Italian Adaptation and Validation of the Dispositional Envy Scale

Adattamento e Validazione Italiana della Dispositional Envy Scale

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ABSTRACT

This paper aimed at translating and validating the Dispositional Envy Scale (DES) into Italian and testing the concurrent validity with a projective technique. Two studies were conducted on a general population (study 1, N=154) (45.4% males; M_{age}=37.49; SD=14.57) and university student sample (study 2, N=233) (17.2% males; M_{age}=20.20; SD=2.70). Participants completed envy, gratitude, social desirability, aggression and career adaptability measures, and a completion test to measure envy related responses (empathic identification, mania, frustration and destructiveness). Exploratory and confirmatory factor analyses suggest that the DES is not unidimensional but shows two correlated components referring to hostility (6 items) and inferiority (2 items), with the former possessing a satisfactory reliability and forms of convergent evidence with other measures and the latter not providing enough robust evidence in measuring envy. No association with destructiveness as proper envy was found with both the components, but only a moderate correlation with frustration, revealing the different nature of the constructs underlying the DES and the projective technique.
Keywords: Dispositional Envy Scale; Envy; Gratitude; Validation; Aggression; Projective Technique.

RIASSUNTO

Il lavoro ha l'obiettivo di tradurre e validare la Dispositional Envy Scale (DES) in italiano e testarne la validità concorrente con una tecnica proiettiva. Sono stati condotti due studi, uno rivolto alla popolazione generale (studio 1, N=154) (45.4% maschi; età media=37.49; DS=14.57) e uno su un campione di studenti universitari (studio 2, N=233) (17.2% maschi; età media=20.20; DS=2.70). I partecipanti hanno compilato diversi strumenti per la valutazione di invidia, gratitudine, desiderabilità sociale, aggressività e adattabilità di carriera, e un test di completamento per misurare le risposte relative all'invidia (identificazione empatica, mania, frustrazione, distruttività). Le analisi fattoriali di tipo esplorativo e confermativo suggeriscono che la DES non è unidimensionale ma presenta due componenti correlate, riferite all'ostilità (6 item) e all'inferiorità (2 item), dove la prima ha un'affidabilità soddisfacente ed evidenza di validità convergente con le altre misure, e la seconda non fornisce sufficienti evidenze nel misurare l'invidia. Entrambe le componenti non risultano associate alla distruttività, come invidia vera e propria, ma alla frustrazione, rivelando la diversa natura dei costrutti sottostanti alla DES e alla tecnica proiettiva.
Parole chiave: Dispositional Envy Scale; Invidia; Gratitudine; Validazione; Aggressività; Tecnica Proiettiva.

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Introduction

Envy is a pan-human emotion, widespread in different cultural settings (Foster, 1972; Miceli & Castelfranchi, 2007; Smith & Kim, 2007) and socially connoted as problematic and undesirable (Lange, Weidman, & Crusius, 2018; Langher, Caputo, Nannini, & Sturiale, 2016). Scholars highlight the maladaptive role of envy in individual and interpersonal adjustment in multiple spheres of life, such as psychological and physical wellbeing (Briki, 2018; Mujcic & Oswald, 2018), educational and work setting (Caputo, Fregonese, & Langher, 2018; Duffy & Shaw, 2000; Langher et al., 2016; Vecchio, 1995), as well as social relationships (Fiske, Cuddy, Glick, & Xu, 2002), interpersonal conflicts and violence (Corner, Gill, Schouten, & Farnham, 2018; Nannini et al., 2018; Polledri, 2003; Schoeck, 1987).

Albeit numerous definitions of envy exist (Caputo, 2014; Lange, Weidman, & Crusius, 2018), researchers agree in defining envy as "an unpleasant and often painful blend of feelings characterised by inferiority, hostility, and resentment caused by a comparison with a person or group of persons who possess something we desire" (Smith & Kim, 2007, p. 49). Smith, Parrot, Ozer and Moniz (1994) identified two main components of envy: the hostile component is associated with ill will and anger toward those who possess the desired object; the depressive one is connected with the sense of inferiority experienced due to the disadvantageous social comparison (Krizan & Johar, 2012; Miceli & Catelfranchi, 2007). Therefore, ill will and hostile tendencies, such as resentment, anger and irritability (Gold, 1996; Smith, Parrott, Diener, Hoyle, & Kim, 1999) are intertwined with feelings of inferiority, impotence, worthlessness (Polledri, 2003), helplessness, hopelessness (Miceli & Castelfranchi, 2007; Smith & Kim, 2007), and fear of failure (Lange & Crusius, 2015).

The unfavourable upward social comparison is perceived as a threat for the self (Crusius & Lange, 2014; Lange & Crusius, 2015; Neufeld & Johnson, 2015) that in turn requires self-protective strategies such as self-disengagement and withdrawal (Duffy & Shaw, 2000; Erdil & Müceldili, 2014; Laverde-Rubio, 2004). In this regard, it is demonstrated that envious people have poorer outcomes and personal gains (Parks, Rumble, & Posey, 2002; Zizzo & Oswald, 2001), especially at work regarded as one of the most hierarchical and competitive domains (Vecchio, 2005). As well, they show self-handicapping strategies (Lange & Crusius, 2015) and maladaptive career adjustment (Caputo et al., 2018; Caputo, Fregonese, & Langher, 2019; Langher et al., 2016; Menon & Thompson, 2010). Besides, envy seems to reduce the capability to experience pleasure and positive emotions such as happiness (Mola, Saavedra, & Reyna, 2014), life satisfaction, vitality (Milfont & Gouvenia, 2009), as well as gratitude, generosity and helpfulness (Hammer & Brenner, 2017; McCullough, Emmons, & Tsang, 2002; McCullough, Tsang, & Emmons, 2004). Indeed, envy and gratitude are conceived as opposite feelings (Klein, 1957) because envious people tend to devote higher attention to comparing their outcomes with those of other people and to focus on the positive contributions of others to their wellbeing to a lesser extent (McCullough et al., 2002). This results in malevolent tendencies toward the other, such as sabotage (Khan, Quratulain, & Bell, 2014), contempt, deception, discrimination and machiavellian behaviours (Vecchio, 1995; Lange, Paulhus, & Crusius, 2018).

The Dispositional Envy: Previous Validation Studies

Despite envy being conceptualised both as a stable dispositional trait or as an episodic emotional state, dispositional envy is generally considered as a marker of chronic envy and has gained increasing attention in psychological research (Smith et al., 1999). In this regard, the Dispositional Envy Scale (DES; Smith et al., 1999) is the most commonly utilised measure of envy (Lange & Crusius, 2015; Rentzsch & Gross, 2015). It includes eight items assessed through a 5-point Likert-type scale, with some items explicitly measuring frequency and intensity of envy (e.g., "I feel envy every day"), and - to reduce social desirability bias - other items implicitly assessing envy-related reactions, respectively referring to inferiority, sense of injustice, frustration and resentment (e.g., "It somehow does not seem fair that some people have all the talent") (Smith & Kim, 2007).

Overall, the original validation study showed high reliability of the scale in two university student samples (with Cronbach's alpha ranging from .83 and .86), and a sufficient temporal stability

(r = .80) after two weeks (Smith et al., 1999). With regard to the construct validity, the scale was unidimensional; as well, evidences of convergent validity with other measures were assessed, showing positive correlations with inferiority, resentment, hostility, sense of injustice, depression, neuroticism and jealousy, and negative correlations with self-esteem, life satisfaction and happiness (Smith et al., 1999). The DES was also adapted and validated in the Brazilian (Milfont & Gouveia, 2009; Medeiros, Soares, Nascimento, Silva, & Gouveia, 2016) and Argentinian contexts (Mola, Saavedra, & Reyna, 2014). All such studies confirmed the unidimensional factor structure of the scale and its good internal consistency, with Cronbach's alpha values between .79 and .84. Besides this, the Brazilian adaptation of the DES (Milfont & Gouveia, 2009) found negative correlations with life satisfaction, vitality and happiness; whereas, the Argentinian validation study showed that the DES was positively associated with psychological entitlement and negatively associated with happiness (Mola, Saavedra, & Reyna, 2014).

However, despite the DES being a well-recognised instrument, some claims have been advanced with regard to the potential role of less conscious strategies, which may alter and influence emotional responses (Crusius & Mussweiler, 2012), because envious people tend to underreport envy due to the unawareness of their feelings (Smith & Kim, 2007). In this regard, Montaldi (1999) highlighted the inherent weakness of the DES and suggested the need for empirical efforts to measure envy in a less direct way. Besides, projective techniques can be deemed as a way to more efficiently detect such self-deceptive tendencies in reporting envy, as well as to measure proper envy without explicitly naming it (Langher, Marchini, Balonan, & Caputo, 2018; Lieblich, 1971; Nannini et al., 2018).

Given the maladaptive role of envy highlighted in both research and clinical fields, the present study aims at translating and validating the DES also in the Italian context since no measure of envy exists in the Italian literature to date. To this purpose, two studies were conducted on different Italian samples - general population (study 1) and university student (study 2) participants – which overall consented to evaluate evidence concerning the factor structure, internal consistency and forms of convergent validity of the DES. In addition to this, a concurrent form of validity has been tested with a projective technique measuring envy in order to fill the gaps concerning the role of less conscious bias in reporting envy, provide a theoretical advancement in the understanding of the underlying construct measured by the DES, and thus increment the related literature.

Specifically, the study 1 was used to perform explorative factor analysis and provide both convergent evidence with gratitude, aggression and social desirability and concurrent evidence by using a projective method. The study 2 was then used for confirmatory factor analysis and for convergent forms of evidence with gratitude and career adaptability.

Methods

Translation of the DES into Italian

For the translation of the DES into Italian, a four-step method was used consistent with what suggested by Sousa and Rojjanasrirat (2011) and previously used in other studies (Fregonese, Caputo, & Langher, 2018; Langher et al., 2019). The first step involved two translators with a good command over English and a linguistics expert, who independently translated the original scale from English to Italian (forward translation). Then, both the translators and the linguist compared the forward versions with the original scale and solved divergences through consensus (reconciliation). The reconciled version was translated from Italian back to English by a bilingual professional translator (back translation). In the last step, this back-translation was compared with the original version of the scale to assure meaning and concept coherence in its final target language version (comparison).

Content Validity

Three psychology experts assessed the content validity of the Italian version of the DES in terms of items' content, meaning, and comprehensibility, using a Likert scale with the following four points: inappropriate (1); appropriate but item should be revised (2); appropriate but minor changes are required (3); and quite appropriate (4) (McKenzie, Wood, Kotecki, Clark, & Brey, 1999). The content validity ratio (CVR) was calculated (Lawshe, 1975) for content, meaning, and comprehensibility, considering as acceptable the items rated with the score of 3 or 4 by all the three experts, as already used in previous validation studies (Caputo & Langher, 2015; Caputo, 2017a).

Face Validity

To test face validity and comprehensibility of the instrument, the DES was pre-tested through participation by 15 volunteer participants. These volunteers were asked to evaluate the scale items with regard to readability, comprehensibility, sentence length, and clarity of meaning, so to ready the scale for implementation. No significant changes to the content were required. The final Italian version of the DES is shown in Table 1 below.

Table 1. List of the items of the DES

Item Nº	Original Version Statement	Italian Version Statement
Item 1	I feel envy every day.	Provo invidia ogni giorno.
Item 2	The bitter truth is that I generally feel inferior to others.	L' amara verità è che in genere mi sento inferiore agli altri.
Item 3	Feelings of envy constantly torment me.	Sentimenti di invidia mi tormentano costantemente.
Item 4	It is so frustrating to see some people succeed so easily.	È così frustrante vedere che alcune persone hanno successo tanto facilmente.
Item 5	No matter what I do, envy always plagues me.	Indipendentemente da ciò che faccio, l'invidia mi affligge sempre.
Item 6	I am troubled by feelings of inadequacy.	Sono afflitto da sentimenti di inadeguatezza.
Item 7	It somehow doesn't seem fair that some people seem to have all the talent.	In qualche modo non trovo giusto che alcune persone abbiano tutto il talento.
Item 8	Frankly, the success of my neighbours makes me resent it.	Sinceramente, il successo di chi mi è vicino mi fa provare risentimento nei suoi confronti.

Study 1

Participants

One hundred and fifty-four subjects (45.4% males) with a mean age of 37.49 ($SD = 14.57$) and on average 13.97 years of education ($SD = 2.38$) participated in the present study. With regard to employment status, 54.9% were employed; whereas, with regard to marital/relationship status, 44.1% were married-cohabitant, 27% were in a relationship and 29% were single. The participants were recruited through a snowball sampling procedure to participate in a research study about emotions that received the research ethics committee approval by the Department of Dynamic and Clinical

Psychology of "Sapienza" University of Rome. The participants completed a questionnaire including socio-demographic information and envy, gratitude, aggression and social desirability measures, after having given their informed consent. The sample size was considered as acceptable because one common rule of thumb is to ensure a person-to-item ratio of 10:1.

Materials

The Dispositional Envy Scale (DES). The DES (Smith et al., 1999) is an eight-item scale assessing dispositional envy, with responses ranging from 1 (strongly disagree) to 5 (strongly agree). The total score is the sum of all items and the score ranges from 8 to 40.

The Gratitude Questionnaire (GQ-6). The GQ-6 (McCullough et al., 2002) is a six-item scale measuring dispositional gratitude on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The total score is the sum of all items, and the score ranges from 6 to 42. The GQ-6 evaluates four facets of gratitude: (1) intensity, in terms of feeling more intensely grateful than would someone less disposed toward gratitude, (2) frequency, in terms of feeling grateful many times each day, (3) span, in terms of the number of life situations for which a person feels grateful during a given time, and (4) density, in terms of the number of persons to whom one feels grateful for a single positive outcome. The Italian version of the GQ-6 was used (Caputo, 2016) and in the present study showed satisfactory internal consistency, with a Cronbach's alpha of .72.

The Aggression Questionnaire (AQ). The AQ (Buss & Perry, 1992) is a 29-item scale, measuring aggression on a 5-point Likert scale ranging from 1 (Entirely false for me) to 5 (Entirely true for me), including several aspects such as physical aggression, verbal aggression, rage and hostility. The total score is the sum of all items and the score ranges from 29 to 145. The Italian version of the AQ was used (Fossati, Maffei, Acquarini, & Di Ceglie, 2003) and in the present study showed good reliability, with a Cronbach's alpha of .84, consistent with other Italian studies (Garofalo, Velotti, & Zavattini, 2018; Rogier, Garofalo, & Velotti, 2017).

Marlowe-Crowne Social Desirability Scale – Short Version (MC-SDS). The Italian short version of MC-SDS **(**Manganelli, Rattazzi, Canova, & Marcorin, 2000) assesses social desirability through a 7-point Likert scale, ranging from 1 (Entirely false for me) to 7 (Entirely true for me). The total score is the sum of all items and the score ranges from 7 to 42. In the present study the scale showed a sufficient reliability, with a Cronbach's alpha of .62, that – although low – is consistent with previous studies (Caputo, 2015, 2017; Maino & Aceti, 1997; Manganelli Rattazzi et al., 2000).

Projective Envy Technique (PET). The PET was employed as a projective technique to evaluate the underlying emotional dynamics featuring envy according to a psychodynamic perspective, already used in previous studies (Nannini, 2019; Marchini et al., 2018). The PET consists of experimental stimuli that allow the respondent to concretely experience an unfavourable social comparison potentially triggering envious feelings, that is closer to real life. Indeed, it is a sentence completion test consisting of 10 stories across several life situations (e.g., having an unsatisfying couple relationship or failing to pass an exam), each illustrated by two pictures: in the first one, the main character is confronted with the missing object of desire; whereas, in the second one, s/he is compared with another person who possesses what the main character desires. For each story, the respondent is asked to write down what the main character would answer to the other person. Respondents' answers are classified into four different categories: Empathic identification (minimising one's frustration feelings and admiring other's attainment), Mania (denying one's loss feelings and ignoring other's attainment), Frustration (emphasising one's painful condition and expressing displeasure towards other's attainment) and Destructiveness (enacting one's hostile feelings and devaluating other's attainment, as expression of proper envy). All responses were independently coded by two researchers by attributing a single code to each text unit (i.e. sentence). The score for each PET category was calculated as the sum of the relative codes. In the present

study, interrater agreement was calculated using Cohen's K coefficient. Cohen's K value was 0.93 for Empathic identification, 0.88 for Mania, 0.90 for Frustration and 0.90 for Destructiveness.

Data Analysis

Construct Validity

A preliminary inspection of the item distribution was conducted. To determine the factor structure, an Exploratory Factor Analysis (EFA) was performed by using a maximum likelihood (ML) estimation method and Oblimin rotation. The minimum factor loading of .40 was used for the retention of items on the relative factor. Besides, to determine the adequate number of factors to retain, parallel analysis was performed, where 100 randomly generated data sets equal in size to the experimental data were constructed and only components with eigenvalues exceeding those extracted from the random data were retained (Fabrigar, Wegener, MacCallum, & Strahan, 1999).

Reliability

The Cronbach's alpha correlation coefficient was used to determine the reliability of the scale. Cronbach's alpha is excellent when the value is larger of .90, good when the value is between .80 and .90, acceptable when the value is between .70 and .80, questionable between .60 and .70, and poor when it is lower than .60.

Convergent and concurrent forms of validity

The Pearson's correlations were used to verify the forms of convergent and concurrent evidence of the DES. According to the literature, envy was hypothesised to correlate with aggression (Cohen-Charash, 2009; Rentzsch & Gross, 2015), and to be negatively associated with both gratitude (Klein, 1957; MCCullogh et al., 2002; Langher et al., 2016) and social desirability (Gold, 1996; Smith et al., 1999). With regard to the concurrent form of validity, given the lack of previous studies and the explorative aim, the DES was hypothesised to positively correlate with the destructiveness category of the PET (considered as proper envy) on a theoretical basis.

Results and Discussion

Table 2 shows that most of the items have values of skewness and kurtosis between -2 and +2, that are considered acceptable in order to prove normal univariate distribution (George & Mallery, 2010), with the exception of item 5 that has a higher value of kurtosis.

**Table 2. Distributional indexes of the items**

Item Nº	Range	M	SE	SD	Skewness	Kurtosis
Item 1	1-4	1.65	.07	.87	1.06	-.03
Item 2	1-5	2.31	.10	1.26	.60	-.76
Item 3	1-4	1.49	.06	.79	1.59	1.82
Item 4	1-5	2.61	.11	1.32	.17	-1.10
Item 5	1-4	1.33	.05	.67	2.07	3.65
Item 6	1-5	2.39	.10	1.27	.58	-.80
Item 7	1-5	1.93	.09	1.08	1.06	.30
Item 8	1-4	1.61	.07	.88	1.33	.85

The KMO of .82 verified the sampling adequacy for the EFA and Bartlett's test of sphericity confirmed the suitability of data for factor analysis, $\chi^2(28) = 528.66$, $p<.001$. The EFA extracted two factors with eigenvalues greater than one, overall explaining for 65.05% of the total variance and with factor loadings ranging from .49 to 1.04 (Table 3). The first factor included items 2 and 6 that mostly grasp feelings of inferiority (i.e., "The bitter truth is that I generally feel inferior to others"; "I am troubled by feelings of inadequacy"), whereas the remaining items loaded on the second factor. Instead, parallel analysis (Figure 1) suggested a single factor structure, because only the first factor with an eigenvalue of 3.97 exceeded the 95th percentile of eigenvalues derived from random data sets (1.35, CI = 1.27, 1.43), differently from the second factor with an eigenvalue of 1.19 (1.21, CI = 1.14, 1.28). Given the unclear results emerging from the EFA, in order to detect the correct number of factors to be retained, a Confirmatory Factor Analysis (CFA) was performed through STATA (version 12) to compare the one-factor and the two-factor model. Overall, the two-factor model showed better fit indexes than one-factor model (Table 4), with all standardised coefficients being statistically significant at .001 level (Table 5), as confirmed by the scaled Chi-Square Difference Test (Satorra & Bentler, 2001), $\chi^2(1) = 70.27$, $p<.001$. The two factors were correlated to a large extent ($r = .53$, $p<.001$, 95% CI = .39, .67). Cronbach's alpha was equal to .83 for the factor including six items, whereas the correlation between the two items of the other factor was high ($r = .69$, $p<.001$).

Table 3. Loadings for exploratory factor analysis (two-factor solution)

Item Nº	Factor 1	Factor 2	Communalities
Item 1	.01	.71	.52
Item 2	.61	.17	.51
Item 3	-.09	.97	.85
Item 4	.11	.49	.31
Item 5	-.08	.88	.70
Item 6	1.04	-.09	1.00
Item 7	.02	.55	.31
Item 8	.06	.52	.30

Figure 1. Parallel Analysis
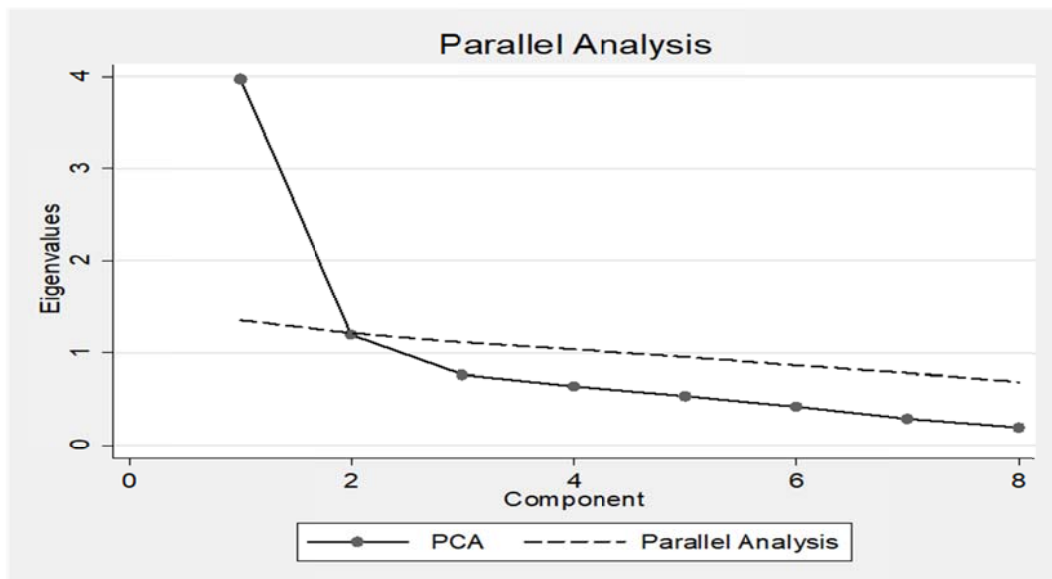
Table 4. *Fit indexes of the models (Study 1)*

Factor solution	X^2	df	RMSEA [90% CI]	AIC	BIC	CFI	TLI	SRMR
One-factor	104.18	20	0.17 [0.14, 0.20]	3072.82	3145.55	0.84	0.78	0.08
Two-factor	33.91	19	0.07 [0.03, 0.11]	3004.55	3080.31	0.97	0.96	0.04

Table 5. Standardised Coefficients of Items (Study 1)

Item Nº	Coefficient	95% Confidence Interval
Item 1 (L1)	.74	.67, .82
Item 3 (L1)	.92	.88, .96
Item 4 (L1)	.57	.45, .68
Item 5 (L1)	.85	.80, .91
Item 7 (L1)	.52	.40, .64
Item 8 (L1)	.56	.44, .67
Item 2 (L2)	.86	.74, .99
Item 6 (L2)	.80	.68, .92

Besides, with regard to forms of convergent validity, correlation analyses were performed considering both the original 8-item version of the DES and the new two-factor solution. In the original solution, envy was found to positively correlate with aggression and negatively correlate with both gratitude and social desirability. With regard to the concurrent validity, envy was found to positively correlate with frustration, whereas no association was detected with empathic identification, mania, and destructiveness (Table 6). When considering the new factor solution, the factor including six items confirmed all these convergent and concurrent forms of validity. Whereas, the factor with only two items (mostly grasping feelings of inferiority) was associated positively with aggression and negatively with social desirability despite to a lower extent, while no association with gratitude was found. With regard to the concurrent validity, some statistically significant associations emerged, positively with frustration and negatively with mania.

Table 6. Intercorrelations among the measures (Study 1)

	Envy (8)	Envy (F1, 6)	Envy (F2, 2)	Gratitude	Aggression	Social des.	Empathic identific.	Mania	Frust.	Destruct.
Envy (8)	-	.93***	.75***	-.33***	.38***	-.53***	.04	-.10	.37***	-.01
Envy (6)	.93***	-	.46***	-.38***	.39***	-.56***	.04	-.02	.30***	.04
Envy (2)	.75***	.46***	-	-.13	.19*	-.32***	.09	-.21**	.35***	-.09
Gratitude	-.33**	-.38***	-.13	-	-.33***	.25**	.15	-.02	-.14	-.13
Aggression	.38**	.39***	.19*	-.33***	-	-.48***	-.01	.04	.14	.17*
Social des.	-.53**	-.56***	-.32***	.25**	-.48***	-	-.01	.12	-.27**	-.05
Empathic identific.	.04	.04	.09	.15	-.01	-.01	-	-.30***	.06	-.28***
Mania	-.10	-.02	-.21**	-.02	.04	.12	-.30***	-	-.08	0.11
Frust.	.37**	.30***	.35***	-.14	.14	-.27**	.06	-.08	-	-.24**
Destruct.	-.01	.04	-.09	-.13	.17*	-.05	-.28***	.11	-.24**	-

*p<0.5; ** p<.01; *** p<.001

Overall, the DES items show a normal univariant distribution, with exception of item 5. The EFA extracted two factors explaining a satisfactory variance, with acceptable factor loadings and good internal consistency. This new two-factor solution suggests that the DES is not unidimensional, but consists of two components respectively focusing on feelings of inferiority on the one hand, and anger, resentment and irritability on the other hand, thus highlighting the potential difference between the depressive and the hostile components of envy that seem to pertain to different latent constructs. As regards the hostile component found, the study confirms convergent forms of validity with measures of gratitude, aggression and social desirability, in line with the theoretical framework; whereas, the component referring to feelings of inferiority shows lower correlations and fails to provide convergent validity with gratitude. About the concurrent forms of validity with the projective technique, the hostile component is correlated only with frustration in line with feelings of anger, resentment and irritability. Moreover, the other component is also negatively associated with mania, consistently with feelings of inferiority arising from a disadvantageous social comparison (which in mania tend to be denied). However, the concurrent forms of validity overall suggest the potential different nature of the underlying construct of envy measured by the DES and the PET, because destructiveness as proper envy is not associated with any of them.

Study 2

Participants

Two hundred and thirty-three participants (17.2% males) with a mean age of 20.20 (*SD* = 2.7) were recruited as university students asked to participate in a research study about emotions that received the research ethics committee approval by the Department of Dynamic and Clinical Psychology of "Sapienza" University of Rome. Specifically, 23.6% were recruited from the Faculty of

Medicine and Psychology of "Sapienza" University of Rome; whereas 76.4% were recruited from the Faculty of Foreign Languages and Literatures of University of Catania.

A questionnaire was administered which included socio-demographic information, envy, gratitude, and career adaptability measures. Participants gave their informed consent. The sample size was considered as acceptable because a sample size of 200 is generally adequate for confirmatory factor analysis (Myers, Ahn, & Jin, 2011).

Materials

The Dispositional Envy Scale (DES). The DES (Smith et al., 1999) is an eight-item scale assessing dispositional envy, with responses ranging from 1 (strongly disagree) to 5 (strongly agree).

The Gratitude Questionnaire (GQ-6). The GQ-6 (McCullough et al., 2002) is a six-item scale measuring dispositional gratitude on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The Italian version of the GQ-6 was used (Caputo, 2016) and in the present study showed sufficient internal consistency, with a Cronbach's alpha of .63.

The Career Adaptability Scale (CAAS). The CAAS (Savickas & Porfeli, 2012) is a 24-item scale assessing career adaptability through a 5-point Likert scale, ranging from 1 (Not strong) to 5 (strongest). It consists in four dimensions referring to different capacities (Savickas, 1997): concern involves preparing for and developing an optimist attitude towards the future; control implicates taking responsibility and exerting influence over the future; curiosity entails the exploration of future career opportunities and scenarios; finally, confidence refers to beliefs about one's abilities to overcome obstacles and achieve goals. In the present study the Italian validated version of CAAS was used (Soresi, Nota, & Ferrari, 2012), which showed an excellent Cronbach's alpha for the entire scale ($\alpha = .91$), and a good reliability for the four sub-scales, respectively .82 (Concern), .73 (Control), .76 (Curiosity) and .84 (Confidence), consistent with other Italian studies (Bocciardi, Caputo, Fregonese, Langher, & Sartori, 2017; Langher et al., 2016).

Data analysis

Construct validity

To confirm the factor structure, Confirmatory Factor Analysis (CFA) was performed through STATA (version 12) after having eliminated univariate outliers, i.e. cases with Z values > ± 3.29 (Tabachnick & Fidell, 2013). Different components of fit were evaluated (Hu & Bentler, 1995) including the Root Mean Square Error of Approximation (RMSEA), the Standardised Root Mean Square Residual (SRMR), the Confirmatory Fit Index (CFI), the Tucker–Lewis Index (TLI), the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC). Smaller AIC and BIC values correspond to better fitting models (Schumacker & Lomax, 2010). We followed Hu and Bentler (1999) proposal considering RMSEA values up to .05 to indicate good fit, between .06 and .08 an adequate fit, and >.10 a poor fit; SRMR values below .08 were considered indicative of a good fit, and CFI and TLI values greater than .90 were considered indicative of acceptable model fit.

Convergent forms of validity

Pearson's correlations were performed to verify the association between envy and both gratitude and career adaptability. Specifically, it was hypothesised that envy is negatively associated with the capability to face challenges and transitions related to career development (Lange & Crusius, 2015; Langher et al., 2016).

Results and Discussion

The two-factor model emerging from the study 1 showed better fit indexes than one-factor model also in the study 2 (Table 7), with all standardised coefficients being statistically significant at .001 level (Table 8), as confirmed by the scaled Chi-Square Difference Test (Satorra & Bentler, 2001), $\chi^2(1) = 81.45$, $p<.001$. The two factors were correlated to a large extent ($r = .52$, $p<.001$, 95% CI = .40, .63). Cronbach's alpha was equal to .77 for the first factor, whereas the correlation between the items of the second factor was high ($r = .65$, $p<.001$).

Table 7. Fit indexes of the models (Study 2)

Factor solution	X^2	df	RMSEA [90% CI]	AIC	BIC	CFI	TLI	SRMR
One-factor	124.72	20	0.15 [0.13, 0.18]	3937.72	4018.84	0.75	0.64	0.09
Two-factor	43.27	19	0.07 [0.04, 0.10]	4490.99	4577.05	0.97	0.95	0.05

Table 8.Standardised Coefficients of Items (Study 2)

Item Nº	Coefficient	95% Confidence Interval
Item 1 (L1)	.80	.74, .85
Item 3 (L1)	.95	.92, .98
Item 4 (L1)	.37	.25, .48
Item 5 (L1)	.84	.80, .89
Item 7 (L1)	.30	.17, .42
Item 8 (L1)	.52	.42, .62
Item 2 (L2)	.79	.68, .89
Item 6 (L2)	.83	.72, .94

A statistically significant association was detected between the hostile component and both gratitude and career adaptability, in line with the findings of the original 8-item scale (Table 9). These associations were also confirmed with regard to the inferiority component, albeit their strength tends to be lower.

Table 9. Intercorrelations among the measures (Study 2)

	Enyy (8 items)	Envy (F1, 6 item)	Envy (F2, 2 item)	Gratitude	Career adaptability
Envy (8 items)	-	.92**	.76**	-.18*	-.34*
Envy (F1, 6 items)	.92**	-	.45**	-.30**	-.42**
Envy (F2, 2 items)	.76**	.45**	-	-.22*	-.34**
Gratitude	-.18*	-.30**	-.22*	-	.07
Career adaptability	-.34*	-.42**	-.34**	.07	-

*p < .01, **p <.001

Overall, the study 2 provided further evidence for the latent factor structure of the DES suggesting a two-factor structure. This result does not seem surprising because in the original validation study (Smith et al., 1999) and further adaptations of the scale (Milfont & Gouveia, 2009; Medeiros et al, 2016) a covariation was performed between item 2 and item 6 for the improvement of the fit indexes, despite this adjustment not being fully correct from a statistical point of view. Convergent forms of validity were found between the two examined components and both gratitude and career adaptability from a low to a moderate extent.

General discussion

The aim of the present study was to adapt and validate the DES in the Italian context. Two studies have been conducted to this purpose on general population and university student samples respectively. Overall, explorative and confirmatory factor analyses suggested that the DES is not unidimensional but has a two-factor structure, differently from what found in the original validation study (Smith et al., 1999) and further adaptations of the scale (Milfont & Gouveia, 2009; Medeiros et al, 2016). Both item 2 (i.e. "The bitter truth is that I generally feel inferior to others") and item 6 (i.e. "I am troubled by feelings of inadequacy") seem to refer to a different construct relying on inferiority feelings. This result is not surprising because items 2 and 6 appear to share a tendency to "feel inferior in reaction to another person's advantage" (Smith et al., 1999, p. 1012). In previous validation studies this problem was solved through specifying the covariation of errors of such items to guarantee better fit indexes (Milfont & Gouveia, 2009; Medeiros et al, 2016; Smith et al., 1999). However, this adjustment based on modification indices is not fully correct from a statistical point of view, because modifications should be theory-based and do not seem to be appropriate in a confirmatory context (Kaplan, 1989). Therefore, the present study sheds light on the potential presence of two different components, focused on inferiority (items 2 and 6) and hostility (items 1, 3, 4, 5, 7, 8 explicitly measuring frequency and intensity of envy, as well as resentment, frustration and sense of injustice), respectively. This could be due to the coexistence of different tendencies in dispositional envy, specifically the depressive and the hostile one, as suggested by several authors (Krizan & Johar, 2012; Miceli & Catelfranchi, 2007; Smith et al., 1994). In particular, this result may highlight that the sense of inferiority experienced in a disadvantageous social comparison does not overlap with hostility, despite being strongly intertwined constructs. For instance, inferiority feelings can trigger benign envy, in terms of admiration, not necessarily ill will and anger (Lange & Crusius, 2014); as well, from a psychodynamic perspective an inferior position can lead to guilty feelings and

subsequent reparation, intended as the capacity to restore the internal goodness through effort and self-enhancement (Caputo et al., 2019). In this regard, future research studies could contribute to provide further evidence about the complex interrelation between proper envy and other related negative feelings; specifically, with the aim of testing whether inferiority is a construct separated from envy.

With regard to forms of convergent validity, the hostile component of the DES is associated with gratitude to a medium extent in both the studies, whereas the inferiority component shows a low correlation, which does not reach the conventional significance level in study 1. Therefore, only the hostile component fully provides convergent evidence of validity with gratitude; indeed, hostile people are less prone to experience generosity, helpfulness and grateful feelings because the other person is experienced as self-threatening rather than as contributing to one's wellbeing (Caputo, 2016; Caputo et al., 2018; Klein, 1957; Langher et al., 2016; McCullough et al., 2002). On the contrary, the sense of inferiority may lead to either envy or reparation thus making its relationship with gratitude fluctuating (Caputo et al., 2019).

With regard to the general population sample, both the components of envy show a statistically significant correlation with social desirability (albeit reduced when considering the inferiority component), which overall suggests that individuals tend to underreport feelings of envy due to a deliberate attempt to present themselves in a positive light and deny emotions that are socially connoted as undesirable (Gold, 1996; Smith et al., 1999). Besides, envy positively correlates with aggression, from a small (inferiority component) to a moderate (hostile component) extent, consistently with previous research studies showing that envy may lead to harmful and hostile behaviours (Smith & Kim, 2007), as well as to interpersonal conflicts, violence and criminal conduct (Nannini et al., 2018; Polledri, 2003; Schoeck, 1987). Indeed, envy may eventually escalate into aggression (Lange, Paulhus, & Crusius, 2018) because both such constructs may be conceived as responses to painful and frustrating experiences and are strongly intertwined with impulsive behavioural tendencies (Crusius & Mussweiler, 2012).

Then, in the university student sample further evidence emerged suggesting that envy and its both components are associated with career adaptability, with higher scores on DES being associated with poorer career adaptability. This result is consistent with previous research findings about the maladaptive nature of envy at work including career aspirations and motivation to achieve (Caputo et al., 2018, 2019; Langher et al., 2016; Menon & Thompson, 2010; Smith & Kim, 2007; Vecchio, 2005). Besides, due to diminished confidence, self-esteem and personal resources, envious people tend to experience inferiority feelings triggered by social comparison (Smith & Kim, 2007), which in turns negatively affect their perceived control and responsibility to influence career development through self-discipline, effort and persistence (Duffy & Shaw, 2000; Langher et al., 2016). In line with this, envy may lead to self-handicapping and avoidance-based strategies as modalities to cope with potential frustration when solving problems and overcoming obstacles (Duffy & Shaw, 2000; Langher et al., 2016).

The concurrent form of validity with the PET scores revealed no association with destructiveness as proper envy, suggesting the different nature of the underlying constructs measured by the PET and the DES. Indeed, whereas according to the PET, envy is conceptualized as devaluation toward other's attainment, according to the DES, envy refers to a mixture of unpleasant feelings such as inferiority, sense of injustice, frustration and resentment, overall resulting from an unfavourable social comparison. While in psychodynamic terms proper envy involves a destructive tendency aimed at spoiling the good nature of the other's attainment (specifically grasped by the PET category of destructiveness), the DES items entirely refer to the unpleasant feelings of the envious subject without any statement regarding ill will, devaluation and hostile acting out toward the envied person. This difference between such constructs seems also supported by the moderate correlation between both the two components of the DES and frustration measured by the PET, mostly indicating the subject's painful and unpleasant feelings rather than ill will and anger toward the other. As well, it is interesting to note the inferiority component negatively correlated with mania, because feelings of inferiority arising from a disadvantageous social comparison point out a sense of dependency on a desired object that one is lacking, which instead tend to be denied when resorting

to maniac strategies (Caputo et al., 2019; Langher, Marchini, Brandimarte, Giacchetta, & Caputo, 2019; Marchini et al., 2018).

In conclusion, the results of the current study indicated that the DES is not unidimensional but shows two components referring to inferiority and hostility. Overall, the hostile component possessed a satisfactory reliability and forms of convergent evidence with other measures (i.e. gratitude, social desirability, aggression, and career adaptability); whereas, the inferiority component consisting of only two items and not correlating with gratitude (as construct opposed to envy on the same spectrum) does not appear robust enough in measuring envy. Consistently, the adapted version of the DES proposed in the present study should be carefully used to assess the envious disposition in an Italian speaking sample, for both research and practice in clinical (Langher, Caputo, & Martino, 2017) and educational settings (Langher, Brancadoro, D'Angeli, & Caputo, 2014; Langher, Nannini, & Caputo, 2018).

Some limitations should be acknowledged, which mainly refer to the convenience nature of the samples and the self-reported nature of the measures used that could have generated a potential bias. Then, we should note that the social desirability bias taken into account in the present study mainly refers to impression management as a voluntary tendency to present oneself in a positive light, rather than to self-deception as unconscious dynamics to underreport some negative feelings and behaviours (Caputo, 2017b, 2019).

The added value of the present study is shedding light on the unclear nature of the underlying construct of the DES, as revealed by the results about the factorial solution. It is possible that the conceptualization of dispositional envy as a mixture of unpleasant feelings such as inferiority, sense of injustice, frustration and resentment does not succeed to grasp the uniqueness and peculiarity of envy, which rather appears as a constellation of partially overlapping feelings. Therefore, future studies should better deepen the extent to which dispositional envy measured by the DES is able to detect the potential hostility and devaluation enacted within the relationship with the other, that is undoubtedly what characterises proper envy.

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