Validation of a substance craving questionnaire (SCQ) in Italian population

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\textbf{ABSTRACT}

\textit{Background:} This study evaluated the psychometric properties of the Italian version of the Substance Craving Questionnaire (SCQ-NOW), extended version of the Cocaine Craving Questionnaire (CCQ-NOW), defined as a multidimensional measure assessing the craving about cocaine, as conceptualized by Tiffany, Singleton, Haertzen, and Henningfield (1993).

\textit{Method:} 344 substance addicts (age 38.56 ± 10.63 years old; 20.6\% females) took part in the research. The Confirmatory Factor Analysis showed that the Italian SCQ-NOW retains good psychometric properties, supporting the conception of substances craving as a multifold concept.

\textit{Results:} The internal consistencies were good; correlations between the SCQ-NOW, the Symptom Check List 90–R (SCL-90-R), and the Addiction Severity Index (ASI) were consistent with literature.

\textit{Conclusion:} Our findings confirm the application of SCQ-NOW as a psychometric useful measure of the craving in the Italian context, highlighting its validity and reliability. Implications for clinical practice are discussed.

1. Introduction

Dependence on psychotropic substances can be defined as a chronic mental illness with a tendency to relapse (Volkow et al., 2006; Volkow & Koob, 2015). It is characterized by a psychological condition accompanied by a substance withdrawal and by craving in the moment the use or access to the substance is denied; other features of dependence are: the pathological motivational state that pushes the person towards a behavior of active research of the substance, and tolerance, that is an escalation in the amount of dose needed to reach the desired state (Sadock & Sadock, 2008). One of the main causes of relapse is the state of craving experienced by the dependent subject. The term craving was initially used by substance-addicts to describe a strong and irresistible urge for opiates that manifested during abstinence. Later it assumed the meaning of desire to use any psychotropic substance in any situation (Shiftman, 2000). Actually craving is now referred to as the impulsive desire for a psychoactive substance, for food or for any other rewarding object or behavior (Hill, Weaver, & Blundell, 1991). This "addictive" behavior is supported by an impulsive desire, being the compulsion aimed at benefiting from the object of desire.

There are two types of craving, which differ according to their dynamics and presumed causality. There is an endogenous craving, experienced tonically, as a sort of permanent state, throughout the day. Superimposed to the endogenous one, there is episodic craving with episodes and occasional shots of intense and pulsating craving. Episodic craving is triggered by environmental or emotional cues (e.g., sight or smell of drug, exposure to stimuli associated with previous use or strong emotional states) and appears to be the immediate precursor of relapse (Marlatt, Baer, Donovan, & Kivlahan, 1988; Shiftman, 2000). Moreover, episodic craving does not seem to show the inexorable reduction in intensity that can be seen with craving background and could be maintained by perseverative thinking like rumination and worry (Caselli & Spada, 2011; Shiftman, 2000).

If not satisfied, craving, as an uncontrollable and irreducible desire to take on a substance, also causes physical and psychological suffering, together with irritability, aggression, depression or hyperactivity, anorexia, asthma, anxiety and insomnia (Cibin, 1993). It is characterized by the presence of thoughts and behaviors similar to those of obsessive-compulsive disorder (Modell, Glaser, Cyr, & Mountz, 1992). It was proposed that compulsiveness and impulsivity represent the extremes of a continuum that goes from a tendency to overestimate the danger and the avoidance of risk on the one hand, to a reduced perception of the danger of certain behaviors and to a high search for the danger on the opposite side (Hollander et al., 1998).

In contrast to the limited use of substances, there is a tendency to generalize the phenomenon of craving to a whole group of other disorders. All repetitive acts are potentially addictive behaviors whose suspension causes the accumulation of a growing tension and whose performance produces pleasure and relief (Marks, 1990; Marlatt et al., 1988). The craving would therefore be a signal associated with reaching...
a threshold of tension and the memory of previous experiences of gratification. Accordingly, addictive behaviors tend to self-maintain despite the efforts to interrupt or moderate them, thus often producing deleterious effects on the health or on the relational and social sphere of the subject.

Many studies and efforts are aimed at measuring craving in the attempt to better contain it, by focusing on its dynamics, gaining greater awareness and trying to master it.

This paper presents a version of the Cocaine Craving Questionnaire (CCQ-Now; Tiffany, Singleton, Haertzen, & Henningfield, 1993) generalized for all substances.

It currently still lacks such kind of tests. Hence the need to validate the SCQ (a generalized version of CCQ) as to have a reliable and valid tool for measuring craving in Italian population.

2. Psychometric properties of the SCQ-NOW

2.1. Method

2.1.1. Participants and procedure

The participants were 344 substance-addicted individuals, recruited to validate the questionnaire at the first meeting related to their access to the Addiction Service in Milan (Italy) by Fondazione Eris, a health service for polyabusers, in the years 2016–2017. They were 71 women (20.6%), having an age range from 18 to 60 years (M = 38.56; SD = 10.63). 49.7% of participants were Italian; 4.7% different European citizens (non-Italian); 1.2% American; 2% African; 16.3% Caucasian (the lasting 26.2% did not give this information). Overall, 31 participants were engaged or married (9%); 223 were single (64%); (the remaining participants did not give this data – 27%). The majority of individuals had a lower secondary school degree (n = 134, 39%), 90 participants had a high school level of education (26%) and 25 were graduate (7%); 28% did not give their response about this matter.

In average, the participants had been abstinent from the substances for 103.33 days (SD = 267.41).

The participants’ principal dependence had the following features: alcohol 23.5%; cannabinoids 4%; cocaine 26.5%; opioids 13.7%; gambling 3.5%; other dependences 28.8%.

46.8% of participants used a combination of some drugs (multiple-dependence); 23% had familiarity with dependence; 22.4% underwent a dependence therapy. Furthermore, 9% had familiarity with psychiatric diseases and 36.3% underwent a psychiatric therapy.

The overall socio-demographic characteristics of participants are illustrated in the Table 1.

In order to be included in the research, the subjects had to be 18 years old, and to be in treatment for substances dependence or abuse. All participants have received a diagnosis of SUD (Substance Use Disorder) in accordance to a scientific classification of disease (DSM-5) by an expert physician. All participants were involved in a multi-disciplinary intervention that includes psychotherapy, pharmacotherapy and educational care.

The evaluation of the test-retest reliability was conducted in a subsample of these participants (n = 95), after 3 months from the first assessment (females = 25.3%; age M = 37.20, SD = 10.01).

2.1.2. Measures

Participants were asked to complete a protocol composed by some parts and different questionnaires.

The first part of protocol was defined by a socio-demographic format (inquiring the classical variables related to age, gender, education, ethnic origin, marital status). In this section the participants were asked also in relation to the features of their dependence from the substances (principal dependence substance, other substance dependence, abstinence, dependence familiarity, psychiatric familiarity, psychiatric therapy, dependence therapy).

Then the Substance Craving Questionnaire-NOW (SCQ-NOW) was illustrated in the Table 1.

Descriptive statistics of variables under study.

| Variable                          | Numerical data               |
|-----------------------------------|------------------------------|
| Women                             | 20.6%                        |
| Age Mean (sd) – range             | 38.56 (10.63) - range 18–60 years old |
| Ethnic origin                     |                              |
| Italian                           | 49.7%                        |
| European (non-Italian)            | 4.7%                         |
| American                          | 1.2%                         |
| African                           | 2.0%                         |
| Caucasian                         | 16.3%                        |
| Missing                           | 26.2%                        |
| Marital status                    |                              |
| Married/Engaged/ Cohabants        | 9%                           |
| Single                            | 64%                          |
| Missing                           | 27%                          |
| Education                         |                              |
| Low school level                  | 39%                          |
| High school                       | 26%                          |
| College                           | 7%                           |
| Missing                           | 28%                          |
| Principal dependence substance    |                              |
| Alcohol                           | 23.5%                        |
| Cannabinoids                      | 401%                         |
| Cocaine                           | 26.5%                        |
| Opioids                           | 13.7%                        |
| Gambling                          | 3.5%                         |
| Other                             | 28.8%                        |
| Other substance dependence        |                              |
| Time abstinence – day mean (SD)   | 103.38 (267.41)              |
| Psychiatric familiarity           | 9%                           |
| Dependence familiarity            | 23%                          |
| Psychiatric Therapy               | 36.3%                        |
| Dependence Therapy                | 22.4%                        |

Dimensions inquired

| Variable                          | MEAN   | SD    |
|-----------------------------------|--------|-------|
| SCL_GSI                           | 0.630  | 0.671 |
| SCL_O-C                           | 0.785  | 0.748 |
| SCL_I-S                           | 0.562  | 0.668 |
| SCL_HEP                           | 0.776  | 0.746 |
| SCL_ANX                           | 0.667  | 0.660 |
| SCL_HOS                           | 0.509  | 0.600 |
| SCL_PHOB                          | 0.306  | 0.491 |
| SCL_PSY                           | 0.459  | 0.535 |
| SCL_PAR                           | 0.732  | 0.749 |
| SCL_SLEEP                         | 0.011  | 1.019 |
| SCL_DISTRES                       | 1.547  | 1.508 |
| So_GSI                            | 0.636  | 0.577 |
| ASI_MED                           | 0.258  | 0.312 |
| ASI_WORK                          | 0.557  | 0.376 |
| ASI_ALCO                          | 0.134  | 0.176 |
| ASI_DRG                           | 0.120  | 0.120 |
| ASI_LEG                           | 0.116  | 0.175 |
| ASI_FAM_SOC                       | 0.182  | 0.215 |
| ASI_FYIC                          | 0.214  | 0.219 |
| ASI_TOT                           | 1.583  | 0.865 |

Note: SCL_SOM somatization; SCL_O-C obsessive compulsion; SCL_I-S interpersonal sensitivity; SCL_DEP depression; SCL_ANX anxiety; SCL_HOS hostility; SCL_PHOB phobic anxiety; SCL_PSY psychoticism; SCL_PAR paranoid ideation; SCL_SLEEP sleep disturbance; SCL_DISTRES distress; SCL_GSI global severity index; ASI_MED medical problems; ASI_WORK employment problems; ASI_ALCO use of alcohol problems; ASI_DRG use of others substances problems; ASI_LEG legality problems; ASI_FAM_SOC family and social functions problems; ASI_PSYC Psychiatric problems; ASI_TOT total.
Specifically, the SCQ-NOW is developed as an adaptation of the original instrument Cocaine Craving Questionnaire-NOW (CCQ-NOW) and measures current craving at the moment it is answered (Tiffany et al., 1993). It is a 45-item self-report instrument (each item is scored by a Likert scale ranging from 1 - strongly disagree to 7 – strongly agree), assessing five dimensions of craving:

1) desire to use substance (9 items, e.g. “My desire to use substance seems over-powering”);
2) intention and planning to use substance (9 items, e.g. “I am thinking of ways to get substance”);
3) anticipation of positive outcome (9 items, e.g. “Using the substance now would make me feel powerful”);
4) anticipation of relief from withdrawal or dysphoria (9 items, e.g. “If I were using the substance, I could think more clearly”);
5) lack of control over use (9 items, e.g. “If there was the substance right here in front of me, it would be hard not to use it”).

Each factor contained four reverse-keyed items (reversed before calculating the total score for each factor). The score of each factor is characterized by the mean of responses given to all items. Internal consistency, calculated by Cronbach’s alpha, ranged from 0.70 to 0.89.
Table 3

Pearson’s correlation between inquired variables – Study 1 (total sample).

|       | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9       | 10      |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1     | **SCL_SOM** | **r**   |         |         |         |         |         |         |         |         |
| 2     | **SCL_O-C** | 0.692*  | 1       |         |         |         |         |         |         |         |
| 3     | **SCL_S**  | 0.711*  | 0.772*  | 1       |         |         |         |         |         |         |
| 4     | **SCL_DDP** | 0.733*  | 0.842*  | 0.798** | 1       |         |         |         |         |         |
| 5     | **SCL_ANX** | 0.799*  | 0.809*  | 0.800** | 0.828** | 1       |         |         |         |         |
| 6     | **SCL_HOS** | 0.571*  | 0.586*  | 0.708** | 0.622** | 0.639** | 1       |         |         |         |
| 7     | **SCL_PHOB** | 0.625*  | 0.682*  | 0.681** | 0.665** | 0.681** | 0.520** | 1       |         |         |
| 8     | **SCL_PSY** | 0.717*  | 0.808*  | 0.791** | 0.847** | 0.823** | 0.607** | 0.701** | 1       |         |
| 9     | **SCL_PAR** | 0.628*  | 0.646*  | 0.809** | 0.685** | 0.705** | 0.703** | 0.546** | 0.707** | 1       |
| 10    | **SCL_SLE** | 0.532*  | 0.605*  | 0.528** | 0.630** | 0.587** | 0.544** | 0.486** | 0.524** | 0.457** |
| 11    | **SCL_DISTRES** | 0.650*  | 0.687*  | 0.700** | 0.743** | 0.706** | 0.540** | 0.496** | 0.675** | 0.622** |
| 12    | **SCI_GSI** | 0.847*  | 0.899*  | 0.899** | 0.930** | 0.917** | 0.740** | 0.764** | 0.903** | 0.672** |
| 13    | **ASI_MED** | 0.544*  | 0.460*  | 0.447** | 0.458** | 0.484** | 0.276** | 0.412** | 0.521** | 0.395** |
| 14    | **ASI_WORK** | 0.043*  | 0.146*  | 0.108** | 0.076** | 0.099** | 0.069** | 0.154** | 0.114** | 0.199** |
| 15    | **ASI_LACCO** | 0.187*  | 0.276*  | 0.222** | 0.277** | 0.244** | 0.178** | 0.197** | 0.311** | 0.216** |
| 16    | **ASILANG** | 0.263*  | 0.337*  | 0.218** | 0.350** | 0.284** | 0.243** | 0.180** | 0.300** | 0.176** |
| 17    | **ASI_LEG**  | 0.090*  | 0.108*  | 0.092*  | 0.074*  | 0.109*  | 0.061*  | 0.133*  | 0.060*  | 0.066*  |
| 18    | **ASI_PAIN** | 0.351*  | 0.322*  | 0.326*  | 0.423*  | 0.355*  | 0.292*  | 0.360*  | 0.374*  | 0.304*  |
| 19    | **ASI_PAIN** | 0.566*  | 0.643*  | 0.545*  | 0.692*  | 0.606*  | 0.489*  | 0.520*  | 0.620*  | 0.543*  |
| 20    | **ASI_VOT**  | 0.532*  | 0.593*  | 0.515*  | 0.595*  | 0.565*  | 0.406*  | 0.526*  | 0.596*  | 0.486*  |
| 21    | **ASI_CRISSLE** | 0.252*  | 0.303*  | 0.243** | 0.299** | 0.287** | 0.267** | 0.224** | 0.279** | 0.260** |
| 22    | **ASI_INTENSIV** | 0.242*  | 0.342*  | 0.240** | 0.333** | 0.285** | 0.260** | 0.176** | 0.318** | 0.287** |
| 23    | **ASI_ANTIP** | 0.242*  | 0.310*  | 0.310** | 0.267** | 0.256** | 0.303** | 0.233** | 0.284** | 0.279** |
| 24    | **ASI_PSY**   | 0.186*  | 0.258*  | 0.261** | 0.241** | 0.250** | 0.293** | 0.231** | 0.270** | 0.268** |
| 25    | **ASI_LACH**  | 0.319*  | 0.404*  | 0.284** | 0.396** | 0.313** | 0.229** | 0.221** | 0.332** | 0.279** |

(continued on next page)
in the original version of the CCQ (Tiffany et al., 1993).

The Italian version of the questionnaire was translated in Italian and back translated to English (Van de Vijver & Poortinga, 2004). Two independent qualified bilingual translators, who were unexperienced with the questionnaire, produced two versions that were compared. No inconsistencies between the original and translated English versions were recognized.

All original items referring specifically to the use of cocaine were adapted and modified, referring to the use, not only of cocaine, but of a general substance. The final agreed version of the instrument was translated back into English, by a mother-tongue English speaker; the differences between the original questionnaire and the back translation were discussed and a final version was constructed.

The other section of protocol was characterized by the Symptom Check List-90-Revised (SCL-90-R) (Derogatis, 1994; Sarno, Pretti, Prunas, & Madeddu, 2011). It is a 90-item self-report inventory reproducing the following dimensions of symptomatology: somatization (SOM, 12 items), obsessive compulsive (O-C, 10 items), interpersonal sensitivity (I-S, 9 items), depression (DEP, 13 items), anxiety (ANX, 10 items), hostility (HOS, 6 items), phobic anxiety (PHOB), psychoticism (PSY, 10 items), paranoid ideation (PAR, 6 items), sleep problems (SLEEP, 3 items) distress (DISTRESS, an index derived from subtracting the total score with the number of positive symptoms). Participants assessed each item in terms of the degree of distress experienced during the past 7 days (by a Likert scale ranging from 0 - not at all - to 4 - extremely). Furthermore, the checklist contains some global indicators, among which we considered the Global Severity Index (GSI), that gives an overall picture of the participant’s symptomatology. The following section of the protocol was defined by the Addiction Severity Index (ASI); it is a semi-structured interview devised to gather information on the life of a user, relevant for its syndrome of use of psychoactive substances (Kokkevi & Hartgers, 1995). The interview developed in relation to the following potential problem areas: 1. medical; 2. employment; 3. use of alcohol; 4. use of other substances; 5. legality; 6. family and social functions; 7. Psychiatric. In relation to each area, a score is calculated using the composite score method (Hofer et al., 2012; McLellan, Cacciola, Alterman, Rikoon, & Carise, 2006).

3. Data analyses

In order to investigate the latent structure of the SCQ-NOW, a confirmatory factor analysis (CFA) was carried out on parcels, comprising three items each (Little, Cunningham, Shahar, & Widaman, 2002). The internal reliabilities were assessed by the Zumbo’s Ordinal Alpha (Gadermann, Guhn, & Zumbo, 2012; Zumbo, Gadermann, & Zeisser, 2007). Furthermore, to evaluate the effect of level of age and gender on the SCQ-NOW scales, a factorial Multivariate Analysis of Variance (MANOVA) was conducted. Then we calculated also the Pearson’s r linear correlations in order to evaluate the construct, concurrent and convergent validity; the level of significance of these correlations was corrected by the Holm’s method (Holm, 1979). Finally, a test–retest analysis, using the Pearson’s r coefficient, was performed to detect the reliability and the stability of the questionnaire (the new administration of the SCQ-NOW was carried out after 3 months from the first assessment).

The data analysis was performed using the R 3.5.0 (Team, 2013) and EQS 6.3 (Bentler, 1995) software.

4. Results

The Confirmatory Factor Analysis with Maximum Likelihood estimation was carried out referring to the original structure of the questionnaire, provided by Tiffany et al. (1993), to assess the validity of this model. In order to overcome the problems inherent the application of CFA with a big number of single items, a parcel method (items-clustering) was applied to enhance the stability of these observed variables/
Table 4
Results of MANOVA (gender × age level).

|                  | Wilks' Lambda | Df(B,W) | F     | p    | Eta² |
|------------------|---------------|---------|-------|------|------|
| Age level        |               |         |       |      |      |
| Gender           | 0.928         | 5;246   | 3.793 | 0.003| 0.072|
| Gender + age     | 0.966         | 5;246   | 1.724 | 0.130| 0.034|
| Age level + gender| 0.947       | 5;246   | 2.767 | 0.193| 0.053|

Note: ** significant at the 0.01 level (2 tailed); * significant at the 0.05 level (2 tailed); Df(B,W) degree of freedom (between; within); p=significance.

Table 5
Descriptive statistics about SCQ-NOW in relation to participants’ groups.

|                  | F1        | F2        | F3        | F4        | F5        |
|------------------|-----------|-----------|-----------|-----------|-----------|
| Age level        |           |           |           |           |           |
| Young adults     | M 2.045   | 2.183     | 2.460     | 2.859     | 3.268     |
| Adults           | M 1.834   | 1.882     | 2.146     | 2.528     | 2.800     |
| Gender           | m         |           |           |           |           |
| m                | M 1.840   | 1.920     | 2.250     | 2.631     | 2.850     |
| f                | M 2.160   | 2.296     | 2.399     | 2.687     | 3.385     |
| Age × Gender     |           |           |           |           |           |
| Young adults     | M 1.974   | 2.044     | 2.346     | 2.706     | 3.157     |
| Adults           | M 1.710   | 1.803     | 2.115     | 2.575     | 2.700     |
| Dependences      |           |           |           |           |           |
| Alcohol          | M 1.943   | 1.939     | 2.334     | 2.647     | 2.975     |
| Cannabinoids     | M 2.302   | 2.571     | 2.532     | 2.960     | 2.889     |
| Cocaine          | M 1.751   | 1.838     | 2.095     | 2.545     | 2.880     |
| Opioids          | M 2.075   | 2.536     | 2.482     | 2.793     | 3.342     |
| Gambling         | M 1.824   | 1.657     | 1.787     | 2.500     | 2.500     |
| Other            | M 1.912   | 2.000     | 2.258     | 2.648     | 2.982     |
| Mono – poli      |           |           |           |           |           |
| Mono addiction   | M 1.772   | 1.766     | 2.165     | 2.485     | 2.722     |
| Multiple addiction| M 2.000   | 2.109     | 2.323     | 2.748     | 3.116     |

Note: F1_DESIRE_USE_SUBSTANCE; F2_INTENTION_USE_SUBSTANCE; F3_ANTICIPATION_POSIT_OUTCOME; F4_ANTICIPATION_RELIEF_DYSPHORIA; F5_LACK_CONTROL; M = mean; Sd = standard deviation.

indicators (Anderson & Gerbing, 1988). For each of the scales, three single items were randomly averaged into parcels; by the application of this procedure three parcels were attained in relation to each scale (see Fig. 1).

The CFA highlighted a good fit, supporting the five-factor model devised by Tiffany and colleagues (Tiffany et al., 1993). Indeed, the fit indices match the values suggested in literature (Chi Square = 217.40, df = 80, p < .01; Chi Square/df = 2.717; CFI = 0.975; SRMR = 0.048; RMSEA = 0.071, RMSEA 90% CI 0.060-0.082) (Bentler, 1990; Hu & Bentler, 1999; Schermelleh-Engel, Moosbrugger, & Müller, 2003) (rules of thumb criteria: Chi Square/df < 3 = acceptable; CFI ≥0.90 = good fit; SRMR and RMSEA ≤0.08 = adequate fit). The factor loadings of items ranged from 0.56 to 0.82. The linear correlations between the scales extended from 0.46 to 0.97 (Fig. 1) (Table 2). The reliability was good for all scales, reporting the following values of Zumbo's Ordinal Alpha (Gadermann et al., 2012; Zumbo et al., 2007): F1 Desire to use substance α = 0.93; F2 Intention to use substance α = 0.91; F3 Anticipation positive outcome α = 0.88; F4 Anticipation relief dysphoria α = 0.79; F5 Lack of control α = 0.84.

Subsequently, these factors of SCQ-NOW were correlated with the scales obtained by the SCL and ASI instruments. The highlighted linear relationships were consistent with the theoretically expected association between variables. Specifically, it was observed that all the dimensions of the SCL-90-R have a positive significant correlation with all scales of SCQ-NOW (see Table 3). In relation to the ASI instrument, it was detected that only the dimension of legality (ASI_LEG) did not have any significant correlation with the scales of SCQ-NOW; for the remaining dimensions we can observe some linear significant relations (Table 3).

Afterward, to assess the construct validity, we evaluated the effect of gender (males = 1; females = 2) and levels of age (young adults, <35 years old =1; adults >35 years old = 2) on the SCQ-NOW scales; specifically, a 2*2 factorial multivariate analysis of variance was carried out.

The findings highlighted a significant effect at the multivariate level in relation to the variable level of age [Wilks’ Lambda = 0.928; F = 3.793, df = 5;246, p = 0.003, η² = 0.072] and to the interaction gender × level of age [Wilks’ Lambda = 0.947; F = 2.767, df = 5;246,
Table 6
Pearson's correlation between inquired variables in the test-retest assessment (n = 95).

| Variable                                      | POST F1 | POST F2 | POST F3 | POST F4 | POST F5 |
|-----------------------------------------------|---------|---------|---------|---------|---------|
| PRE r1 DESIRE_USE_SUBSTANCE                   | 0.429** | 0.404** | 0.371** | 0.249*  | 0.451** |
| PRE r2 INTENTION_USE_SUBSTANCE                | 0.518** | 0.587** | 0.309** | 0.194   | 0.561** |
| PRE r3 ANTICIPATION_POINT_OUTCOME             | 0.439** | 0.433** | 0.540** | 0.421** | 0.482** |
| PRE r4 ANTICIPATION_RELIEF_DYSPHORIA          | 0.265** | 0.231** | 0.417** | 0.401** | 0.245*  |
| PRE r5 LACK_CONTROL                           | 0.356   | 0.448** | 0.200   | 0.156   | 0.615** |

Note: ** correlation is significant at the 0.01 level (2 tailed); * correlation is significant at the 0.05 level (2 tailed); PRE = first assessment; POST = second assessment after 3 months.

$p = .019, \eta^2 = 0.053$. There is not a significant principal effect of the variable gender [Wilk's Lambda = 0.966; $F = 1.724$, $df = 5,246$, $p = .130, \eta^2 = 0.034$] (Table 4). These significant effects were confirmed at the univariate level for the variable level of age, in relation to the scales F2 [$F = 6.056$, $df = 1,250$, $p = .015, \eta^2 = 0.023$], F3 [$F = 5.980$, $df = 1,250$, $p = .015, \eta^2 = 0.023$], F4 [$F = 11.436$, $df = 1,250$, $p = .001, \eta^2 = 0.044$], F5 [$F = 6.740$, $df = 1,250$, $p = .010, \eta^2 = 0.026$], in which younger participants always show higher scores. In relation to the interaction, significant effect was found for gender × level of age in relation to the scale F4 [$F = 6.978$, $df = 1,250$, $p = .009, \eta^2 = 0.027$]; specifically, it is highlighted that younger females showed higher scores in this factor than older females (Table 4). The exhaustive values of means for each scale are shown in the Table 5.

Formerly, in a subsample of 95 participants a test-retest assessment of SCQ-NOW reliability was applied after 3 months. The Pearson’s $r$ coefficients showed high correlations between the first and second administration of the questionnaire, highlighting significant values ranging from 0.401 ($p < .001$) to 0.615 ($p < .001$) (see Table 6). These values sustain the stability, the concurrent and convergent validity of the SCQ (Dimitrov, 2014; Hambleton, Merenda, & Spielberger, 2005).

5. Discussion

The present work reports the results from a psychometric evaluation of a revised measure of CCQ-NOW (Cocaine Craving Questionnaire-NOW; Tiffany et al., 1993). Specifically, the goal of the present research was to develop an Italian version of the CCQ-NOW, generalizing their use, not only in relation to the assessment of cocaine craving, but also for all dependence behaviors and substances; coherently, we aimed at investigating its main psychometric features. The choice to validate a generalized version arises from the idea of having a tool that is more flexible both in function and in the mode of administration, especially in the care settings for addictions mainly from adults (often with late onset) who use substances (especially alcohol) to reduce dysphoric symptoms (Irvin, Schuckit, & Smith, 1990) and which have a personality structure with high levels of stress and anxiety and with the tendency to avoid physical and psychological discomfort. Ultimately, this work provides interesting results with respect to the psychometric characteristics of SCQ-NOW, highlighting excellent correlations with ASI and SCL-90-R, and making a significant contribution to the cross-cultural validation process of this instrument.

As far as the lack of correlation between SCQ-NOW scales and the dimension of legality (ASI_LEG) is concerned, it is necessary to state that the ASI_LEG dimension is composed of questions that in the Italian context are not necessarily significant of a dependency or craving condition. In fact, the questions of this dimension which are included in the composite score, give for sure that the subject has or has had legal problems in the past or has committed a crime. The usefulness of the legal dimension of the ASI therefore has a social validity above all, and this validity is consistent with the objective of the interview, but it is not necessarily indicative of a condition of craving of the subject at the moment in which he / she responds to the test. Overall, the findings showed that a 45-item Italian version of the SCQ-NOW has good psychometric properties and may be used in the assessment of substance craving in Italian context.
5.1. Limitations of the present study

A limitation of this study consists in the small number of women in the sample, especially in the subsample used to examine the test-retest reliability.

Another limit of this research might be related to the frequency distribution of participants in relation to their dependence and their socio-demographical features; some subgroups are unbalanced regarding these variables, having a small number of participants. These aspects were related to the features of individuals attending the addiction services.

Also, the non-probabilistic sampling procedure stands as a problem for the generalization of these findings, but the practical difficulties in the data collection in this population might give sustenance of the application of this practice.

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Update

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Erratum regarding missing Declaration of Competing Interest statements in previously published articles

Declaration of Competing Interest statements were not included in published version of the following articles that appeared in previous volumes of Addictive Behaviors Reports.

The appropriate Declaration of Competing Interest statements, provided by the Authors, are included below.

1. Comparison of the locations where young adults smoke, vape, and eat/drink cannabis: Implications for harm reduction [Addictive Behaviors Reports, Volume 8, December 2018, Pages 140–146] https://doi.org/10.1016/j.abrep.2018.09.002

Declaration of Competing Interest: The authors were contacted after publication to request a Declaration of Interest statement.

2. Prior prescription opioid misuse in a cohort of heroin users in a treatment study [Addictive Behaviors Reports, Volume 8, December 2018, Pages 8–10] https://doi.org/10.1016/j.abrep.2018.04.001

Declaration of Competing Interest: The authors were contacted after publication to request a Declaration of Interest statement.

3. Validation of a substance craving questionnaire (SCQ) in Italian population [Addictive Behaviors Reports, Volume 9, June 2019, 100172] https://doi.org/10.1016/j.abrep.2019.100172

Declaration of Competing Interest: The authors were contacted after publication to request a Declaration of Interest statement.

4. Relationship between tonic and phasic craving for alcohol [Addictive Behaviors Reports, Volume 7, June 2018, Pages 71–74] https://doi.org/10.1016/j.abrep.2018.03.001

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5. Psychometric evaluation of a lifetime version of the marijuana problems scale [Addictive Behaviors Reports, Volume 8, December 2018, Pages 21–24] https://doi.org/10.1016/j.abrep.2018.05.001

Declaration of Competing Interest: The authors were contacted after publication to request a Declaration of Interest statement.

6. What matters is when you play: Investigating the relationship between online video games addiction and time spent playing over specific day phases [Addictive Behaviors Reports, Volume 8, December 2018, Pages 185–188] https://doi.org/10.1016/j.abrep.2018.06.003

Declaration of Competing Interest: The authors were contacted after publication to request a Declaration of Interest statement.

7. Long-term smoking cessation rates in elderly versus other adult smokers: A 3-year follow-up study in Taiwan [Addictive Behaviors Reports, Volume 8, December 2018, Pages 62–65] https://doi.org/10.1016/j.abrep.2018.07.001

Declaration of Competing Interest: The authors were contacted after publication to request a Declaration of Interest statement.

8. Drinking wine to “get high”: The influence of awareness of the negative effects among young adults [Addictive Behaviors Reports, Volume 8, December 2018, Pages 56–61] https://doi.org/10.1016/j.abrep.2018.07.002

Declaration of Competing Interest: The authors were contacted after publication to request a Declaration of Interest statement.

9. Associations of personality traits with marijuana use in a nationally representative sample of adolescents in the United States [Addictive Behaviors Reports, Volume 8, December 2018, Pages 51–55] https://doi.org/10.1016/j.abrep.2018.06.005

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10. Data mining techniques for drug use research [Addictive Behaviors Reports, Volume 8, December 2018, Pages 128–135] https://doi.org/10.1016/j.abrep.2018.09.005

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11. Examining co-patterns of depression and alcohol misuse in emerging adults following university graduation [Addictive Behaviors Reports, Volume 8, December 2018, Pages 40–45] http://dx.doi.org/10.1016/j.abrep.2018.06.002

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12. Understanding drinking among midlife men in the United Kingdom: A systematic review of qualitative studies [Addictive Behaviors Reports, Volume 8, December 2018, Pages 85–94] http://dx.doi.org/10.1016/j.abrep.2018.08.001

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