Psychopathic traits and social anxiety in cyber-space: A context-dependent theoretical framework explaining online disinhibition

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ABSTRACT

Online disinhibition is a common phenomenon with negative implications among adolescents, but its correlates have been scarcely investigated from an integrative perspective. This study aimed to examine the relationship of two socially maladaptive personal characteristics, namely psychopathic traits and social anxiety, with online disinhibition. Furthermore, the effect of empathy (affective and cognitive) was examined through moderation analysis. The investigation was based on a context-dependent theoretical framework, according to which, the structural characteristics of cyberspace increase or decrease the expression of certain personal tendencies, thus differentiating an individual's behavior. Overall, 1097 Greek Junior High School students from Northern Greece voluntarily completed an anonymous self-report questionnaire. After construct validity was tested, a two-step latent moderated structural equation modeling was conducted. Results showed that online disinhibition correlated negatively with all variables except affective empathy. Cognitive empathy moderated only the effect of impulsive-irresponsible traits and social anxiety on online disinhibition. Overall, findings show that students with maladaptive personality characteristics have high propensity for online disinhibition. These results can contribute significantly in understanding the phenomenon, as well as in the design of prevention programs aiming at developing the cognitive empathy of impulsive and socially anxious adolescents.

1. Introduction

Internet is being used widely in contemporary society for work, or recreation (e.g., Raskauskas & Stoltz, 2007). Although Computer Mediated Communication (CMC) is often used for the same purposes and with the same results as face-to-face communication, it may vary significantly due to the attributes of the used means. According to Suler (2004), the Internet is a social context with unique structural conditions and as Nevin (2015) points out, when online, many users often engage in activities that somehow deviate from their typical behaviors in the 'real' world. While on the Internet, users may exhibit *online disinhibition* (Suler, 2004), which refers to the tendency to feel less inhibition and concern for the consequences of one's actions in the online world (Wright, Harper, & Wachs, 2018). Overall, the user may not be aware of the consequences of online behavior in the real life. Online disinhibition may lead to both positive and negative social outcomes (Bargh, 2002). Regarding the former, research suggests that it can help the user explore his/her identity, express his/her views, socialize, establish friendly and romantic relationships and feel accepted (e.g., Anolli, Villani, & Riva, 2005; Bargh, 2002; Harman, Hansen, Cochran, &

Lindsey, 2005). Negative effects may include the implication of the user in antisocial or illegal activities, such as cyber-bullying (Anolli et al., 2005; Antoniadou & Kokkinos, 2013).

Several studies during the last years have provided evidence regarding online disinhibition (e.g., Voggeser, Singh, & Göritz, 2018). Early studies indicated anonymity and type of Internet use as possible causal factors, but as Lapidot-Lefler and Barak (2012) point out, these cannot be the sole factors leading to this behavior, since they frequently occur in non-anonymous environments (e.g., social networks and e-mail accounts). More recent studies have suggested that the interaction between several characteristics (e.g., personal and social) may encourage online disinhibition (Lapidot-Lefler & Barak, 2015), but relevant evidence is still scarce.

Nevin (2015) has proposed a *context-dependent theoretical framework*, which perceives cyberspace as a unique social context, the structural characteristics of which increase or decrease the expression of certain personal tendencies, thus differentiating the user's behavior. According to this perspective, personal characteristics (e.g., personality traits) are the result of an interplay between biological and environmental factors and therefore their effect on an individual's behavior is

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related to the given situation, or to the individual's perception of the situation. In this sense, personal characteristics are dynamical, since they can result in different expressions of behavior. For example, the same person may express more dominant behavior in an athletic setting than in a religious one due to a differentiated trait activation by the situational cues. Similarly, a person may exhibit more unethical behavior at nighttime, or more extraverted behavior when he interacts with friends, than with an employer (Nevin, 2015). Therefore, while on the Internet, some personal attributes may be masked, while others may be exuberated (Postmes, Spears, & Lea, 1999), or the users may fill in the gaps of the communication depending on their personality and experiences (e.g., the tone and intention of the other person) (Suler, 2004). For example, a message with a winking face emoticon might be interpreted by one user as playful and friendly and by another one as ironic (Derks, Bos, & Von Grumbkow, 2008). Based on this framework, some instances of online misconduct may be perpetrated by users who never misbehave in offline social contexts (Aboujaoude, 2012). According to scarce evidence, socially maladaptive personal characteristics can predict online disinhibition, but empathy may act as a protective factor in this relation (Nevin, 2015; Subrahmanyam & Greenfield, 2008; Wright et al., 2018).

This study attempts to investigate two such characteristics, namely psychopathic traits (which are exuberated online), and social anxiety (the symptoms of which may be reduced online), that are differently expressed online compared to offline and appear to be related to online disinhibition, as well as the moderating role of empathy (affective and cognitive)[1] in the association. The target group of the study is adolescents, and more specifically Junior High School students (aged 12–15 yrs), who, according to plentiful studies make heavy Internet use for various purposes (i.e., gaming, communication, information searching; Raskauskas & Stoltz, 2007).

1.1. Psychopathic traits

Psychopathic personality is a multifaced concept which is characterized by manipulation tendencies, egocentricity, superficial charm, lack of empathy and remorse, and impulsiveness (Hare, 2003). Psychopathy is an important construct to consider when studying online behavior, because users with such traits exhibit tendencies for disinhibited behaviors that may be exuberated online (Mura, 2011).

The expression of an individual's personality characteristics may vary depending on the social contexts; for example, the manipulative, detached and impulsive tendencies of psychopathy that stay concealed or restricted in the real world due to normative and social pressures (Amichai-Hamburger, 2005), may be heightened during online communication due to less prominent norms, physical distance and possibly anonymity/pseudonymity (Suler, 2004). Since only recently studies started investigating how Internet may decrease, increase, or intensify the expression of psychopathy, evidence is still scarce. Nevertheless, a recent study showed that Internet users with higher levels of psychopathy exhibited more frequently antisocial behaviors when online compared to their own offline behaviors (e.g., cyber-piracy, cyber-stalking, cyber-bullying) (Nevin, 2015).

However, when studying the association of psychopathic traits with online disinhibition, a distinction should be made between primary and secondary psychopathy, since they differ significantly in terms of the individual's behavioral tendencies and empathic abilities. Primary psychopathy refers to affective/interpersonal traits and has received wide research attention due to its most prominent characteristics, i.e. the manipulation tendencies and the lack of empathy (Hare, 2003). High grandiose-manipulative and/or callous-unemotional users exhibit

greater disinhibition tendencies when online (Wright et al., 2018), which, as suggested, may be related to their empathic capabilities. However, despite the controversial findings, their deficiencies seem to be mainly associated with their affective and not their cognitive empathy (Van Baardewijk et al., 2010). Deficits in affective empathy may increase during online communication and lead to "psychological distancing" (Nevin, 2015), due to physical distance, limited social critique and absence of non-verbal social cues, all of which lower the chances of feeling remorse (Almeida, Marinho, Gomes, & Correia, 2012). Studies have shown that absence of non-verbal cues (e.g., physical appearance, eye contact, vocal inflections) may lead to detachment and disinhibition (Todd, 2014). High grandiose-manipulative and/or callous-unemotional individuals have a limited input of such non-verbal cues, since they tend to make less eye contact, which may become more pronounced during online communication (Dadds, El Masry, Wimalaweera, & Guastella, 2008).

In contrast, secondary psychopathy refers to behavioral/social aspects (impulsive, irresponsible), and is more common among younger individuals (Harpur & Hare, 1994). Although it has been linked to disinhibited behavior due to the limited self-control and the increased impulsivity (Hart & Dempster, 1997), lack of empathy is not prevalent among high impulsive-irresponsible adolescents (Hare, 2003). Indeed, limited evidence suggests that not all psychopathic traits have the same association with empathy (Van Baardewijk et al., 2010). Thus, although impulsive-irresponsible adolescents usually have a better understanding and sharing of others' distress in the real world (Van Baardewijk et al., 2010), they may have difficulties when interacting online, since cyberspace does not provide triggers for experiencing empathy (Todd, 2014).

1.2. Social anxiety

Since the Internet may allow individuals to present an alternative or hidden dimension of themselves, it can be beneficial for users with significant difficulties in their social interactions (e.g., Wallace, 1999). More specifically, another socially maladaptive group that is significantly drawn to Internet use, and in all appearances to disinhibited behavior, is socially anxious adolescents. According to DSM-5, social anxiety refers to fear or anxiousness in social situations where the person is likely to be exposed to social control (American Psychiatric Association, 2013), and is mostly common among girls and adolescents, two groups that receive increased social pressure (Pabian & Vandebosch, 2015).

Social anxiety fits into the context-dependent theoretical framework (Nevin, 2015), since according to DSM-5 the symptoms may be reduced or even disappear temporarily due to discontinuation of exposure to the anxiety agent (American Psychiatric Association, 2013). During online communications, social anxiety symptoms are reduced since socially anxious users can curate themselves in ways that are more desirable to others, draw attention to their ideal qualities, but most importantly avoid the non-verbal cues of face-to-face interactions (Valkenburg & Peter, 2009).

Contrary to individuals with high psychopathic traits, those with high social anxiety exhibit increased amygdala activity, which causes them to fixate on the abundant non-verbal cues of face-to-face communications (Veit et al., 2002). These cues frequently trigger social anxiety (Koa et al., 2014), and their absence during online communications make the socially anxious user feel more at ease (Subrahmanyam & Greenfield, 2008). Nevertheless, this absence may also cause a decreased understanding and respect for others' feelings and thoughts and an increased concern for the person's own needs, leading to toxic disinhibited behavior (Siegel, Dubrovsky, Kiesler, & McGuire, 1986). Until recently, the prevailing view was that socially anxious individuals don't manifest disinhibited behavior, but recent studies showed that disinhibition is negatively correlated with a person's fear for physical injury, not fear for social judgement (Zuckerman,

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[1] Cognitive empathy refers to the ability to recognize and understand others' feelings, while affective empathy involves arousal to others' emotional state (König, Gollwitzer, & Steffgen, 2010).

2014). In fact, recent work suggests that some individuals with higher levels of anxiety are likely to exhibit risky, impulsive behaviors (e.g., Lipton, Weeks, Daruwala, & De Los Reyes, 2016). According to some researchers, uninhibited behavior may be one of the core characteristics of a subset of people with social anxiety, since they attempt to increase social assertiveness and alleviate anxiety by engaging in risk-taking behaviors. Because socially anxious individuals are overly concerned with positive self-presentation, risk-taking may increase if the uninhibited behavior will restore their sense of personal control or will make them appear more socially attractive (e.g., posting pictures of themselves consuming too much alcohol) (Kashdan, Elhai, & Breen, 2008).

Since uninhibited behavior, coupled with social anxiety is likely to compromise the psychological, social and physical well-being of the individual, it is essential to recognize potential protective factors (Kashdan et al., 2008). Empathy may function as a protective factor in the association of social anxiety and online disinhibition, since online behavior is unsupervised and therefore regulated according to each person's perceptions and characteristics (Mura, 2011). Highly empathic adolescents have a better understanding of their own and others' emotional states and tend to keep away from behaviors that may cause negative feelings (Mura, 2011). Social anxiety has been found to be related to empathy; Since high socially anxious individuals are preoccupied with the impression they make to others, they acquire unique social-cognitive abilities, as they show sensitivity and attentiveness to other peoples' state of mind and social signals (Tibi-Elhanany & Shamay-Tsoory, 2011). Recent studies suggest that this inclination of socially anxious individuals mainly involve cognitive but not affective empathy (Tibi-Elhanany & Shamay-Tsoory, 2011).

1.3. The moderating role of empathy

Although psychopathic traits and social anxiety have been linked to online disinhibition, they cannot be viewed as causal but rather as contributing factors to the manifestation of the phenomenon and are subjected to various personal and environmental influences. Specifically, based on the existing evidence (see sections 1.1 and 1.2), empathy is a powerful moderating factor which might reduce the likelihood of online disinhibition among adolescents with high psychopathic traits or social anxiety.

2. Purpose of the study

While existing theories have proposed several personal correlates of online disinhibition (e.g., self-control; Voggeser et al., 2018, moral disengagement; Mura, 2011), these should be examined from a more integrative perspective. This study aims to investigate the moderating role of empathy (affective and cognitive) in the association between maladaptive personal characteristics that may be context-dependent, and online disinhibition.

Specifically, given the possible associations between the aforementioned variables, and the limited scientific attention given to this issue, this study was designed to answer the following research questions:

1) Does empathy moderate the association between psychopathic traits and online disinhibition?

We hypothesize that the association between psychopathic traits and online disinhibition would be moderated by empathy and the effect of psychopathic traits on online disinhibition would be stronger at lower levels of empathy.

2) Does empathy moderate the association between social anxiety and online disinhibition?

We hypothesize that the association between social anxiety and online disinhibition would be moderated by empathy and the effect of social anxiety on online disinhibition would be stronger at lower levels of empathy.

3. Material and methods

3.1. Participants

Based on stratified sampling, 1097 Greek Junior High School students (12–17 yrs, M = 13.95 yrs) from Northern Greece participated. In terms of gender, 537 were boys (49%) and 551 girls (51%), while in terms of grade, 336 were 1st graders (30.6%), 426 2nd graders (38.8%) and 333 3rd graders (30,4%).

3.2. Procedure

Prior to the implementation of the study, the researchers obtained permission: a) from the Institute of Educational Policy, a consulting body of the Greek Ministry of Education, Research and Religious Affairs and b) from the students' parents/guardians. Furthermore, students were informed that their participation would be anonymous and voluntary and that they retained the right to withdraw from the study at any time (less than 1% withdrew). The completion of the questionnaire took approximately 35 min.

3.3. Measures

3.3.1. Demographics
Students reported their gender, age and grade level.

3.3.2. Online disinhibition
Students' tendency for disinhibited online acts was assessed with the "Social confidence" and "Socially liberating" scales from the "Internet Behaviors and Attitudes" questionnaire (Morahan-Martin & Schumacher, 2000). The 15 items assess the frequency of more confident and liberated online social behavior on a 4-point scale (from 1 = *Strongly disagree* to 4 = *Strongly agree*). The scales have been previously used combined for the assessment of online disinhibition (Niemz, Griffiths, & Banyard, 2005) and their validity and reliability has been confirmed in Greek studies (Antoniadou & Kokkinos, 2013; Antoniadou, Kokkinos, & Markos, 2016; Kokkinos & Antoniadou, 2019).

3.3.3. Social anxiety
Students' social anxiety symptoms were assessed with the use of the "Social anxiety" subscale of "Self-Consciousness Scales" (SCS) (Fenigstein, Scheier, & Buss, 1974; Panayiotou & Kokkinos, 2006). The subscale consists of 6 items rated on a 5-point scale (from 0 = *Never* to 4 = *Always*) and it has been successfully used among adolescents (e.g., Martin & Debus, 1998).

3.3.4. Empathy
Affective (11 items) and cognitive (9 items) empathy were assessed with the use of the respective "Basic Empathy Scales" (BES) (Jolliffe & Farrington, 2006), the items of which are rated on a 5-point scale (from 1 = *Strongly disagree* to 5 = *Strongly agree*). The BES has been proven valuable in the assessment of empathy and its validity and reliability have been confirmed (Antoniadou & Kokkinos, 2013; Jolliffe & Farrington, 2006; Kokkinos & Kipritsi, 2018).

3.3.5. Psychopathic traits
The "Youth Psychopathic Inventory-Short Version" (YPI-S) (Van Baardewijk et al., 2010) assesses grandiose-manipulative, callous-unemotional and impulsive-irresponsible traits through 18 (equally distributed) items on a 4-point scale (from 1 = *Not true at all*, to 4 = *Applies very much*). YPI-S has been widely used due to its good validity and

reliability, as well as its ability to avoid socially desirable responses (Antoniadou & Kokkinos, 2013; Fanti, Frick, & Georgiou, 2009).

3.4. Data analysis

First, we estimated a measurement model for each scale to test construct validity. Online disinhibition and social anxiety were modeled as unidimensional constructs. Psychopathic traits were modeled with three correlated factors: grandiose-manipulative, impulsive-irresponsible and callous-unemotional. Empathy was modeled as a correlated two-factor model with cognitive empathy and affective empathy as subscales. The models were estimated using the robust maximum likelihood (MLR) estimator, a full information maximum-likelihood estimation method featuring robust standard errors (Muthén & Muthén, 1998–2012). The following indices were used to evaluate model fit (Hu & Bentler, 1999): standardized root-mean-square residual (SRMR) less than 0.08, root-mean-square error of approximation (RMSEA) less than 0.05, goodness of fit index (GFI) above 0.90, and comparative fit index (CFI) above 0.95. Correlation coefficients were calculated to assess correlation between the variables.

Next, following Maslowsky, Jager, and Hemken (2015), latent moderated structural equation modeling (LMS; Klein & Moosbrugger, 2000) was conducted. LMS, unlike conventional approaches to testing interactions, produce estimates of interactions that are unattenuated by measurement error, which serves to reduce the likelihood of biased estimates (Little, Bovaird, & Widaman, 2006). The analysis was conducted in two steps. In the first step, a measurement model (Model 0) was evaluated containing all variables of interest and structural paths representing the main effects (i.e., main effects of social anxiety, empathy and psychopathic traits on online disinhibition). In the second step, a LMS model was tested (Model 1) containing the measurement model plus the hypothesized latent interactions (i.e., Empathy x Social Anxiety, Empathy x Psychopathic traits). Given the lack of a reliable chi-square statistic and traditional model fit statistics when applying the LMS, the log-likelihood ratio test statistic was used to evaluate adequacy of the nested latent interaction models. The log-likelihood ratio difference test (Asparouhov & Muthén, 2013) was used to determine the significance of the latent interactions (loglikelihood values and scaling correction factors obtained with the MLR estimator were used). Finally, plots of interaction effects were used to estimate conditional effects at 1 SD below the mean, the sample mean, and 1 SD above the mean on the distribution of factor scores of the moderating variables.

All analyses were performed using Mplus version 7.31 (Muthen & Muthen, 2012–2017). LMS models were estimated with the XWITH command, using full information maximum likelihood with robust standard errors. Data were standardized prior to analysis to obtain standardized beta coefficients. Latent variables were scaled by fixing the loading of the first item to 1.0, per Mplus defaults.

4. Results

4.1. Descriptive statistics and correlations

Full-information maximum likelihood was used for missing data. Less than 5% of data were missing. Means, standard deviations, alpha reliabilities, and bivariate correlations appear in Table 1.

4.2. Measurement models

Initial CFAs for evaluating the measurement models for each construct exhibited satisfactory model fit in all cases, psychopathic traits: ($\chi^2(132) = 255.48$, $p < .001$, CFI = 0.94, TLI = 0.93, RMSEA = 0.047, 90%CI (0.042–0.053), SRMR = 0.045, social anxiety: ($\chi^2(9) = 7.703$, $p < .001$, CFI = 0.99, TLI = 0.97, RMSEA = 0.051, 90%CI (0.019–0.087), SRMR = 0.017, empathy: ($\chi^2(169) = 123.56$,

Table 1
Sample means, standard deviations, Cronbach's alpha values (on the diagonal) and zero-order correlations among measures ($N = 1097$).

Scale	Range	M	SD	OD	GM	CU	II	SA	AE	CE
OD	0–3	.60	.46	(.80)						
GM	1–4	1.66	.60	.39**	(.77)					
CU	1–4	1.84	.58	.27**	.20**	(.73)				
II	1–4	1.96	.58	.39**	.39**	.35**	(.79)			
SA	0–4	1.64	.93	.25**	.04	.28**	.25**	(.76)		
AE	1–5	3.36	.50	-.02	-.06	-.08**	.06*	.21**	(.77)	
CE	1–5	3.87	.59	-.10**	.02	-.01	.07*	.01	.28**	(.84)

Note. OD = Online Disinhibition, GM = Grandiose-Manipulative, CU = Callous-Unemotional, II = Impulsive-Irresponsible, SA = Social Anxiety, AE = Affective Empathy, CE = Cognitive Empathy. Cronbach's alpha values in parentheses. $^*p < .05$ $^{**}p < .01$.

$p < .001$, CFI = 0.95, TLI = 0.94, RMSEA = 0.049, 90%CI (0.041–0.057), SRMR = 0.041), online disinhibition: ($\chi^2(105) = 132.63$, $p < .001$, CFI = 0.94, TLI = 0.93, RMSEA = 0.05, 90%CI (0.044–0.059), SRMR = 0.042). An inspection of modification indices did not indicate any misspecifications that could be justifiably modified to improve model fit.

4.3. Main effects and interactions

Model 0 (main effects) was first estimated. The hypothesized model exhibited reasonably good fit, $\chi^2(1631) = 1092.22$, $p < .001$, CFI = 0.94, TLI = 0.93, RMSEA = 0.027, 90%CI (0.026–0.029), SRMR = 0.040. The seven factors were significantly loaded by the intended manifest indicators, providing support to the theoretical constructs. Five out of six main effects were significantly different from zero. The model explained 28.1% of the variance in online disinhibition. Social anxiety has a positive effect on online disinhibition, $b = 0.26$, SE = 0.05, $z = 5.084$, $p < .001$, indicating that participants higher in social anxiety had higher online disinhibition. Psychopathic traits significantly and positively predicted online disinhibition, $b = 0.41$, SE = 0.08, $z = 4.995$, $p < .001$ for grandiose-manipulative $b = 0.11$, SE = 0.03, $z = 3.48$, $p < .05$ for callous-unemotional and $b = 0.23$, SE = 0.06, $z = 3.046$, $p < .001$ for impulsive-irresponsible. Cognitive empathy had a negative effect on online disinhibition, $b = -0.13$, SE = 0.06, $z = -2.23$, $p < .05$. However, the effect of affective empathy on online disinhibition was non-significant.

Model 1 (main effects plus interactions) was then evaluated. A total of eight interactions were estimated, six between psychopathic traits (grandiose-manipulative, callous-unemotional and impulsive-irresponsible factors) and empathy (cognitive empathy and affective empathy factors) and another two between social anxiety and empathy factors. The relative fit of Model 1 versus Model 0 was determined via a log-likelihood ratio test comparing the log-likelihood values of Model 0 and Model 1, yielding a log-likelihood difference value of D = 19.7. The difference in free parameters is 2. Using a chi-square distribution, this log-likelihood ratio test was significant ($p < .001$), indicating that the null model (Model 0; the model without the interaction effects) represents a significant loss in fit relative to the alternative model (Model 1; the model with the interaction effects). This suggests significant latent interactions.

Fig. 1 presents the final model with significant main effects and interactions. Out of the eight interactions tested predicting online disinhibition, only two were statistically significant at the 0.05 level. First, impulsive-irresponsive traits interacted with cognitive empathy ($b = -0.09$, SE = 0.03, $z = -2.743$, $p = .0062$). The direction of this interaction coefficient suggests that the association between impulsive-irresponsible and online disinhibition was stronger for lower cognitive empathy. The interaction plot in Fig. 2 reveals that the relationship between impulsive-irresponsible and online disinhibition becomes
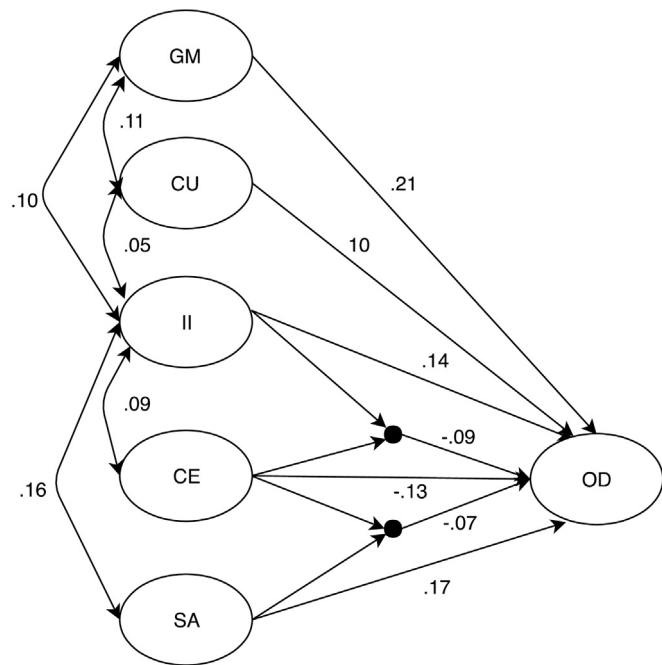
Fig. 1. Latent moderated structural equation model (Model 1, final model with significant main effects and interactions). Black dots ● denote latent interaction terms. Latent interaction terms are CE x II and SA x CE. All effects shown are standardized coefficients (b) and significant. *Note.* GM = Grandiose-Manipulative, CU = Callous-Unemotional, II = Impulsive-Irresponsible; CE = Cognitive Empathy; SA = Social Anxiety; OD = Online Disinhibition.
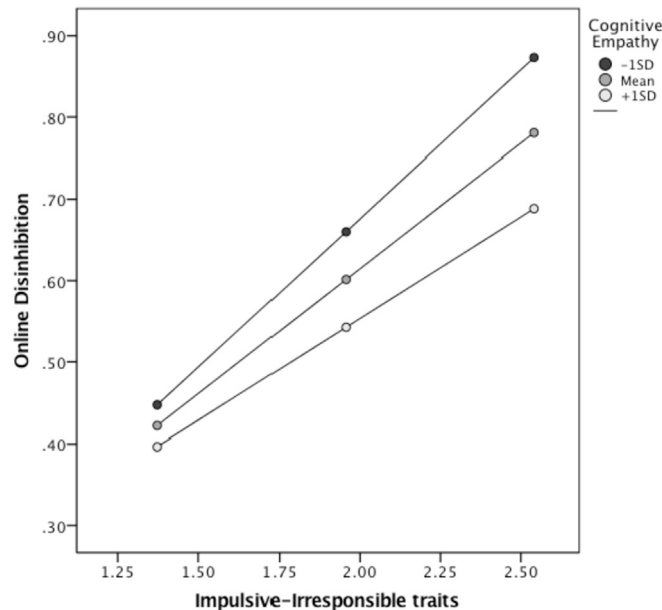

Fig. 2. Interaction between impulsive-irresponsible and cognitive empathy as predictors on online disinhibition.

more positive as cognitive empathy decreases, from $b = .25$, SE = 0.03, $t = 8.21$, $p < .001$ for 1SD below the mean to $b = 0.36$, SE = 0.03, t = 12.24, $p < .001$ for 1SD above the mean. Second, social anxiety interacted with cognitive empathy ($b = -0.07$, SE = 0.02, $z = -2.746$, $p = .0061$). The direction of this interaction coefficient suggests that the association between social anxiety and online disinhibition was stronger for lower cognitive empathy. Fig. 3 shows that the relationship between social anxiety and online disinhibition becomes more positive as cognitive empathy decreases, from $b = .08$, SE = 0.02,
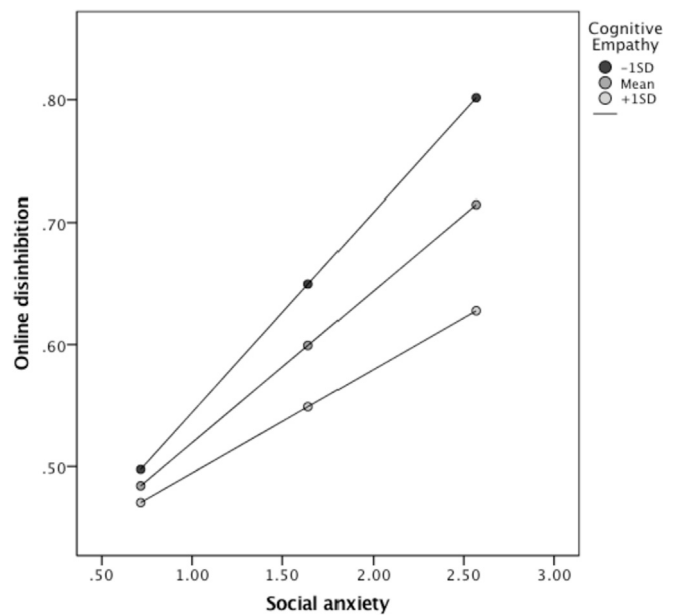

Fig. 3. Interaction between social anxiety and cognitive empathy as predictors on online disinhibition.

$t = 4.27$, $p < .001$ for 1SD below the mean to $b = 0.16$, SE = 0.02, $t = 7.90$, $p < .001$ for 1SD above the mean.

5. Discussion

The purpose of this study was to examine the association of psychopathic traits and social anxiety with online disinhibition, as well as the moderating role of empathy, using the theoretical framework of context-dependent personality. Online disinhibition was relatively infrequent in the present sample, indicating that adolescent students generally engage in activities that were in accordance with their typical offline behavior (Suler, 2004). Previous studies have also found similar low scores of online disinhibition (e.g., Charaschanya & Blauw, 2017).

Results showing negative correlations of empathy with online disinhibition, as well as students' high empathy scores could suggest that they had elevated concern for the consequences of their online actions (Wright et al., 2018). Terry and Cain (2016) propose the use of the term "digital empathy" and comment that the advances in technology that have altered our communication patterns, threaten the expression of empathy. Specifically, it may be reduced during CMC, due to lack of non-verbal feedback, and because the user can express thoughts and feelings instantly, which lowers the use of the social filters that characterize offline communications (Terry & Cain, 2016). Under these circumstances, although the online disinhibition effect could apply to all users, several individual characteristics -such as low empathy-could impact the likelihood of uninhibited online behavior (Terry & Cain, 2016). Correlation analysis also showed that psychopathic traits and social anxiety were positively related to online disinhibition, thus indicating that they may be context dependent and differently manifested online (Amichai-Hamburger, 2005; Suler, 2004).

Moderation analysis showed that cognitive empathy had a significant moderating effect only in the relationship of impulsive-irresponsible traits and social anxiety with online disinhibition. These results have significant theoretical and practical implications. Firstly, they suggest that, the strong disinhibition tendencies of grandiose-manipulative and callous-unemotional students (which are integral parts of their repertoire) (Wright et al., 2018) might not be significantly lowered by cognitive empathy, but rather heightened during the unsupervised online communications (Mura, 2011), since users act according to their characteristics and values (Voggeser et al., 2018). As

Nevin (2015) argues, the characteristics of cyberspace may facilitate the expression of psychopathic traits and contribute to disinhibited online acts. It is notable, that he also found higher scores of psychopathy online than offline in his study, which he linked to the lack of social restrains and online disinhibition. In terms of impulsive-irresponsible traits, as these findings replicate, they may be predictive of disinhibited acts (Birkley, Giancola, & Lance, 2013), but adolescents with such characteristics do not have substantial empathic limitations (Hare, 2003). More specifically, research shows that their impulsiveness mainly stems from thoughtlessness and emotional reactivity (enhanced by the online environment), and therefore high cognitive empathy may allow them to control their urges and be mindful (Krueger, Caspi, Moffitt, White, & Stouthamer-Loeber, 1996). As previous researchers have found, understanding the distress of others interrupts disinhibited and especially violent behaviors (e.g., Mayer, Jusyte, Klimecki-Lenz, & Schönenberg, 2018). Finally, high social anxiety scores predicted online disinhibition, which is in accordance with previous studies, since socially anxious adolescents may act in a disinhibited manner to socialize and self-disclose (Green, Wilhelmsen, Wilmots, Dodd, & Quinn, 2016), especially if the online environments create false feelings of invincibility (Hayne & Rice, 1997). Nevertheless, previous studies have shown that socially anxious individuals seem to have elevated cognitive empathy (related to increased attention towards social disapproval signs) (Rapee & Heimberg, 1997; Tibi-Elhanany & Shamay-Tsoory, 2011) which, as the present findings show, may act protectively.

Overall, the present findings can contribute significantly in understanding a phenomenon whose correlates have been scantly investigated, based on a context-dependent theoretical framework (Nevin, 2015). Specifically, characteristics such as social anxiety and psychopathic traits have frequently been studied as stable, while their expression in cyber-space has only recently been investigated. Therefore, this study adds to our knowledge regarding the facilitating effect of online environment in the disinhibited behavior of socially anxious students, as well as students with high psychopathic traits, thus indicating that the Internet may differentiate the expression of personality traits and emotions (Amichai-Hamburger, 2005). Moreover, the study has the potential to extend previous findings regarding the association between psychopathic traits, social anxiety and cognitive empathy (e.g., Tibi-Elhanany & Shamay-Tsoory, 2011). It is important to note that the correlates of online disinhibition have not been previously investigated in Greece. Since the values of a country have been found to affect behaviors related to the use of Information and Communication Technologies (such as self-disclosure and aggression), researchers have recently extended their investigation to cultural patterns. Greece has been described as a collectivist country, but relatively recent social and technological changes have led the country to an ongoing transition from collectivism to individualism (Georgas, 1989). Although results from previous studies have shown that users from individualistic cultures tend to self-disclose more during CMC, others indicate that the level of self-disclosure is greater for individuals from collectivist countries, since they experience fewer cultural constrains online (e.g., Chen, 2013; Lapidot-Lefler & Hosri, 2016). Since findings are still scarce and controversial, the results of this study could contribute to our understanding on this matter (Chen, 2013).

The findings of the present study can provide several guidelines for parents, school staff, policy makers, and providers of social media in order to prevent and handle adolescents' online disinhibition tendencies (Wachs & Wright, 2018). Even if Internet use is prohibited within school grounds, its afternoon use (i.e., at home, or other places) can affect students' behavior at school. Therefore, both parents and teachers are responsible to teach adolescents appropriate Internet skills and help them understand that CMC affects their real life since ethical values apply online as well. In this direction, workshops could be arranged that help adolescents develop self-control, self-monitoring and re-cognition of nonverbal social cues (Wachs & Wright, 2018). Internet

usage has been linked to both positive and negative consequences. The same applies for online disinhibition effect, which can be both toxic and benign and can therefore have beneficial or harmful effects. For example, the Internet has been suggested as a potentially useful tool for the treatment of social anxiety, but until recently evidence was scarce regarding the effect of online interaction on socially anxious individuals (Yen et al., 2012). Previous studies have suggested that the Internet may be beneficial for the social interaction of users with social anxiety and findings of this study support these arguments, since they seem to have increased chances of exhibiting less anxious and more liberated behaviors. Therefore, such results could be used not only for the prevention of antisocial acts (e.g., cyber-bullying), but also for online counseling which will aim in decreasing real-life social anxiety (e.g., through cognitive-behavior therapy, relaxation and social skills training) (Yen et al., 2012). In terms of adolescents with high psychopathic traits, findings of this study could be used towards reducing disinhibited aggressive acts, which are frequent in their repertoire. In line with this study, previous evidence suggests that the enhancement of empathy could be a promising intervention (Mayer et al., 2018) - especially for impulsive-irresponsible adolescents. For example, empathy inducing videos have been regarded as a useful technique, since they seem to lead to increases of prosocial behavior, as well as providing more cues for others' emotions and points of view through relative communication platforms (e.g., online social networks) (Mayer et al., 2018). Such programs may be especially valuable for adolescents, who are going through significant changes of moral and identity development and have therefore increased chances of exhibiting online disinhibition (Mayer et al., 2018).

Although efforts were made for ensuring the validity and reliability of the results (e.g., large sample, sampling techniques, use of previously verified scales, anonymous questionnaire), limitations include the cross-sectional nature of the study, the use of self-report questionnaires as well as their distribution in a specific geographic region. The cross-sectional nature of the study does not allow causal inferences to be drawn (e.g., White, 1990) and therefore longitudinal and mixed-method studies could be used in the future for the investigation of this issue (Cassidy, Faucher, & Jackson, 2013). Finally, since only Junior High School students of North Greece participated in the study, thus limiting generalization possibilities, future studies could involve geographically wider samples.

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