

Korean Journal of **Clinical Psychology**

Vol. 42 No. 3 August 2023

Original Article

Validating Korean Narcissistic Admiration and Rivalry Questionnaire (NARQ): Its Relations with Big Five, Self-esteem, NPI and Benign and Malicious Envy

Chanki Moon, Sera Lee

Emotion Regulation Strategies as Moderators between Counterfactual Thinking Concerning Intimate Partner Violence and Trauma-related Emotions: An Ecological Momentary Assessment Study

Yu Jin Hwang, Soo Hyun Park

The Study of Self-Deprecating Bias towards Own Bodies in Individuals with Body Dissatisfaction

Yeon-Ju Park, Jang-Han Lee

Study Examines Difference between Communal Narcissism and Altruism in Korean College Students Using Close-Other Reports

Hyeonjin Kim, Jinwon Kim, Kibum Moon, Jisun Jeong, Young-gun Ko



Korean Journal of Clinical Psychology

Volume 42, Number 3
Published: August 30, 2023

Korean Journal of Clinical Psychology is a peer-reviewed scientific journal published quarterly. The journal publishes original articles, review papers, or brief reports in the broad field of clinical psychology. The scope of the journal includes but is not limited to the following: Etiology or risk factors of psychological disorders or abnormal behavior; psychosocial correlates of psychological disorders or abnormal behavior; diagnosis or assessment of psychological disorders or abnormal behavior; development and validation of psychological tests; treatment efficacy or psychological intervention effectiveness studies; cross-cultural aspects of psychological disorders or psychopathology; abnormal behaviors or pathological features of nonclinical samples; applied areas of clinical psychology (e.g., community psychology, behavioral medicine, criminal behaviors); position papers addressing theoretical or clinical issues in the field of clinical psychology (e.g., clinical training issues, mental health law); and special topics invited by the editorial board.

Editorial Board

Editor-in-Chief	HyunSoo Kim	<i>Hanyang University, Republic of Korea</i>
Associate Editors	Hyein Chang	<i>Sungkyunkwan University, Republic of Korea</i>
	Hyunjung Choi	<i>Chungbuk National University, Republic of Korea</i>
	Jinkwan Kim	<i>Dr Jinkwan Kim's Psychology Clinic, Australia</i>
	Jongsun Lee	<i>Kangwon National University, Republic of Korea</i>
	Juyoen Hur	<i>Yonsei University, Republic of Korea</i>
	Keehong Choi	<i>Korea University, Republic of Korea</i>
	Soojin Lee	<i>Kyungsung University, Republic of Korea</i>
	Sungkun Cho	<i>Chungnam National University, Republic of Korea</i>
	Yookyung Eoh	<i>Seoul Graduate School of Counseling Psychology, Republic of Korea</i>

Printing Company

Academy Publishing Co.
Room 2003, Daerung Techno Town 15-Cha, 401 Simin-daero, Dongan-gu, Anyang 14057, Korea
Phone: +82-31-389-8811-6 Fax: +82-31-389-8817 E-mail: journal@academya.co.kr

Copyright © 2023 Korean Clinical Psychology Association.
Korean Journal of Clinical Psychology is published quarterly by Korean Clinical Psychology Association.



This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Original Article

Validating Korean Narcissistic Admiration and Rivalry Questionnaire (NARQ): Its Relations with Big Five, Self-esteem, NPI and Benign and Malicious Envy

Chanki Moon, Sera Lee

Emotion Regulation Strategies as Moderators between Counterfactual Thinking Concerning Intimate Partner Violence and Trauma-related Emotions: An Ecological Momentary Assessment Study

Yu Jin Hwang, Soo Hyun Park

The Study of Self-Deprecating Bias towards Own Bodies in Individuals with Body Dissatisfaction

Yeon-Ju Park, Jang-Han Lee

Study Examines Difference between Communal Narcissism and Altruism in Korean College Students Using Close-Other Reports

Hyeonjin Kim, Jinwon Kim, Kibum Moon, Jisun Jeong, Young-gun Ko

Validating Korean Narcissistic Admiration and Rivalry Questionnaire (NARQ): Its Relations with Big Five, Self-esteem, NPI and Benign and Malicious Envy

Chanki Moon^{1†} Sera Lee^{2†}

¹Department of Law & Criminology, Institute for the Study of Power, Crime, and Society, Royal Holloway, University of London, Egham, UK;

²Department of Psychology, Chonnam National University, Gwangju, Korea

Empirical interest in narcissism in the fields of psychology and social sciences has been growing in recent years, with scholars increasingly acknowledging that grandiose narcissism is best understood as a two-dimensional construct: rivalry (self-protection) and admiration (assertive self-enhancement). Despite the increase of utilizing the Narcissistic Admiration and Rivalry Questionnaires (NARQ), validating the NARQ across countries and language has not been extensively utilized. In the present study ($n = 600$), we sought to validate the Korean version of NARQ by investigating its theoretically derived relationship with the Narcissistic Personality Inventory (NPI), Big Five personality traits, self-esteem and envy (benign and malicious). The results supported the findings that the Korean version of NARQ is a reliable and valid measure of the two-dimensional structure of grandiose narcissism. Interestingly, we observed that the two-dimensional latent factors did not correlate with each other, indicating that admiration and rivalry can be distinct among Koreans. The findings broaden our understanding of the dynamics of narcissism by providing validated evidence of the NARQ in South Korea.

Keywords: NARQ, narcissism, admiration, rivalry, validation, personality

Introduction

Narcissism has garnered considerable attention in psychology, and it has been investigated in both clinical and non-clinical samples. Compared with vulnerable narcissism, grandiose narcissism has

mostly been interpreted as normal or subclinical narcissism (Miller et al., 2017; Krizan & Herlache, 2018). Grandiose narcissism, as a personality trait, has often been evaluated and conceptualized as a unidimensional construct. However, it is also associated with paradoxical nature. For instance, narcissistic individuals can be described as assertive, self-assured, charming, extraverted and confident but they can also be dominant, exploitative, defensive, aggressive and hostile (Ackerman et al., 2011; Back et al., 2013; Krizan & Herlache, 2018; Miller et al., 2011, 2017). Due to the contradictory attributes, many psychologists have recognized the need to address the heterogeneity of narcissistic grandiosity in cognition, motivation and behavior. In order to resolve these paradoxes, the use of the Narcissistic Admiration and Rivalry Concept (NARC), a two-dimensional process (admiration and rivalry), was suggested and developed the related Narcissistic Admiration and Rivalry Questionnaire (NARQ) (Back et al., 2013).

[†]Correspondence to Chanki Moon, Department of Law & Criminology, School of Law & Social Sciences, Institute for the Study of Power, Crime, and Society, Royal Holloway, University of London, Egham TW20 0EX, UK; E-mail: chanki.moon@rhul.ac.uk

Sera Lee, Department of Psychology, Chonnam National University, 77 Yongbong-ro, Buk-gu Gwangju 61186, Korea; E-mail: shawbian1107@gmail.com

Received Jan 15, 2023; Revised Apr 14, 2023; Accepted Apr 18, 2023

*Data collection for this research was financially supported by the Centre for Psychological Research (PsyCen) at Leeds Beckett University. The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as potential conflicts of interest.



© 2023, Korean Journal of Clinical Psychology. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

According to the Narcissistic Admiration and Rivalry Concept (NARC), both dimensions serve the same goal of gaining and maintaining a grandiose sense of self although they operate differently in social strategies. The first dimension, narcissistic admiration, involves expectation and approach of opportunities for admiration through two aspects of narcissism: self-enhancing and assertive, which is related to endeavoring for uniqueness, grandiose fantasies, and expressions of charm that evoke desired outcomes, such as positive attention and status granted by others. Consequently, the grandiose sense of self and positive style of social approach can be maintained and strengthened by feeling admired, respected and special (Back et al., 2013).

The second dimension, narcissistic rivalry, involves anticipation that one's desired self-image would be threatened by losing status and admiration through defensive or avoidant motivational orientations. This dimension entails an antagonistic style of preemptive self-protection, in which individuals tend to devalue others, strive for superiority over others, and behave toward others in an aggressive, annoying, arrogant, hostile, insensitive, and defensive manner. Thus, the antagonistic nature can be maintained and enhanced by experiencing rejection, unpopularity, and criticism and can cause negative social outcomes (e.g., social conflict) accompanied by threat to the ego (Back et al., 2013; Lange et al., 2016; Leckelt et al., 2015).

So far, the two-dimensional conceptual model of grandiose narcissism (Back et al., 2013) has been supported by many studies (e.g., Cichocka et al., 2019; Dufner et al., 2015; Fatfouta & Schröder-Abé, 2017; Geukes et al., 2017; Lange et al., 2016; Rogoza et al., 2018; Wetzel et al., 2016). For instance, narcissistic admiration is correlated with high self-esteem, grandiosity, gratitude, forgiveness, reduced anxiety, and lowered distrust, while narcissistic rivalry is associated with loneliness, lowered self-esteem, higher anxiety, impulsivity, lowered empathy, lack of forgiveness, and lowered trust (e.g., Fatfouta & Schröder-Abé, 2017; Kwiatkowska et al., 2019; Manley et al., 2020; Rogoza et al., 2016, 2018; Wetzel et al., 2016). Furthermore, within the five-factor personality model, the strongest correlation with admiration is high extraversion, whereas for rivalry, it is (low) agreeableness (Back et al., 2013; Rogoza et al., 2016; Vecchione et al., 2018). In the context of social relations, narcissistic admiration is also associated with achievement values,

hope for success, short-term romantic success, and benign envy, but narcissistic rivalry is related to fear of failure, desire for revenge, avoidance after interpersonal difficulties, long-term romantic problems, and malicious aspects of envy (Doroszuk et al., 2020; Fatfouta et al., 2015; Lange et al., 2016; Rogoza et al., 2016; Wurst et al., 2017). Thus, the two-constructs can be distinct in their outcomes and correlates, albeit both strategies can maintain a grandiose sense of self.

The NARQ scale has been translated into various languages, including English, Polish, Dutch, Danish, Chinese, Turkish, Italian and Spanish (e.g., Back et al., 2013; Doroszuk et al., 2020; Rogoza et al., 2016; Vecchione et al., 2018; Zhang et al., 2017). However, except for its original English and German versions (Back et al., 2013), the scale has been validated only in Polish (Rogoza et al., 2016), Italian (Vecchione et al., 2018) and Spanish (Doroszuk et al., 2020). Moreover, studies have shown diverse findings regarding the relationships between narcissisms and culture (Brailovskaia & Bierhoff, 2016; Brailovskaia et al., 2019; Jonason et al., 2020; Moriizumi & Mcdermott, 2017; Žemojtel-Piotrowska et al., 2019; Wetzel et al., 2020). For instance, higher levels of narcissism have been observed in societies that do not value egalitarianism or intellectual autonomy, but instead put importance upon embeddedness and hierarchy (Jonason et al., 2020). In addition, the positive relationship between grandiose narcissism and depression and suicidal ideation was significant among Chinese but not among Germans (Brailovskaia et al., 2019). To support the conceptualization and measurement of grandiose narcissism associated with culture, further validation of the NARQ in many more languages is required.

The present research, for the first time, tested the structure of grandiose narcissism measured by the Korean translated version of the NARQ by examining its psychometric properties (validity and reliability). First, we examined the factor structure of the scale using a Confirmatory Factor Analysis (CFA). Our expectation was to replicate the second-order factorial structure (admiration and rivalry; each with three first-order variables) observed in previous validation studies (Back et al., 2013; Doroszuk et al., 2020; Vecchione et al., 2018). Our measurement model is illustrated in Figure 1. To assess the internal reliability of the scale scores, we applied Cronbach's alpha as well as the McDonald's omega coefficients (as has been recommended, Dunn et al., 2014; Hayes & Coutts, 2020),

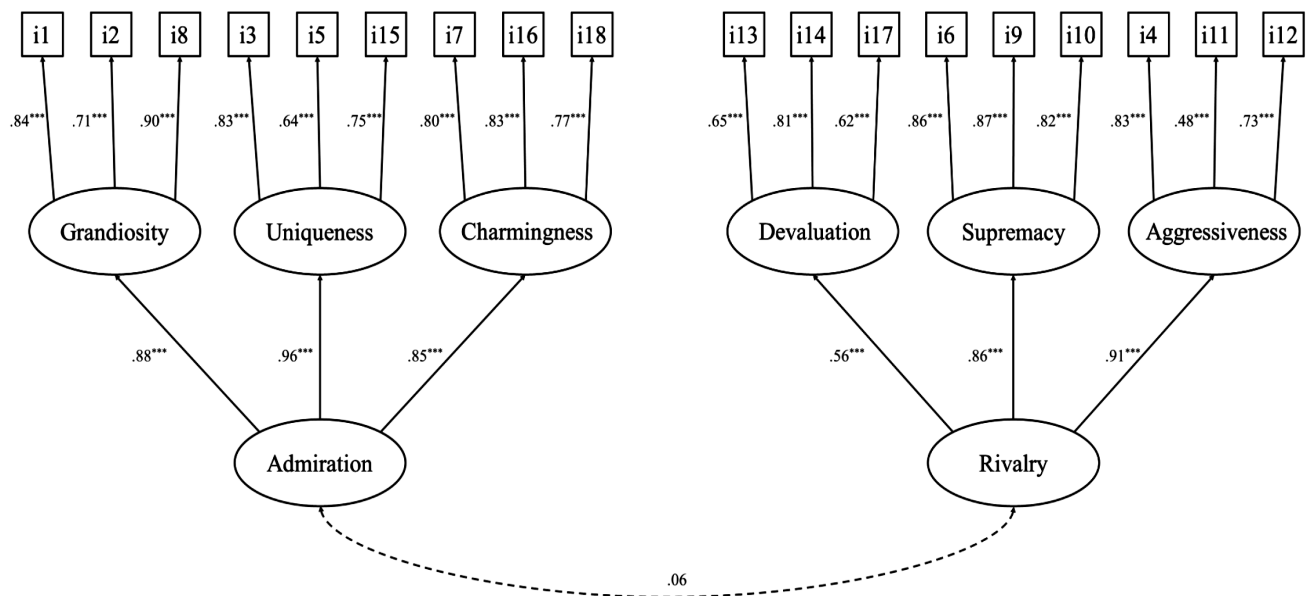


Figure 1. A CFA model of the narcissism admiration and rivalry questionnaire. Standardized factor loadings are presented in this model. *** $p < .001$.

albeit the values of both coefficients are generated similarly.

We examined the construct validity of the NARQ through the correlations with another measurement of narcissism: Narcissistic Personality Inventory (NPI), as well as several variables conceptually and empirically related to the two-dimensional structure of narcissism such as the Big Five (five-factor model of personality), self-esteem and dispositional envy (e.g., Back et al., 2013; Doroszuk et al., 2020; Leckelt et al., 2018; Vecchione et al., 2018). Based on these previous validation studies, we expected that narcissistic rivalry and admiration would be associated differently with the study variables. Specifically, admiration would be more strongly associated with grandiose exhibitionism and the NPI leadership/authority facets than rivalry, whereas rivalry would be more strongly or similarly related to the NPI entitlement/exploitativeness facet. In relation to the Big Five, we predicted that admiration would be most strongly associated with high extraversion and rivalry would be most strongly associated with low agreeableness. Furthermore, we expected a positive relationship between admiration and self-esteem, while rivalry would be negatively related to self-esteem. Finally, we expected that benign envy would only be predicted by admiration and malicious envy would only be predicted by rivalry.

Method

Participants and Procedure

Six-hundred participants (300 women; $M_{age} = 44.09$, $SD_{age} = 13.18$, range = 19 to 78) from South Korea were recruited using an online platform (Qualtrics) via a large research institute. In order to detect a minimum small-to-medium effect size ($\delta = 0.2$), at 80% power and $\alpha = .05$ in a model (relationship between NARQ and BeMaS) with 10 latent and 28 observed variables, the recommended sample size is $n = 475$ (Soper, 2019). Amongst the Korean participants, 93.0% lived in a large-sized city, 6.2% in a smaller/medium-sized city, and only 0.8% stated that they lived in a village/rural area. Participants were from various metropolitan cities and provinces: Seoul (51.3%), Busan (14.0%), Incheon (11.0%), Daegu (10.7%), Gwangju (5.7%), and Daejeon (5.8%). Fewer than 5% of Korean participants accounted for in the sample were from other regions. The average monthly income of the participants was KRW 3,655,117 ($SD = 2,277,545$ KRW). More than half of the participants had a college or university qualification (86.7%; high school = 12.5%) and were employed (64.6%; other = 12.0%, student = 4.3, retired = 4.0%, unemployed = 4.8%, homemaker = 10.3%).

The present study was approved by the Psychology Ethics Com-

mittee of Leeds Beckett University. The participants were invited for a study on personality assessment, and they completed a set of self-report measures, including NARQ, NPI, Big Five, RSES, and BeMaS. All participants were informed about the research purpose and were given research ethics-related information. The study questionnaires were presented only to those who signed an informed consent form. Participants were paid KRW 3,000 (approximately USD 2.55) in exchange for their participation. NARQ and BeMaS were translated from English to Korean to perform the stage of linguistic validity following guidelines for translation and back-translation (Brislin, 1986). Specifically, in the first stage, the original English version of the measures was translated into Korean by two independent translators. The translators then made the final translated version together. In the second stage, the translated version was translated back into English by two other independent

translators who were unaware of the original English version. The translators compared the original and the translated versions to ensure that both versions were semantically equivalent. The final Korean-translated version of the measures was completed after discussions between the translators. All translators were fluent in both English and Korean and had higher education degrees (PhD and MA).

Materials

NARQ

The Narcissistic Admiration and Rivalry Questionnaire (Back et al., 2013) was measured using an 18-item scale rated on a 6-point Likert scale (1 = *do not agree at all*, 6 = *agree completely*). It assesses two narcissistic dimensions (*admiration and rivalry*). Each dimension consists of three facets, with three test items per facet.

Table 1. Means and Standard Deviations for NARQ Items

#	English version	Korean version	<i>M</i>	<i>SD</i>	Skew	Kurt	ω if item deleted	α if item deleted
1	I am great	나는 훌륭하다	3.87	1.04	-0.301	-0.232	.77	.83
2	I will someday be famous	나는 언젠가 유명해질 것이다	3.03	1.28	0.297	-0.471	.75	.82
8	I deserve to be seen as a great personality	나는 훌륭한 사람으로 인정받을만 하다	3.76	1.10	-0.172	-0.263	.77	.83
3	I show others how special I am	나는 다른 사람들에게 내가 얼마나 특별한지 보여준다	3.50	1.07	-0.212	-0.288	.75	.82
5	I enjoy my successes very much	나는 나의 성공을 굉장히 즐긴다	4.03	1.12	-0.305	-0.051	.76	.83
15	Being a very special person gives me a lot of strength	내가 매우 특별한 사람이라는 점은 나에게 큰 힘이 된다	3.95	1.10	-0.310	0.024	.76	.83
7	Most of the time I am able to draw people's attention to myself in conversations	누군가와 대화하는 시간 대부분 나는 사람들의 이목을 끌 수 있다	3.52	1.12	-0.114	-0.211	.77	.83
16	I manage to be the center of attention with my outstanding contributions	나는 나의 탁월한 공헌으로 관심의 중심에 설 수 있다	3.33	1.13	-0.037	-0.196	.76	.82
18	Mostly, I am very adept at dealing with other people	대부분 나는 사람들을 다루는데 매우 능숙하다	3.46	1.14	-0.248	-0.342	.77	.83
13	Most people won't achieve anything	대부분의 사람들은 어떤 성취도 이루지 못할 것이다	2.78	1.11	0.310	-0.474	.78	.84
14	Other people are worth nothing	다른 사람들은 아무런 가치가 없다	1.87	1.05	1.214	0.976	.77	.83
17	Most people are somehow losers	대부분의 사람들은 어느 정도 실패자이다	2.48	1.22	0.460	-0.677	.78	.84
6	I secretly take pleasure in the failure of my rivals	나는 내 경쟁자들의 실패를 마음 속으로 즐긴다	2.87	1.20	0.077	-0.828	.77	.83
9	I want my rivals to fail	나는 내 경쟁자들이 실패하기를 바란다	2.80	1.22	0.155	-0.818	.77	.83
10	I enjoy it when another person is inferior to me	나는 다른 사람이 나보다 열등한 순간을 즐긴다	2.73	1.22	0.244	-0.757	.77	.83
4	I react annoyed if another person steals the show from me	나는 다른 사람이 인기를 독차지하면 짜증이 난다	2.78	1.19	0.142	-0.858	.77	.83
11	I often get annoyed when I am criticized	나는 종종 비판받을 때 짜증이 난다	3.94	1.11	-0.544	0.227	.78	.84
12	I can barely stand it if another person is at the center of events	나는 나 아닌 사람이 어떤 일의 중심에 있는 걸 참을 수 없다	2.44	1.10	0.576	-0.033	.76	.83

Note. The first nine items are related to narcissistic admiration. The last nine items are related to narcissistic rivalry.

Narcissistic admiration includes *uniqueness*, *charmingness* and *grandiosity*. Narcissistic rivalry includes *supremacy*, *aggressiveness* and *devaluation*. The English and Korean versions of this scale are listed in Table 1.

NPI

The 40-item version of the Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988) is the most frequently used measure of narcissism. It features a dichotomous forced-choice format. For every item, participants are required to select either a narcissistic or non-narcissistic option. We used a validated Korean version of this measure (Chung, 2001). Based on the past studies (Back et al., 2013; Vecchione et al., 2018), we derived three components from 25 of the 40 NPI items following Ackerman et al.'s (2011) approach. The three components include leadership/authority (11 items; $\omega[\alpha] = .82[.81]$), grandiose exhibitionism (10 items; $\omega[\alpha] = .73[.73]$), and entitlement/exploitativeness (4 items; $\omega[\alpha] = .30[.15]$). The observed lower reliability of the subscale (E/E) was in line with past studies (Ackerman et al., 2011; Vecchione et al., 2018), which aligns with concerns about the psychometric properties of the NPI (e.g., Brown et al., 2009; Grosz et al., 2019). As the present study used a Korean sample, we additionally followed the approach by Chung (2001) and derived four components from 32 of the 40 NPI items: leadership/self-confidence (11 items; $\omega[\alpha] = .77[.76]$), need for power/entitlement (11 items; $\omega[\alpha] = .77[.76]$), need for admiration/exhibitionism (11 items; $\omega[\alpha] = .70[.70]$), and superiority (11 items; $\omega[\alpha] = .60[.64]$).

Big Five

The validated 44-item Korean version of the Big Five Inventory (BFI-K; Kim et al., 2010) was used to assess the Big Five personality factors (extraversion [8 items; $\omega(\alpha) = .68(.68)$], agreeableness [9 items; $\omega(\alpha) = .71(.71)$], conscientiousness [9 items; $\omega(\alpha) = .81(.82)$], neuroticism [8 items; $\omega(\alpha) = .74(.74)$], and openness [10 items; $\omega(\alpha) = .80(.79)$]). Using a 5-point scale, participants specified the extent to which they agree with the statement (1 = *Strongly disagree*, 5 = *Strongly agree*; e.g., “I see myself as someone who tends to be lazy”).

Self-esteem

The 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1965) was

used to assess global self-esteem. Items were administered using a 4-point scale (1 = *Strongly Disagree*, 4 = *Strongly Agree*; e.g., “I take a positive attitude toward myself”). A validated Korean version of this measure was used (Bae et al., 2014). McDonald's omega (Cronbach's alpha) coefficient was .87 (.86) in this study.

Envy

The 10-item Benign and Malicious Envy Scale (BeBaS; Lange and Crusius, 2015; the Korean translated version of the scale is available at https://osf.io/kgyhv/?view_only=60d9b463c10d4de3a4ccd9fc4f25d355) was rated on a 6-point Likert scale (1 = *Strongly disagree*, 6 = *Strongly agree*). The scale assesses two types of dispositional envy: benign (5 items; e.g., “I strive to reach other people's superior achievement”; $\omega[\alpha] = .85[.85]$) and malicious (5 items; e.g., “I feel ill will toward people I envy”; $\omega[\alpha] = .88[.87]$).

Results

Reliability and Descriptive Statistics

The 18 items of the NARQ for both English and Korean versions with descriptive statistics (means, standard deviation, skewness, and kurtosis) are shown in Table 1. When values of skewness and kurtosis are close to zero (approximately between -1.5 and + 1.5), a normal distribution can be demonstrated (Byrne & Campbell, 1999). The values presented in Table 1 indicate that the normality assumption for all NARQ items was not violated. Descriptive statistics, including reliability estimates, the intercorrelations for the NARQ scales, standard deviations, means, and gender differences are shown in Table 2. Regarding the gender difference, males scored significantly higher than females on admiration, but there was no significant difference for rivalry.

Structural Validity of the NARQ

Based on the Narcissistic Admiration and Rivalry Concept (NARC; Back et al., 2013), the Structural validity of the NARQ scales was assessed using a second-order confirmation factor analysis (CFA) with two main components: (a) admiration (composed of grandiosity, charmingness and uniqueness) and (b) rivalry (composed of supremacy, devaluation and aggressiveness). The lavaan package and robust standard errors were used to conduct the analysis using R

Table 2. Descriptive Statistics, Intercorrelations for the NARQ Scales, Reliability Estimates and Gender Differences

	ω (α)	Intercorrelations for the NARQ scales										Male		Female	t	p	d [$CI_{95\%}$]
		M (SD)	1	2	3	4	5	6	7	8	9	M (SD)	SD	M (SD)			
1. NARQ	.77 (.84)	3.18 (.59)	—									3.19 (.59)		3.16 (.59)	.767	.443	.05 [.06; .13]
2. Admiration	.91 (.91)	3.60 (.85)	.75***	—								3.69 (.84)		3.51 (.85)	2.61	.009**	.21 [.05; .32]
3. Grandiosity	.84 (.84)	3.55 (.99)	.65***	.89***	—							3.65 (1.01)		3.45 (.96)	2.46	.014*	.20 [.04; .36]
4. Uniqueness	.79 (.79)	3.83 (.92)	.70***	.88***	.71***	—						3.88 (.90)		3.76 (.94)	1.64	.102	.13 [-.02; .27]
5. Charmingness	.85 (.85)	3.43 (.99)	.64***	.87***	.65***	.64***	—					3.54 (.98)		3.33 (.98)	2.70	.007**	.21 [.06; .37]
6. Rivalry	.85 (.85)	2.75 (.78)	.69***	.04	.01	.09*	.02	—				2.69 (.79)		2.80 (.77)	-1.70	.090	-.14 [-.23; .02]
7. Devaluation	.73 (.73)	2.38 (.91)	.48***	.01	.01	-.03	.04	.72***	—			2.37 (.91)		2.38 (.90)	-.08	.934	-.01 [-.15; .14]
8. Supremacy	.86 (.88)	2.80 (1.10)	.60***	.03	-.01	.09*	.003	.87***	.41***	—		2.72 (1.10)		2.89 (1.09)	-1.92	.056	-.16 [-.35; .004]
9. Aggressiveness	.74 (.70)	3.06 (.90)	.60***	.07	.03	.16***	.01	.83***	.37***	.65***	—	2.99 (.92)		3.13 (.87)	-2.01	.045*	-.16 [-.29; -.003]

* $p < .05$, ** $p < .01$, *** $p < .001$.

(Rosseel, 2012). Robust maximum likelihood was implemented to estimate the parameters. In the present study, the following criteria were used to evaluate model fit: CFI ≥ 0.90 , RMSEA ≤ 0.08 and SRMR < 0.10 suggests an acceptable fit and CFI ≥ 0.95 , RMSEA < 0.06 and SRMR < 0.08 suggests an excellent fit (Chen et al., 2008; Gana & Broc, 2019; Schumacker & Lomax, 2016; cf. Hu & Bentler, 1999; Kline, 2016). It is worth noting that we are also aware of the cutoff recommendation of Hu and Bentler (1999), which suggests that a model should have 1) RMSEA value ≤ 0.06 , with confidence interval at 90% values should be between 0 and 1.00; 2) SRMR value ≤ 0.08 ; and 3) CFI and TLI values ≥ 0.95 . However, we subscribe to the idea of Chen et al., (2008) who state that there is no “golden rule” on these fit indices and that there cannot be a universal, interchangeable threshold for them in all models. In fact, Chen et al., (2008) demonstrated how the universal threshold of 0.05 for RMSEA can penalize (reject) good models estimated with a small sample size ($n < 100$). The authors rightly concluded that researchers must combine these statistical tests with human judgment when making decisions about the goodness-of-fit of a model (Gana & Broc, 2019). Based on this, the model fit of research models for the present study was judged to be acceptable.

The two-dimensional NARQ scale demonstrated an acceptable fit, χ^2 (128, $n = 600$) = 434.76, $p < .001$, CFI = .93, RMSEA = .07 ($CI_{90\%}$ [.06, .08], $p < .001$), and SRMR = .07, except for the chi-square statistic, because it was significant. However, it should be noted that the reliability for this index is low because of its sample size and dependency on multivariate normality (Schermelleh-Engel et al., 2003). In addition, we explored whether the model fit could be further improved. Based on the inspection of the modification indices, we first allowed for a correlation between the residual errors of Items 6 and 8. The model fit was significantly improved, χ^2 (127, $n = 600$) = 398.28, $p < .001$, CFI = .94, RMSEA = .07 ($CI_{90\%}$ [.06, .08], $p < .001$), SRMR = .07. Next, we included another correlation for the residual errors of 10 and 11. The model fit was further improved, χ^2 (126, $n = 600$) = 370.34, $p < .001$, CFI = .94, RMSEA = .06 ($CI_{90\%}$ [.06, .07], $p < .001$), SRMR = .06. Although these modified models yielded a significantly better fit than the posited model ($\Delta \chi^2$ [1] = 27.58, $p < .001$; ($\Delta \chi^2$ [2] = 53.19, $p < .001$), we conducted following analysis, such as construct validity, with the posited model because the posited model also has acceptable fit and it is the same

as the originally developed model (Back et al., 2013; Study 1). Figure 1 shows proposed model with standardized factor correlations and factor loadings.

We also tested two alternative models: (1) a model with a single higher-order factor, $\chi^2 (135, n = 600) = 2369.14, p < .001, CFI = .49, RMSEA = .19 (CI_{90\%} [.18, .19], p < .001), SRMR = .20$; (2) a model with two uncorrelated higher-order factors, $\chi^2 (129, n = 600) = 436.24, p < .001, CFI = .93, RMSEA = .07 (CI_{90\%} [.06, .08], p < .001), SRMR = .07$. The first alternative model did not meet the criteria for adequate fit; however, the second alternative model demonstrated acceptable fit. According to the scaled difference chi-square tests, overall model fit of the posited model was significantly better than the first alternative model ($\Delta\chi^2 [7] = 2203.8, p < .001$), but was similar to the second alternative model ($\Delta\chi^2 [1] = 1.26, p = .262$).

In the postulated model (Figure 1), the standardized loadings of the items on the first-order factors were all significant ($p < .001$) and greater than .48 ($M = .76$). The standardized loadings of the first-order factors on each higher-order factor were also significant ($p < .001$) and greater than .56 ($M = .84$). The latent correlation between the two second-order factors (admiration and rivalry) was not significant (.06, $p = .267$), which is inconsistent with previous studies conducted in Italy and other Spanish speaking

countries (Vecchione et al., 2018; Doroszuk et al., 2020), including the original validation study performed in Germany (Back et al., 2013). This suggests that the two dimensions (admiration and rivalry) are distinct among Koreans.

Construct Validity of the NARQ

Using Fisher's Z transformation, we assessed the significance of the correlation strength between admiration and rivalry, and the criterion variables.

NPI

Table 3 shows the correlations between admiration and rivalry and the NPI measures. Narcissistic admiration had a stronger relationship with all NPI facets than rivalry for Chung's (2001) facet ($Z_{L/S} = 13.63; Z_{P/E} = 5.75; Z_{A/E} = 6.93; Z_S = 7.27$, all $p_s < .001$). For Ackerman et al.'s (2011) facet, rivalry and narcissistic admiration both correlated with all NPI facets, but admiration had a more pronounced relationship with leadership/authority ($Z = 11.59, p < .001$) and grandiose exhibitionism ($Z = 6.97, p < .001$). The size of the correlations for exploitativeness/entitlement did not differ between admiration and rivalry ($Z = -.80, p = .213$).

Table 3. Correlations Between NARQ and NPI Measures

NARQ measure	NPI total score	Chung's (2001) facet				Ackerman et al.'s (2011) facet		
		Leadership /Self-confidence	Power /Entitlement	Admiration /Exhibitionism	Superiority	Leadership /Authority	Grandiose exhibitionism	Entitlement /Exploitativeness
NARQ	.586**	.432**	.522**	.461**	.454**	.518**	.492**	.295**
Admiration	.667**	.635**	.513**	.502**	.506**	.640**	.523**	.192**
Rivalry	.160**	-.039	.230**	.150**	.136**	.087*	.175**	.236**

* $p < .05$, ** $p \leq .001$.

Table 4. Relations to the Big Five and Self-esteem

Trait correlate	$\omega (\alpha)$	NARQ		
		$r/\beta/CI_{95\%}$		R^2
		Admiration	Rivalry	
Extraversion	.68 (.68)	.541**/.547**/.28, .36]	-.119*/-.142**/ [-.13, -.05]	.31
Agreeableness	.71 (.71)	.232**/.251**/ [.10, .17]	-.413**/-.424**/ [-.28, -.20]	.23
Conscientiousness	.81 (.82)	.305**/.316**/ [.15, .25]	-.243**/-.257**/ [-.23, -.13]	.16
Neuroticism	.74 (.74)	-.219**/-.232**/ [-.20, -.10]	.292**/.302**/ [.16, .26]	.14
Openness	.80 (.79)	.470**/.472**/ [.25, .33]	-.027/-.047/ [-.08, .02]	.22
Self-esteem	.87 (.86)	.516**/.530**/ [.26, .33]	-.039**/-.332**/ [-.24, -.16]	.38

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

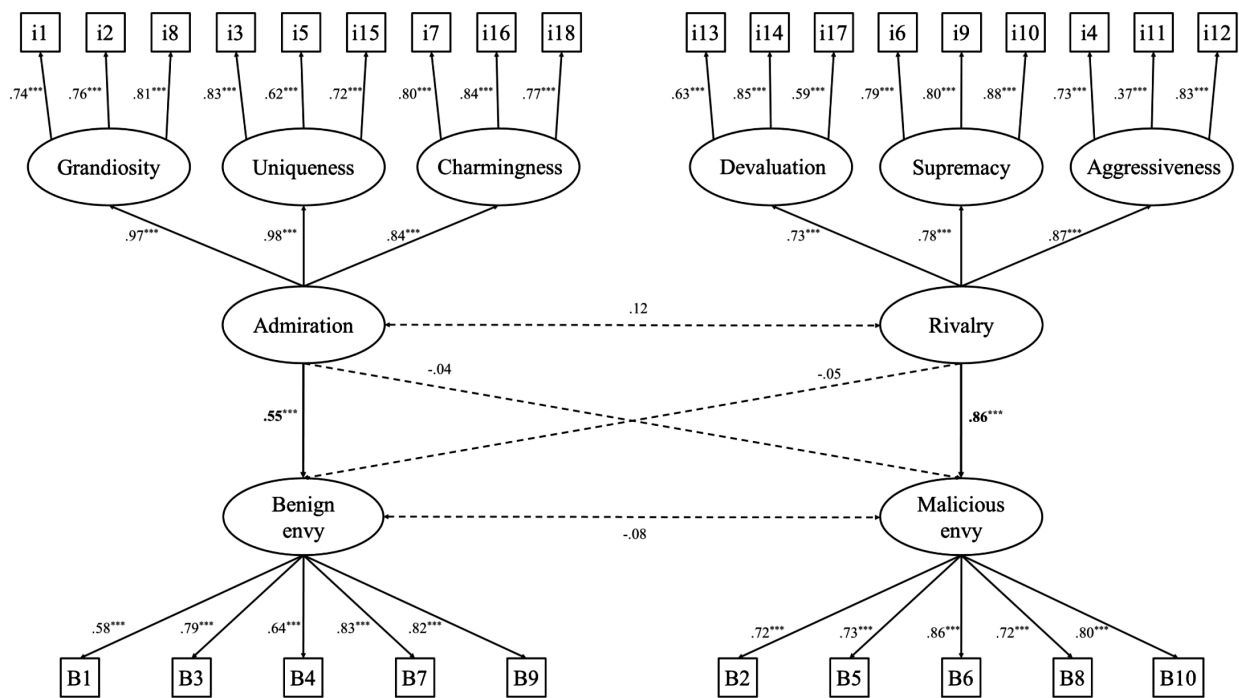


Figure 2. The latent variables model: coefficients for predictors of benign envy and malicious envy. Gender and age are covariates in the model. Note. Dashed lines are nonsignificant paths at $p > .10$. *** $p < .001$.

Big Five and self-esteem

Table 4 shows the results from correlational and regression analyses for the Big Five personality traits and self-esteem. Correlations with the Big Five and self-esteem were dependent on which narcissism dimension was investigated. Narcissistic admiration correlated positively with extraversion, agreeableness, conscientiousness and openness, but negatively with neuroticism. In contrast, narcissistic rivalry was correlated negatively with extraversion, agreeableness and conscientiousness, but positively with neuroticism. Regression analyses also confirmed this pattern of results. Admiration had a more pronounced relation with extraversion ($Z = 8.40, p < .001$), whereas rivalry was more strongly related to agreeableness ($Z = 3.51, p < .001$). The correlation between admiration and conscientiousness was found to be similar in magnitude to the correlation between rivalry and conscientiousness ($Z = 1.16, p = .123$). Similarly, the correlation between admiration and neuroticism was not significantly different in magnitude from the correlation between rivalry and neuroticism ($Z = 1.35, p = .088$). As expected, admiration was positively correlated with self-esteem, whereas rivalry was negatively correlated with self-esteem, which

was also confirmed by the regression analysis. The strength of the correlation for admiration was even stronger than that for rivalry when examining self-esteem ($Z = 9.19, p < .001$).

Benign and malicious envy scale

Based on theory and past research (Doroszuk et al., 2020; Lange et al., 2016), we estimated a structural equation model (SEM) in which narcissistic admiration predicted benign envy, whereas narcissistic rivalry predicted malicious envy. Figure 2 shows the standardized factor loadings of the measurement models (NARQ and BeMas) and standardized regression coefficients.

The model demonstrated good fit to the data, $\chi^2 (384, n = 600) = 952.85, p < .001$, CFI = .92, RMSEA = .06 (CI_{90%} [.05, .06], $p = .02$), SRMR = .07. Within the measurement model of the BeMas, the two-dimensional latent factors did not correlate with each other ($r = .05, p = .276$), indicating the distinct characteristics of malicious and benign and envy. According to the correlation and regression analyses, benign envy was positively predicted by narcissistic admiration ($r = .49, \beta = .55, SE = .06, p_s < .001$), but the association between benign envy and rivalry was non-significant ($r = .05$,

$\beta = -.05$, $SE = .03$, $p_s \leq .33$). In contrast, malicious envy was positively predicted by narcissistic rivalry ($r = .69$, $\beta = .86$, $SE = .13$, $p_s < .001$), but the association between malicious envy and admiration was non-significant ($r = .07$, $\beta = -.04$, $SE = .05$, $p_s \leq .39$). As expected, the prediction for rivalry was significantly stronger than that for admiration ($Z = 5.39$, $p < .001$), which is consistent with a previous study (Doroszuk et al., 2020).

Discussion

In the current study, we validated, for the first time, a Korean version of the Narcissistic Admiration and Rivalry Questionnaire (NARQ) using a large-sized sample in which the sample characteristics (age, gender, region of residence, and education) are somewhat representative of the general population of South Korea. The normality assumption for all NARQ items was not violated in the current sample. Regarding the gender differences in narcissistic admiration and rivalry, prior research showed ambiguous findings. Some studies found gender differences in both admiration and rivalry; men scored significantly higher than women (samples from Germany, Italy, the US and the UK; Back et al., 2013; Leckelt et al., 2018; Vecchione et al., 2018), but a recent study observed gender differences in rivalry only in several Spanish speaking countries such as Spain and Chile (but no differences in Colombia; Doroszuk et al., 2020). In the present study, we found gender differences for admiration, but not rivalry; men scored significantly higher than women. Thus, gender differences in the two core factors of NARQ may be associated with culture.

The result from the confirmatory factor analysis supported the two-dimensional structure (rivalry and admiration) that reflects two aspects of grandiose narcissism. The reliability scores on the admiration and rivalry scales were acceptable at each level (i.e., overall NARQ, first-order and second-order components). Although the total NARQ can be used as an alternative to the NPI because the reliability for the overall NARQ score was acceptable and it had a higher correlation with the NPI, our results suggest that the two-dimensional structure model is more adequate because the alternative model with a single higher-order factor did not meet the criteria for an adequate model fit. Unexpectedly but interestingly, the present study revealed that the two factors were

not correlated with each other; the measurement model with two correlated higher-order factors and the model with two uncorrelated factors were not significantly different, which is inconsistent with prior research (e.g., Back et al., 2013; Doroszuk et al., 2020; Leckelt et al., 2015, 2018; Vecchione et al., 2018). This suggests that grandiose narcissism may not necessarily be equivalent to having high scores in both dimensions, albeit it may be possible that high scores in both dimensions are combined within the same individual due to the positive correlation between the two factors. Indeed, the past research provides evidence for different ranges of correlation sizes between the dimensions (about .16 - .60; Back et al., 2013; Doroszuk et al., 2020; Rogoza et al., 2016; Vecchione et al., 2018). Moreover, recent evidence showed that the two types of moderately narcissistic subgroups (admiration vs. both admiration and rivalry) can be distinct (Wetzel et al., 2016). Accordingly, the present study sample from South Korea may have included more moderate narcissists, which may have led to the dissociation of the correlation between admiration and rivalry. More importantly, according to the NARC, each dimension can independently affect social interaction outcomes (i.e., social conflict and social potency; Back et al., 2013), which has been empirically supported (e.g., Back et al., 2013; Lange et al., 2016; Manley et al., 2020; Sauls et al., 2019). Nonetheless, future work is required to verify whether the findings from the present or previous research can be replicated.

As expected, our study provided evidence that rivalry and admiration are associated differently with several narcissism-related variables. First, we found that admiration had stronger relationships with the NPI leadership/authority and grandiose exhibitionism facets than rivalry, whereas rivalry and admiration were similarly related to the NPI entitlement/exploitativeness facet. Additionally, we observed the stronger relationship between admiration and the Korean validated NPI sub-facets. The total NARQ and NPI scores were also highly correlated. Therefore, the NPI may be associated with the total NARQ and the narcissistic admiration.

Second, consistent with prior studies (e.g., Back et al., 2013; Leckelt et al., 2018; Rogoza et al., 2016; Vecchione et al., 2018), we observed that admiration is most strongly associated with high extraversion and rivalry is most strongly associated with low agreeableness. This continues to support the notion that narcissistic in-

dividuals are not simply disagreeable extraverts; narcissists' personal traits should be specified by these two dimensions (Rogoza et al., 2016). In addition, narcissistic admiration correlated positively with conscientiousness and openness, but negatively with neuroticism, whilst narcissistic rivalry correlated negatively with conscientiousness, but positively with neuroticism, which aligns with prior research (Back et al., 2013; Leckelt et al., 2018; Rogoza et al., 2016). Furthermore, our results supported different patterns of relationship between narcissistic dimension and self-esteem; admiration was positively related to self-esteem and rivalry was negatively related to self-esteem (e.g., Back et al., 2013; Geukes et al., 2017; Rogoza et al., 2016).

Finally, our prediction that only admiration would predict benign envy, and only rivalry would predict malicious envy was confirmed by a structural equation model (SEM), which aligns with previous literature (Doroszuk et al., 2020; Lange et al., 2016). This implies that the assertive self-enhancement (self-promotion) of narcissistic admiration is in line with the upward-directed motivational tendencies of benign envy, whereas the antagonistic self-protection (self-defense) strategies of narcissistic rivalry are consistent with hostile characteristics of malicious envy. Envy, conceptualized as a status-related emotion, can be associated with grandiose narcissism (Crusius & Lange, 2017; Lange et al., 2016). According to the self-regulation model of grandiose narcissism, narcissistic admiration can manifest itself in self-enhancing behaviors of status pursuit, while narcissistic rivalry can manifest itself in other-derogating behaviors of status pursuit (see Grapsas et al., 2020, for a review). According to Lee (2016), it has been suggested that the phenomenon of bullying and rudeness ("Gapjil") in Korean society may be a manifestation of pathological narcissism. Future research should aim to extend these findings to the context of social hierarchy.

In conclusion, we showed that the Korean version of NARQ is a reliable and valid measure of grandiose narcissism that concerning its agentic and antagonistic aspects. However, as this research is the first validation of the NARQ in South Korea, future research is required to provide definitive validity evidence including other relevant constructs such as the Dark Triad personality traits (narcissism, Machiavellianism, and psychopathy), anger, empathy, and cultural value orientations. Nonetheless, the present research con-

tributes to extending our understanding of the dynamics of narcissism by providing validated evidence of the NARQ in South Korea.

Data availability statement

Data supporting the findings of this study are available upon request from the corresponding authors.

Compliance with Ethical Standards

All procedures performed in studies involving human participants were in accordance with the Ethical Standards of the Leeds Beckett University Ethics Committee and the 1964 Helsinki Declaration and its later amendments, or comparable ethical standards. Informed consent was obtained from all participants included in the study.

Author contributions statement

CM, Assistant Professor at Royal Holloway, University of London, collected and analyzed data and created the initial draft of the manuscript. SL, Lecturer at Chonnam National University, reviewed and revised the manuscript. Both authors deliberated thoroughly before approving the final version for submission.

References

- Ackerman, R. A., Witt, E. A., Donnellan, M. B., Trzesniewski, K. H., Robins, R. W., & Kashy, D. A. (2011). What does the narcissistic personality inventory really measure? *Assessment*, 18, 67-87. <https://doi.org/10.1177/1073191110382845>
- Back, M. D., Küfner, A. C. P., Dufner, M., Gerlach, T. M., Rauthmann, J. F., & Denissen, J. J. A. (2013). Narcissistic admiration and rivalry: Disentangling the bright and dark sides of narcissism. *Journal of Personality and Social Psychology*, 105, 1013-1037. <https://doi.org/10.1037/a0034431>
- Bae, H. N., Choi, S. W., Yu, J. C., & Lee, J. S. (2014). Reliability and validity of the Korean version of the Rosenberg Self-Esteem Scale (K-RSES) in adult. *Mood Emot*, 12, 43-49.
- Brailovskaia, J., & Bierhoff, H. W. (2016). Cross-cultural narcissism on Facebook: Relationship between self-presentation, social inter-

- action and the open and covert narcissism on a social networking site in Germany and Russia. *Computers in Human Behavior*, 55, 251-257. <https://doi.org/10.1016/j.chb.2015.09.018>
- Brailovskaia, J., Teismann, T., Zhang, X. C., & Margraf, J. (2019). Grandiose narcissism, depression and suicide ideation in Chinese and German students. *Current Psychology*, 1-9. <https://doi.org/10.1007/s12144-019-00355-1>
- Brislin, R. W. (1986). The wording and translation of research instruments. In W. J. Lonner, & J. W. Berry (Eds.), *Field methods in cross-cultural research* (pp. 137-164). Sage.
- Brown, R. P., Budzek, K., & Tamborski, M. (2009). On the meaning and measure of narcissism. *Personality and Social Psychology Bulletin*, 35, 951-964. <https://doi.org/10.1177/0146167209335461>
- Byrne, B. M., & Campbell, T. L. (1999). Cross-cultural comparisons and the presumption of equivalent measurement and theoretical structure: A look beneath the surface. *Journal of Cross-Cultural Psychology*, 30, 555-574. <https://doi.org/10.1177/0022022199030005001>
- Chung, N. W. (2001). Factor structure of the Korean version of the narcissistic personality inventory (NPI). *The Korean Journal of Counseling and Psychotherapy*, 13, 221-237.
- Chen, F., Curran, P. J., Bollen, K. A., Kirby, J., & Paxton, P. (2008). An empirical evaluation of the use of fixed cutoff points in RMSEA test statistic in structural equation models. *Sociological Methods & Research*, 36, 462-494. <https://doi.org/10.1177/0049124108314720>
- Cichocka, A., Cislak, A., Stronge, S., Osborne, D., & Sibley, C. G. (2019). Does high self-esteem foster narcissism? Testing the bidirectional relationships between self-esteem, narcissistic admiration and rivalry. *Journal of Research in Personality*, 83, 103882. <https://doi.org/10.1016/j.jrp.2019.103882>
- Crusius, J., & Lange, J. (2017). How do people respond to threatened social status? Moderators of benign versus malicious envy. In R. H. Smith, U. Merlone, & M. K. Duffy (Eds.), *Envy at work and in organizations: Research, theory, and applications* (pp. 85-110). New York, NY: Oxford University Press.
- Doroszuk, M., Kwiatkowska, M. M., Torres-Marin, J., NavarroCarrillo, G., Włodarczyk, A., Blasco-Belled, A., MartínezBuevas, L., Newton, J. D. A., Oviedo-Trespalacios, O., & Rogoza, R. (2020). Construct validation of the Narcissistic Admiration and Rivalry Questionnaire in Spanish-speaking countries: Assessment of the reliability, structural and external validity and cross-cultural equivalence. *International Journal of Psychology*, 55, 413-424. <https://doi.org/10.1002/ijop.12595>
- Dufner, M., Egloff, B., Hausmann, C. M., Wendland, L. M., Neyer, F. J., & Back, M. D. (2015). Narcissistic tendencies among actors: Craving for admiration, but not at the cost of others. *Social Psychological and Personality Science*, 6, 447-454. <https://doi.org/10.1177/1948550614564224>
- Dunn, T. J., Baguley, T., & Brunsden, V. (2014). From alpha to omega: A practical solution to the pervasive problem of internal consistency estimation. *British Journal of Psychology*, 105, 399-412. <https://doi.org/10.1111/bjop.12046>
- Fatfouta, R., Gerlach, T. M., Schröder-Abé, M., & Merkl, A. (2015). Narcissism and lack of interpersonal forgiveness: The mediating role of state anger, state rumination, and state empathy. *Personality and Individual Differences*, 75, 36-40. <https://doi.org/10.1016/j.paid.2014.10.051>
- Fatfouta, R., & Schröder-Abé, M. (2017). I can see clearly now: Clarity of transgression-related motivations enhances narcissists' lack of forgiveness. *Personality and Individual Differences*, 105, 280-286. <https://doi.org/10.1016/j.paid.2016.10.010>
- Gana, K., & Broc, G. (2019). *Structural equation modeling with lavaan*. John Wiley & Sons.
- Geukes, K., Nestler, S., Hutteman, R., Dufner, M., Küfner, A. C. P., Egloff, B., Denissen, J. J. A., & Back, M. D. (2017). Puffed-up but shaky selves: State self-esteem level and variability in narcissists. *Journal of Personality and Social Psychology*, 112, 769-786. <https://doi.org/10.1037/pspp0000093>
- Grapsas, S., Brummelman, E., Back, M. D., & Denissen, J. J. (2020). The "why" and "how" of narcissism: A process model of narcissistic status pursuit. *Perspectives on Psychological Science*, 15, 150-172. <https://doi.org/10.1177/1745691619873350>
- Grosz, M. P., Emons, W. H., Wetzel, E., Leckelt, M., Chopik, W. J., Rose, N., & Back, M. D. (2019). A comparison of unidimensionality and measurement precision of the Narcissistic Personality Inventory and the Narcissistic Admiration and Rivalry Questionnaire. *Assessment*, 26, 281-293. <https://doi.org/10.1177/1073191116686686>
- Hayes, A. F., & Coutts, J. J. (2020). Use omega rather than Cronbach's alpha for estimating reliability. But.... *Communication Methods and Measures*, 14, 1-24. <https://doi.org/10.1080/19312458.2020.1718629>
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: a Multidisciplinary Journal*, 6, 1-55. <https://doi.org/10.1080/10705519909540118>
- Jonason, P. K., Žemojtel-Piotrowska, M., Piotrowski, J., Sedikides, C., Campbell, W. K., Gebauer, J. E., Maltby, J., Adamovic, M., Adams, B. G., Kadiyono, A. L., Atitsogbe, K. A., Bundhoo, H. Y., Băltătescu, S., Bilić, S., Brulin, J. G., Chobthamkit, P., Del Carmen Dominguez, A., Dragova-Koleva, S., ... Yahiaev, I. (2020). Country-Level correlates of the dark triad traits in 49 countries. *Journal of Personality*, 88, 1252-1267. <https://doi.org/10.1111/jopy.12569>
- Kim, S. Y., Kim, J. M., Yoo, J. A., Bae, K. Y., Kim, S. W., Yang, S. J., Shin, I. S., & Yoon, J. S. (2010). Standardization and validation of big five inventory-Korean version (BFI-K) in elders. *Korean Journal of Biological Psychiatry*, 17, 15-25.

- Kline, R. B. (2016). *Principles and practice of structural equation modeling* (4th ed.). The Guilford Press.
- Krizan, Z., & Herlache, A. D. (2018). The narcissism spectrum model: A synthetic view of narcissistic personality. *Personality and Social Psychology Review*, 22, 3-31. <https://doi.org/10.1177/1088868316685018>
- Kwiatkowska, M. M., Jułkowski, T., Rogoza, R., Żemojtel-Piotrowska, M., & Fatfouta, R. (2019). Narcissism and trust: Differential impact of agentic, antagonistic, and communal narcissism. *Personality and Individual Differences*, 137, 139-143. <https://doi.org/10.1016/j.paid.2018.08.027>
- Lange, J., & Crusius, J. (2015). Dispositional envy revisited: Unraveling the motivational dynamics of benign and malicious envy. *Personality and Social Psychology Bulletin*, 41, 284-294. <https://doi.org/10.1177/0146167214564959>
- Lange, J., Crusius, J., & Hagemeyer, B. (2016). The evil queen's dilemma: Linking narcissistic admiration and rivalry to benign and malicious envy. *European Journal of Personality*, 30, 168-188. <https://doi.org/10.1002/per.2047>
- Lee, S. (2016). Pathological personality and the society - focus on the narcissistic personality disorder. *Contemporary Social Science Research*, 20, 31-47.
- Leckelt, M., Küfner, A. C. P., Nestler, S., & Back, M. D. (2015). Behavioral processes underlying the decline of narcissists' popularity over time. *Journal of Personality and Social Psychology*, 109, 856-871. <https://doi.org/10.1037/pspp0000057>
- Leckelt, M., Wetzel, E., Gerlach, T. M., Ackerman, R. A., Miller, J. D., Chopik, W. J., Penke, L., Geukes, K., Küfner, A. C. P., Hutteman, R., Richter, D., Renner, K. H., Allroggen, M., Brecheen, C., Campbell, W. K., Grossmann, I., & Back, M. D. (2018). Validation of the narcissistic admiration and rivalry questionnaire short scale (NARQ-S) in convenience and representative samples. *Psychological Assessment*, 30, 86-96. <https://doi.org/10.1037/pas0000433>
- Manley, H., Paisarnsriromsuk, N., & Roberts, R. (2020). The effect of narcissistic admiration and rivalry on speaking performance. *Personality and Individual Differences*, 154, 109624. <https://doi.org/10.1016/j.paid.2019.109624>
- Miller, J. D., Hoffman, B. J., Gaughan, E. T., Gentile, B., Maples, J., & Keith Campbell, W. (2011). Grandiose and vulnerable narcissism: A nomological network analysis. *Journal of Personality*, 79, 1013-1042. <https://doi.org/10.1111/j.1467-6494.2010.00711.x>
- Miller, J. D., Lynam, D. R., Hyatt, C. S., & Campbell, W. K. (2017). Controversies in narcissism. *Annual Review of Clinical Psychology*, 13, 291-315. <https://doi.org/10.1146/annurev-clinpsy-032816-045244>
- Moriizumi, S., & Mcdermott, V. (2017). The role of narcissism and face concerns in providing comforting messages: A cross-cultural comparison between Japan and the United States. *Japanese Journal of Communication Studies*, 46, 23-41. https://doi.org/10.20698/comm.46.1_23
- Raskin, R., & Terry, H. (1988). A principal-components analysis of the Narcissistic Personality Inventory and further evidence of its construct validity. *Journal of Personality and Social Psychology*, 54, 890-902. <https://doi.org/10.1037/0022-3514.54.5.890>
- Rogoza, R., Żemojtel-Piotrowska, M., Kwiatkowska, M. M., & Kwiatkowska, K. (2018). The bright, the dark, and the blue face of narcissism: The Spectrum of narcissism in its relations to the metatraits of personality, self-esteem, and the nomological network of shyness, loneliness, and empathy. *Frontiers in Psychology*, 9, 343. <https://doi.org/10.3389/fpsyg.2018.00343>
- Rogoza, R., Żemojtel-Piotrowska, M., Rogoza, M., Piotrowski, J., & Wyszynska, P. (2016). Narcissistic admiration and rivalry in the context of personality metatraits. *Personality and Individual Differences*, 102, 180-185. <https://doi.org/10.1016/j.paid.2016.07.003>
- Rosenberg, M. (1965). Rosenberg self-esteem scale (RSE). Acceptance and Commitment Therapy. *Measures Package*, 61, 18.
- Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, 48, 1-36. <https://doi.org/10.18637/jss.v048.i02>
- Sauls, D., Zeigler-Hill, V., Vrabel, J. K., & Lehtman, M. J. (2019). How do narcissists get what they want from their romantic partners? The connections that narcissistic admiration and narcissistic rivalry have with influence strategies. *Personality and Individual Differences*, 147, 33-42. <https://doi.org/10.1016/j.paid.2019.04.025>
- Schumacker, E., & Lomax, G. (2016). *A Beginner's Guide to Structural Equation Modelling* (4th ed). Routledge.
- Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online*, 8, 23-74.
- Soper, D. S. (2019). *A-priori sample size calculator for structural equation models*. Retrieved from: <https://www.danielsoper.com/statcalc/calculator.aspx?id=89>
- Vecchione, M., Dentale, F., Graziano, M., Dufner, M., Wetzel, E., Leckelt, M., & Back, M. D. (2018). An Italian validation of the Narcissistic Admiration and Rivalry Questionnaire (NARQ): Further evidence for a two-dimensional model of grandiose narcissism. *BPA-Applied Psychology Bulletin*, 66, 29-37. <https://doi.org/10.26387/bpa.281.3>
- Wetzel, E., Lang, F. J., Back, M. D., Vecchione, M., Rogoza, R., & Roberts, B. W. (2020). Measurement invariance of three narcissism questionnaires across the United States, the United Kingdom, and Germany. *Assessment*, 28, 29-43. <https://doi.org/10.1177/1073191120907967>
- Wetzel, E., Leckelt, M., Gerlach, T. M., & Back, M. D. (2016). Distinguishing subgroups of narcissists with latent class analysis.

- European Journal of Personality*, 30, 374-389. <https://doi.org/10.1002/per.2062>
- Wurst, S. N., Gerlach, T. M., Dufner, M., Rauthmann, J. F., Grosz, M. P., Küfner, A. C. P., Denissen, J. J. A., & Back, M. D. (2017). Narcissism and romantic relationships: The differential impact of narcissistic admiration and rivalry. *Journal of Personality and Social Psychology*, 112, 280-306. <https://doi.org/10.1037/pspp0000113>
- Żemojtel-Piotrowska, M., Piotrowski, J., Rogoza, R., Baran, T., Hittokoto, H., & Maltby, J. (2019). Cross-cultural invariance of NPI-13: Entitlement as culturally specific, leadership and grandiosity as culturally universal. *International Journal of Psychology*, 54, 439-447. <https://doi.org/10.1002/ijop.12487>
- Zhang, Q., Zhang, L., & Li, C. (2017). Attachment, perceived parental trust and grandiose narcissism: Moderated mediation models. *Personality and Individual Differences*, 104, 470-475. <https://doi.org/10.1016/j.paid.2016.09.013>

Emotion Regulation Strategies as Moderators between Counterfactual Thinking Concerning Intimate Partner Violence and Trauma-related Emotions: An Ecological Momentary Assessment Study

Yu Jin Hwang Soo Hyun Park[†]

Department of Psychology, Yonsei University, Seoul, Korea

According to the cognitive model of posttraumatic stress disorder (PTSD), negative appraisals and negative emotions are key factors in PTSD symptoms. Moreover, emotion regulation strategies (ERS) may affect the severity of PTSD symptom differently. This study investigated the reported types and frequency of intimate partner violence (IPV) survivors, and the effects of counterfactual thinking (CFT) and ERS on trauma-related emotions in daily life via ecological momentary assessment (EMA). Data from 59 women who experienced IPV within the past year were analyzed. The results demonstrated that cognitive reappraisal may modulate the relationship between upward CFT and trauma-related emotions ($B = -0.012, p = .005$), but the effect of emotion suppression was not statistically significant ($B = -0.006, p = .365$). Especially, upward CFT may demonstrate a greater impact on trauma-related emotions in individuals who use a lower degree of cognitive reappraisal in daily life than in participants employing a higher degree. Conversely, although downward CFT also increased trauma-related emotions, neither type of ERS moderated this relationship (cognitive reappraisal: $B = -0.069, p = .129$; emotion suppression: $B = -0.004, p = .947$). These findings extend prior research on the effectiveness of cognitive reappraisal by reinforcing its ecological validity and emphasize the need for further investigations.

Keywords: IPV, PTSD, EMA, counterfactual thinking, trauma-related emotions, emotion regulation strategies

Introduction

Most individuals may likely be exposed to more than one traumatic event during their lifetime (Kilpatrick et al., 2013), which can be categorized as impersonal and interpersonal trauma, depending on the degree of interpersonal involvement. Individuals

experiencing interpersonal trauma reportedly exhibit a more severe and pervasive PTSD symptomatology that also lasts longer (Chapman et al., 2012; Cougle et al., 2013; Ford et al., 2011). Allen (1995) contended that psychological sequelae are most severe if the trauma is man-made, repeated, unpredictable, multifaceted, sadistic or malevolent in intent, and has been experienced in childhood and perpetrated by a caregiver. Therefore, among interpersonal traumas, intimate partner violence (IPV), defined as psychological, physical, and/or sexual abuse/aggression, or stalking by a current or former intimate partner (Centers for Disease Control and Prevention; CDC, 2021; Heise & Garcia-Moreno, 2002), may lead to more severe psychological distress.

IPV is a major social issue concerning women, which has been steadily increasing in frequency and severity (Korean National

[†]Correspondence to Soo Hyun Park, Department of Psychology, Yonsei University, 50 Yonsei-ro, Seodaemun-gu, Seoul 03722, Korea; E-mail: parksoohyun@yonsei.ac.kr

Received Jan 2, 2023; Revised May 16, 2023; Accepted May 16, 2023

*This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.



© 2023, Korean Journal of Clinical Psychology. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Police Agency; KNPA, 2019), often contributing to PTSD symptoms (Lilly & Graham-Bermann, 2010). According to a study on survivors of violent crimes, PTSD symptoms, hyperarousal reactions, negative cognitive evaluations of trauma, negative belief in others, and negative emotional reactions were higher when the perpetrator was a male intimate partner than an acquaintance, stranger, or family member (Gong, 2015). A meta-analysis of 11 studies on IPV survivors documented a weighted mean prevalence of PTSD of 63.8% (Golding, 1999), the rate of women who met the clinical criteria for PTSD was 92.4% in a sample of women who experienced abuse (Woods et al., 2008). These results suggest that IPV is a traumatic event implicated with one of the highest risk levels leading to a higher prevalence of PTSD than other interpersonal traumas (Kemp et al., 1995; Nixon et al., 2004).

According to the cognitive model of PTSD, negative cognitive appraisals of trauma, negative emotions such as the sense of ongoing threat, and strategies intended to control negative emotions lead to PTSD symptoms (Ehlers & Clark, 2000). A meta-analysis indicated that rumination is one of negative appraisals and a key factor in PTSD (Seligowski et al., 2015). Rumination is multidimensional and consists of several components (Brinker & Dozois, 2009; Treynor et al., 2003), one of the which is recurrent thinking about alternative outcomes of trauma-related memory such as counterfactual thinking (CFT; Tanner et al., 2013). CFT indicates repetitive thoughts concerning potentially different outcomes of past events (Blix et al., 2018) and consists of two types, each reflecting the direction of the outcome. Upward CFT refers to simulating a better alternative than the actual outcome (e.g., “If I had not met him today, I would not have been hurt”), while downward CFT represents simulating worse alternatives (e.g., “If I had not run away, I would have been dead”).

In particular, a few studies have constantly demonstrated the relationship between CFT and PTSD symptoms. CFT plays an important role in exacerbating PTSD symptoms and psychological distress (El Leithy et al., 2006). De Brigard et al.’s (2013) fMRI study contended that the recall of personal episodes and counterfactuals involves the activation of identical brain regions. Although many studies have supported a significant association between CFT and PTSD symptoms, the relationship between upward or downward CFT and PTSD has not been clearly confirmed. Gilbar et al. (2010)

claimed that only upward CFT was associated with the diagnosis of PTSD. However, Blix et al. (2016, 2018) asserted that both CFT types are associated with posttraumatic stress reactions. More specifically, Blix et al. (2016) contended that downward CFT was generally more frequent than upward CFT, and Blix et al. (2018) also asserted that trauma survivors used downward CFT more frequently than the bereaved. Interestingly, according to a recent meta-analysis, which of upward or downward CFT is related to PTSD symptoms may differ depending on the type of trauma or exposure (e.g., direct vs. indirect trauma; Hoppen et al., 2020). The effect of upward and downward CFT on IPV survivors requires further investigation.

There are possible conceptual rationales concerning the relationship between CFT and PTSD symptoms (i.e., the mnemonic model of PTSD and different mechanisms that generate negative emotions), but this study assumed the reason that CFT are associated with PTSD may be because these generate negative emotions, based on the cognitive model of PTSD. Previous findings have indicated that upward and downward CFT elicit negative emotions through different mechanisms. Upward CFT may cause negative emotions, because comparisons with better alternatives often lead to contrast effects (Blix et al., 2018; Markman et al., 1993; Roese, 1994). Conversely, downward CFT may contribute to negative emotions because it renders individuals to feel that they are experiencing worse alternatives in reality via assimilation (Blix et al., 2018; Markman & McMullen, 2003; Markman et al., 2007). Trauma-related emotions, which are negative emotions experienced in the evaluation and interpretation of traumatic events (DePrince et al., 2010), are particularly relevant in IPV survivors. IPV, a repeated and intended traumatic event by an intimate person, may be related to more complicated emotions because of the characteristics of traumatic event itself and lack of social support (Cloitre et al., 2009; Filipas & Ullman, 2001). Furthermore, in a study on women with IPV-related PTSD, a greater reduction in trauma-related emotions was associated with remission following exposure therapy (Harned et al., 2015). Therefore, this study focused on whether these two types of CFT generate trauma-related emotions.

Regulating negative emotions while thinking about a traumatic event is highly demanding for trauma survivors because exposure to trauma causes intense emotional reactions (Seligowski et al.,

2016), emotional numbing, or chronic secondary emotions (Resick & Schnicke, 1992). Emotion regulation strategies (ERS) related to PTSD could be explained by the process model of emotion which focuses on two ERS (i.e., cognitive re-appraisal and emotion suppression; Gross, 1998), and Gratz and Roemer's (2004) model concerning a variety of facets (i.e., acceptance, rumination, and catastrophizing, etc.). Among these, there have been consistent and cumulative findings that the results of two ERS of the process model of emotion may exert a differential effect on PTSD symptoms (Seligowski et al., 2015, 2016). In particular, cognitive reappraisal works well in non-clinical samples to regulate negative emotions (S. H. Kim & Hamann, 2012), whereas patients diagnosed with PTSD under-utilize cognitive reappraisal and over-utilize emotion suppression (Boden et al., 2013; Moore et al., 2008; Shepherd & Wild, 2014). Furthermore, Boden et al. (2013) indicated that using emotion suppression predicted PTSD symptom severity. Given that recent theories of emotion regulation have demonstrated that strategies may differ depending on context (Aldao, 2013; Aldao & Nolen-Hoeksema, 2012; Bonanno & Burton, 2013), the strength of the association between negative appraisals and psychopathology may depend on contextual factors affecting the way negative appraisals are used, such as the setting or level of a stressor (McMahon & Naragon-Gainey, 2018). Therefore, this study aimed to determine how these two types of ERS modulate the relationship between upward and downward CFT in IPV and trauma-related emotions.

Moreover, most previous studies on ERS have used self-report questionnaires. This retrospective design holds the limitation that participants must be aware of the types of ERS they use at a particular point in time (Shepherd & Wild, 2014). However, it is necessary to consider the dynamics, reactivity to momentary situations, and variations in ERS (Aldao, 2013). Ecological momentary assessment (EMA) is based on repeated sampling of participants' cur-

rent behaviors and experiences in real time and in a natural environment (Shiffman et al., 2008). EMA has many advantages such as maximizing ecological validity and allowing the examination of microprocesses that affect behavior in daily contexts (Shiffman et al., 2008). Therefore, the present study explored whether these two types of ERS modulate the relationship between CFT concerning IPV and trauma-related emotions in daily life. The following hypotheses were examined. Figure 1 illustrates the research model.

Hypothesis 1: A higher degree of upward and downward CFT will be associated with a greater level of trauma-related emotions.

Hypothesis 1-1: This relationship will be antagonistically moderated by cognitive reappraisal.

Hypothesis 1-2: This relationship will be synergistically moderated by emotion suppression.

Methods

Participants

Participants were recruited through online communities between July and November 2021. The inclusion criteria were (1) women aged over 18, (2) women who had experienced psychological, physical, and/or sexual abuse/aggression, or stalking by a current or former intimate partner within the past year, and (3) more than one month had passed since the occurrence of the traumatic event, according to the DSM-5 criteria for PTSD. To clarify the effects of IPV on PTSD, the exclusion criteria were: (1) women who had not been exposed to threat of death, actual or threatened serious injury, or sexual violence, (2) women who reported past interpersonal trauma such as child abuse, and (3) women who had been diagnosed with other psychological disorders. Among the 87 participants who provided consent, one requested to withdraw from the study, seven provided invalid e-mail addresses, and 18 did not an-

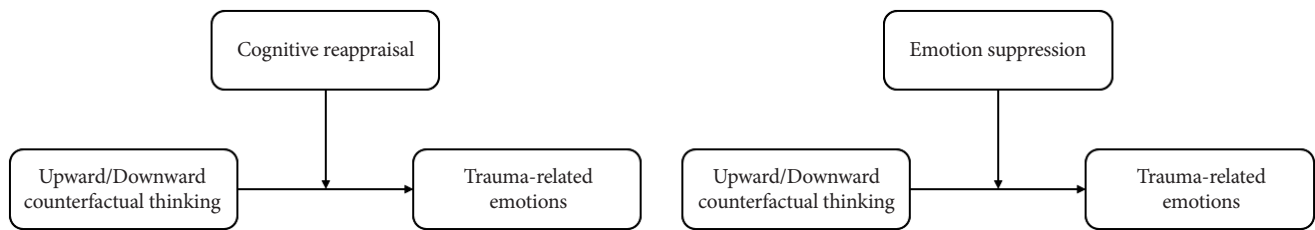


Figure 1. The research model.

swer the survey for more than three days. Overall, 61 participants completed EMA 14 times for seven to nine days, and participants who did not answer for one or two days were not excluded unless they wanted to withdraw. The final statistical analysis was limited to participants whose reported IPV types and frequency did not exceed 2SD from the mean ($N = 59$). The participants were aged between 18 and 41 years of age ($M = 24.10$, $SD = 5.00$). Appendix A provides an a priori sample size estimation.

Procedure

First, information on demographic characteristics, IPV-related information, pre-EMA PTSD symptoms, and e-mail addresses were collected. Next, questionnaires were randomly sent out twice a day for seven days (once between 9 a.m. and 4 p.m., once between 4 p.m. and 11 p.m.). Daily EMA assessed CFT, trauma-related emotions, and ERS at the time. Finally, post-EMA PTSD symptoms were assessed, and participants were compensated with 20,000 Korean won. The participants were informed that the survey would be terminated when they stopped answering for over three consecutive days or when they requested to withdraw. All procedures were approved by the Institutional Review Board of the researchers' university.

Measures

EMA (Level 1) variables

Counterfactual thinking

CFT was measured via 12-items related to upward CFT and four items related to downward CFT using the Counterfactual Thinking for Negative Events Scale (CTNES; Rye et al., 2008). This study used the Korean version translated by Kwon (2009). Each item is rated on a five-point scale ranging from 1 (never) to 5 (very often). Higher sum scores indicated that the participants underwent more CFT. In this study, Cronbach's alpha of the upward and downward CFT was .93 and .88, respectively.

Trauma-related emotions

Trauma-related emotions were assessed using six items from the short version of the Trauma Appraisal Questionnaire (TAQ; De-Prince et al., 2010). In this study, the Korean version of TAQ translated and validated by Chang (2011) was employed. This scale con-

sists of 54 items that measure negative emotions following trauma. For the purpose of EMA study, the six factors (betrayal, self-blame, fear, alienation, anger, and shame) were changed to six questions rated on a Likert-type scale ranging from 1 (not at all) to 5 (extreme). Exploratory factor analysis confirmed that one factor is adequate, and the results can be found in Appendix B. In this study, Cronbach's alpha for the six items was .85.

Emotion regulation strategies

ERS were measured through the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003). The Korean version of the ERQ translated by Shon (2005) was used. This scale consists of six items measuring cognitive reappraisal and four items assessing emotion suppression, for which Cronbach's alpha was .91 and .85, respectively in this study.

Level 2 variables

IPV Types and frequency within the past year

Based on the definition of IPV types (CDC, 2021; Heise & Garcia-Moreno, 2002), they were classified into four constructs. Psychological aggression was assessed using nine items from the Abusive Behavior Inventory (ABI; Shepard & Campbell, 1992), and physical aggression was measured by using the eight-item physical aggression subscale of the Conflict Tactic Scale (CTS; Straus, 1979). In this study, the Korean versions of the ABI and CTS translated and validated by Yoo (2000) were used. Furthermore, this study additionally collected information regarding IPV experiences associated with criminal allegations (KNPA, 2019), among these three items were categorized as physical aggression. Experiences of sexual criminal allegations were categorized as sexual aggression. The experience of stalking was also assessed. Consequently, 23 items (e.g., "Have you experienced IPV types within the past year?") were rated as "Yes" or "No" and the participants could select all that applied. All the number of types that the participant checked "Yes" was added and it named as IPV types. If a type was rated as "Yes", the IPV frequency for each type within the past year was collected.

PTSD symptoms

PTSD symptoms were assessed through the Posttraumatic Stress

Disorder Checklist for DSM-5 (PCL-5; Blevins et al., 2015). This study used the Korean version of the PCL-5 (K-PCL-5) translated and validated by J. W. Kim et al. (2017). Based on a previous study of elderly Korean veterans, the K-PCL-5 cut-off score was 37 (J. W. Kim et al., 2017) and the National Center for PTSD initially suggested that it should be between 31 and 33 (Weathers et al., 2016). Cronbach's alpha for the pre-EMA PCL-5 was .92, and .94 for the post-EMA PCL-5 in this study.

Data Analysis

Descriptive statistics were used to investigate IPV types and frequency of participants and PTSD symptoms. The mixed model, also known as the multilevel model, was used to assess the moderation effect of Level 1 variables. The restricted maximum likelihood (REML) method was used for parameter estimation. The repeated measures of Level 1 variables were nested within the par-

ticipants' person-level measures (Level 2). Level 1 variables were person-mean centered and Level 2 variables were grand-mean centered. Data analysis was performed using IBM SPSS 26. Intra-class correlation coefficient (ICC) of the dependent variable was 0.82. A detailed explanation of the analytical strategy is provided in Appendix C.

Results

Descriptive Statistics and IPV Types and Frequency

The participants' mean number of reported experiences of IPV types was 8.51 ($SD = 3.70$). All participants reported experiencing psychological aggression, 38 participants reported physical aggression, 24 participants reported sexual aggression, and 25 participants reported experiencing stalking. Eight participants reported experiencing all types of IPV. The mean IPV frequency

Table 1. Participants' Reported Trauma Types and Frequency by Intimate Partners ($N = 59$)

	<i>n</i> , %	<i>M</i>	<i>SD</i>
Psychological aggression	59; 100%	116.24	167.58
Said humiliating or degrading words or blamed you	51; 86.4%	22.61	34.31
Yelled to threaten and scare you	42; 71.2%	15.62	20.73
Threatened to hit or throw something at you	26; 44.1%	12.35	22.78
Threatened to break up with you	35; 59.3%	11.57	28.75
Accused you of paying too much attention to someone or something else	52; 88.1%	21.04	29.31
Checked up on you (e.g., listened to your phone calls)	42; 71.2%	25.38	45.04
Put you on an allowance	51; 86.4%	33.37	66.46
Compared your body with other's bodies in a negative way	28; 47.5%	11.61	18.77
Threatened to have sex in words	17; 28.8%	8.00	12.75
Physical aggression	38; 64.41%	6.83	16.02
Threw something at you	15; 25.4%	5.07	7.55
Shoved you	30; 50.8%	6.90	12.94
Slapped you in the face	8; 13.6%	2.25	2.05
Kicked or punched you	10; 16.9%	3.80	4.08
Hit you with something	2; 3.4%	2.00	1.41
Pummeled you	5; 8.5%	3.60	4.78
Choked or Strangled you	6; 10.2%	2.50	2.35
Threatened you with a knife or gun	1; 1.7%	2.00	-
Body tied up, making movement impossible	8; 13.6%	2.00	0.93
False imprisonment	8; 13.6%	1.38	0.74
Attempted homicide	0; 0%	-	-
Sexual aggression	24; 40.68%	6.29	16.37
Unwanted sexual harassment	22; 37.3%	10.09	13.82
Sexual assault	18; 30.5%	8.28	11.37
Stalking	25; 42.4%	7.44	19.59
Threatened death, serious injury, or sexual aggression through stalking	25; 42.4%	7.44	19.59

Note. Participants could select all IPV types that were experienced.

within the past year was 132.54 times ($SD = 189.21$, range = 2-905; Table 1). Participants demonstrated high-level pre-EMA PTSD symptoms ($M = 41.44$, $SD = 14.80$) and post-EMA PTSD symptoms ($M = 36.00$, $SD = 16.23$).

The Mixed Model

The moderating role of ERS on the relationship between upward CFT and trauma-related emotions

The mixed model was employed to assess the moderating role of ERS on the relationship between CFT and trauma-related emotions. After accounting for the control variables (IPV types and frequency), the main effect of upward CFT was statistically significant ($B = 0.262$, $p < .001$). That is, the more participants experienced upward CFT, the more they felt trauma-related emotions. The main effect of cognitive reappraisal was not statistically significant ($B = -0.018$, $p = .58$), implying cognitive reappraisal does not affect trauma-related emotions. The interaction effect between upward CFT and cognitive reappraisal was statistically significant ($B = -0.012$, $p = .005$; Table 2). Figure 2 illustrates the moderating role of cognitive reappraisal. Furthermore, the main effect of upward CFT was statistically significant ($B = 0.264$, $p < .001$), but the main effect of emotion suppression was not statistically significant ($B = -0.052$, $p = .314$). This finding implies that using emotion sup-

pression does not affect trauma-related emotions. The interaction effect between upward CFT and emotion suppression was not statistically significant ($B = -0.006$, $p = .365$).

The moderating role of ERS on the relationship between downward CFT and trauma-related emotions

The more participants experienced downward CFT, the more they felt trauma-related emotions after controlling the control variables ($B = 0.423$, $p < .001$). However, the main effect of cognitive reap-

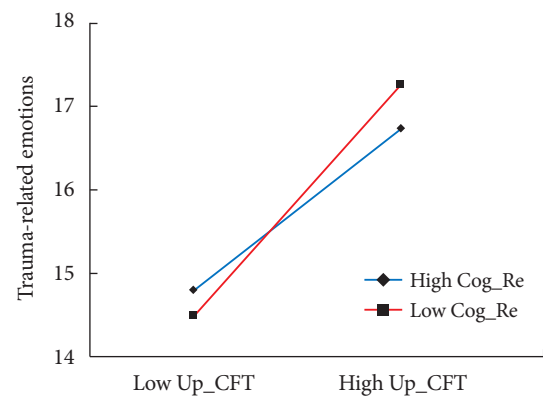


Figure 2. The moderation effect of cognitive reappraisal on the relationship between upward CFT and trauma-related emotions ($N = 59$). Note. Up_CFT = upward counterfactual thinking, and Cog_Re = cognitive reappraisal.

Table 2. The Moderating Role of Cognitive Reappraisal on the Relationship Between Upward CFT and Trauma-related Emotions ($N = 59$)

Final estimation of fixed effects (with robust standard errors)

Fixed Effect	Coefficient	SE	d.f.	t-ratio	p-value
For Intercept1, β_{0i}					
Intercept2, γ_{00}	15.814131	.724655	56.002	21.823	.000
For Up_CFT slope, β_{1i}					
Up_CFT, γ_{10}	.261589	.025422	33.668	10.290	.000
For Cog_Re slope, β_{2i}					
Cog_Re slope, γ_{20}	-.017795	.032228	36.826	-.552	.584
For Interaction, β_{3i}					
Interaction, γ_{30}	-.012316	.004407	601.381	-2.795	.005

Final estimation of variance components

Random Effect	Variance component	Standard deviation	Wald Z	p-value
Residual	5.130920	.278409	18.429	.000
Intercept1, u_0	30.615332	5.855055	5.229	.000
Up_CFT slope, u_1	.012275	.007043	1.743	.081
Cog_Re slope, u_2	.017906	.010034	1.785	.074

Note. Up_CFT = upward counterfactual thinking, and Cog_Re = cognitive reappraisal.

praisal ($B = -0.069$, $p = .129$) and the interaction effect ($B = 0.0002$, $p = .990$) were not statistically significant. In addition, the main effect of downward CFT was statistically significant ($B = 0.411$, $p < .001$), but the main effect of emotion suppression was not significant ($B = -0.004$, $p = .947$). This means that thinking about downward CFT affected trauma-related emotions, but the two types of ERS did not. The interaction effect between downward CFT and emotion suppression was not statistically significant ($B = -0.017$, $p = .337$).

Discussion

This study aimed to investigate participants' reported IPV types and frequency and the effects of CFT and ERS on trauma-related emotions in daily life through EMA.

The participants had experienced several IPV types and frequency within the past year. These results imply that IPV may be experienced frequently in different forms, and confirm that IPV could have a lasting impact on chronic and severe episodes over several years (CDC, 2021). In addition, the participants' mean pre- and post-EMA PTSD symptoms scores were higher than the suggested cut-off scores. This investigation corroborates the result of Pico-Alfonso et al. (2006) wherein experiencing physical, psychological, and sexual IPV manifested a cumulative effect on the development of PTSD. In summary, the results indicate that IPV survivors experience extensive psychological distress and PTSD symptoms.

Furthermore, the mixed model demonstrated the moderation effect of cognitive reappraisal on the relationship between upward CFT and trauma-related emotions. This indicates that although upward CFT affects trauma-related emotions, the more participants employ cognitive reappraisal in daily life, the lesser they feel trauma-related emotions. In particular, upward CFT may demonstrate a greater impact on trauma-related emotions for participants with a lower degree of cognitive reappraisal in daily life than in individuals with a higher degree of cognitive reappraisal. In contrast, the moderation effect of emotion suppression on the relationship between the two variables was not statistically significant. This result substantiates the view that cognitive reappraisal is more effective than emotion suppression (Gross, 1998), and that cognitive reappraisal would be helpful in decrease negative emo-

tions by altering the way individuals think about and interpret a situation (Gross, 2002). Several previous studies have demonstrated that cognitive reappraisal has a positive effect on alleviating PTSD symptoms as the combination of emotional clarity and cognitive reappraisal correlates with lower PTSD severity (Boden et al., 2012), and that cognitive reappraisal is associated with fewer self-reported stress-related symptoms in women exposed to trauma (Moore et al., 2008). In an fMRI study on the effectiveness of trauma-focused cognitive-behavioral therapy for assault survivors, changes in the functional connectivity of the amygdala during cognitive reappraisal predicted a reduction in PTSD symptoms (Cisler et al., 2016). In a longitudinal test conducted during and after PTSD treatment, the more PTSD patients employed emotion suppression and avoidance coping, the higher the risk of PTSD symptoms predicted at discharge. Monitoring and targeting negative appraisal and negative secondary emotions through cognitive reappraisal may be therapeutically efficient in patients with PTSD and IPV survivors.

In contrast, although downward CFT also increased trauma-related emotions, neither type of ERS moderated this relationship. There are possible conceptual rationales. First, this may be because negative emotions generated by upward and downward CFT may be qualitatively different. Many studies have defined upward CFT as self-focused inference (Epstude & Roese, 2008; Gilovich & Medvec, 1995; Zeelenberg, 1999) and have demonstrated that upward CFT is associated with secondary emotions such as guilt, shame, regret, and disappointment (Mandel, 2003; Miller & Taylor, 1995; Niedenthal et al., 1994). Compared to better alternatives, self-related inferences are more likely to cause individuals to feel secondary emotions through the contrast effect. However, there is limited evidence of a direct relationship between downward CFT and secondary emotions. Compared to worse outcomes through the assimilation effect of downward CFT, individuals may immediately feel primary emotions such as fear, sadness, or anxiety (Epstude & Roese, 2008). More specifically, trauma-related emotions may not be appropriate for measuring exact emotions generated through downward CFT. However, limited research has been conducted to determine whether these two types of CFT cause different emotions. From this standpoint, future research should investigate whether downward CFT is related to primary negative emotions,

and what type of ERS leads to a decrease in negative emotions.

Second, there is another possible conceptual rationale for the relationship between downward CFT themselves as a recollection of traumatic memories and PTSD symptoms. One of the studies has indicated through the mnemonic model of PTSD that downward CFT may affect posttraumatic stress reactions in a manner similar to trauma memories (Rubin et al., 2008). According to this model, traumatic events are encoded as highly sensory and emotional memories that are not integrated into existing cognitive schemas (Brewin et al., 1996). Instead, these memories are stored in a fragmented and disorganized manner in the brain. Consequently, when cues or triggers associated with the traumatic experience are encountered, the brain is unable to contextualize the memory, leading to intrusive and distressing re-experiencing symptoms (Brewin et al., 1996). The simulation of alternative outcomes may be explained by the same basic mechanisms as episodic recollection (Van Hoesck et al., 2013; De Brigard, 2013; Özbek et al., 2017). Furthermore, given that intrusive memories of traumatic events are important factors in the development and maintenance of posttraumatic stress reactions (Rubin et al., 2008), downward CFT may affect PTSD symptoms, especially intrusive memories, by recollecting fragmented and inaccurate episodic memories. However, there is limited findings as to whether only downward CFT has the same basic mechanism as episodic recollection, or whether upward CFT is not. It is imperative to conduct further research to investigate the relationship between these two types of CFT and the basic mechanisms of episodic recollection.

This study contributes to understanding survivors' reported experiences of IPV and PTSD symptoms. Notably, this study is significant in that it substantiates the finding that cognitive reappraisal may play a crucial role in reducing trauma-related emotions by reinforcing the ecological validity of previous findings.

However, the current study is not without limitations. First, women diagnosed with other psychological disorders and those who reported past interpersonal trauma were excluded to investigate the particular effects of PTSD symptoms. At first, this study aimed to investigate the relationship between variables of survivors who were recently exposed to traumatic events, and focus on how trauma-related emotions are developed or maintained by thinking of CFT and employing ERS in real time, allowing the ex-

amination of how constructs change together over time by using the EMA method (Shiffman et al., 2008). However, previous studies have reported that people diagnosed with PTSD without comorbid psychological disorders are a minority (Ginzburg et al., 2010; Pico-Alfonso et al., 2006). Additionally, as clinical diagnostic information was not collected, this study may not have fully explored the general characteristics of patients diagnosed with PTSD. Future research should investigate the validity of the current finding by gathering information on the survivors' primary diagnoses and comorbidity. Second, this study did not allow for the unique contribution of specific IPV-related constructs such as experienced IPV types or frequency. Given that the concomitance of experiences with sexual violence was associated with a higher severity of depressive symptoms and incidence of suicide attempts (Pico-Alfonso et al., 2006), analyzing variables that reflect this relationship may yield different results. Given that the diagnosis of PTSD is often insufficient and inappropriate for IPV survivors when demonstrating the effects of repeated trauma (Pill et al., 2017), it implies that the frequency of IPV may cause survivors to experience PTSD symptoms and other variables differently. Next, this study analyzed only 826 EMA data points (2 daily EMAs for 7 days from 59 participants), despite the sample size being above the minimum required sample size determined by the G*power 3.1.9.7 program (Faul et al., 2007). Although the data points are not that small in comparison with previous EMA studies (i.e., 768, Short et al., 2018; 544 data time points containing missing data, Kolar et al., 2020) and there is no rule of thumb for determining sample size in EMA studies. However, the more data points for EMA study may increase the generalizability of the research. This study had the limitation of obtaining a large number of data points because of the nature of the participants who had experienced IPV within the past year. Future research is encouraged to investigate more data points by including additional participants or times per day or longer days to prospectively investigate the effects of CFT and ERS on negative emotions or PTSD symptoms. Finally, this study did not measure PTSD symptoms as an EMA variable. To identify how daily thoughts, emotions, and ERS cause PTSD symptoms, it is suggested that PTSD symptoms are measured as an EMA variable.

Investigating cognitive components that are subject to intervention is essential given that cognitive elements affect long-term

treatment efficacy in PTSD patients (Asmundson et al., 2019; Resick et al., 2002). Previous studies, focused on “what could have been” prevented survivors from recovering as well as reinforced problematic evaluation of the traumatic event (Ehlers & Clark, 2000). Consequently, it is recommended that future studies clarify ways to reduce negative appraisals and negative emotions in interventions, and the specific mechanism of each treatment.

Author contributions statement

YJH, graduate of the Master’s Degree Program in Clinical Psychology in the Department of Psychology at Yonsei University, conceived and designed the study, collected the data, performed data analysis, and drafted the manuscript. SHP, a full-time Professor in the Department of Psychology of Yonsei University, supervised all the processes of this study. All authors participated in the revision and submission of the manuscript.

References

- Aldao, A. (2013). The future of emotion regulation research: Capturing context. *Perspectives on Psychological Science*, 8, 155-172. <https://doi.org/10.1177/1745691612459518>
- Aldao, A., & Nolen-Hoeksema, S. (2012). When are adaptive strategies most predictive of psychopathology? *Journal of Abnormal Psychology*, 121, 276. <https://doi.org/10.1037/a0023598>
- Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review*, 30, 217-237. <https://doi.org/10.1016/j.cpr.2009.11.004>
- Allen, J. G. (1995). *Coping with trauma: A guide to self-understanding*. American Psychiatric Association: Arlington, VA: American Psychiatric Publishing.
- Asmundson, G. J., Thorisdottir, A. S., Roden-Foreman, J. W., Baird, S. O., Witcraft, S. M., Stein, A. T., Smits, J. A. J., & Powers, M. B. (2019). A meta-analytic review of cognitive processing therapy for adults with posttraumatic stress disorder. *Cognitive Behaviour Therapy*, 48, 1-14. <https://doi.org/10.1080/16506073.2018.1522371>
- Blevins, C. A., Weathers, F. W., Davis, M. T., Witte, T. K., & Domino, J. L. (2015). The posttraumatic stress disorder checklist for DSM-5 (PCL-5): Development and initial psychometric evaluation. *Journal of Traumatic Stress*, 28, 489-498. <https://doi.org/10.1002/jts.22059>
- Blix, I., Kanten, A. B., Birkeland, M. S., Solberg, Ø., Nissen, A., & Heir, T. (2016). Thinking about what might have happened: Counterfactual thinking and post-traumatic stress in individuals directly and indirectly exposed to the 2011 Oslo bombing. *Applied Cognitive Psychology*, 30, 983-991. <https://doi.org/10.1002/acp.3289>
- Blix, I., Kanten, A. B., Birkeland, M. S., & Thoresen, S. (2018). Imagining what could have happened: Types and vividness of counterfactual thoughts and the relationship with post-traumatic stress reactions. *Frontiers in Psychology*, 9, 515. <https://doi.org/10.3389/fpsyg.2018.00515>
- Boden, M. T., Bonn-Miller, M. O., Kashdan, T. B., Alvarez, J., & Gross, J. J. (2012). The interactive effects of emotional clarity and cognitive reappraisal in posttraumatic stress disorder. *Journal of Anxiety Disorders*, 26, 233-238. <https://doi.org/10.1016/j.janxdis.2011.11.007>
- Boden, M. T., Westermann, S., McRae, K., Kuo, J., Alvarez, J., Kulkarni, M. R., Gross, J. J., & Bonn-Miller, M. O. (2013). Emotion regulation and posttraumatic stress disorder: A prospective investigation. *Journal of Social and Clinical Psychology*, 32, 296-314. <https://doi.org/10.1521/jscp.2013.32.3.296>
- Bonanno, G. A., & Burton, C. L. (2013). Regulatory flexibility: An individual differences perspective on coping and emotion regulation. *Perspectives on Psychological Science*, 8, 591-612. <https://doi.org/10.1177/1745691613504116>
- Brewin, C. R., Dalgleish, T., & Joseph, S. (1996). A dual representation theory of posttraumatic stress disorder. *Psychological Review*, 103, 670-686. <https://doi.org/10.1037/0033-295X.103.4.670>
- Brinker, J. K., & Dozois, D. J. (2009). Ruminative thought style and depressed mood. *Journal of Clinical Psychology*, 65, 1-19. <https://doi.org/10.1002/jclp.20542>
- Centers for Disease Control and Prevention. (2021). Preventing Intimate Partner Violence. <https://www.cdc.gov/violenceprevention/intimatepartnerviolence/fastfact.html>
- Chang, M. S. (2011). *A validation of the Korean version of the Trauma Appraisal Questionnaire* [Unpublished master’s thesis]. Ewha Womans University, Seoul: Korea.
- Chapman, C., Mills, K., Slade, T., McFarlane, A. C., Bryant, R. A., Creamer, M., Silove, D., & Teesson, M. (2012). Remission from post-traumatic stress disorder in the general population. *Psychological Medicine*, 42, 1695-1703. <https://doi.org/10.1017/S0033291711002856>
- Cisler, J. M., Sigel, B. A., Steele, J. S., Smitherman, S., Vanderzee, K., Pemberton, J., Pemberton, J., & Kilts, C. D. (2016). Changes in functional connectivity of the amygdala during cognitive reappraisal predict symptom reduction during trauma-focused cognitive-behavioral therapy among adolescent girls with post-traumatic stress disorder. *Psychological Medicine*, 46, 3013-3023. <https://doi.org/10.1017/S0033291716001847>

- Cloitre, M., Stolbach, B. C., Herman, J. L., Kolk, B. V. D., Pynoos, R., Wang, J., & Petkova, E. (2009). A developmental approach to complex PTSD: Childhood and adult cumulative trauma as predictors of symptom complexity. *Journal of Traumatic Stress*, 22, 399-408. <https://doi.org/10.1002/jts.20444>
- Cougle, J. R., Resnick, H., & Kilpatrick, D. G. (2013). Factors associated with chronicity in posttraumatic stress disorder: A prospective analysis of a national sample of women. *Psychological Trauma: Theory, Research, Practice, and Policy*, 5, 43. <https://doi.org/10.1037/a0025954>
- DePrince, A. P., Zurbriggen, E. L., Chu, A. T., & Smart, L. (2010). Development of the trauma appraisal questionnaire. *Journal of Aggression, Maltreatment & Trauma*, 19, 275-299. <https://doi.org/10.1080/10926771003705072>
- De Brigard, F., Addis, D. R., Ford, J. H., Schacter, D. L., & Giovanello, K. S. (2013). Remembering what could have happened: Neural correlates of episodic counterfactual thinking. *Neuropsychologia*, 51, 2401-2414. <https://doi.org/10.1016/j.neuropsychologia.2013.01.015>
- Ehlers, A., & Clark, D. M. (2000). A cognitive model of posttraumatic stress disorder. *Behaviour Research and Therapy*, 38, 319-345. [https://doi.org/10.1016/S0005-7967\(99\)00123-0](https://doi.org/10.1016/S0005-7967(99)00123-0)
- Epstude, K., & Roesse, N. J. (2008). The functional theory of counterfactual thinking. *Personality and Social Psychology Review*, 12, 168-192. <https://doi.org/10.1177/1088868308316091>
- El Leithy, S., Brown, G. P., & Robbins, I. (2006). Counterfactual thinking and posttraumatic stress reactions. *Journal of Abnormal Psychology*, 115, 629-635. <https://doi.org/10.1037/0021-843X.115.3.629>
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175-191. <https://doi.org/10.3758/BF03193146>
- Filipas, H. H., & Ullman, S. E. (2001). Social reactions to sexual assault victims from various support sources. *Violence and Victims*, 16, 673-692. <https://www.proquest.com/scholarly-journals/social-reactions-sexual-assault-victims-various/docview/808564676/se-2>
- Ford, J. D., Steinberg, K. L., & Zhang, W. (2011). A randomized clinical trial comparing affect regulation and social problem-solving psychotherapies for mothers with victimization-related PTSD. *Behavior Therapy*, 42, 560-578. <https://doi.org/10.1016/j.beth.2010.12.005>
- Gilbar, O., Plivazky, N., & Gil, S. (2010). Counterfactual thinking, coping strategies, and coping resources as predictors of PTSD diagnosed in physically injured victims of terror attacks. *Journal of Loss and Trauma*, 15, 304-324. <https://doi.org/10.1080/15325020903382350>
- Gilovich, T., & Medvec, V. H. (1995). The experience of regret: what, when, and why. *Psychological Review*, 102, 379-395. <https://doi.org/10.1037/0033-295X.102.2.379>
- Ginzburg, K., Ein-Dor, T., & Solomon, Z. (2010). Comorbidity of posttraumatic stress disorder, anxiety and depression: A 20-year longitudinal study of war veterans. *Journal of Affective Disorders*, 123, 249-257. <https://doi.org/10.1016/j.jad.2009.08.006>
- Golding, J. M. (1999). Intimate partner violence as a risk factor for mental disorders: A meta-analysis. *Journal of Family Violence*, 14, 99-132. <https://doi.org/10.1023/A:1022079418229>
- Gong, J. S. (2015). A study on PTSD of violent criminal victims in Korea - Family of murdered victims, victims of attempted murder, victims of arson, other victims of violence. *Journal of Korean Criminal Psychology*, 11, 29-50.
- Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment*, 26, 41-54. <https://doi.org/10.1023/B:JOBA.0000007455.08539.94>
- Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology*, 2, 271-299. <https://doi.org/10.1037/1089-2680.2.3.271>
- Gross, J. J. (2002). Emotion regulation: Affective, cognitive, and social consequences. *Psychophysiology*, 39, 281-291. <https://doi.org/10.1017/S0048577201393198>
- Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, 85, 348-362. <https://doi.org/10.1037/0022-3514.85.2.348>
- Harned, M. S., Ruork, A. K., Liu, J., & Tkachuck, M. A. (2015). Emotional activation and habituation during imaginal exposure for PTSD among women with borderline personality disorder. *Journal of Traumatic Stress*, 28, 253-257. <https://doi.org/10.1002/jts.22013>
- Heise, L., & Garcia-Moreno, C. (2002). Violence by intimate partners. *World Report on Violence and Health*, 1, 87-113.
- Hoppen, T. H., Heinz-Fischer, I., & Morina, N. (2020). If only... a systematic review and meta-analysis of social, temporal and counterfactual comparative thinking in PTSD. *European Journal of Psychotraumatology*, 11, e1737453. <https://doi.org/10.1080/2008198.2020.1737453>
- Kemp, A., Green, B. L., Hovanitz, C., & Rawlings, E. I. (1995). Incidence and correlates of posttraumatic stress disorder in battered women: Shelter and community samples. *Journal of Interpersonal Violence*, 10, 43-55. <https://doi.org/10.1177/088626095010001003>
- Kilpatrick, D. G., Resnick, H. S., Milanak, M. E., Miller, M. W., Keyes, K. M., & Friedman, M. J. (2013). National estimates of exposure to traumatic events and PTSD prevalence using DSM-IV and DSM-5 criteria. *Journal of Traumatic Stress*, 26, 537-547.

- <https://doi.org/10.1002/jts.21848>
- Kim, J. W., Chung, H. G., Choi, J. H., So, H. S., Kang, S. H., Kim, D. S., Moon, J. Y., & Kim, T. Y. (2017). Psychometric properties of the Korean version of the PTSD Checklist-5 in elderly Korean veterans of the Vietnam War. *Anxiety and Mood*, 13, 123-131. <https://doi.org/10.24986/anxmod.2017.13.2.123>
- Kim, S. H., & Hamann, S. (2012). The effect of cognitive reappraisal on physiological reactivity and emotional memory. *International Journal of Psychophysiology*, 83, 348-356. <https://doi.org/10.1016/j.ijpsycho.2011.12.001>
- Kolar, D. R., Neumayr, C., Roth, M., Voderholzer, U., Perthes, K., & Schlegl, S. (2020). Testing an emotion regulation model of physical activity in adolescents with anorexia nervosa: A pilot ecological momentary assessment. *European Eating Disorders Review*, 28, 170-183. <https://doi.org/10.1002/erv.2706>
- Korean National Police Agency. (2019). *Police Statistical Yearbook 2018*. <https://www.police.go.kr>
- Kwon, Y. E. (2009). *The moderating effects of trait meta-mood and counterfactual thinking on the subjective well-being and the impact of event after unwanted sexual compliance* [Unpublished master's thesis]. Korea University, Seoul: Korea.
- Lilly, M. M., & Graham-Bermann, S. A. (2010). Intimate partner violence and PTSD: The moderating role of emotion-focused coping. *Violence and Victims*, 25, 604-616. <https://doi.org/10.1891/0886-6708.25.5.604>
- Mandel, D. (2003). Counterfactuals, emotions, and context. *Cognition and Emotion*, 17, 139-159. <https://doi.org/10.1080/026999303002275>
- Markman, K. D., Elizaga, R. A., Ratcliff, J. J., & McMullen, M. N. (2007). The interplay between counterfactual reasoning and feedback dynamics in producing inferences about the self. *Thinking & Reasoning*, 13, 188-206. <https://doi.org/10.1080/13546780600927157>
- Markman, K. D., Gavanski, I., Sherman, S. J., & McMullen, M. N. (1993). The mental simulation of better and worse possible worlds. *Journal of Experimental Social Psychology*, 29, 87-109. <https://doi.org/10.1006/jesp.1993.1005>
- Markman, K. D., & McMullen, M. N. (2003). A reflection and evaluation model of comparative thinking. *Personality and Social Psychology Review*, 7, 244-267. https://doi.org/10.1207/S15327957PSPR0703_04
- McMahon, T. P., & Naragon-Gainey, K. (2018). The moderating effect of maladaptive emotion regulation strategies on reappraisal: A daily diary study. *Cognitive Therapy and Research*, 42, 552-564. <https://doi.org/10.1007/s10608-018-9913-x>
- Miller, D. T., & Taylor, B. R. (1995). *Counterfactual thought, regret, and superstition: How to avoid kicking yourself*. In N. J. Roese & J. M. Olson (Eds.), *What might have been: The social psychology of counterfactual thinking* (pp. 305-331). Mahwah, NJ: Lawrence Erlbaum Associates.
- Moore, S. A., Zoellner, L. A., & Mollenholt, N. (2008). Are expressive suppression and cognitive reappraisal associated with stress-related symptoms? *Behaviour Research and Therapy*, 46, 993-1000. <https://doi.org/10.1016/j.brat.2008.05.001>
- Niedenthal, P. M., Tangney, J. P., & Gavanski, I. (1994). "If only I weren't" versus "If only I hadn't": Distinguishing shame and guilt in counterfactual thinking. *Journal of Personality and Social Psychology*, 67, 585-595. <https://doi.org/10.1037/0022-3514.67.4.585>
- Nixon, R. D., Resick, P. A., & Nishith, P. (2004). An exploration of comorbid depression among female victims of intimate partner violence with posttraumatic stress disorder. *Journal of Affective Disorders*, 82, 315-320. <https://doi.org/10.1016/j.jad.2004.01.008>
- Özbek, M., Bohn, A., & Berntsen, D. (2017). Imagining the personal past: Episodic counterfactuals compared to episodic memories and episodic future projections. *Memory & Cognition*, 45, 375-389. <https://doi.org/10.3758/s13421-016-0671-2>
- Pico-Alfonso, M. A., Garcia-Linares, M. I., Celda-Navarro, N., Blasco-Ros, C., Echeburúa, E., & Martinez, M. (2006). The impact of physical, psychological, and sexual intimate male partner violence on women's mental health: Expressive symptoms, posttraumatic stress disorder, state anxiety, and suicide. *Journal of Women's Health*, 15, 599-611. <https://doi.org/10.1089/jwh.2006.15.599>
- Pill, N., Day, A., & Mildred, H. (2017). Trauma responses to intimate partner violence: A review of current knowledge. *Aggression and Violent Behavior*, 34, 178-184. <https://doi.org/10.1016/j.avb.2017.01.014>
- Resick, P. A., Nishith, P., Weaver, T. L., Astin, M. C., & Feuer, C. A. (2002). A comparison of cognitive-processing therapy with prolonged exposure and a waiting condition for the treatment of chronic posttraumatic stress disorder in female rape victims. *Journal of Consulting and Clinical Psychology*, 70, 867-879. <https://doi.org/10.1037/0022-006X.70.4.867>
- Resick, P. A., & Schnicke, M. K. (1992). Cognitive processing therapy for sexual assault victims. *Journal of Consulting and Clinical Psychology*, 60, 748-756. <https://doi.org/10.1037/0022-006X.60.5.748>
- Roese, N. J. (1994). The functional basis of counterfactual thinking. *Journal of Personality and Social Psychology*, 66, 805-818. <https://doi.org/10.1037/0022-3514.66.5.805>
- Rubin, D. C., Boals, A., & Berntsen, D. (2008). Memory in posttraumatic stress disorder: properties of voluntary and involuntary, traumatic and nontraumatic autobiographical memories in people with and without posttraumatic stress disorder symptoms. *Journal of Experimental Psychology: General*, 137, 591-614. <https://doi.org/10.1037/a0013165>
- Rye, M. S., Cahoon, M. B., Ali, R. S., & Daftary, T. (2008). Development and validation of the counterfactual thinking for negative events scale. *Journal of Personality Assessment*, 90, 261-269. <https://doi.org/10.15842/kjcp.2023.42.3.002>

- doi.org/10.1080/00223890701884996
- Seligowski, A. V., Lee, D. J., Bardeen, J. R., & Orcutt, H. K. (2015). Emotion regulation and posttraumatic stress symptoms: A meta-analysis. *Cognitive Behaviour Therapy*, 44, 87-102. <https://doi.org/10.1080/16506073.2014.980753>
- Seligowski, A. V., Rogers, A. P., & Orcutt, H. K. (2016). Relations among emotion regulation and DSM-5 symptom clusters of PTSD. *Personality and Individual Differences*, 92, 104-108. <https://doi.org/10.1016/j.paid.2015.12.032>
- Shepard, M. F., & Campbell, J. A. (1992). The Abusive Behavior Inventory: A measure of psychological and physical abuse. *Journal of Interpersonal Violence*, 7, 291-305. <https://doi.org/10.1177/088626092007003001>
- Shepherd, L., & Wild, J. (2014). Emotion regulation, physiological arousal and PTSD symptoms in trauma-exposed individuals. *Journal of Behavior Therapy and Experimental Psychiatry*, 45, 360-367. <https://doi.org/10.1016/j.jbtep.2014.03.002>
- Shiffman, S., Stone, A. A., & Hufford, M. R. (2008). Ecological momentary assessment. *Annual Review of Clinical Psychology*, 4, 1-32. <https://doi.org/10.1146/annurev.clinpsy.3.022806.091415>
- Shon, J. M. (2005). *Individual differences in two regulation strategies: cognitive reappraiser vs. emotion suppressor* [Unpublished Doctoral dissertation]. Seoul National University, Seoul: Korea.
- Short, N. A., Boffa, J. W., Clancy, K., & Schmidt, N. B. (2018). Effects of emotion regulation strategy use in response to stressors on PTSD symptoms: An ecological momentary assessment study. *Journal of Affective Disorders*, 230, 77-83. <https://doi.org/10.1016/j.jad.2017.12.063>
- Straus, M. A. (1979). Measuring intrafamily conflict and violence: The Conflict Tactics (CT) Scales. *Journal of Marriage and the Family*, 41, 75-88.
- Tanner, A., Voon, D., Hasking, P., & Martin, G. (2013). Underlying structure of ruminative thinking: Factor analysis of the Ruminative Thought Style Questionnaire. *Cognitive Therapy and Research*, 37, 633-646. <https://doi.org/10.1007/s10608-012-9492-1>
- Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Rumination reconsidered: A psychometric analysis. *Cognitive Therapy and Research*, 27, 247-259. <https://doi.org/10.1023/A:1023910315561>
- Van Hoeck, N., Ma, N., Ampe, L., Baetens, K., Vandekerckhove, M., & Van Overwalle, F. (2013). Counterfactual thinking: an fMRI study on changing the past for a better future. *Social Cognitive and Affective Neuroscience*, 8, 556-564. <https://doi.org/10.1093/scan/nss031>
- Walz, L. C., Nauta, M. H., & Aan het Rot, M. (2014). Experience sampling and ecological momentary assessment for studying the daily lives of patients with anxiety disorders: A systematic review. *Journal of Anxiety Disorders*, 28, 925-937. <https://doi.org/10.1016/j.janxdis.2014.09.022>
- Weathers, F. W., Litz, B. T., Keane, T. M., Palmieri, P. A., Marx, B. P., & Schnurr, P. P. (2016). *The PTSD Checklist for DSM-5 (PCL-5)-Standard* [Measurement instrument]. <https://www.ptsd.va.gov/professional/assessment/adult-sr/ptsd-checklist.asp>
- Woods, S. J., Hall, R. J., Campbell, J. C., & Angott, D. M. (2008). Physical health and posttraumatic stress disorder symptoms in women experiencing intimate partner violence. *Journal of Midwifery & Women's Health*, 53, 538-546. <https://doi.org/10.1016/j.jmwh.2008.07.004>
- Yoo, S. Y. (2000). *A study on the factor mediating the link between family violence victimization and dating violence victimization of college women: Focusing on the acceptability of dating violence* [Unpublished master's thesis]. Yonsei University, Seoul: Korea.
- Zeelenberg, M. (1999). Anticipated regret, expected feedback and behavioral decision making. *Journal of Behavioral Decision Making*, 12, 93-106. [https://doi.org/10.1002/\(SICI\)1099-0771\(199906\)12:2<93::AID-BDM311>3.0.CO;2-S](https://doi.org/10.1002/(SICI)1099-0771(199906)12:2<93::AID-BDM311>3.0.CO;2-S)

Appendix A

An a priori sample size estimation was performed for a repeated measures ANOVA using G*power software version 3.1.9.7 (the input parameters were as follows: Statistical test = MANOVA: Repeated measures, within factors; Effect size $f = 0.25$; α err prob = 0.05; Power ($1 - \beta$ err prob) = 0.95; Number of groups = 1; Number of measurements = 14; Faul et al., 2007), and the sample size in this study ($N = 59$) was satisfied under this condition ($N = 43$).

Appendix B

The Kaiser-Meyer-Olkin (KMO) statistic and Bartlett's test were used to assess factorial validity. The KMO result for the data was 0.832, which was confirmed by Bartlett's test ($\chi^2 = 2,025.15, p < .001$). Oblique rotation was chosen because the perpetuating components are likely to be correlated. The results of the common factor of the direct oblimin rotation confirmed that one factor was adequate; thus, the six items were used as one scale.

Table B1. *KMO and Bartlett's Test*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.832
Bartlett's Test of Sphericity	Approx. Chi-Square	2025.152
	<i>df</i>	15
	<i>p</i>	0.000

Table B2. *Factor Matrix*

	Factor 1
TAQ6	.772
TAQ4	.731
TAQ1	.704
TAQ2	.697
TAQ5	.679
TAQ3	.623

Extraction Method: CFA (common factor analysis)

Rotation Method: Direct Oblimin

Note. TAQ = Trauma Appraisal Questionnaire

a. 1 factor extracted

Appendix C

Analytic strategy

The intercept-only model is the following equation:

$$\text{Level1 Model: Trauma-related emotions} = \beta_{0i} + e_{it}$$

$$\text{Level2 Model: } \beta_{0i} = \gamma_{00} + u_{0i}$$

The Level 1 model includes a person's mean trauma-related emotions and time deviation from the person's mean, which implies individual deviation of trauma-related emotions at the time points. The Level 2 model includes individual deviations from the grand mean (u_{0i}), meaning that trauma-related emotions may differ between participants. The intraclass correlation coefficient (ICC) of the dependent variable was 0.82. Specifically, 82% of the total variance in participants' trauma-related emotions was due to the mean difference between participants.

The research model is the following equation:

$$\text{Level1 Model: Trauma-related emotions} = \beta_{0i} + \beta_{1i} \times X + \beta_{2i} \times M + \beta_{3i} \times XM + e_{it}$$

$$\text{Level2 Model: } \beta_{0i} = \gamma_{00} + u_{0i}$$

$$\beta_{1i} = \gamma_{10} + u_{1i}$$

$$\beta_{2i} = \gamma_{20} + u_{2i}$$

$$\beta_{3i} = \gamma_{30}$$

X, the independent variables, implies CFT (upward and downward), and M, the moderating variables, are ERS. Four equations were used: upward CFT*cognitive reappraisal, upward CFT*emotion suppression, downward CFT*cognitive reappraisal, and downward CFT*emotion suppression. The grand-mean centered IPV types and frequency were employed as control variables (fixed effect).

The Study of Self-Deprecating Bias towards Own Bodies in Individuals with Body Dissatisfaction

Yeon-Ju Park¹ Jang-Han Lee^{2†}

¹Department of Psychiatry, CHA Bundang Medical Center, CHA University, Seongnam;

²Department of Psychology, Chung-Ang University, Seoul, Korea

This study investigated whether women with high levels of body dissatisfaction (BD) have a self-deprecating bias towards bodies when evaluating bodies presented with their own or another woman's faces. Overall, 382 undergraduate students completed the Eating Disorder Inventory-2. According to the upper and lower 15th percentile, the participants were categorized into high BD ($n=26$) and low BD ($n=27$) groups. The participants were shown pictures demonstrating the characteristics of their own, thin, average, fat, and muscular bodies with their own faces and the face of another woman. Gaze duration was measured using an eye-tracking system. In addition, all the participants were asked to rate their body attractiveness, emotional arousal, valence, body fat, and muscle mass using PsychoPy. The results showed that both groups gazed at their own and thin bodies longer than the low BD group when their own face was presented rather than with another woman's face. Particularly, the high BD group rated their own bodies as less attractive, while rating thin bodies as more attractive than to the low BD group. This suggests that individuals with high BD have a self-deprecating bias toward their own bodies because of the double standards applied to themselves and others in the process of evaluation.

Keywords: body dissatisfaction, double standard, body image, attentional bias, self-deprecation

Introduction

Body dissatisfaction (BD) is defined as a person's negative thoughts and feelings toward his/her body. BD is enhanced when one compares attractive others' and unattractive own bodies. Essentially, women with high levels of BD often experience discrepancies between their own bodies and an idealized female body (Cho & Lee, 2013). This leads to body dissatisfaction because the ideal is unre-

alistic and unattainable (Grossbard et al., 2011; Peterson, 2007). BD is an important risk factor for the development and maintenance of eating disorders (ED; Grogan, 2016; Jacobi et al., 2004; Kearney-Cooke & Tieger, 2015; Thompson et al., 1999). It is widespread among women with and without ED (Coker & Abraham, 2014), especially female university students compared to their male counterparts (Keski-Rahkonen & Mustelin, 2016; Karazsia et al., 2017).

It has been suggested that BD surfaces when individuals fail to meet physical appearance standards in one or more social or personal situations (Cash et al., 2004; Riva, 2014; Yamamotova et al., 2017). People compare themselves with others in various self-evaluation dimensions. Social media conveys that a thin body is ideal for women, which is internalized in Western societies (Dittmar et al., 2000; Crossley et al., 2012). This is in line with the social comparison theory, which suggests that people determine their self-worth based on how they collocate against others (Festinger, 1954).

[†]Correspondence to Jang-Han Lee, Department of Psychology, Chung-Ang University, 84 Heukseok-ro, Dongjak-gu, Seoul 06974, Korea; E-mail: clipsy@cau.ac.kr

Received Jan 14, 2023; Revised May 4, 2023; Accepted May 17, 2023

*This research was supported by Basic Science Research Program through the National Research Foundation of Korea(NRF) funded by the Ministry of Education, Science and Technology(No. 2015R1D1A1A09061029) and the Ministry of Education of the Republic of Korea and the National Research Foundation of Korea (NRF-2017S1A5B4055761).



© 2023, Korean Journal of Clinical Psychology. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Individuals with BD may exhibit a tendency to perceive others' bodies as attractive and their bodies as unattractive; they may also have a different evaluation strategy under two conditions: oneself and others. For example, individuals with BD tend to assign relatively greater attention to thin-idealized bodies and unattractive body parts of their own body, which increases the perceived attractiveness of the object in comparison and unattractiveness of their own bodies (Cho & Lee, 2013). Women with symptomatic ED and low self-rated attractiveness paid longer attention to their unattractive body parts and others' attractive body parts (Jansen et al., 2005; Roefs et al., 2008).

Self-related body stimuli activate different body schemas than other-related body stimuli, leading to different ratings of these body stimuli. This is in line with the body image theory, which suggests that the overestimation of body size is conceptualized as a cognitive bias that stems from a self-schema (Voges et al., 2019; Williamson et al., 2004). This could be explained by double standards (DS), which are observable when two elements that objectively possess the same attributes are evaluated differently depending on the element at stake (Foschi, 2000). For example, in the general population, when presenting only overweight bodies with their own faces, they were evaluated as having high body fat, low muscle mass, and unattractiveness (Voges et al., 2019). It seems fair to evaluate a body that is different from one's own (Voges et al., 2018). In addition, people with ED rate their own bodies critically than nonclinical controls (Bauer et al., 2017; Horndasch et al., 2015). They demonstrated more pronounced self-deprecating DS across body types.

Self-report rating scales were used to reveal double standards for body images, and BD was strongly correlated with self-deprecating DS about the average-weight body in terms of attractiveness, valence, and muscle mass (Voges et al., 2018). However, the mechanism through which DS may increase BD remains unclear. To understand the relationship between DS and BD before identifying this mechanism, it is important to measure attractiveness, emotional arousal, valence, body fat, and muscle mass as self-reports with attentional bias toward bodies. Studies of body image among individuals with body dissatisfaction have either used body stimuli without faces or presented only participants' actual bodies (Cho & Lee, 2013; Gao et al., 2013; Roef et al., 2008; Smeets et al.,

2011). However, to distinguish oneself from others and to reveal the mechanism between BD and DS, it is important to recognize that the body image stimuli are one's own when studying the DS of body image. It is necessary to use body stimuli that are similar to participants' bodies, although it has been assumed in previous studies that average-weight bodies would be recognized as their own bodies (Voges et al., 2018; 2019). In the present study, the participants were asked to choose a body stimulus similar to their own body shape before experimental trials. After selecting their own body type, the following five body types were organized for body image stimuli: Own, Thin, Average-weight, Fat, and Muscular.

Considering the methodological limitations of previous studies that employed visual search and dot-probe paradigms (Dobson & Dozois, 2004; Lee & Shafran, 2004; Rosser et al., 2010; Smeets et al., 2008), which provide only discontinuous snapshots of responses (Hermans et al., 1999), this study used the eye-tracking technology, which is a non-invasive tool that provides an appropriate and direct measure of abnormal attention. This technology helps to continually measure visuo-spatial attention processing (Mogg et al., 2000). Therefore, the present study aimed to investigate how the attentional patterns in body images can be explained by double standards using an eye-tracking system and self-report rating questionnaires, according to body dissatisfaction levels.

The study investigates whether women with high levels of dissatisfaction have a self-deprecating attentional bias toward their bodies under two conditions: with their own faces and with another woman's face. It is expected that the higher body dissatisfaction (high BD) group would exhibit a greater attentional bias toward their own and thin bodies presented with their own faces than with another face. Compared with the low BD group, the high BD group would also report their own body with their own faces as less attractive than with another face.

Methods

Participants

Overall, 382 adults completed the body dissatisfaction subscales of Eating Disorder Inventory-2 (EDI-2). All the participants were female university students aged 18-30. They were recruited from bulletins with QR codes and online bulletin boards at universities

in Seoul, South Korea. According to a previous study (Cho & Lee, 2013), on the body dissatisfaction subscale of EDI-2, a mean score above 4.778 was classified as high level of body dissatisfaction (>1 standard deviation; [SD] from mean score) and a mean score below 2.667 as low level of body dissatisfaction (<1 SD from the mean score). The participants were screened according to the total points on the subscales of EDI-2 and then divided into two groups: High Body Dissatisfaction (high BD; upper 15%) and Low Body Dissatisfaction (low BD; lower 15%) to compare between groups using rigorous criteria. Finally, 58 participants were included, 29 each for the High BD and Low BD groups. All participants signed an informed consent form before participating in the experiment. The study was approved by the Institutional Review Board (No. 1041078-201910-H***-323-01).

Materials

Body dissatisfaction subscale of Eating Disorder Inventory–2 (EDI–2)

The EDI-2 (Gardner, 1991), especially the body dissatisfaction subscale, was used to screen participants. This includes nine items assessing the belief that certain body parts (e.g., hips, thighs, and stomach) are too large and measuring the level of dissatisfaction for overall body shape. Items were rated on a 6-point scale ranging from 1 = *never true of me* to 6 = *always true of me*. Cronbach's α for the body dissatisfaction subscale of EDI-2 in the Korean version of the present study was .960.

State–Trait Anxiety Inventory (STAI)

The STAI (Spielberger et al., 1983) includes 20 items on state anxiety (STAI-S) and trait anxiety (STAI-T). In the present study, the Korean version of STAI (Kim & Shin, 1978) was used. The STAI is measured to avoid differences in the level of anxiety between groups and to control as an extraneous variable in this study. Cronbach's α was .966 (STAI-S) and .907 (STAI-T).

Rating for body stimuli using PsychoPy

Using a 9-point Likert scale, participants assessed body attractiveness, emotional arousal, valence, body fat, and muscle mass for body stimuli with either the participant's or another woman's face. All participants were asked to rate body stimuli in the following

five categories: body attractiveness (1 = *very unattractive*; 9 = *very attractive*), emotional arousal (1 = *very calm*; 9 = *very arousing*), valence (1 = *very negative*; 9 = *very positive*), body fat, and muscle. To evaluate the consistency of the pictures, participants were asked to evaluate how coherent the body images looked overall; that is, how well the bodies and heads matched.

Body Mass Index (BMI)

To measure obesity, the participants were asked to report their height and weight. BMI was calculated as weight divided by height squared.

Body Dissatisfaction and Mood Visual Analogue Scale (VAS)

VAS was used to assess changes in the level of subjective feelings before and after the experiment, which consisted of a 100 mm horizontal line ranging from 0 (*very satisfied*) to 100.

Apparatus

Body images were presented on a desktop PC, and the monitor was 23-inch wide with a distance of 60–75 cm between the eyes and the monitor. A 3D program, DAZ studio 4.6 (DAZ Productions, Inc., USA), was used to construct body images for us as eye-tracking stimuli. Eye movements of the participants were recorded using a computerized eye-tracking system (Tobii TX300; Tobii Technology AB, Sweden). Body image ratings were measured using PsychoPy version 2 based on Python (Peirce, 2008). These stimuli were presented on a monitor for three seconds, in accordance with previous studies (Cho & Lee, 2013; Voges et al., 2019; 2018).

Body stimuli

Four types of female bodies (thin, average-weight, fat, and muscular) were constructed using the DAZ studio 4.6. The females were clad in a sports bra and hot pants. In addition, eight types of body images were created according to BMI levels (e.g., 10, 15, and 45) for participants to choose a body type similar to their actual self. Each body type had five different poses, resulting in 25 images each. Prior to the experiment, female students who were not participants rated each image on a 6-point overall body shape scale (1 = *extremely thin*; 6 = *extremely fat*) and mood scale (1 = *negative*; 6 = *positive*). Prior to the study, all the participants were asked

to provide a photo of their face with a neutral expression to create experimental stimuli. The other female face was an averagely attractive face from the Extended ChaeLee Korean Facial Expression of Emotions (Lee et al., 2013). It was also rated for each facial image on a 6-point emotional scale (1 = *very calm*; 6 = *very arousing*), valence (1 = *very negative*; 6 = *very positive*), and facial attractiveness (1 = *very unattractive*; 9 = *very attractive*) in the pre-experiment by female students who were not participants in this study for comparison with participants' faces. Finally, 20 body stimuli (4 poses \times 5 body types) were created with the participant's face and 20 body stimuli identical to the other woman's face in a 1,920 \times 1,080 pixel format.

Procedure

All the participants performed the experiment in a similar manner. First, they reported their level of BD and mood on VAS, and completed the affect scale questionnaires on paper. Subsequently, when in front of the computer monitor, the participants were instructed as follow: "Two images will appear few seconds after presenting the '+' mark. When the '+' mark appears, focus on the '+'." Then watch the screen freely as if you were looking through a magazine or watching television. Do not talk and move your head during the experimental trials." In this eye-tracking task, after each trial started with a central cross-fixation ('+' mark) for 1,000 ms, it is replaced by a pair of body images for 3,500 ms. Each trial included own (which was chosen similar to the participant's body shape), thin, average-weight, fat, and muscular bodies with the same pose and facial type randomly. A total of 48 trials, including two practice trials, were conducted (Figure 1). All gaze durations for the body images were recorded in milliseconds. After completing the eye-tracking experiment, the participants were asked to respond to the rating scales for body attractiveness, emotional arousal, valence, body fat, and muscle mass after a body picture was presented for three seconds. Forty body pictures were presented successively, not a pairs, in a random order. The participants were asked to rate only the bodies, not the faces, to reduce the possibility of bias. Body images and rating questionnaires were provided using the experimental software PsychoPy version 2.0, based on Python (Peirce, 2008). After the rating, they reported the level of their body satisfaction and mood on the VAS once more on paper.

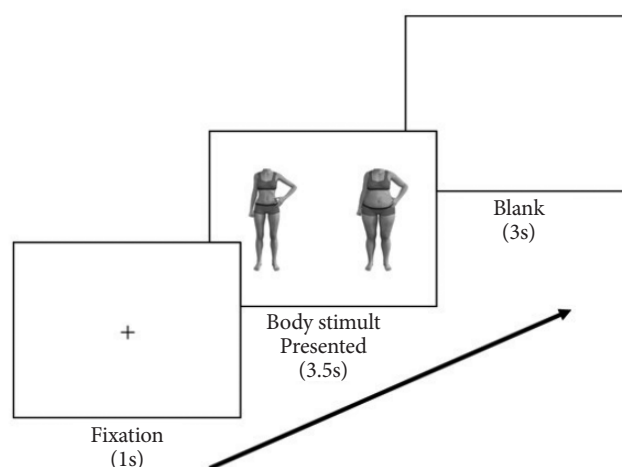


Figure 1. Examples of body image usage free viewing task using eye-tracker.

Data Analysis

All statistical analyses were performed using SPSS 25.0, for Windows. A 2 (group: high BD, low BD) \times 2 (face: self, other) \times 5 (build type: own, thin, average-weight, fat, muscular) mixed ANOVA was used to assess the differences in gaze duration and ratings of attractiveness, emotional arousal, valence, body fat, and muscle mass, according to body dissatisfaction levels. In addition, a 2 (groups: high BD, low BD) \times 2 (condition: pre, post-experiment) mixed ANOVA was performed to assess body satisfaction and emotional changes. The DS-score was calculated for each body type to assess the scale of DS. Specifically, the differences between the rating scores for attractiveness, emotional arousal, valence, body fat, and muscle mass of the bodies between the participant's and other woman's faces were evaluated. A positive difference between these rating scores indicates a higher value of the dependent variable for the former than for the latter body. Independent *t*-tests were performed to examine differences in the questionnaires between the groups. Bonferroni post-hoc tests and independent sample *t*-tests were conducted to determine significant interactions and main effects.

Results

Group Characteristics

Table 1 shows the mean and standard deviation of the self-report questionnaires for high BD and low BD in the present study. Inde-

Table 1. Means (Standard Deviations) of the Demographic Characteristic

	High BD (n = 26)	Low BD (n = 27)	t
Age (yr)	21.8 (2.4)	21.6 (2.5)	0.4
BD subscales of EDI-2	5.0 (0.3)	2.1 (0.4)	29.4*
BMI	24.8 (4.1)	19.0 (1.7)	6.7*
STAI-T	54.3 (10.3)	40.8 (9.0)	5.1*
STAI-S			
Pre-experiment	53.1 (10.8)	38.0 (8.8)	5.6*
Post-experiment	51.1 (12.7)	38.3 (12.4)	3.7*

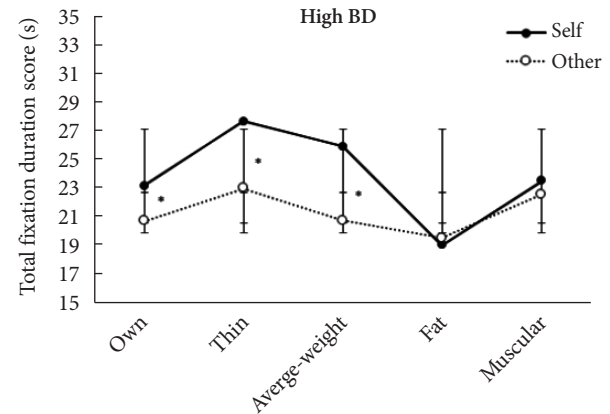
Note. high BD = the high levels of body dissatisfaction; low BD = the low levels of body dissatisfaction; yr = year; BMI = the Body Mass Index; STAI-T = State Trait Anxiety Inventory-Trait; STAI-S = State Trait Anxiety Inventory-State; EDI-2 = Eating Disorder Inventory-2.

* $p < .01$.

pendent *t*-tests were conducted for age, mean body dissatisfaction, BMI, STAI-T, and pre- and post-STAI-S scores. The two groups did not differ significantly in age, body satisfaction, and mood change, $t(51) = 0.432$, *n.s.* There was a significant difference in the body dissatisfaction subscale of EDI-2 between the high BD and low BD groups, $t(51) = 29.413$, $p < .001$. This indicates that the participants were well classified into groups using the EDI-2 subscale, without any differences in basic demographic factors. In addition, the two groups differed significantly in BMI, STAI-T, and STAI-S scores before and after the experiment, $t(33.216) = 6.715$, $p < .001$; $t(51) = 5.087$, $p < .001$; $t(51) = 5.596$, $p < .001$; $t(51) = 3.697$, $p = .001$. Therefore, the low BD group had significantly fewer anxiety problems than the high BD group. Excluded due to data input errors, the final number of participants was 53 (high BD = 26, low BD = 27) for eye-movement statistical analysis.

Attentional Bias Toward Body Stimuli

A 2 (face: self, other) \times 5 (build type: own, thin, average-weight, fat, muscular) mixed ANOVA showed a significant interaction, $F(1, 204) = 14.093$, $p < .001$, $\eta^2 = .217$. The results of the post-hoc test revealed a significant difference in the own, thin, and average-weight bodies when presented with one's own face compared to another woman's face, $t(52) = 5.298$, $p < .001$; $t(52) = 7.532$, $p < .001$; $t(52) = 8.460$, $p < .001$. These results showed that the participants gazed at their own, thin, and average-weight bodies significantly longer when they were presented with their own face than with another woman's face. This is consistent with our hypothesis that

**Figure 2.** Comparison of total fixation duration between faces (self, other) toward 5-type of bodies in high BD. Error bars represent standard error of the mean (* $p < .05$).**Table 2.** Mean (SD) of Eye-Movement, Body Satisfaction, and Mood Changes

	High BD (n = 26)	Low BD (n = 27)	F
Gaze duration (s) – self			
Own	23.223 (6.960)	26.440 (5.411)	-1.883
Thin	27.754 (7.919)	29.962 (6.507)	-1.111
Average-weight	25.972 (6.607)	26.409 (4.387)	-0.285
Fat	19.043 (7.506)	20.961 (5.858)	-1.039
Muscular	23.565 (7.451)	25.566 (4.455)	-1.182
Gaze duration (s) – other			
Own	20.741 (6.153)	22.595 (4.543)	-1.251
Thin	23.021 (6.935)	26.581 (5.077)	-2.138*
Average-weight	20.772 (6.529)	23.553 (3.457)	-1.927
Fat	19.552 (6.664)	21.060 (5.538)	-0.897
Muscular	22.613 (7.279)	24.939 (4.376)	-1.403
Body satisfaction			
Pre-experiment	26.877 (13.907)	74.489 (13.204)	0.899
Post-experiment	24.242 (15.594)	75.859 (16.154)	1.776
Mood			
Pre-experiment	39.546 (21.033)	75.426 (16.628)	-0.653
Post-experiment	31.492 (19.140)	71.904 (20.822)	0.839

Note. high BD = high levels of body dissatisfaction; low BD = low levels of body dissatisfaction.

* $p < .01$.

the high BD group would show a greater attentional bias towards their own body presented with their own face than another face. However, there was no significant interaction among group, face, and build type, $F(4, 204) = 1.874$, *n.s.* There was a significant main effect of build type, $F(4, 204) = 18.205$, $p < .001$, $\eta^2 = .263$. The results of the post-hoc test revealed that all participants showed a

greater gaze duration for their own bodies than for fat bodies. They also gazed at a thin body longer than at their own, average-weight, fat, and muscular bodies. In addition, the participants gazed at a fat body less than an average-weight or muscular body (Figure 2 and Table 2).

Ratings for Body Attractiveness, Emotional Arousal, Valence, Body Fat, and Muscle Mass

A 2 (group: high BD, low BD) \times 5 (build type: own, thin, average-weight, fat, muscular) \times 5 (rating: attractiveness, emotional arousal, valence, body fat, muscle mass) repeated-measure ANOVA

Table 3. Mean (SD) of the Double Standard Scores, and post-hoc *t*-test for Each Group

	High BD (<i>n</i> = 26)	Low BD (<i>n</i> = 27)	<i>F</i>
DS attractive			
Own	0.404 (0.822)	-0.509 (0.833)	4.015*
Thin	-0.058 (0.719)	-0.234 (0.876)	0.797
Average-weight	-0.539 (1.080)	-0.205 (1.032)	1.150
Fat	-0.529 (0.661)	-0.336 (0.909)	0.879
Muscular	-0.077 (1.031)	-0.261 (0.737)	1.378
DS arousal			
Own	-0.000 (1.091)	-0.259 (0.839)	0.972
Thin	-0.423 (1.166)	-0.198 (0.858)	-0.800
Average-weight	-0.043 (0.866)	-0.241 (1.048)	-1.073
Fat	-0.615 (1.463)	-0.140 (1.172)	-1.308
Muscular	-0.414 (0.765)	-0.333 (0.861)	-0.358
DS valence			
Own	0.740 (1.048)	-0.3704 (0.738)	4.476*
Thin	-0.019 (0.874)	-0.2438 (1.125)	0.809
Average-weight	-0.630 (1.022)	-0.5100 (1.023)	0.427
Fat	-0.894 (1.359)	-0.5082 (0.754)	1.272
Muscular	-0.279 (0.867)	-0.2119 (0.701)	2.270*
DS body fat			
Own	-0.394 (0.895)	0.0926 (0.683)	-2.231*
Thin	-0.019 (0.570)	0.2047 (0.736)	-1.023
Average-weight	-0.399 (0.863)	-0.3205 (0.534)	-0.400
Fat	-0.404 (0.704)	-0.3107 (0.445)	-0.573
Muscular	0.000 (1.020)	-0.0391 (0.513)	-0.177*
DS muscle mass			
Own	0.202 (0.732)	-0.259 (0.732)	-2.294*
Thin	-0.192 (1.211)	-0.082 (0.940)	-0.370
Average-weight	-1.083 (0.944)	-0.987 (0.787)	-0.406
Fat	-0.490 (0.602)	-0.041 (0.372)	-3.254
Muscular	-0.202 (0.938)	-0.015 (0.382)	-0.941

Note. high BD = high levels of body dissatisfaction; low BD = low levels of body dissatisfaction; DS = Double standard bias score (other – self face).

* $p < .01$.

al, valence, body fat, muscle mass) repeated-measure ANOVA showed a significant group \times build type \times rating interaction, $F(16, 816) = 2.184, p = .017, \eta^2 = .041$. There was a significant group \times rating interaction, $F(4, 204) = 3.943, p = .004, \eta^2 = .072$. The results of the post-hoc test revealed that the high BD group rated their own body as significantly less attractive, lower in valence, and lower in muscle mass when their own face was presented rather than with another woman's face, as compared to the low BD group, $F(1, 51) = 16.117, p < .001, \eta^2 = .240$; $F(1, 51) = 20.031, p < .001, \eta^2 = .282$; $F(1, 51) = 5.260, p = .026, \eta^2 = .093$. It is consistent with our hypothesis that individuals with high BD would also rate their own bodies with their own face as less attractive than with another face. In contrast, the high BD group rated their own bodies as significantly higher on body fat with their own face than with another woman's face, relative to the low BD group, $F(1, 51) = 4.977, p = .030, \eta^2 = .089$. The high BD group rated fat bodies as significantly higher on muscle mass when one's own face, rather than that of another woman, was presented to them, $F(1, 51) = 10.775, p = .002, \eta^2 = .174$, compared to the low BD group (Table 3).

Discussion

This study aimed to explore whether women with high levels of body dissatisfaction have a self-deprecating bias towards bodies when evaluating bodies presented with their own or other women's faces. The eye-tracking results showed that there was a significant difference in participants' evaluation of their own bodies when presented with their own faces as compared to when their bodies were presented with another's face. Specifically, the high BD group rated their own bodies and faces as significantly less attractive than the low BD group. Both attentional bias and rating scores for body stimuli will be discussed according to body type.

The results showed that both the high BD and low BD groups gazed longer at their own bodies when presented with their own faces than with another woman's face. Compared to the low BD group, the high BD group evaluated their own bodies as less attractive and negative and as having less muscle mass when their own faces, rather than another woman's face, were presented. This is consistent with previous studies that assumed self-deprecating double standards for average-weight as their own bodies (Voges et

al., 2019). In sum, while both the high and low BD groups gazed longer at bodies with their own faces (compared to bodies with the face of another woman), the high BD group gazed at their own body longer and rated it as less attractive than the low BD group. These findings suggest that individuals with high BD have a self-deprecating bias toward their own bodies. The results also suggest that the high BD group maintains or increases dissatisfaction with their bodies because they gaze at their own body with a negative evaluation that it is unattractive.

Both the high and low BD groups gazed longer at pictures of thin bodies with their own faces than at pictures of another woman's face. Pictures of thin bodies were also gazed at longer than pictures presenting bodies of other types (such as own, average-weight, fat, and muscular). These results are consistent with our hypotheses and previous research (Cho & Lee, 2013), and suggest that thin bodies are familiar to both groups due to the impact of social media (Hawkins et al., 2004). Although there was no significant group difference for thin bodies, both groups reported that thin bodies with their own faces appeared more attractive than thin bodies with the faces of other women. These results confirm that thin bodies are idealized, in line with the social comparison theory (Festinger, 1954). Accordingly, the high BD group may suffer from body dissatisfaction because of their comparison with thin bodies. In other words, the high BD groups perceived thin bodies with their own faces as attractive (Ahern et al., 2008), which suggests that they have a thin idealization and apply stricter standards to themselves than others. Interestingly, both the high and low BD groups gazed less at fat bodies than at bodies of other types, regardless of the face presented in the pictures (Cho & Lee, 2013). In line with these results, both groups reported that fat bodies when presented with their own faces were less attractive than the same bodies when presented with the faces of another woman; however, there was no significant difference between the groups. These results suggest that the high BD group may tend to avoid fat bodies as negative (Seifert et al., 2008).

This study has several limitations. First, there is ambiguity regarding whether the low BD was satisfied with their own bodies. For this reason, we labelled it a low BD group rather than a body satisfaction group, and both body satisfaction and dissatisfaction questions were asked when screening participants using the EDI-

2. Second, the study mainly focused on undergraduates, although men also experience dissatisfaction with their own bodies (Cordes et al., 2017; Galioto & Crowther, 2013). Therefore, in future studies, it is necessary to consider both women and men when studying self-deprecating DS in individuals with body dissatisfaction, regardless of occupation, sex, etc.

Despite these limitations, the results confirm self-deprecating DS toward one's own body in individuals with high body dissatisfaction, using an eye-tracking system and rating scales. Measuring longer gaze duration and lower rating scores of body attractiveness toward one's own body when looking at one's own face than with another woman's face may suggest a mechanism that increases body dissatisfaction. In summary, these findings could confirm a body-related identity bias (Buote et al., 2011; Voges et al., 2019) in BD based on self-deprecating DS in body evaluation. As a therapeutic approach to high levels of body dissatisfaction, it may be helpful to reduce identity and attentional biases toward their own and thin bodies (Voges et al., 2019; Voges et al., 2018; Williamson et al., 2004). It could also be incorporated into psychoeducation by teaching students about identity biases and applying it to psychological interventions. Furthermore, it may be helpful to reduce the schema-distorted perception of one's own body in body exposure therapy (Jansen et al., 2016; Trentowska et al., 2014) by changing the perspective of body image.

Author contributions statement

Y. J. Park, graduate student at Chung-Ang University, collected and analyzed the data and prepared the manuscript. J. H. Lee, professor at Chung-Ang University supervised the research process. All the authors provided critical feedback, participated in the revision of the manuscript, and approved the final submission.

Y. J. Park, graduate student at Chung-Ang University who is now a clinical psychology resident at CHA University Bundang Medical Center, designed the study.

References

Ahern, A. L., Bennett, K. M., & Hetherington, M. M. (2008). Internalization of the ultra-thin ideal: Positive implicit associations

- with underweight fashion models are associated with drive for thinness in young women. *Eating Disorders*, 16, 294-307. <https://doi.org/10.1080/10640260802115852>
- Basanovic, J., Notebaert, L., Grafton, B., Hirsch, C. R., & Clarke, P. J. (2017). Attentional control predicts change in bias in response to attentional bias modification. *Behaviour Research and Therapy*, 99, 47-56. <https://doi.org/10.1016/j.brat.2017.09.002>
- Bauer, A., Schneider, S., Waldorf, M., Braks, K., Huber, T. J., Adolph, D., & Vocks, S. (2017). Selective visual attention towards oneself and associated state body satisfaction: An eye-tracking study in adolescents with different types of eating disorders. *Journal of Abnormal Child Psychology*, 45, 1647-1661. <https://doi.org/10.1007/s10802-017-0263-z>
- Buote, V. M., Wilson, A. E., Strahan, E. J., Gazzola, S. B., & Papps, F. (2011). Setting the bar: Divergent sociocultural norms for women's and men's ideal appearance in real-world contexts. *Body Image*, 8, 322-334. <https://doi.org/10.1016/j.bodyim.2011.06.002>
- Cash, T. F., Morrow, J. A., Hrabosky, J. I., & Perry, A. A. (2004). How has body image changed? A cross-sectional investigation of college women and men from 1983 to 2001. *Journal of Consulting and Clinical Psychology*, 72, 1081-1089. <https://doi.org/10.1037/0022-006x.72.6.1081>
- Cho, A., & Lee, J. H. (2013). Body dissatisfaction levels and gender differences in attentional biases toward idealized bodies. *Body Image*, 10, 95-102. <https://doi.org/10.1016/j.bodyim.2012.09.005>
- Coker, E., & Abraham, S. (2014). Body weight dissatisfaction: A comparison of women with and without eating disorders. *Eating Behaviors*, 15, 453-459. <https://doi.org/10.1016/j.eatbeh.2014.06.014>
- Cordes, M., Vocks, S., Düsing, R., & Waldorf, M. (2017). Effects of the exposure to self- and other-referential bodies on state body image and negative affect in resistance-trained men. *Body Image*, 21, 57-65. <https://doi.org/10.1016/j.bodyim.2017.02.007>
- Crossley, K. L., Cornelissen, P. L., & Tovée, M. J. (2012). What is an attractive body? Using an interactive 3D program to create the ideal body for you and your partner. *PLoS ONE*, 7, e50601. <https://doi.org/10.1371/journal.pone.0050601>
- Dittmar, H., Lloyd, B., Dugan, S., Halliwell, E., Jacobs, N., & Cramer, H. (2000). The "body beautiful": English adolescents' images of ideal bodies. *Sex Roles*, 42, 887-915. <https://doi.org/10.1093/hwj/30.1.1>
- Dobson, K. S., & Dozois, D. J. (2004). Attentional biases in eating disorders: A meta-analytic review of Stroop performance. *Clinical psychology review*, 23, 1001-1022. <https://doi.org/10.1016/j.cpr.2003.09.004>
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, 7, 117-140. <https://doi.org/10.1177/001872675400700202>
- Foschi, M. (2000). Double standards for competence: Theory and research. *Annual Review of Sociology*, 26, 21-42. <https://doi.org/10.1146/annurev.soc.26.1.21>
- Galioto, R., & Crowther, J. H. (2013). The effects of exposure to slender and muscular images on male body dissatisfaction. *Body Image*, 10, 566-573. <https://doi.org/10.1016/j.bodyim.2013.07.009>
- Gao, X., Li, X., Yang, X., Wang, Y., Jackson, T., & Chen, H. (2013). I can't stop looking at them: Interactive effects of body mass index and weight dissatisfaction on attention towards body shape photographs. *Body Image*, 10, 191-199. <https://doi.org/10.1016/j.bodyim.2012.12.005>
- Garner, D. M. (1991). Eating disorder Inventory-2; professional manual. *Psychological assessment resources*.
- Grogan, S. (2016). *Body image: Understanding body dissatisfaction in men, women and children*. <https://doi.org/10.4324/9781315681528>
- Grossbard, J. R., Neighbors, C., & Larimer, M. E. (2011). Perceived norms for thinness and muscularity among college students: What do men and women really want? *Eating Behaviors*, 12, 192-199. <https://doi.org/10.1016/j.eatbeh.2011.04.005>
- Hawkins, N., Richards, P. S., Granley, H. M., & Stein, D. M. (2004). The impact of exposure to the thin-ideal media image on women. *Eating Disorders*, 12, 35-50.
- Hermans, D., Vansteenwegen, D., & Eelen, P. (1999). Eye movement registration as a continuous index of attention deployment: Data from a group of spider anxious students. *Cognition & Emotion*, 13, 419-434. <https://doi.org/10.1080/026999399379249>
- Horndasch, S., Heinrich, H., Kratz, O., Mai, S., Graap, H., & Moll, G. H. (2015). Perception and evaluation of women's bodies in adolescents and adults with anorexia nervosa. *European Archives of Psychiatry and Clinical Neuroscience*, 265, 677-687. <https://doi.org/10.1007/s00406-015-0603-3>
- Jacobi, C., Hayward, C., De Zwaan, M., Kraemer, H. C., & Agras, W. S. (2004). Coming to terms with risk factors for eating disorders: Application of risk terminology and suggestions for a general taxonomy. *Psychological Bulletin*, 130, 19-65. <https://doi.org/10.1037/0033-2909.130.1.19>
- Jansen, A., Nederkoorn, C., & Mulken, S. (2005). Selective visual attention for ugly and beautiful body parts in eating disorders. *Behavior Research and Therapy*, 43, 183-196. <https://doi.org/10.1016/j.brat.2004.01.003>
- Jansen, A., Voorwinde, V., Hoebink, Y., Rekkers, M., Martijn, C., & Mulken, S. (2016). Mirror exposure to increase body satisfaction: Should we guide the focus of attention towards positively or negatively evaluated body parts? *Journal of Behavior Therapy and Experimental Psychiatry*, 50, 90-96. <https://doi.org/10.1016/j.jbtep.2015.06.002>
- Karaszia, B. T., Murnen, S. K., & Tylka, T. L. (2017). Is body dissatisfaction changing across time a cross-temporal meta-analysis. *Psychological Bulletin*, 143, 293-320. <https://doi.org/10.1037/bul0000081>

- Kearney-Cooke, A., & Tieger, D. (2015). Body image disturbance and the development of eating disorders. In L. Smolak and M. D. Levine (Eds.), *The Wiley handbook of eating disorders* (pp. 283-296). <https://doi.org/10.1002/9781118574089.ch22>
- Keski-Rahkonen, A., & Mustelin, L. (2016). Epidemiology of eating disorders in Europe: Prevalence, incidence, comorbidity, course, consequences, and risk factors. *Current Opinion in Psychiatry*, 29, 340-345. <https://doi.org/10.1097/YCO.0000000000000278>
- Kim, J. T., & Shin, D. K. (1978). A study based on the standardization of the STAI for Korea. *Recent Medicine*, 2, 69-75.
- Lee, K. U., Kim, J., Yeon, B., Kim, S. H., & Chae, J. H. (2013). Development and standardization of extended ChaeLee Korean facial expressions of emotions. *Psychiatry Investigation*, 10, 155-163. <https://doi.org/10.4306/pi.2013.10.2.155>
- Lee, M., & Shafran, R. (2004). Information processing biases in eating disorders. *Clinical psychology review*, 24, 215-238. <https://doi.org/10.1016/j.cpr.2003.10.004>
- McCabe, M. P., & Ricciardelli, L. A. (2004). Body image dissatisfaction among males across the lifespan: A review of past literature. *Journal of Psychosomatic Research*, 56, 675-685. [https://doi.org/10.1016/S0022-3999\(03\)00129-6](https://doi.org/10.1016/S0022-3999(03)00129-6)
- Mogg, K., Millar, N., & Bradley, B. P. (2000). Biases in eye movements to threatening facial expressions in generalized anxiety disorder and depressive disorder. *Journal of Abnormal Psychology*, 109, 695. <https://doi.org/10.1037/0021-843x.109.4.695>
- Neumark-Sztainer, D., Paxton, S. J., Hannan, P. J., Haines, J., & Story, M. (2006). Does body satisfaction matter? Five-year longitudinal associations between body satisfaction and health behaviors in adolescent females and males. *Journal of Adolescent Health*, 39, 244-251. <https://doi.org/10.1016/j.jadohealth.2005.12.001>
- Pierce, J. W. (2008). Generating stimuli for neuroscience using PsychoPy. *Frontiers in Neuroinformatics*, 2, 10. <https://doi.org/10.3389/neuro.011.010.2008>
- Peterson, C. M. (2007). *Body image in men: Drive for muscularity and social influences, body image evaluation and investment, and psychological well-being* (Unpublished doctoral dissertation). University of Saskatchewan.
- Riva, G. (2014). Out of my real body: Cognitive neuroscience meets eating disorders. *Frontiers in Human Neuroscience*, 8, 236. <https://doi.org/10.3389/fnhum.2014.00236>
- Roefs, A., Jansen, A., Moresi, S., Willems, P., van Grootel, S., & van der Borgh, A. (2008). Looking good. BMI, attractiveness bias and visual attention. *Appetite*, 51, 552-555. <https://doi.org/10.1016/j.appet.2008.04.008>
- Rosser, B. A., Moss, T., & Rumsey, N. (2010). Attentional and interpretative biases in appearance concern: An investigation of biases in appearance-related information processing. *Body Image*, 7, 251-254. <https://doi.org/10.1016/j.bodyim.2010.02.007>
- Seifert, A. L., Arnell, K. M., & Kiviniemi, M. T. (2008). The relation of body dissatisfaction to salience of particular body sizes. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity*, 13, e84-e90. <https://doi.org/10.1007/bf03327510>
- Smeets, E., Roefs, A., van Furth, E., & Jansen, A. (2008). Attentional bias for body and food in eating disorders: Increased distraction, speeded detection, or both? *Behaviour Research and Therapy*, 46, 229-238. <https://doi.org/10.1016/j.brat.2007.12.003>
- Smeets, E., Jansen, A., & Roefs, A. (2011). Bias for the (un)attractive self: On the role of attention in causing body (dis)satisfaction. *Health Psychology*, 30, 360-367. <https://doi.org/10.1037/a0022095>
- Spielberger, C. D., Gorsuch, R. L., & Lushene, R. E. (1983). *Manual for the state-trait anxiety inventory*. Consulting Psychologist Press. <https://doi.org/10.53841/bptest.2003.s tai>
- Thompson, J. K., Covert, M. D., & Stormer, S. (1999). Body image, social comparison and eating disturbance: A covariance structure modeling investigation. *International Journal of Eating Disorders*, 26, 43-53. [https://doi.org/10.1002/\(SICI\)1098-108X\(199907\)26:1<43::AID-EAT6>3.0.CO;2-R](https://doi.org/10.1002/(SICI)1098-108X(199907)26:1<43::AID-EAT6>3.0.CO;2-R)
- Trentowska, M., Svaldi, J., & Tuschien-Caffier, B. (2014). Efficacy of body exposure as treatment component for patients with eating disorders. *Journal of Behavior Therapy and Experimental Psychiatry*, 45, 178-185. <https://doi.org/10.1016/j.jbtep.2013.09.010>
- Voges, M. M., Giabbiconi, C. M., Schone, B., Braks, K., Huber, T. J., & Waldorf, M. (2018). Double standards in body evaluation? How identifying with a body stimulus influences ratings in women with anorexia and bulimia nervosa. *The International Journal of Eating Disorders*, 51, 1223-1232. <https://doi.org/10.1002/eat.22967>
- Voges, M. M., Giabbiconi, C. M., Schone, B., Waldorf, M., Hartmann, A. S., & Vocks, S. (2019). Double standards in body evaluation? The influence of identification with body stimuli on ratings of attractiveness, body fat, and muscle mass. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity*, 24, 1173-1180. <https://doi.org/10.1007/s40519-017-0450-5>
- Williamson, D. A., White, M. A., York-Crowe, E., & Stewart, T. M. (2004). Cognitive-behavioral theories of eating disorders. *Behavior Modification*, 28, 711-738. <https://doi.org/10.1177/0145445503259853>
- Yamamoto, A., Bulant, J., Bocek, V., & Papezova, H. (2017). Dissatisfaction with own body makes patients with eating disorders more sensitive to pain. *Journal of Pain Research*, 10, 1667-1675. <https://doi.org/10.2147/jpr.s133425>

Study Examines Difference between Communal Narcissism and Altruism in Korean College Students Using Close-Other Reports

Hyeonjin Kim¹ Jinwon Kim² Kibum Moon³ Jisun Jeong⁴ Young-gun Ko^{1†}

¹School of Psychology, Korea University, Seoul; ²Office of Digital Information, Korea University, Seoul, Korea;

³Department of Psychology, Georgetown University, Washington D.C., USA;

⁴Department of Education, Pusan National University, Busan, Korea

This study aimed to examine the difference between communal narcissism and altruism using close-other reports, especially in collectivistic cultures (e.g., Korea). There may be differences between individualistic and collectivistic cultures in the evaluation of communality. However, research on acquaintance evaluations of the difference between communal narcissism and altruism has never been conducted in a collectivistic culture. Accordingly, 179 Korean college students (115 females) completed self-report questionnaires to assess communal narcissism and altruism, selecting three close others who rated the psychological adjustment of the participants in terms of communality, altruism, and well-being. We found that self-reported communal narcissism was positively correlated with self-reported altruism but not significantly correlated with close-other-reported altruism. Additionally, the effect of self-reported communal narcissism on psychological adjustment as evaluated by close others was not significant after controlling for the effect of self-reported altruism. However, after controlling for the effect of self-reported communal narcissism, the effect of self-reported altruism on psychological adjustment as evaluated by close others was significant. Although communal narcissism and altruism are closely related in self-reports, findings based on reports of close others provide empirical evidence that they are distinguishable personality traits.

Keywords: grandiose narcissism, communal narcissism, altruism, close-other reports, biased self-perception, cultural difference

Introduction

According to the agentic-communal model of grandiose narcissism, the latter can be categorized into two types: agentic and communal narcissism (Gebauer et al., 2012). Agentic narcissism mani-

festes as grandiose self-views in agentic domains, such as academic achievement and creativity, whereas communal narcissism manifests as grandiose self-views in communal domains, such as amiability and faithfulness (Gebauer et al., 2012).

Communal narcissists tend to perceive themselves as highly altruistic and deeply dedicated to their communities and natural environment (Barry et al., 2017; Fatfouta & Schröder-Abé, 2018; Gebauer & Sedikides, 2018; Naderi, 2018; Yang et al., 2018). Previous studies have shown that communal narcissism and altruism have different motivations for helping others. Altruistic behavior is the motivation to contribute to others' welfare (Bar-Tal, 1982; Batson, 2011; Eisenberg, 1986; MacIntyre, 1967). Meanwhile, communal narcissists are motivated by the goals of authority and grandiosity (Gebauer et al., 2012). It has also been reported that if communal


[†]Correspondence to Young-gun Ko, School of Psychology, Korea University, 145 Anam-ro, Seongbuk-gu, Seoul 02841, Korea; E-mail: elip@korea.ac.kr

Received Nov 8, 2022; Revised May 19, 2023; Accepted May 25, 2023

Portions of this article were submitted as the Master's thesis of the first author to Korea University. Part of the data of this article were presented at the 2020 Fall Online Conference of the Korean Clinical Psychology Association, Republic of Korea.

This study did not receive any specific grants from funding agencies in the public, commercial, or non-profit sectors.

The authors declare that they have no conflict of interest.

 © 2023, Korean Journal of Clinical Psychology. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

narcissists are told that they will attain a superior position in the future, the greater their communal narcissism, the lower their willingness to help others (Giacomin & Jordan, 2015). They are comparatively reticent in making personal sacrifices for the benefit of society and the environment (Naderi, 2018).

Previous studies have found that both altruism and communal narcissism are positively correlated with psychological adjustment. Altruism is positively associated with common bond, life satisfaction and positive affect (Dulin & Hill, 2003; Kahana et al., 2013; Kim et al., 2016; Post, 2005). Communal narcissism also positively correlates with life satisfaction, positive affect, and self-esteem (Žemojtel-Piotrowska et al., 2014; Žemojtel-Piotrowska et al., 2017). However, these findings were based on self-reported measures. Relying solely on self-reported information in psychological assessments can be problematic (see Achenbach et al., 2005; Meyer et al., 2001). In particular, because narcissistic individuals tend to have an inflated view of themselves and their abilities, obtaining information from acquaintances may minimize the limitations of self-reported measures (Cooper et al., 2012).

Communal narcissism is not related to objective prosociality (i.e., actual behavior and informant-reports), but to subjective prosociality (i.e., self-perceptions) (Nehrlich et al., 2019). Barry et al. (2017) reported that adolescent participants who were communally narcissistic self-reported that they frequently helped others, while other students reported that they engaged in violent and ostracizing behavior. On the contrary, communal narcissists may act altruistically toward peers or seem pro-social because they are primarily interested in the communal domain (Barry et al., 2021).

However, previous studies on communal narcissism involved participants who were enrolled in the same course or program but did not evaluate how well others knew the participants (Barry et al., 2017; Gebauer et al., 2012; Nehrlich et al., 2019). Studies of acquaintance evaluations of personality traits demonstrated that close-other reports were more accurate if the respondent knew more about the participant (Funder et al., 1995; Paulhus & Reynolds, 1995; Vazire, 2010; Vazire & Carlson, 2011). Prolonged interaction with the same individual increases the quantity of behavioral data accessible as well as the quality of data upon which we can make judgments (Funder, 1999; Letzring et al., 2006). Therefore, the reliability of close-other reports can be maximized by in-

cluding respondents who know the participant well and are selected by the participant, and by assessing how well the respondent knows the participant.

Prior studies on communal narcissism have mainly been conducted in individualistic cultures, such as Germany (Kesenheimer & Greitemeyer, 2021; Nehrlich et al., 2019), Poland (Nowak et al., 2022; Žemojtel-Piotrowska et al., 2021), the United Kingdom (Gebauer et al., 2012), and the United States (Barry et al., 2021; Fennimore, 2021). To the best of our knowledge, no empirical study has examined the relationship between communal narcissism and altruism in a collectivistic culture by incorporating close other reports.

There may be differences in self-enhancement, such as grandiose narcissism, between individualistic and collectivistic cultures. Individualistic cultures may value agentic traits (e.g., intelligence), whereas collectivistic cultures may value communal traits (e.g., agreeableness) (Sedikides et al., 2003; Swann & Bosson, 2010). Individualistic cultures amplify individual attributes, whereas collectivistic cultures exaggerate collectivistic attributes (Sedikides et al., 2007a, 2007b). However, according to Yang et al. (2018), also in collectivistic cultures, communal narcissism did not correlate with actual altruistic behavior. How do people in close proximity assess the psychological adjustment of individuals with communal narcissism in Eastern cultures?

When one gets to know them better, grandiose becomes increasingly unpopular (Colvin et al., 1995; Paulhus, 1998). With zero familiarity (i.e., informants had no prior knowledge of the targets), the grandiose were rated favorably; but, after extended acquaintance (i.e., informants have previously been aware of the targets), they were not rated positively (Dufner et al., 2019). Even in collectivist cultures, close acquaintances can distinguish between communal narcissism and altruism.

Therefore, in this study, we examined the differences between communal narcissism and altruism through evaluation of close others. According to Barry et al. (2021), there were significant correlations among peer-reported prosociality, self-reported communal narcissism, and self-reported communalism (i.e., without grandiose self-views in communal domains); However, only communalism significantly explained peer-reported prosociality when simultaneous regression analyses were performed. Our hy-

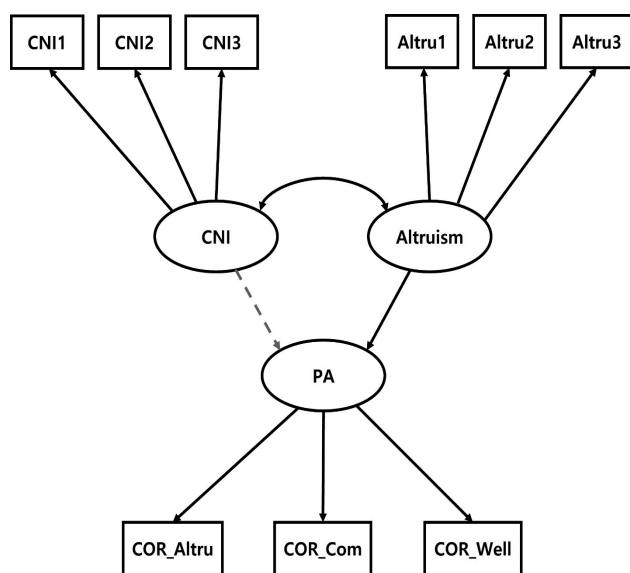


Figure 1. Research model of the effect of communal narcissism and altruism on psychological adjustment. CNI = Communal Narcissism Inventory; PA = Psychological Adjustment; COR_Altru = Close-Other-Reported Altruism; COR_Com = Close-Other-Reported Communitarity; COR_Well = Close-Other-Reported Well-being.

potheses are as follows: First, when we examined communal narcissism, altruism, and psychological adjustment as reported by close others using a structural equation model, only altruism significantly explained psychological adjustment, as evaluated by an acquaintance (Figure 1). Second, the relationship between communal narcissism and close-other-reported psychological adjustment would be weaker than that between altruism and close-other-reported psychological adjustment.

Methods

Participants and Procedure

Participants were recruited through an online post on a college website. We conducted an orientation where each participant was asked to select three individuals with whom they had a close relationship to complete the close other reports. Accordingly, 179 participants (115 females, mean age = 19.46, and 64 males, mean age = 20.21), and each of their three close others who completed a set of questionnaires, were included in the analysis. All self-reported and close-other-reported responses were recorded online. This study was approved by our Institutional Review Board (IRB), and all participants

were compensated.

Measures

The assessment scales were the Communal Narcissism Inventory (CNI) and an altruism scale in a self-report format. To assess close others' evaluations of the participants, we administered the Close-Other-Reported Communitarity (CORC), Close-Other-Reported Altruism (CORA), and Close-Other-Reported Well-Being (CORW) instruments.

Communal Narcissism Inventory (CNI)

Gebauer et al. (2012) developed and validated a scale for assessing the degree of communal narcissism. The Korean version of the questionnaire was first translated by a bilingual user majoring in clinical psychology. The translated questionnaire was then back translated into English by an independent bilingual user majoring in clinical psychology. Sixteen items were included on a 7-point scale, ranging from 1 (strongly disagree) to 7 (strongly agree), including statements such as "I will be well-known for my good deeds." Internal consistency (Cronbach's alpha) was .92. We conducted confirmatory factor analysis using the maximum likelihood method to confirm the factor structure of the CNI. The results showed that the structure of communal narcissism was bifactorial, with two factor grouping items related to the present and future with an adequate model fit, $\chi^2 [88] = 187.131$; $p < 0.001$; CFI = 0.935; RMSEA = 0.079; 90% CI [0.064-0.095]; SRMR = 0.060. Our results replicated the findings of previous studies (e.g., Rogoza & Fatfouta, 2019; Żemojtel-Piotrowska et al., 2016).

Altruism scale

We used the Korean version by Ahn and Chae (1997) of NEO-PI-R (Costa & McCrae, 1992) to assess altruism. We used only eight items of the Altruism subscale of the Agreeableness Scale, and each statement was answered using a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree), including statements such as "If possible, I assist others even risking difficulties." Internal consistency (Cronbach's alpha) was .82.

Close-Other-Reported Well-Being (CORW)

We used eight close other items reported by Kim and Ko (2018) that

were significantly correlated with defense mechanism maturity using Vaillant's (1971, 1976, 1977) defense mechanism rating interview. The eight items assess depression, anxiety, emotional stability, well-being, interpersonal relationships, psychological maturity, coping skills, and happiness. Statements included "I believe that this person is good at adaptation." The items were rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Internal consistency (Cronbach's alpha) was .87.

Close–Other–Reported Communality (CORC)

We used the method described by Rammstedt and John (2007) to adjust the CNI to match the usual other-reported formats. For example, "I am generally the most understanding person" was amended to "This person is generally the most understanding person." However, because the meaning of CNI is changed in the form of acquaintance evaluation, the meaning of the question changes; therefore, we named it CORC. Specifically, CORC provides information on how much the participant helps others and is dedicated to the community. It uses a 7-point scale, ranging from 1 (strongly disagree) to 7 (strongly agree). Internal consistency (Cronbach's alpha) was .94.

Close–Other–Reported Altruism (CORA)

We also adjusted the altruism scale to match the usual other-reported format, using the same means. For example, the statement "I try to be kind to everyone I meet" was amended to "This person tries to be kind to everyone that this person meets." CORA is rated on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). Internal consistency (Cronbach's alpha) was .87.

Statistical Analyses

We analyzed the data using SPSS 24.0 and R programming. Descriptive statistics were used to summarize the demographic characteristics of participants. We analyzed Pearson's correlation coefficients to explore the relationships between the variables, and calculated Cronbach's alpha for each scale to verify internal consistency. The intraclass correlation coefficients (ICCs) for communal narcissism, altruism, and well-being were .30, .44, and .47, respectively. Assuming that the mean score of multiple respondents' reports is a reliable indicator (Clifton et al., 2005; Jackson et al., 2015),

we used the mean score of the three close other reports for analyses. Finally, we compared the variance in communal narcissism and altruism after combining the three other reported measures into one latent variable, psychological adjustment, using structural equation modeling.

Considering that both communal narcissism and altruism consist of a single factor, we created three parcels for each factor, as recommended by both Little et al. (2013) and Matsunaga (2008). We used a factor algorithm or single-factor analysis parceling (Little et al., 2002; Matsunaga, 2008; Rogers & Schmitt, 2004) and set item parceling to be equivalent across parcels in terms of average factor loading. The parcels were named CNI1-CNI3 and Altru1-Altru3. We used χ^2 , CFI, SRMR, and RMSEA to assess the goodness-of-fit indices in structural equation modeling (Boomsma, 2000; Kline, 2011; McDonald & Ho, 2002; West et al., 2012).

According to Hu and Bentler (1999), a CFI greater than .95 and an SRMR lower than 0.08 indicates a good fit. An RMSEA value lesser than or equal to .05 is a close fit, lesser than .08 is a fair fit, and lesser than .10 is considered a mediocre fit (Browne & Cudeck, 1993; MacCallum et al., 1996). We retested 5,000 bootstrap samples to calculate 95% confidence intervals when comparing the variance in communal narcissism and altruism regarding psychological adjustment. This result was statistically significant at a level of .05 when the 95% confidence interval did not include 0 (Bollen & Stine, 1992).

Results

Demographic Characteristics

Participants were included in the study if all measures were answered and all three close others completed their evaluations. The participants included 64 males and 115 females. The mean age of males was 20.21 ($SD = 1.80$), and the mean age of females was 19.46 ($SD = 1.24$). Demographic characteristics are shown in Table 1.

Descriptive Statistics and Correlations

We calculated the mean and standard deviation of each variable and the correlations between the variables. The results are summarized in Table 2. Self-reported communal narcissism was positively correlated with altruism ($r = .47, p < .001$). It was also positively correlated with communality ($r = .19, p < .05$) and well-being

Table 1. Demographic Characteristics of Participants and Their Close Others

Category		<i>n</i> = 179
Sex	Male	64 (36%) ^a
	Female	115 (64%) ^a
Grade level	Freshman	121 (68%) ^a
	Sophomore	40 (22%) ^a
	Junior	12 (7%) ^a
	Senior	6 (3%) ^a
Relationship to close other	Family	106 (20%) ^a
	Significant other	37 (7%) ^a
	Friend	373 (69%) ^a
	Senior/Colleague	14 (3%) ^a
	Teacher	3 (1%) ^a
	Not Answered	4 (1%) ^a
How well I am known to the close other as answered by the participants		5.88 ^c (.95) ^b
How well I know the participant as answered by close others		5.73 ^c (.92) ^b

Note. ^a = frequency (percentage), ^b = 'mean (SD)', ^c = rating scale for how well the participant is known (1 = hardly know, 7 = know very well).

($r = .26, p < .001$) as assessed by close others, but did not have a statistically significant relationship with altruism as assessed by close others. Self-reported altruism was positively correlated with close-other-reported communality ($r = .27, p < .001$), well-being ($r = .25, p < .01$), and altruism ($r = .42, p < .001$). Communality assessed by close others was positively correlated with close-other-reported altruism ($r = .67, p < .001$) and well-being ($r = .58, p < .001$), whereas close-other-reported altruism was positively correlated with close-other-reported well-being ($r = .46, p < .001$).

Result of Structural Equation Validation

Structural equation modeling

We combined close-other-reported communality, altruism, and well-being into a single latent variable, "psychological adjustment," because it refers to altruistic and highly dedicated behavior to the community and a high level of well-being. The internal consistency (Cronbach's alpha) of the statements measuring psychological adjustment was .95. We compared the individual effects of communal narcissism (Model 1), altruism (Model 2), and their combined effects (Model 3) on psychological adjustment using structural equation modeling. We validated each model for goodness-of-fit and accurate reflection of the measured variables in the latent variables

Table 2. Means, Standard Deviation, and Correlations

Variable	1	2	3	4	5
1. CNI ^a	—				
2. Altruism ^a	.47***	—			
3. CORC ^b	.19*	.27***	—		
4. CORA ^b	.13	.42***	.67***	—	
5. CORW ^b	.26***	.25**	.58***	.46	—
<i>M</i>	69.77	39.73	84.20	42.69	44.72
<i>SD</i>	15.08	6.60	8.96	4.86	4.71

Note. ^a = participant ($n = 179$). ^b = close others ($n = 537$). CNI = Communal Narcissism Inventory; CORC = Close-Other-Reported Communality; CORA = Close-Other-Reported Altruism; CPRW = Close-Other-Reported Well-being.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3. Goodness-of-fit Index of Models 1, 2, and 3

<i>n</i> = 179	χ^2	<i>Df</i>	CFI	SRMR	RMSEA (90% Confidence Interval)
Model 1	9.824	8	.997	.047	.036 (.000-.099)
Model 2	19.028	8	.975	.050	.088 (.037-.139)
Model 3	52.289	24	.970	.056	.081 (.051-.111)

using confirmatory factor analysis. The results are summarized in Table 3. The goodness-of-fit results were: model 1, $\chi^2 = 9.824$ ($df = 8, p > .05$), CFI = .997, SRMR = .047, RMSEA = .036 (90% confidence interval = .000-.099), AIC = 6,129.33; model 2, $\chi^2 = 19.028$ ($df = 8, p < .05$), CFI = .975, SRMR = .050, RMSEA = .088 (90% confidence interval = .037-.139), AIC = 5,512.03; and model 3, $\chi^2 = 52.289$ ($df = 24, p < .05$), CFI = .970, SRMR = .056, RMSEA = .081 (90% confidence interval = .051-.111), AIC value = 8,350.83.

We found that Models 1, 2, and 3 were all appropriate for the study analyses after taking into consideration: (1) the χ^2 test for model fit has a problem of excessively rejecting the zero hypothesis (Kim, 2016), (2) RMSEA is statistically positively biased in smaller sample sizes ($n < 200$) (Curran et al., 2003), (3) SRMR is a useful indicator of model fit, compared to RMSEA, for structural equation models (Maydeu-Olivares et al., 2018; Shi et al., 2020), (4) When evaluating models with small degrees of freedom, it is important to be cautious in interpreting RMSEA values and to rely more on SRMR and CFI (Shi et al., 2022), (5) As suggested by Hu and Bentler (1999), we used the combination of CFI (greater than .95) and SRMR (less than 0.08) to assess the goodness of fit of structural equation modeling (Hu & Bentler, 1999), and (6) both factor loadings of observed and latent variables are statistically significant ($p < .05$).

Comparison of the effects of communal narcissism and altruism on psychological adjustment as assessed by close others. We compared the individual effects of communal narcissism (Model 1) and altruism (Model 2) with their combined effects (Model 3) on psychological adjustment, as assessed by close others, using structural equation modeling. The path coefficients and path models are presented in Table 4 and Figures 1, 2 and 3. Communal narcissism and altruism significantly predicted close-other-reported psychological adjustments ($\beta = .22, p < .01$) and ($\beta = .42, p < .001$), respectively. Altruism independently and significantly predicted psychological adjustment when the effect of communal narcissism was controlled for ($\beta = .41, p < .001$). Communal narcissism, however, did not predict close-other-reported psychological adjustment when

the effect of altruism was controlled for ($\beta = .02, ns$). Therefore, at a constant altruism level, close-other-reported psychological adjustment did not increase, even when communal narcissism increased. However, close-other-reported psychological adjustment increased with altruism, regardless of the level of communal narcissism.

Validation of the difference of variance of communal narcissism and altruism on close-other-assessed psychological adjustment. Calculation of the statistical difference between the regression coefficients of communal narcissism and altruism on psychological adjustment showed a statistically significant difference between the two regression coefficients ($p < .01$). Additionally, we extracted 5,000 bootstrap samples from the original data ($n = 179$) to vali-

Table 4. Path Coefficients of Models 1, 2, and 3

Model	Path	B	SE	β
Model 1	Communal narcissism \rightarrow Close-other-reported psychological adjustment	.184	.068	.227**
Model 2	Altruism \rightarrow Close-other-reported psychological adjustment	.764	.165	.418***
Model 3	Communal narcissism \rightarrow Close-other-reported psychological adjustment	.014	.082	.016
	Altruism \rightarrow Close-other-reported psychological adjustment	.723	.188	.410***

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

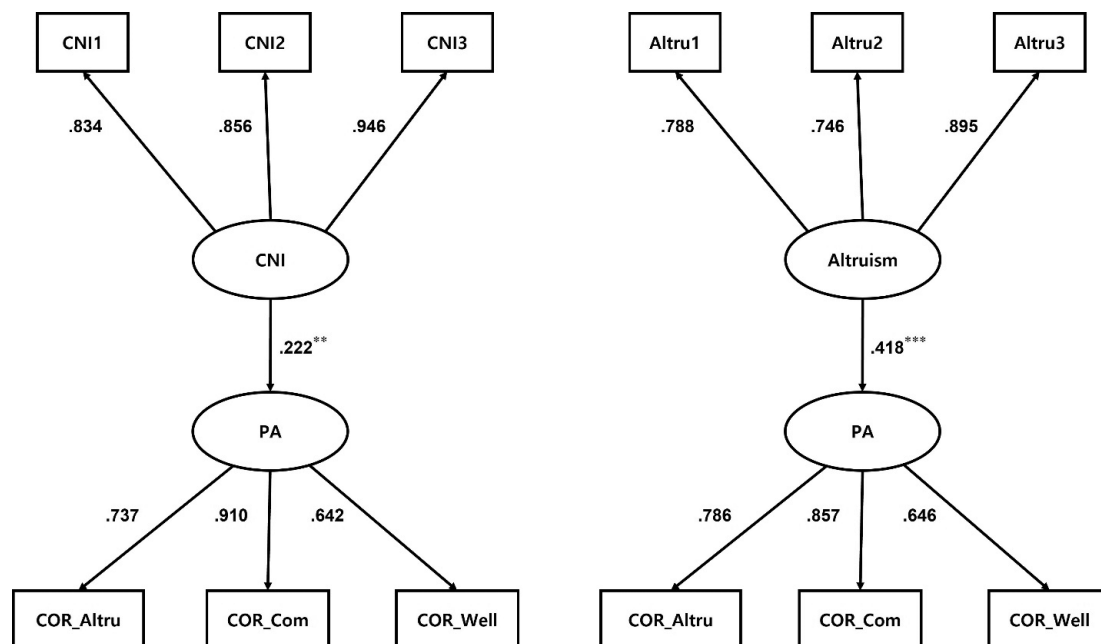


Figure 2. Path models of the effect of communal narcissism and altruism on psychological adjustment (Models 1 and 2). $n = 179$. CNI = Communal Narcissism Inventory; PA = Psychological Adjustment; COR_Altru = Close-Other-Reported Altruism; COR_Com = Close-Other-Reported Communion; COR_Well = Close-Other-Reported Well-being. The standardized regression coefficients of all paths are statistically significant at a level of .001 except for the path from communal narcissism (CNI) to psychological adjustment (PSM) (at .01). Error terms omitted for diagram simplification.

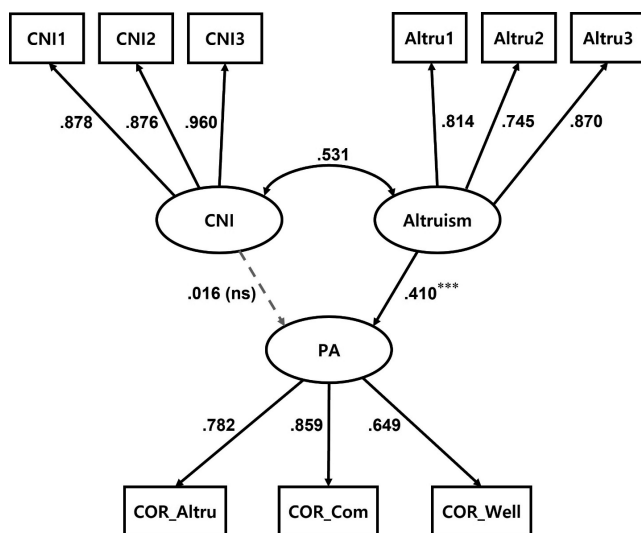


Figure 3. Path model of the effect of communal narcissism and altruism on psychological adjustment (Model 3). $n = 179$. CNI = Communal Narcissism Inventory; PA = Psychological Adjustment; COR_Altru = Close-Other-Reported Altruism; COR_Com = Close-Other-Reported Communion; COR_Well = Close-Other-Reported Well-being. The standardized regression coefficients of all paths are statistically significant at a level of .001 except for the path from communal narcissism (CNI) to psychological adjustment (PSM). Error terms omitted for diagram simplification.

date significant differences in the regression coefficients. We tested statistical significance at a level of .05 to determine whether 0 was included in the 95% confidence interval. We found that the difference between the regression coefficients of communal narcissism and altruism on psychological adjustment did not include 0 in its 95% confidence interval [.272, 1.149].

Discussion

This study examined the differences between communal narcissism and altruism using close other reports, especially in a collectivistic culture (i.e., Korea). Communal narcissism was positively correlated with self-reported altruism, but not with close-other-reported altruism. This suggests that close others tend to perceive communally-narcissistic participants as less altruistic than they perceive themselves. As in individualistic cultures, in collective cultures, communal narcissists were more likely to report better altruistic attributes, although they were not perceived as altruistic from the perspective of close others.

We found that self-reported communal narcissism was positive-

ly correlated with close-other-reported communality. Essentially, communal narcissists are perceived as communalistic not only for themselves but also for their close others. This finding is inconsistent with several previous studies on individualistic cultures (Barry et al., 2017; Nehrlic et al., 2019). Communal narcissists tend to focus on the communal domain, which could lead to altruistic behavior toward others and are sometimes viewed as prosocial by others (Barry et al., 2021). Nonetheless, we suspect that these findings may have been influenced by differences between individualistic and collectivistic cultures.

Regarding the cultural orientation between individualism and collectivism, some studies have found that the binary orientation of culture is inaccurate (Vignoles et al., 2016; Santos et al., 2017) whereas others have found this classification to be valid (Yi, 2018). In response to the COVID-19 pandemic, researchers reported empirical support for categorizing cultural orientations (Chang et al., 2021; Festing et al., 2020; Lu et al., 2021). People with a collectivistic cultural orientation tend to have a stronger association with interdependence and shared goals, whereas those with an individualistic cultural orientation are more likely to emphasize personal choice and autonomy. Therefore, we speculate that this classification is meaningful.

Moreover, Asian Americans tend to report their peers' communal traits (e.g., agreeableness) more positively than European Americans (Church et al., 2006). Considering these results, acquaintances may value communal narcissism in collectivistic cultures more than they do in individualistic ones. Collective cultures are more likely than individualistic cultures to define relationships with in-group members as communal (Triandis, 2001). Especially, one of the most important goals of personal relationships for a Korean is to create and maintain a form of collectivism, also referred to as "we-ness" (Choi & Choi, 2002; Yang, 2019; Yoo et al., 2007). Therefore, this "we-ness" tendency may have caused the close others to evaluate the participants positively. Therefore, evaluations in other close-related reports may reflect a positive bias inherent in Korean culture. In the distribution of the mean scores of the three close others, the skewness of all assessments showed a negativity bias of less than 0 (communality = -.533, altruism = -.351, well-being = -.877), although it was less than its absolute value (Curran et al., 1996), indicating a tendency to respond positively. Furthermore, in this study,

participants and close acquaintances were selected as evaluators. Brown and Kobayashi (2002) suggested that in Japan, a collectivistic culture like that of Korea, people rated their close acquaintances more positively than others.

We speculate that altruism may also explain the inconsistent results regarding communal narcissism in different cultures. When we controlled for altruism in the structural equation modeling, communal narcissism did not predict close-other-reported communality. Conversely, altruism significantly predicted close-other-reported communality, even when communal narcissism was controlled for. These results suggest that communal narcissism alone does not ensure recognition of communal behaviors by close others in a collectivistic culture.

Communal narcissism predicts other-reported psychological adjustments. However, when altruism was controlled for, communal narcissism did not predict close-other-reported psychological adjustments. In contrast, altruism significantly predicted close-other-reported psychological adjustment, even after controlling for communal narcissism. In a collectivistic society, communal narcissists without altruism do not receive the recognition of well-being and are psychologically mature from those close to them. In line with our hypothesis, the relationship between communal narcissism and close-other-reported psychological adjustment was weaker than that between altruism and close-other-reported psychological adjustment.

We empirically demonstrated communal narcissists' tendency toward grandiose self-perception by comparing self- and close-other-reported assessments in collectivistic cultures. Furthermore, we tested the unique cultural meaning of communal narcissism in a Korean sample. Future research should consider ingroup favoritism, we-ness, and altruism in Korea as important aspects for assessing communal narcissism in collectivistic cultures.

However, this study has several limitations. The CNI scale has not been fully validated for use in Korea, and this lack of validation includes the absence of information regarding test-retest reliability. Building on prior studies (Żemojtel-Piotrowska et al., 2014; Żemojtel-Piotrowska et al., 2017), we defined psychological adjustment as the dependent variable and communal narcissism as the independent variable. However, as it can be difficult to distinguish between cause and effect using these constructs, we acknowledge

the importance of future research, including mediators, in addressing this issue.

As the participants in this study were college students in their 20s, further studies should be conducted with other age groups to generalize the findings. A previous study that primarily recruited young adults who were high school dropouts reported physical aggression and acts of retaliation against others in the same program by students who were communally narcissistic (Barry et al., 2017). However, to the best of our knowledge, there is no evidence that communally narcissistic adults show violent tendencies. High levels of communal narcissism may manifest differently in different populations. Therefore, future studies should be conducted to better understand the characteristics of communal narcissism in diverse age groups and clinical populations.

Most participants in this study were women (64%). In a meta-analysis, narcissism (agentic narcissism) was found to be more prevalent in men than in women (Grijalva et al., 2015). Therefore, it is reasonable to expect differences in communal narcissism between men and women. However, in this study, although the CNI scores of women were higher than those of men, the difference was not statistically significant. In the future, it will be necessary to study the differences in communal narcissism between men and women.

Author contributions statement

HK and YK conceived and designed the study. HK, JK, and KM performed the study, analyzed the data, interpreted the results, and drafted the manuscript. YK and JJ interpreted the results, and edited the manuscript. All the authors have read and approved the final version of the manuscript.

Ethical Approval

All procedures performed in this study involving human participants were in accordance with the ethical standards of the Institutional Research Committee and/or National Research Committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The study protocol was approved by the Institutional Review Board of Korea University (1040548-

KU-IRB-17-274-A-1).

Informed Consent

Informed consent was obtained from all individual participants included in the study.

Data Availability

Data supporting the findings of this study are available from the corresponding author upon request.

References

- Ahn, C. K., & Chae, J. H. (1997). Standardization of the Korean version of the revised NEO personality inventory. *The Korean Journal of Counseling and Psychotherapy*, 9, 443-473.
- Achenbach, T. M., Krukowski, R. A., Dumenci, L., & Ivanova, M. Y. (2005). Assessment of adult psychopathology: Meta-analyses and implications of cross-informant correlations. *Psychological Bulletin*, 131, 361-382. <https://doi.org/10.1037/0033-2909.131.3.361>
- Barry, C. T., Lui, J. H., Lee-Rowland, L. M., & Moran, E. V. (2017). Adolescent communal narcissism and peer perceptions. *Journal of Personality*, 85, 782-792. <https://doi.org/10.1111/jopy.12287>
- Barry, C. T., Sidoti, C. L., & Wong, M. (2021). Peer perceptions of communal narcissism and communalism in at-risk adolescents. *Journal of Individual Difference*, 42, 99-106. <https://doi.org/10.1027/1614-0001/a000334>
- Bar-Tal, D. (1982). Sequential development of helping behavior: A cognitive-learning approach. *Developmental Review*, 2, 101-124. [https://doi.org/10.1016/0273-2297\(82\)90006-5](https://doi.org/10.1016/0273-2297(82)90006-5)
- Batson, C. D. (2011). *Altruism in Humans*. Oxford University Press.
- Bollen, K. A., & Stine, R. A. (1992). Bootstrapping goodness-of-fit measures in structural equation models. *Sociological Methods & Research*, 21, 205-229. <https://doi.org/10.1177/0049124192021002004>
- Boomsma, A. (2000). Reporting analyses of covariance structures. *Structural Equation Modeling*, 7, 461-483. https://doi.org/10.1207/s15328007sem0703_6
- Brown, J. D., & Kobayashi, C. (2002). Self-enhancement in Japan and America. *Asian Journal of Social Psychology*, 5, 145-168. <https://doi.org/10.1111/1467-839x.00101>
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. *Sociological Methods & Research*, 21, 230-258. <https://doi.org/10.1177/0049124192021002005>
- Chang, H. J., Min, S., Woo, H., & Yurchisin, J. (2021). Mask-wearing behavior during the COVID-19 pandemic: A cross-cultural comparison between the United States and South Korea. *Family and Consumer Sciences Research Journal*, 50, 5-26. <https://doi.org/10.1111/fcsr.12416>
- Choi, I. J., & Choi, S. J. (2002). The effects of Korean cultural psychological characteristics on coping styles, stress, and life satisfaction: Centering around cheong and weness. *The Korean Journal of Counseling and Psychotherapy*, 14, 55-71.
- Church, A. T., Katigbak, M. S., del Prado, A. M., Valdez-Medina, J. L., Miramontes, L. G., & Ortiz, F. A. (2006). A cross-cultural study of trait self-enhancement, explanatory variables, and adjustment. *Journal of Research in Personality*, 40, 1169-1201. <https://doi.org/10.1016/j.jrp.2006.01.004>
- Clifton, A., Turkheimer, E., & Oltmanns, T. F. (2005). Self-and peer perspectives on pathological personality traits and interpersonal problems. *Psychological Assessment*, 17, 123-131. <https://doi.org/10.1037/1040-3590.17.2.123>
- Colvin, C. R., Block, J., & Funder, D. C. (1995). Overly positive self-evaluations and personality: Negative implications for mental health. *Journal of Personality and Social Psychology*, 68, 1152-1162. <https://doi.org/10.1037/0022-3514.68.6.1152>
- Cooper, L. D., Balsis, S., & Oltmanns, T. F. (2012). Self-and informant-reported perspectives on symptoms of narcissistic personality disorder. *Personality Disorders: Theory, Research, and Treatment*, 3, 140-154. <https://doi.org/10.1037/a0026576>
- Costa, P. T., & McCrae, R. R. (1992). *The Revised NEO Personality Inventory (NEO PI-R) Professional Manual*. Psychological Assessment Resources.
- Curran, P. J., Bollen, K. A., Chen, F., Paxton, P., & Kirby, J. B. (2003). Finite sampling properties of the point estimates and confidence intervals of the RMSEA. *Sociological Methods & Research*, 32, 208-252. <https://doi.org/10.1177/0049124103256130>
- Curran, P. J., West, S. G., & Finch, J. F. (1996). The robustness of test statistics to nonnormality and specification error in confirmatory factor analysis. *Psychological Methods*, 1, 16-29. <https://doi.org/10.1037/1082-989x.1.1.16>
- Dufner, M., Gebauer, J. E., Sedikides, C., & Denissen, J. J. (2019). Self-enhancement and psychological adjustment: A meta-analytic review. *Personality and Social Psychology Review*, 23, 48-72. <https://doi.org/10.1177/1088868318756467>
- Dulin, P. L., & Hill, R. D. (2003). Relationships between altruistic activity and positive and negative affect among low-income older adult service providers. *Aging & Mental Health*, 7, 294-299. <https://doi.org/10.1080/1360786031000120697>
- Eisenberg, N. (1986). *Altruistic emotion, cognition, and behavior*. Lawrence Erlbaum. <https://doi.org/10.4324/9781315746135>
- Fatfouta, R., & Schröder-Abé, M. (2018). A wolf in sheep's clothing? Communal narcissism and positive implicit self-views in

- the communal domain. *Journal of Research in Personality*, 76, 17-21. <https://doi.org/10.1016/j.jrp.2018.07.004>
- Fennimore, A. K. (2021). Duplicitous me: Communal narcissists and public service motivation. *Public Personnel Management*, 50, 25-55. <https://doi.org/10.1177/0091026019900355>
- Festing, M., Schumacher, T., & Lee, Y. Y. (2020). National responses to the COVID—19 pandemic—Observations and cultural interpretations. *ESCP Impact Paper*. Available at: <https://academ.escpeurope.eu/pub/Chair%20IP2020-81-EN%20FESTING%20ET%20AL2.pdf> (Accessed April 3, 2023).
- Funder, D. C. (1999). *Personality judgment: A realistic approach to person perception*. Academic Press.
- Funder, D. C., Kolar, D. C., & Blackman, M. C. (1995). Agreement among judges of personality: Interpersonal relations, similarity, and acquaintanceship. *Journal of Personality and Social Psychology*, 69, 656-672. <https://doi.org/10.1037/0022-3514.69.4.656>
- Gebauer, J. E., & Sedikides, C. (2018). Communal narcissism: Theoretical and empirical support. In *Handbook of trait narcissism* (pp. 69-77). Springer, Cham.
- Gebauer, J. E., Sedikides, C., Verplanken, B., & Maio, G. R. (2012). Communal narcissism. *Journal of Personality and Social Psychology*, 103, 854-878. <https://doi.org/10.1037/a0029629>
- Giacomin, M., & Jordan, C. H. (2015). Validating power makes communal narcissists less communal. *Self and Identity*, 14, 583-601. <https://doi.org/10.1080/15298868.2015.1031820>
- Grijalva, E., Newman, D. A., Tay, L., Donnellan, M. B., Harms, P. D., Robins, R. W., & Yan, T. (2015). Gender differences in narcissism: A meta-analytic review. *Psychological Bulletin*, 141, 261. <https://doi.org/10.1037/a0038231>
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1-55. <https://doi.org/10.1080/10705519909540118>
- Jackson, J. J., Connolly, J. J., Garrison, S. M., Leveille, M. M., & Connolly, S. L. (2015). Your friends know how long you will live: A 75-year study of peer-rated personality traits. *Psychological Science*, 26, 335-340. <https://doi.org/10.1177/0956797614561800>
- Kahana, E., Bhatta, T., Lovegreen, L. D., Kahana, B., & Midlarsky, E. (2013). Altruism, helping, and volunteering: Pathways to well-being in late life. *Journal of Aging and Health*, 25, 159-187. <https://doi.org/10.1177/0898264312469665>
- Kesenheimer, J. S., & Greitemeyer, T. (2021). Greenwash yourself: The relationship between communal and agentic narcissism and pro-environmental behavior. *Journal of Environmental Psychology*, 75, 101621. <https://doi.org/10.1016/j.jenvp.2021.101621>
- Kim, K., & Ko, Y. (2018). Validation of the Korean version of the vaillant defense mechanism rating scale. *Korean Journal of Clinical Psychology*, 37, 236-251.
- Kim, M. J., Lee, C. K., & Bonn, M. (2016). The effect of social capital and altruism on seniors' revisit intention to social network sites for tourism-related purposes. *Tourism management*, 53, 96-107. <https://doi.org/10.1016/j.tourman.2015.09.007>
- Kim, S. Y. (2016). *Basic principles of structural equation modeling*. Hakjisa.
- Kline, R. B. (2011). *Principles and practice of structural equation modeling*. The Guilford Press.
- Letzring, T. D., Wells, S. M., & Funder, D. C. (2006). Information quantity and quality affect the realistic accuracy of personality judgment. *Journal of Personality and Social Psychology*, 91, 111-123. <https://doi.org/10.1037/0022-3514.91.1.111>
- Little, T. D., Cunningham, W. A., Shahar, G., & Widaman, K. F. (2002). To parcel or not to parcel: Exploring the question, weighing the merits. *Structural Equation Modeling*, 9, 151-173. https://doi.org/10.1207/s15328007sem0902_1
- Little, T. D., Rhemtulla, M., Gibson, K., & Schoemann, A. M. (2013). Why the items versus parcels controversy needn't be one. *Psychological Methods*, 18, 285-300. <https://doi.org/10.1037/a0033266>
- Lu, J. G., Jin, P., & English, A. S. (2021). Collectivism predicts mask use during COVID-19. *Proceedings of the National Academy of Sciences*, 118, e2021793118. <https://doi.org/10.1073/pnas.2021793118>
- MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods*, 1, 130-149. <https://doi.org/10.1037/1082-989x.1.2.130>
- MacIntyre, A. (1967). Egoism and altruism. In P. Edwards (Ed.), *The Encyclopedia of Philosophy* (pp. 462-466). Macmillan.
- Matsunaga, M. (2008). Item parceling in structural equation modeling: A primer. *Communication Methods and Measures*, 2, 260-293. <https://doi.org/10.1080/19312450802458935>
- Maydeu-Olivares, A., Shi, D., & Rosseel, Y. (2018). Assessing fit in structural equation models: A Monte-Carlo evaluation of RMSEA versus SRMR confidence intervals and tests of close fit. *Structural Equation Modeling: A Multidisciplinary Journal*, 25, 389-402. <https://doi.org/10.1080/10705511.2017.1389611>
- Meyer, G. J., Finn, S. E., Eyde, L. D., Kay, G. G., Moreland, K. L., Dies, R. R., Eisman, E. J., & Reed, G. M. (2001). Psychological testing and psychological assessment: A review of evidence and issues. *American Psychologist*, 56, 128. <https://doi.org/10.1037/0003-066X.56.2.128>
- McDonald, R. P., & Ho, M. H. R. (2002). Principles and practice in reporting structural equation analyses. *Psychological Methods*, 7, 64-82. <https://doi.org/10.1037/1082-989x.7.1.64>
- Naderi, I. (2018). I'm nice, therefore I go green: An investigation of pro-environmentalism in communal narcissists. *Journal of Environmental Psychology*, 59, 54-64. <https://doi.org/10.1016/j.jenvp.2018.08.010>
- Nehrllich, A. D., Gebauer, J. E., Sedikides, C., & Schoel, C. (2019).

- Agentic narcissism, communal narcissism, and prosociality. *Journal of Personality and Social Psychology*, 117, 142-165. <https://doi.org/10.1037/pspp0000190>
- Nowak, B., Brzóska, P., Piotrowski, J., & Żemojtel-Piotrowska, M. (2022). Narcissism and personal values: Investigation into agentic, antagonistic, communal and neurotic facets of narcissism. *Personality and Individual Differences*, 184, 111167. <https://doi.org/10.1016/j.paid.2021.111167>
- Paulhus, D. L. (1998). Interpersonal and intrapsychic adaptiveness of trait self-enhancement: A mixed blessing? *Journal of Personality and Social Psychology*, 74, 1197-1208. <https://doi.org/10.1037/0022-3514.74.5.1197>
- Paulhus, D. L., & Reynolds, S. (1995). Enhancing target variance in personality impressions: Highlighting the person in person perception. *Journal of Personality and Social Psychology*, 69, 1233-1242. <https://doi.org/10.1037/0022-3514.69.6.1233>
- Post, S. G. (2005). Altruism, happiness, and health: It's good to be good. *International Journal of Behavioral Medicine*, 12, 66-77. https://doi.org/10.1207/s15327558ijbm1202_4
- Rammstedt, B., & John, O. P. (2007). Measuring personality in one minute or less: A 10-item short version of the Big Five Inventory in English and German. *Journal of Research in Personality*, 41, 203-212. <https://doi.org/10.1016/j.jrp.2006.02.001>
- Rogers, W. M., & Schmitt, N. (2004). Parameter recovery and model fit using multidimensional composites: A comparison of four empirical parceling algorithms. *Multivariate Behavioral Research*, 39, 379-412. https://doi.org/10.1207/s15327906mbr3903_1
- Rogoza, R., & Fatfouta, R. (2019). Normal and pathological communal narcissism in relation to personality traits and values. *Personality and Individual Differences*, 140, 76-81. <https://doi.org/10.1016/j.paid.2018.03.039>
- Santos, H. C., Varnum, M. E., & Grossmann, I. (2017). Global increases in individualism. *Psychological Science*, 28, 1228-1239. <https://doi.org/10.1177/0956797617700622>
- Sedikides, C., Gaertner, L., & Toguchi, Y. (2003). Pancultural self-enhancement. *Journal of Personality and Social Psychology*, 84, 60-79. <https://doi.org/10.1037/0022-3514.84.1.60>
- Sedikides, C., Gaertner, L., & Vevea, J. L. (2005). Pancultural self-enhancement reloaded: A meta-analytic reply to Heine (2005). *Journal of Personality and Social Psychology*, 89, 539-551. <https://doi.org/10.1037/0022-3514.89.4.539>
- Sedikides, C., Gaertner, L., & Vevea, J. L. (2007a). The inclusion of theory-relevant moderators yield the same conclusions as Sedikides, Gaertner, and Vevea (2005): A meta-analytic reply to Heine, Kitayama, and Hamamura (2007). *Asian Journal of Social Psychology*, 10, 59-67. <https://doi.org/10.1111/j.1467-839X.2007.00212.x>
- Sedikides, C., Gaertner, L. & Vevea, J. L. (2007b). Evaluating the evidence for pancultural selfenhancement. *Asian Journal of Social Psychology*, 10, 201-203. <https://doi.org/10.1111/j.1467-839X.2007.00227.x>
- Shi, D., DiStefano, C., Maydeu-Olivares, A., & Lee, T. (2022). Evaluating SEM model fit with small degrees of freedom. *Multivariate Behavioral Research*, 57, 179-207. <https://doi.org/10.1080/00273171.2020.1868965>
- Shi, D., Maydeu-Olivares, A., & Rosseel, Y. (2020). Assessing fit in ordinal factor analysis models: SRMR vs. RMSEA. *Structural Equation Modeling: A Multidisciplinary Journal*, 27, 1-15. <https://doi.org/10.1080/10705511.2019.1611434>
- Swann, W. B., & Bosson, J. K. (2010). Self and identity. In S. T. Fiske., D. T. Gilbert., & G. Lindzey (Eds.), *Handbook of Social Psychology* (Vol. 1, pp. 589-628). Wiley.
- Triandis, H. C. (2001). Individualism-collectivism and personality. *Journal of Personality*, 69, 907-924. <https://doi.org/10.1111/1467-6494.696169>
- Vaillant, G. E. (1971). Theoretical hierarchy of adaptive ego mechanisms: A 30-year follow-up of 30 men selected for psychological health. *Archives of General Psychiatry*, 24, 107-118. <https://doi.org/10.1001/archpsyc.1971.01750080011003>
- Vaillant, G. E. (1976). Natural history of male psychological health: V. The relation of choice of ego mechanisms of defense to adult adjustment. *Archives of General Psychiatry*, 33, 535-545. <http://doi.org/10.1001/archpsyc.1976.01770050003001>
- Vaillant, G. E. (1977). *Adaptation to life*. Little, Brown.
- Vazire, S. (2010). Who knows what about a person? The self-other knowledge asymmetry (SOKA) model. *Journal of Personality and Social Psychology*, 98, 281-300. <http://doi.org/10.1037/a0017908>
- Vazire, S., & Carlson, E. N. (2011). Others sometimes know us better than we know ourselves. *Current Directions in Psychological Science*, 20, 104-108. <https://doi.org/10.1177/0963721411402478>
- Vignoles, V. L., Owe, E., Becker, M., Smith, P. B., Easterbrook, M. J., Brown, R., González, R., Didier, N., Carrasco, D., Cadena, M. P., Lay, S., Schwartz, S. J., Des Rosiers, S. E., Villamar, J. A., Gavreliuc, A., Zinkeng, M., Kreuzbauer, R., Baguma, P. ... & Bond, M. H. (2016). Beyond the 'east-west' dichotomy: Global variation in cultural models of selfhood. *Journal of Experimental Psychology: General*, 145, 966. <http://dx.doi.org/10.1037/xge0000175>
- West, S. G., Taylor, A. B., & Wu, W. (2012). Model fit and model selection in structural equation modeling. In R. H. Hoyle (Ed.), *Handbook of Structural Equation Modeling*. Guilford Press.
- Yang, J. (2019). The influence of Korean collectivism (Uri, we-ness) on interpersonal communication behaviors. *The Journal of the Korea Contents Association*, 19, 1-14. <https://doi.org/10.5392/JKCA.2019.19.05.001>
- Yang, Z., Sedikides, C., Gu, R., Luo, Y. L., Wang, Y., Yang, Y., Wu, M., & Cai, H. (2018). Communal narcissism: Social decisions and neurophysiological reactions. *Journal of Research in Personality*, 76, 64-73. <https://doi.org/10.1016/j.jrp.2018.07.003>

- Yi, J. (2018). Revisiting individualism-collectivism. *Journal of Inter-cultural Communication*, 47. Available at: <https://immi.se/old-website/nr47/jung.html> (Accessed April 3, 2023).
- Yoo, Y. J., Lee, I., & Yoo, G. (2007). How strong families encounter social challenges in the Republic of Korea. *Marriage & Family Review*, 41, 195-216. https://doi.org/10.1300/J002v41n01_10
- Žemojtel-Piotrowska, M., Clinton, A., & Piotrowski, J. (2014). Agentic and communal narcissism and subjective well-being: Are narcissistic individuals unhappy? A research report. *Current Issues in Personality Psychology*, 2, 10-16. <http://doi.org/10.5114/cipp.2014.43097>
- Žemojtel-Piotrowska, M., Czarna, A. Z., Piotrowski, J., Baran, T., & Maltby, J. (2016). Structural validity of the Communal Narcissism Inventory (CNI): The bifactor model. *Personality and Individual Differences*, 90, 315-320. <https://doi.org/10.1016/j.paid.2015.11.036>
- Žemojtel-Piotrowska, M., Piotrowski, J. P., & Maltby, J. (2017). Agentic and communal narcissism and satisfaction with life: The mediating role of psychological entitlement and self-esteem. *International Journal of Psychology*, 52, 420-424. <http://doi.org/10.1002/ijop.12245>
- Žemojtel-Piotrowska, M., Piotrowski, J., Sedikides, C., Sawicki, A., Czarna, A. Z., Fatfouta, R., & Baran, T. (2021). Communal collective narcissism. *Journal of Personality*, 89, 1062-1080. <https://doi.org/10.1111/jopy.12636>