curiosity can be expected to correlate (or even be part of) such metacognitive and broader processes, but has a narrower scope and more specific aim: increasing the knowledge of one’s own psychological functioning.

Curiosity, Self-Curiosity, and Treatment

Several studies have stressed the importance of people’s ability to reflect on themselves as a prerequisite for promoting healthy interpersonal boundaries and mentalization in treatment (Auerbach & Blatt, 2001; Fonagy et al., 1995; Fonagy & Target, 1996) and several therapeutic approaches are built around sustaining clients’ curiosity. For example, the Motivational Interview (MI; Miller & Rollnick, 2002) fosters curiosity to help clients move from a Precontemplation to a Contemplation stage of change. In MI clients’ curiosity is sustained by exploring the differences between their current conditions and their goals for their lives (Miller, Zweben, DiClemente, & Rychtarik, 1992). In MI curiosity is inferred on the basis of how easily the client can explore the desired goal for the treatment and, in a later stage, develop creative action plans to achieve such goals.

In Mentalization Based Treatment (MBT; Allen, Fonagy, & Bateman, 2008), the therapeutic aims of increasing behavior control, enhancing affect regulation, allowing intimate relationships, and creating a better adaptation to daily life are promoted by a safe relationship with the therapist who engages them in a curious exploration of the others’ and of their own states of mind. In MBT, the level of curiosity and ability to explore clients’ and therapists’ states of mind is indirectly evaluated on the bases of the clients’ acting out and affective dysregulation.

Therapeutic Assessment (Finn, 2007) is a brief, semistructured psychological intervention that combines — in a post-modern reflexive framework — the use of psychological testing and emotion-based intervention techniques to promote change in clients. Therapeutic Assessment stresses the importance of the clients’ curiosity about themselves for many steps of the intervention. For example, a client’s level of curiosity guides how to frame the assessment, how to introduce the tests,

how to interpret the results, and how to discuss findings with the client at the end of an assessment. To date, in Therapeutic Assessment, clients' curiosity about self has been ascertained by performance indicators (such as the number and deepness of clients' questions) or by indirect measures (such as the MMPI validity scales). Clients' curiosity is at the basis of their "assessment questions," that is, the questions that they pose and hope to answer through the testing. Questions range from those that indicate deep curiosity about the self (such as: "What should I do to process the loss of my former partner so I can develop new relationships?") to ones that show less maturity and curiosity (such as: "Why am I shy with strangers?"). Test validity scales are indirect measures of curiosity in that, for example, on the MMPI-2, high F and low K and L scores suggest that the clients are ready to observe and reflect on themselves and their problems. On the contrary, low F and high L and K scales indicate less openness and higher "defensiveness" in the testing situation (Finn, 1996a, 1996b). In his later writings, Finn emphasized that test "defensiveness" can show that clients are facing a "dilemma" about learning and exposing new information about themselves, and that this "Catch-22" can interfere with self-curiosity (Finn, 2007).

Formal Assessment of Self-Curiosity

Although different studies have focused on curiosity in many specific life domains (Ainley, 1986; Day, 1971; Litman & Spielberger, 2003; Zuckerman, Eysenck, & Eysenck, 1978), curiosity about the self has been for the most part neglected and the most popular instruments measuring curiosity (Curiosity and Exploration Inventory-II, Kashdan et al., 2009; Curiosity as a Feeling-of-Deprivation Scale, Litman & Jimerson, 2004; Epistemic Curiosity Scale, Litman & Spielberger, 2003) do not map this aspect. Other more pertinent self-report instruments (e.g., Interpersonal Reactivity Index-IRI, Davis, 1983; Emotional Intelligence-EM, Schutte et al., 1998) still fail to properly identify the construct of self-curiosity. In fact, the Personal Distress factor of the IRI and the Emotions-Own factor of the EM both focus on awareness of one's own emotional reactions, respectively under stress and in general.

The absence of self-report measures of self-curiosity is consistent with how similar, yet broader concepts of mentalization and reflexivity have been traditionally assessed. Such constructs are in fact often evaluated through performance-based methods (see for review Choi-Kain & Gunderson, 2008). The assessment of self-curiosity through a questionnaire could hence buffer the potential bias of performance-based tests that are generally more sensitive to daily fluctuations and to the activities endorsed to complete the task at hand than self-report measures (Kempen, Steverink, Ormel, & Deeg, 1996).

The aim of the present research is to develop a self-report scale assessing curiosity about the self. The analytic strategy involved two studies: 1) structure of the Self-Curiosity Attitude-Interest scale; 2) scale reliability and construct validity. All the participants involved were Italian and all the items were written and presented in Italian.

STUDY 1

STRUCTURE OF THE SELF-CURIOSITY ATTITUDE-INTEREST SCALE

The aim of the first study was to create a new self-report measure of self-curiosity, in order to assess how people explore new aspects of their inner worlds and psychological motives. It

was carried out in three phases: Step 1 involved developing an initial pool of items; Step 2 explored the structure of these items through exploratory factor analysis (EFA) and principal component analysis (PCA); in Step 3 confirmatory factor analysis (CFA) was used.

Data were collected through a questionnaire applied online through psychology blogs, commercial mailing lists, and social networks. Participation was rewarded by being entered in a context to win items (USB flash drives, pens, neck chains).

Study participants' demographic features and sample sizes are presented in Table 1. No gender differences were found in the three EFA, PCA, and CFA, samples $\chi^2(2) = 4.27, p = .118$. Due to the higher incidence of college students in Sample 1 compared to Samples 2 and 3, Sample 1 was slightly more educated, $F(2) = 22.79, p < .001, \eta^2 = .05$, and with a higher rate of unemployed participants, $\chi^2(6) = 34.74, p < .001$, and people aged 18-25, $\chi^2(6) = 71.65, p < .001$. Sample 2 was significantly older than Sample 3, $t(490) = 6.24, p < .001, d = 0.60$, and with fewer students, 31.4% and 55.1%, respectively.

Step 1: Definition of the Initial Pool of Items

The initial pool of items designed to reflect curiosity about the self was derived from descriptions of introspection, self-awareness, and curiosity, taken from literature and from a personal survey with the faculty from the Therapeutic Assessment Institute, an international non-profit agency whose central office is located in Austin, Texas. Recognized experts in the field of curiosity were also involved.

The resulting 51 items fell, based on their content, into three main thematic areas. The first group of items focused on the means used to know oneself better (e.g., "I often read psychology magazines"). The second group of items dealt with the desire to understand new things about oneself (e.g., "I like to learn new things about myself"). Finally, a third group of items covered the level of openness to feedback about one's own psychological world (e.g., "I look for friends who are able to tell me interesting things about who I am"). Each thematic group comprised both positively and negatively scaled items, and items had different degrees of difficulty. For example, in the realm of desire to understand oneself better, items ranged from "I like to understand my reactions" — believed to be an "easy" item — to items less likely to be endorsed, such as, "I read, reflect, and talk to other people to understand why I did what I did in the past." Initially, item responses were keyed on a dichotomous *true-false* scale.

Step 2: Structure of the Scale

Step 2 was designed to assess the structure of the scale and determine the number of components needed to adequately describe the psychological construct of curiosity about the self. Two subsequent analyses were carried out: first, an EFA on the original set of items, and second, a PCA on a modified set of items resulting from the first analysis.

Exploratory Factor Analysis

Method

Table 1 reports descriptive information about Sample 1 ($N = 282$), used for the EFA. All participants completed the initial pool of 51 items on self-curiosity.

TABLE 1
Sociodemographic characteristics of Sample 1, Sample 2, and Sample 3

	Sample 1 ($N = 282$)		Sample 2 ($N = 138$)		Sample 3 ($N = 357$)					
Descriptive data	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	χ^2	<i>F</i>	<i>df</i>	<i>p</i>
Women	186	66.0	82	59.4	247	69.2	4.27		2	.118
Men	96	34.0	56	40.6	110	30.8				
<i>Age range</i>							71.65		6	< .001
18-25	128	45.4	49	35.8	206	58.0				
26-35	48	17.0	26	19.0	87	24.5				
36-45	24	8.5	27	19.7	36	10.2				
46-65	82	29.1	35	25.5	26	7.3				
<i>Years of education</i>								22.79	2	< .001
Primary school	9	3.2	1	.7	1	.3				
Secondary school	14	5.0	27	19.7	39	10.9				
High school	90	31.9	67	48.9	205	57.6				
University degree	169	59.9	42	30.7	111	31.2				
<i>Employment status</i>							34.74		6	< .001
Unemployed	131	46.5	43	31.4	195	55.1				
Blue collar	47	16.6	29	21.2	55	15.5				
White collar	88	31.2	46	33.5	66	18.7				
Self-employed	16	5.7	19	13.9	38	10.7				

Note. χ^2 test was used to assess differences in gender, age range, and employment status. ANOVA test was used to assess differences in years of education. The difference between the general total and the total for each variable is due to missing data.

Results

Prior to running the EFA, 18 items with low response variance (to which more than 80% of participants responded *true* or *false*) were eliminated (e.g., “I like people who share their honest feedback about me,” 95% *true*; and “I am curious to understand what goes on in my head,” 89% *true*). An EFA using unweighted least squares extraction (Brown, 2006; Floyd & Widaman, 1995; Nunnally, 1970) on the polychoric correlation matrix was conducted on the remaining 33 items using MPlus 6 (Múthen & Múthen, 2010). A reiterative exclusion procedure deleted items with cross-loadings above .35 or loadings on one factor below .35.

After a promax rotation, a final set of 18 items allowed for five- or three-factor solutions. In fact, analysis of the scree plot showed five factors with eigenvalues exceeding 1.0 (respectively 4.97, 2.10, 1.68, 1.26, and 1.12). This solution accounted for 50% of the total variance.

However, the five-factor solution was discarded because only one item loaded on each of the last two factors. For this reason, the three-factor solution was considered more appropriate. It explained 38% of the total variance, and Table 2 presents the factor loadings for each of the 18 items on the three extracted factors. As expected with a promax rotation, the factors showed moderate intercorrelations: a Pearson's r of .36 between Factor 1 and Factor 2, $-.30$ between Factor 1 and Factor 3, and $-.39$ between Factor 2 and Factor 3.

TABLE 2
Factor loadings from exploratory factor analysis with promax rotation in the first version of the scale
(18 items, $N = 282$)

Item	Active Self-Curiosity	Reflexive Self-Curiosity	Disinterest in Self-Curiosity
The best part of travelling is what it teaches us about ourselves	.769	-.051	-.175
Sometimes I read psychology or philosophy magazines while waiting at a doctor's office	.453	.142	.162
I like to do things like meditation or yoga because they teach me who I am	.437	.169	.053
I select my best friends among those with whom I can grow as a person	.405	-.005	-.140
I often look forward to experiences and opportunities that challenge me and allow me to grow as a person	.365	.011	-.004
I spend a lot of time thinking about how I became who I am	.073	.862	-.100
Every month I spend part of my leisure time reflecting about how I am as a person	-.139	.713	.158
I think I spend more time than other people reflecting on my actions	-.126	.616	-.132
Sometimes I take others' point of view to observe my behaviors	-.058	.605	.117
I need to understand how my past experiences influence my current life	.078	.515	.021
I really want to know what motivates my behaviors	.143	.513	-.404
I value doing above thinking*	-.347	.244	.833
I get bored when I have to talk about my feelings*	.096	-.034	.659
It is more important to experience strong emotions than to understand their origins*	.023	-.026	.655
I prefer spending time with people who live their lives on the surface of things*	.106	-.270	.605
Thinking too much about who I am as a person is a waste of time*	-.021	.273	.452
I am the only one who can understand who I am*	.052	-.056	.404
I feel happier if I take life as it is*	.037	.025	.381

Note. All items were developed in Italian. Factor loadings $> .35$ are in boldface. Items identified with * were reversed.

Items loading on Factor 1, called “Active Self-Curiosity” (five items), represent a desire to understand oneself through practical experiences (e.g., “I like to do things like meditation or yoga because they teach me who I am”). Items loading on Factor 2, called “Reflexive Self-Curiosity” (six items), concern a desire to understand oneself through thinking (e.g., “I spend a lot of time thinking about how I became who I am”). Finally, items loading on Factor 3, called “Disinterest in Self-Curiosity” (seven items), captured a lack of interest in understanding oneself (e.g., “I get bored when I have to talk about my feelings”).

Principal Components Analysis

A closer scrutiny of this initial version of the scale showed limitations connected to the presence of adverbs in different items and to the dichotomous nature of the items. In order to overcome these limitations, a 7-point Likert scale with descriptive anchors ranging from *strongly disagree* to *strongly agree* was used to elicit responses. Likert-type scales provide a higher reliability of the scores and more information than those based on dichotomous items (Kothari, 2011). The 18 items were adjusted to fit into a Likert scale and the adverbs were eliminated. This rephrasing led to dropping three items that were replaced by nine new items, yielding a new list of 24 items. The analysis aimed at reducing the number of items while specifying the principal components of the scale.

Method

Data were collected on a total of 138 participants (Table 1, Sample 2) with an average age of 34.77 ($SD = 11.73$). All participants completed the 24-item questionnaire.

Results

The initial matrix of correlations showed adequate factorizability (KMO test = .70; Bartlett’s Test of Sphericity: approx. $\chi^2 = 758.82$, $df = 276$, $p < .001$). A reiterative exclusion procedure deleted items with cross-loadings above .35 or loadings on one factor below .35. Data was analyzed by SPSS Statistical Software 20.0. After removing items, a parallel Monte Carlo simulation analysis was run on the last set of seven items, that revealed a two-factor structure (Figure 1). The two-factor solution emerged also in light of eigenvalues exceeding 1.0, that accounted for 56.3% of the total variance.

Factor 1 (called “Attitude toward Self-Curiosity”) accounted for 33% of the variance and had an eigenvalue of 2.31. Factor 2 (called “Interest in Increasing Knowledge of Self”) explained 23.3% of variance and had an eigenvalue equal to 1.63. Attitude toward Self-Curiosity was defined by four items, such as “The best part of traveling is what it teaches us about ourselves” and “I like to listen to music because it teaches me what I am like as a person.” Interest in Increasing Knowledge of Self was defined by three items, such as “I am not interested in understanding how my past experiences impact my current life” (reversed item) and “I get bored when I have to talk about my feelings” (reversed item) (see Table 3). The factor names changed from the EFA analysis to signal that they turned from three to two.

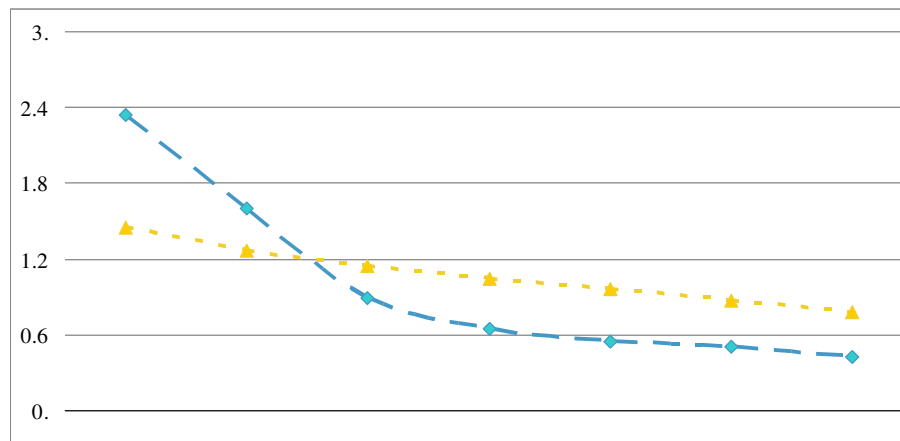


FIGURE 1

Scree plot comparing PCA eigenvalues with PA eigenvalues.

Dotted line represents the random 95th percentile of PA eigenvalues and the dashed line represents eigenvalues from the research data. PCA = principal component analysis; PA = parallel analysis.

Loadings of items on the two factors of the Self-Curiosity Attitude-Interest scale after an oblique (oblimin) rotation are reported in Table 3. The correlation between Attitude toward Self-Curiosity and Interest in Increasing Knowledge of Self was .15, indicating a positive yet weak relation between these dimensions.

TABLE 3

Factor loadings for principal component analysis with oblimin rotation of Self-Curiosity Attitude-Interest scale (seven items, $N = 138$)

Item	Attitude toward Self-Curiosity	Interest in Increasing Knowledge of Self	Communalities
1. I like to listen to music because it teaches me what I am like as a person	.834	-.159	.681
2. The best part of traveling is what it teaches us about ourselves	.738	.118	.585
3. My favorite movies are those that taught me new things about myself	.671	-.074	.441
4. I select my best friends among those with whom I can grow as a person	.608	.155	.422
5. I am not interested in understanding how my past experiences impact my current life	-.126	.814	.649
6. I get bored when I have to talk about my feelings	-.002	.752	.566
7. I am not interested in understanding what motivates my behaviors	.169	.729	.597

Note. All items were developed in Italian (see Appendix). Factor loadings > .35 are in boldface. Items 5, 6, and 7 were reversed.

Step 3: Confirmatory Factor Analysis

This step was based on the results of the PCA and aimed to support the scale factor structure with a CFA. In order to evaluate the two-factor structure of the scale, we used CFA and compared two nested models: a non-correlated and a correlated model.

Method

Data were collected on a total of 357 participants (Table 1, Sample 3). Average age was 28.29 years ($SD = 9.72$). All participants completed the 7-item questionnaire.

Results

CFA (SPSS AMOS, Version 22.0) was applied to the seven items to assess the fit for the two different models. Models were evaluated using the chi-square test, the root mean square error of approximation (RMSEA), the goodness-of-fit index (GFI), the comparative fit index (CFI), the standardized root mean square residual (SRMR). To compose the models we used the Chi-Square Difference Test (Jöreskog & Sörbom, 1993; Kline, 2005; McDonald & Ho, 2002).

For Model 1 (uncorrelated factors; Table 4), results showed a poor fit to data: $\chi^2(14) = 47.12$, $p < .001$; $\chi^2/df = 3.37$. For Model 1, GFI was .96, CFI was .91, RMSEA was equal to .08, with a true value at the 95% confidence interval between .06 and .11. The SRMR was .11, above the threshold of .08 proposed by Hu and Bentler (1999).

TABLE 4
Confirmatory factory analysis of the Self-Curiosity Attitude-Interest scale ($N = 357$)

	χ^2	df	p	χ^2/df	GFI	CFI	RMSEA	95% CI for RMSEA	SRMR
Model 1	47.12	14	.00	3.37	.96	.91	.08	[.06, .11]	.11
Model 2	17.67	13	.17	1.36	.99	.99	.03	[.00, .06]	.03

Note. GFI = goodness-of-fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation; CI = confidence interval; SRMR = standardized root mean square residual.

For Model 2 (Table 4 and Figure 2), the results of CFA showed a good model fit to data, highlighted by a nonsignificant chi-square: $\chi^2(13) = 17.67$, $p = .17$; $\chi^2/df = 1.36$; GFI = .99; CFI = .99; RMSEA = .03, with a true value at the 95% confidence interval between .00 and .06. For Model 2, SRMR was .03, coherent with the rule-of-thumb proposed by Hu and Bentler (1999) and approaching optimal levels of fit according to Byrne (1998) and Diamantopoulos and Siguaw (2000).

The more parsimonious Model 1 was compared to Model 2 by using the Chi-Square Difference Test. The difference between the two chi-squares was significant: 29.45, $df = 1$, $p < .001$. In conclusion, Model 2 was retained. Actually, theoretically, attitude toward and interest in self-curiosity are expected to be correlated. The same correlation is found between trait and state cu-

riosity, as indicated in the relevant literature (Kashdan & Roberts, 2004). Statistically, Model 2 had a better fit in terms of all the fit indices considered.

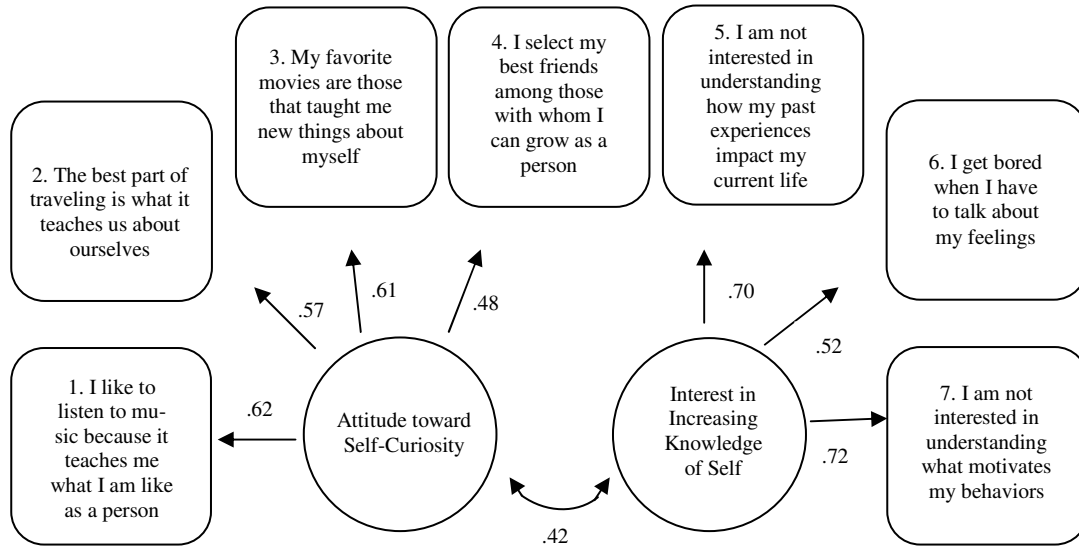


FIGURE 2
Confirmatory factor analysis of the Self-Curiosity Attitude-Interest scale ($N = 357$).
Items 5, 6, and 7 were reversed.

Discussion

The aim of this study was to create a new self-report measure for assessing self-curiosity. Three independent samples were used to highlight two different aspects of self-curiosity. These two dimensions of self-curiosity recall the dispositional and situational aspects of curiosity described by Kashdan and Fincham (2004). Factor 1, describing attitude toward self-curiosity, may correspond to the cognitive propensity to explore one's own inner world. Factor 2, describing the interest in expanding the knowledge of one's own inner world and psychological functioning, may tap the emotional/motivational pull to understand oneself better. On these bases the questionnaire was called Self-Curiosity Attitude-Interest scale (SCAI) (see Appendix).

STUDY 2 SCALE RELIABILITY AND CONSTRUCT VALIDITY

The aim of the second study was to assess the internal consistency and test-retest reliability of the SCAI scale. This study also investigated the construct validity of the scale, correlating it with several other self-report measures conceptually connected with curiosity about the self.

The internal consistency and the construct validity were calculated on 138 participants (Table 1, Sample 2). Correlations were calculated on 138 (Sample 2) and 357 participants (Sample 3) (Table 5).

TABLE 5
Inter-item correlations coefficients in Sample 2 ($N = 138$) and Sample 3 ($N = 357$)

Item	1.	2.	3.	4.	5.	6.	7.
1.	–						
2.	.451/.338	–					
3.	.462/.412	.329/.349	–				
4.	.371/.304	.398/.297	.133/.296	–			
5.	–.040/.108	.108/.149	–.036/.180	.093/.135	–		
6.	.031/.099	.116/.094	.091/.107	.162/.156	.400/.390	–	
7.	.103/.163	.257/.238	.215/.196	.149/.257	.424/.503	.386/.355	–

Note. The seven items are reported in Appendix. Correlations regarding Sample 2 are placed to the left of the slash, those regarding Sample 3 are placed to the right. Items 5, 6, and 7 were reversed.

Test-retest reliability was calculated on 47 participants, randomly selected from those in Sample 2; these participants gave their permission to be contacted for a second administration of the scale after four months. The test-retest sample was composed of 23 women and 24 men (age: $M = 32.74$, $SD = 12.56$), with an average education of 14.27 years of study ($SD = 3.21$).

Internal Consistencies

Results

Data showed an alpha coefficient of .65 for the total scale (seven items). Specifically, for Factor 1 “Attitude toward Self-Curiosity” (four items), alpha was .69. For Factor 2 “Interest in Increasing Knowledge of Self” (three items) alpha was .66. Given the number of items composing the scale, these coefficients are sufficient for a research instrument (John & Benet-Martinez, 2000; Nunnally, 1978), however suggesting a nonexcessive homogeneity or item overlap.

The inter-item correlation matrix (Table 5) showed for both samples comparable coefficients. The highest discrepancies between the two samples were: .216 (between Item 3 “My favorite movies are those that taught me new things about myself” and Item 5 “I am not interested in understanding how my past experiences impact my current life”); .163 (between Item 4 “I select my best friends among those with whom I can grow as a person” and Item 3 “My favorite movies are those that taught me new things about myself”).

Table 6 reports descriptives and item-total correlations for all the items in Samples 2 and 3. In Sample 2, Factor 1 item-total correlation coefficients ranged from .387 to .592, while the item-total correlation coefficients for Factor 2 ranged from .455 to .484. In Sample 3, coefficients in the two factors were respectively between .371 and .486 and between .431 and .534, suggesting a similar and significant contribution by each item to the respective factor in both samples (Shrigley, 1983).

TABLE 6
Means, standard deviations, descriptive statistics, item-total correlations
in Sample 2 ($N = 138$) and Sample 3 ($N = 357$)

Item	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	Item-total correlations
1. I like to listen to music because it teaches me what I am like as a person	3.87/4.36	1.71/1.59	0.118/0.437	-0.941/-0.456	.592/.486
2. The best part of traveling is what it teaches us about ourselves	5.08/5.09	1.55/1.40	-0.627/-0.587	-0.200/-0.026	.530/.443
3. My favorite movies are those that taught me new things about myself	4.13/4.46	1.56/1.53	-0.303/-0.353	-0.776/-0.436	.405/.463
4. I select my best friends among those with whom I can grow as a person	5.40/5.63	1.48/1.25	-1.018/-0.993	0.766/1.000	.387/.371
5. I am not interested in understanding how my past experiences impact my current life	5.39/5.53	1.55/1.51	-0.949/-1.170	0.185/0.720	.482/.534
6. I get bored when I have to talk about my feelings	4.84/4.69	1.70/1.63	-0.532/-0.407	-0.833/-0.703	.455/.431
7. I am not interested in understanding what motivates my behaviors	5.47/5.77	1.35/1.34	-1.028/-1.290	0.769/1.430	.484/.511

Note. Data regarding Sample 2 are placed to the left of the slash, those regarding Sample 3 are placed to the right. Items 5, 6, and 7 were reversed.

Test-Retest Reliability

Results

Test-retest reliability of the scale over time highlighted a Pearson's $r = .78$ ($p < .001$). The stability coefficient of Factor 1 (Attitude toward Self-Curiosity) was $r = .81$ ($p < .001$), while the stability coefficient of Factor 2 (Interest in Increasing Knowledge of Self) was $r = .67$ ($p < .001$), indicating that both factors and the total scale had good stability over time.

Discussion

The consistency of the SCAI scale proved to be acceptable, given the length of the scale and the number of items composing each factor. Temporal stability was good. It is worth noting that the cognitive dimension of self-curiosity (Factor 1, Attitude toward Self-Curiosity) showed

greater reliability than its emotional/motivational counterpart (Factor 2, Interest in Increasing Knowledge of Self).

Scale Construct Validity

Method

In order to evaluate the construct validity of the scale, the Self-Curiosity Attitude-Interest (SCAI) questionnaire was correlated with the Curiosity and Exploration Inventory-II (CEI-II; Kashdan et al., 2009), the Big Five Inventory (BFI; Soto, John, Gosling, & Potter, 2008), and the Reflection factor of the Rumination and Reflection Questionnaire (RRQ; Trapnell & Campbell, 1999) for Sample 2 participants ($N = 138$). Analyses were conducted by using SPSS Statistical Software (Version 21.0).

Measures

Curiosity and Exploration Inventory-II (CEI-II). CEI-II (Kashdan et al., 2009) is a self-report questionnaire assessing individual differences in the recognition, pursuit, and integration of novel and challenging experiences and information. CEI-II is a 10-item scale articulated into two dimensions: stretching, referring to the desire to seek out knowledge and new experiences, and embracing, referring to the propensity to embrace the novel and to be deeply engaged in specific activities.

Big Five Inventory (BFI). The Big Five Inventory (BFI; Soto et al., 2008) consists of 44 items. The questionnaire measures five traits/dimensions of personality: Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness to Experience.

Rumination and Reflection Questionnaire (RRQ). The Rumination and Reflection Questionnaire (Trapnell & Campbell, 1999) is a self-report questionnaire measuring the individual type of self-observation and proposing a distinction between two different types of attention toward the self, Rumination and Reflection. The present research only considered the dimension of Reflection composed of 12 items.

Results

Table 7 reports the correlations between instruments. As can be seen, the correlation between the SCAI and the CEI-II total scores was moderate ($r = .30, p < .001$). Notably, Factor 2 of the SCAI scale, corresponding to the emotional/motivational component of self-curiosity was not significantly correlated with the CEI-II or with its components. In contrast, Factor 1 of the SCAI scale, the cognitive/dispositional aspect of self-curiosity, had a .38 correlation with the CEI-II total score and correlation between .33 and .37 with embracing and stretching.

TABLE 7
Correlation coefficients between SCAI, CEI-II, and RRQ Reflection ($N = 138$)

	Attitude toward Self-Curiosity	Interest in Increasing Knowledge of Self	Total scale
	<i>r</i>	<i>r</i>	<i>r</i>
CEI-II			
Total scale	.38**	.04	.30**
Stretching	.37**	.09	.32**
Embracing	.33**	-.01	.24**
RRQ			
Reflection	.47**	.35**	.55**
BFI			
Openness to Experience	.34**	.18*	.35**
Conscientiousness	.10	.12	.14
Extraversion	.19*	.11	.20*
Agreeableness	.13	.16	.19*
Neuroticism	.16	-.10	.06

Note. CEI-II= Curiosity and Exploration Inventory-II; RRQ = Rumination and Reflection Questionnaire; BFI = Big Five Inventory.
* $p < .05$. ** $p < .001$.

Findings evidence that the SCAI total scale was positively correlated with the Openness to Experience personality trait ($r = .35, p < .001$), while it showed a small correlation (albeit statistically significant) with the Extraversion ($r = .20, p < .05$) and Agreeableness ($r = .19, p < .05$) factors of BFI. Openness to Experience exhibited higher correlations with the SCAI Factor 1 ($r = .34, p < .001$) than with the SCAI Factor 2 ($r = .18, p < .05$). The Extraversion scale had a low correlation with SCAI Factor 1 ($r = .19, p < .05$).

The correlations of the Reflection subscale of RRQ with the SCAI total scale ($r = .55, p < .001$), Factor 1 ($r = .47, p < .001$), Factor 2 ($r = .35, p < .001$) were positive and statistically significant. This suggests that curiosity about self is close to general curiosity and reflection, especially for its dispositional component, and relatively less for its emotional/motivational component.

Discussion

Self-Curiosity, and Factor 1 in particular, appeared to be a component of general curiosity. Openness to Experience showed moderate correlations with the SCAI scale total scores and with Factor 1 scores, whilst weak relations with Factor 2 score. Extraversion and Agreeableness were weakly correlated with Self-Curiosity total scores. Extraversion also showed a weak correlation with Factor 1. The same pattern emerged with Reflection, suggesting strong and moderate correlations with Factor 1 and Factor 2, respectively. These results show that Factor 1 has higher correlations with trait-like psychological constructs than Factor 2.

CONCLUSIONS

The literature on curiosity has showed a gap as far as curiosity about the self is concerned, particularly in using self-report measures to assess self-curiosity. The aim of this study was to provide a short measure of self-curiosity, readily usable in clinical contexts.

The Self-Curiosity Attitude-Interest (SCAI) scale was developed through an analytic strategy that involved exploratory factor analysis, principal component analysis, and confirmatory factor analysis. These steps yielded a two-factor scale composed of seven items. Internal consistency and stability over time were assessed and showed acceptable alpha coefficients and good test-retest reliability. Construct validity of the SCAI scale was evaluated against general curiosity, personality traits and reflection. Results showed that Self-Curiosity has moderate overlaps with general curiosity, Reflection, and Openness to Experience, and that these correlations are stronger for Factor 1 than for Factor 2. These results, in conjunction with outcomes from temporal stability of the SCAI scale, seem to indicate that Factor 2 could be more influenced by contextual conditions, and may represent a motivational, situational aspect of self-curiosity. The SCAI scale, compared to the RRQ factor of Reflection, seems to measure the extent to which people want to know new things about themselves, including the emotional-motivational pull to do so.

The difference between Factor 1 and Factor 2 of the SCAI scale recalls the recent contributions about curiosity from Kashdan and Fincham (2004), who proposed a distinction between dispositional and situational components of curiosity. Further research should analyze whether participants' interest in their inner world and motives is more sensitive to life changes and transitional conditions than their ability and attitude to explore themselves.

Interestingly, three items of the SCAI scale showed moderately negative skewed distributions (i.e., participants tended to endorse scores on the positive end of the scale). Two explanations may account for this finding: these items may be relatively easier than the others, or participants' real scores may be particularly high in these aspects of self-curiosity, namely selecting friends that allow new insights into oneself and having an interest in understanding one's own current behavior on the basis of past experiences and hidden motives.

More research is needed to examine the psychometric properties of the SCAI scale in different samples. In detail, configural, metric, and scalar invariance needs to be evaluated cross-culturally (is self-curiosity displayed similarly among people from different cultural backgrounds and countries?), and comparing groups for which different levels of self-curiosity can be expected or manipulated by assigning subjects to different experimental conditions. For example, clinical participants might have higher interest and (perhaps) lower attitude or disposition in exploring themselves than controls. Differences in age groups or in the level of intelligence need to be accounted for as well.

The SCAI scale might allow exploration of several important clinical areas of research. Will initial interest and attitude in understanding oneself predict final outcome of the treatment? Will the level of self-curiosity be important in terms of the success of different kinds of treatments? For example, could cognitive behavioral approaches be more suitable for relatively less curious clients than insight-based approaches? Recently, Therapeutic Assessment (TA) researchers have offered theoretical models to account for change mechanisms in clients (Aschieri, Fantini, & Smith, in press; Aschieri & Smith, 2012; Smith, Eichler, Norman, & Smith, 2014; Smith & Finn, 2014; Tarocchi, Aschieri, Fantini, & Smith, 2013). Curiosity about the self may serve as

a moderator of such treatment effects. Relatedly, research may focus on how TA (and similar treatments) can increase curiosity about the self and assess its role as a mediator of intervention effects. For example, in personality assessment, the SCAI scale may serve to evaluate whether the collection of initial assessment questions (Finn, 2007) arouses clients' desire to learn new things about themselves through assessment more than a traditional initial interview does.

From a process-based perspective on treatment, the SCAI scale, repeated at different phases of the therapy, may serve to monitor the clients' involvement and engagement, helping therapists to collect feedback about their work. Finally, evaluating the level of curiosity in psychological assessment may allow clinicians to modulate more sensitively the level of the feedback to clients after the testing is completed.

Clinically, the assessment of self-curiosity may be important also in systemic or family interventions, in which one of the clinicians' first goals is to promote parents' involvement in a systemic and circular view of their child's problems (Aschieri, Fantini, & Bertrando, 2012; Fantini, Aschieri, & Bertrando, 2013; Smith, Handler, & Nash, 2010). The assessment of self-curiosity in parents before the onset of the treatment may allow clinicians to engage them better, tailoring the work with the child to the parents' interest and availability in understanding how they are contributing to the child's problems.

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APPENDIX

The Self-Curiosity Attitude-Interest Scale (SCAI)

1. Mi piace ascoltare la musica soprattutto perché mi insegna come sono fatto [I like to listen to music because it teaches me what I am like as a person].
2. La parte migliore del viaggiare è ciò che può insegnarci su di noi [The best part of travelling is what it teaches us about ourselves].
3. I film che ho preferito sono quelli che mi hanno fatto scoprire aspetti nuovi di me [My favorite movies are those that taught me new things about myself].
4. I miei migliori amici sono quelli con cui posso crescere come persona [I select my best friends among those with whom I can grow as a person].
5. Non mi interessa capire l'impatto che le mie esperienze passate hanno su quello che succede oggi nella mia vita [I am not interested in understanding how my past experiences impact my current life].
6. Mi annoiano i discorsi in cui devo parlare dei miei sentimenti [I get bored when I have to talk about my feelings].
7. Non mi interessa conoscere ciò che sta alla base dei miei comportamenti [I am not interested in understanding what motivates my behaviors].

Note. The items were originally formulated in Italian.