I Can't Understand You, Because I Can't Understand Myself: The Interplay between Alexithymia, Excessive Social Media Use, Empathy, and Theory of Mind

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Abstract

Social media represent a relatively new phenomenon affecting the lives of people across the globe. Recently, the number of social media users reached billions, and this number increases every year. Previous studies indicated that excessive social media use may have adverse effects on mental and physical health. Therefore, it is important to explore what psychological factors may contribute to the excessive use of social media. It was found that social anxiety and alexithymia are robust predictors of excessive social media use. However, little is known about the role of empathy and Theory of Mind (ToM) in excessive social media use. Therefore, the primary aim of this study was to examine the mediating effect of empathy and ToM in the relationship between alexithymia and social anxiety. Collectively, 1737 subjects participated in the study (M_{age} = 25.28, SD_{age} = 10, Females: 60.83%). We assessed empathy, social anxiety, ToM, loneliness, and excessive social media use. Structural Equation Modelling was used to test the mediating effect of empathy and ToM. It was revealed that there is a positive relationship between difficulty in identifying feelings (alexithymia) and social anxiety: B = 0.53 (95% CI [0.41 – 0.65], p < .001). Moreover, a significant

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positive association was found between social anxiety and excessive social media use: $B = 0.28$, 95% CI [0.14 – 0.37], $p < 0.001$. However, loneliness was unrelated to social media use. Similarly, there was no significant mediating effect of empathy and ToM on the link between difficulty in identifying feelings and social anxiety. Future research should examine the generalizability of our findings using different cultural/linguistic environments. The primary limitation of the study is the use of cross-sectional data which prevent to draw causal links between the explored relationships.

Introduction

Social media, broadly defined as Internet applications that enable the creation and exchange of user-generated digital content (Betton et al., 2015), have experienced a rapid user-based surge in recent years. For example, Facebook is visited by approximately 3 billion users per month, Instagram by 1.4 billion, and currently the most popular social media platform, TikTok, is used by 1 billion people (Biggest social media platforms 2022, 2022), and more importantly, the number of social media users has been increasing every year (Han & Myers, 2018).

Furthermore, social media provides wide-ranging opportunities to join various online social groups and engage in close communities that share similar interests. This massive and global presence of social networking sites stresses the importance of research of their excessive use in relation to personal characteristics as well as the mental and physical health of the users. Additionally, as the number of social media users increases each year, it can be assumed that the number of people who use social media excessively also increases.

A number of conducted studies have repeatedly found a positive association between excessive social media use and depression (Dhir et al., 2018; Hussain & Griffiths, 2018; Pontes, 2017). Similarly, high social anxiety and stress levels have also been found to be positively associated with excessive social media use (Atroszko et al., 2018; Pontes, 2017). With the growing understanding of the adverse effects associated with excessive social media use, follow-up studies have found that excessive use of social media is also associated with a higher incidence of aggressive behavior (Jamil et al., 2016; Lim et al., 2015), poorer sleep quality (Sümen & Evgin, 2021), and lower working memory capacity (Sha & Dong, 2021). However, despite the growing number of studies that have investigated the relationship between excessive social media use and psychological problems, only a small number of studies have addressed the association between excessive social media use and emotional intelligence.

One definition states that emotional intelligence refers to the perception, appraisal, and regulation of emotions in oneself as well as others (Drigas & Papoutsi, 2018). According to Bar-On (2006), emotional intelligence has the following components: 1) Self-awareness and self-expression; 2) Social awareness and

interpersonal relationship; 3) Emotional management and regulation; 4) Change management and 5) Self-motivation. According to Bar-On (2006) theory, the ability to perceive one's own emotions and those of others is one of the central components of emotional intelligence. The second mentioned component, i.e., social awareness and interpersonal relationship, can be operationalized in different ways; one of them is the recognition of emotions from facial expressions, or sometimes called Theory of Mind - ToM - (Quesque & Rossetti, 2020). Interestingly, this operationalized component of emotional intelligence has not yet been sufficiently investigated by previous studies, namely in the context of excessive social media use.

A systematic review by Casale et al. (2021), examining the association between metacognition and addiction to selected technologies (e.g., online gaming) revealed that, across major global databases such as WoS or Pubmed, there is only one study that examined the association between excessive social media use and emotion recognition (Ünal-Aydın et al., 2020). However, this study contains several limitations that make the interpretation of its results difficult. One of the limitations concerns the approach the study undertook to measure emotion recognition. More specifically, the scoring method used in the study has not been empirically tested or recommended by the authors of the respective version of the instrument (Yıldırım et al., 2011).

Along with emotion recognition, there is another psychological construct that can be related to excessive social media use: alexithymia, which represents the inability to recognize, express, and describe one's own emotions (Preece et al., 2017). Alexithymia can be a key construct linking emotional recognition with symptoms of certain psychopathologies such as social anxiety. This effect of alexithymia on social anxiety can consequently result in excessive social media use. The theoretical explanation of the effect is as follows: According to the vulnerability hypothesis (de Vente et al., 2006), alexithymia is causally associated with psychopathology via impaired emotional processing. This impaired emotional processing seems to be linked with a lower degree of emotion recognition (Pisani et al., 2021) and empathy (Williams & Wood, 2010). Consequently, difficulties in empathy and emotion recognition could affect the social abilities of a person, leading to social anxiety (Pittelkow et al., 2021). Ultimately, individuals with a higher degree of social anxiety tend to compensate for a lack of in-person relationships via the excessive use of social media (O'Day & Heimberg, 2021).

Thus, the problem that the present study aims to address is the relationship between emotional intelligence components (i.e., ToM, empathy, and alexithymia), social anxiety, and excessive social media use. In more detail, the primary aim of this study is to test the mediating effect of ToM and empathy on psychological constructs predicting excessive social media use, that is, alexithymia and social anxiety (see Figure 1). Based on this aim, the following hypotheses were formulated:

H1: Reading Mind in Eyes (RMET) raw score will be negatively associated with excessive social media use;

H2: RMET raw score will significantly mediate the relationship between alexithymia and excessive social media use;

H3: There will be a positive association between difficulty in identifying feelings and excessive social media use;

H4: Relationship between difficulty in identifying feelings and social anxiety will be mediated by the RMET score;

H5: Social anxiety will be positively associated with excessive social media use.

Method

Participants and Procedure

The study sample consists of Czech young adults, primarily university students (see Table 1 for more details). The data was collected through convenience and snowball sampling methods. The data collection took place from March to December 2022 via an online data collection platform developed by the Social Health Institute of Palacky University in Olomouc (OUSHI). The study was pre-registered on the Open Science Framework website[1] before the data collection started. Participation in the survey was completely voluntary, and respondents could exit the survey at any time. Additionally, before respondents entered the survey, they give informed consent. The study was approved by the Committee for Research Ethics of the Faculty of Education, University of Hradec Králové, Czech Republic (No. 1/2022). The study procedure is in accordance with the ethical research framework of the Ministry of Education, Youth, and Sports, Czech Republic.

Exclusion criteria for the current study was: (1) younger than 18 years of age or leaving online questionnaire after it was just begun ($n = 1699$), (2) respondents form countries other than Czech Republic ($n = 75$); (3) inconsistent answering to control questions regarding participants' weight, height and age; (4) extremely fast way of completing the survey, i.e. less than 10 minutes ($n = 50$); (5) participants who answered a large number of items in the same way ($n = 122$). As a result, the final sample consisted of 1737 participants ($M_{age} = 25.29$, $SD_{age} = 9.92$, Females: 61.49%)[2].

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[1] https://osf.io/vftxk/?view_only=4cd83e195ea246509e4ee7f613f3886d

[2] Research data and study code are publicly available on the Open Science Framework website: https://doi.org/10.17605/OSF.IO/VFTXK

Measures

The Perth Alexithymia Questionnaire (PAQ) (Preece et al., 2018) was primarily designed to measure the following components of alexithymia: generalized difficulties in identifying one's own feelings (G_DIF); difficulties in describing one's own feelings (DDF); and an externally oriented thinking style (EOT). This self-report tool consists of 24 items. Participants responded to each item on a 7-point scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), with a higher score indicating higher levels of alexithymia (Preece et al., 2018). The G_DIF subscale used in this study consists of eight items creating minimum scale score of 8 and maximum score of 56. The internal consistency of the G_DIF subscale was excellent: Cronbach's α = .87, 95% CI [.86 – .88] and McDonald's ω_t = .90.

Toronto Empathy Questionnaire (TEQ) (Spreng et al., 2009; Czech adaptation Novak et al., 2021) is a self-report instrument for measuring empathy – particularly its emotional aspects. It is a very brief and user-friendly instrument with 7 questions rated on a five-point Likert scale from *Never* (0) to *Always* (4) creating score range from 0 to 28. A higher score indicates higher empathy. The internal consistency of the TEQ was good: Cronbach's α = .85, 95% CI [.83 – .86] and McDonald's ω_t = .89.

Social Anxiety Inventory (SIAS) (Mattick & Clarke, 1998) is a 6-item self-report scale for measuring social anxiety. Respondents are required to answer each item on a 5-point Likert scale ranging from *Does not characterize me* (1) up to *Characterizes me very much* (5) creating a score ranging from 6 to 30. The items referred to fear related to interacting in social situations. The scale was translated to Czech using forward-backward method. The internal consistency of the SIAS was good: Cronbach's α = .82, 95% CI [.80 – .84] and McDonald's ω_t = .87.

Reading Mind in Eyes Test (RMET) (Baron-Cohen et al., 2001) was developed to measure the Theory of Mind – ability to recognize another's mental state. Original version of the RMET contains 36 photographs of human eyes depicting mental states. For each photograph, participants are asked to recognize their mental state, choosing between one of four possible emotions. The scale was translated to Czech using forward-backward method. Czech translation consists of 12 items. Thus, RMET score ranges from 0 to 12. The internal consistency of the RMET was below sufficient threshold: Cronbach's α = .58, 95% CI [.54 – .62] and McDonald's ω_t = .62.

Social Media Disorder Scale (SMDS) (Eijnden et al., 2016) is a 9-item scale, measuring problematic social media use based on DSM-5. Subjects are responding on dichotomous items "*yes*" (1) "*no*" (0). Thus, possible score ranges from 0 to 9. Higher score indicates higher excessive social media use. The scale was translated to Czech using forward-backward method. The internal consistency of the SMDS was below sufficient threshold: Cronbach's α = .69, 95% CI [.66 – .72] and McDonald's ω_t = .74.

Overall Loneliness Severity and Impairment Scale (OLSIS) (Timulak et al., 2020 - in development) is a 5-item self-report transdiagnostic measure. It focuses

mainly on experienced and functional aspects of maladaptive loneliness across the last week. Participants are required to respond on a 6-point Likert scale ranging from 0 to 5 creating a score ranging from 0 to 25. Higher score indicates higher loneliness. The scale was translated to Czech using forward-backward method. The internal consistency of the OLSIS was good: Cronbach's α = .90, 95% CI [.89 – .91] and McDonald's ω_t = .93.

Data Analysis

The Little MCAR test indicated that the null hypothesis, assuming that the data are not missing completely on a random count, should not be rejected. For this reason, missing data in key study variables (G_DIF = 55.73%, OLSIS = 56.76%, RMET = 42.49%, SIAS = 51.58%, SMDS = 51.30%, TEQ = 60.05) were handled using list-wise deletion. Using the full information maximum likelihood method was not possible due to estimation problems. The Mardia test suggested that the data normality assumption can be rejected. For this reason, non-parametric analytical methods were used during data analysis. Examination of homoscedasticity using the Breusch-Pagan test revealed that the data are heteroscedastic (χ^2 = 43.99, df = 1, $p <$ .001. The multicolinearity was explored using the Variance Inflation Factor (VIF). As the maximum value of the VIF was 1.32, it can be concluded that there was no multicolinearity in our data. For comparison of socio-demographic groups, in the key study variables, Kruskal–Wallis test was used. As post-hoc tests, the Dunn and Games-Howell tests were used. In the SEM, we sequentially tested the three models depicted in Figure 1. As these models contained ordinal variables and to correct for heteroscedasticity of the data (Feldman et al., 2014), we fitted all models using the maximum likelihood method with robust standard errors. Across the SEM models, age, and gender were added into the models as covariates. Moreover, when the association between social anxiety and excessive social media use is explored, it is important to consider the effect of additional confounding variables: although loneliness is a psychologically different construct than social anxiety (Lieberz et al., 2022), it was found to be significantly associated with excessive social media use as well as social anxiety (O'Day & Heimberg, 2021). For this reason, it is important to control for the effect of loneliness while examining this relationship.

Model fit was evaluated using the following goodness of fit indices: 1) Mean Square Error of Approximation (RMSEA), 2) Standardized Root Mean Squared Residual (SRMR), 3) Comparative Fit Index (CFI), 4) Tucker-Lewis index (TLI). In the first two indices, < .08 and < .06 indicate an acceptable and a good fit respectively. In the last two indices, values > .95 suggest an excellent fit (Hu & Bentler, 1999). The data analysis was done in R programming environment. The following packages were primarily used: *lavaan* (Rosseel, 2012), *papaja* (Aust & Barth, 2020), *psych* (Revelle, 2020), *ufs* (Peters, 2018) and *psychtoolbox* (Novak, 2022).

Figure 1

Models Tested in Structural Equation Model (SEM)
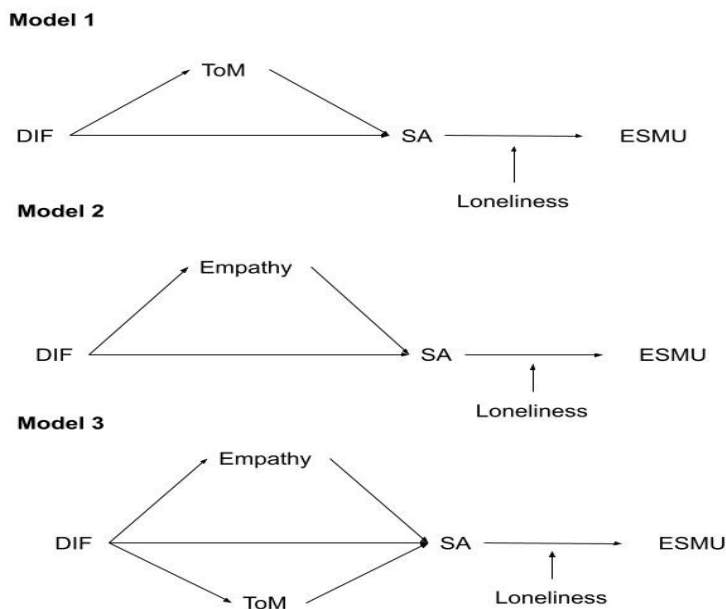
Note. DIF = Difficulty in identifying geelings; ESMU = excessive social media use; ToM = Theory of Mind; SA = Social Anxiety. In each of these models, socio-demographic variables will be controlled.

Results

Socio-Demographic Results

Analysis of differences between socio-demographic groups revealed significant differences in social anxiety, loneliness, emotional recognition, empathy, difficulties in identifying feelings, and problematic use of social media. The detailed results of this socio-demographic testing can be found in Table 1.

Table 1

Socio-Demographic Comparison and Group Differences

Key	Value	n	%	RMET Group difference	SIAS Group difference	SMDS Group difference	TEQ Group difference	RMET M (SD)	TEQ M (SD)	SIAS M (SD)	SMDS M (SD)
Gender	1 Female	1022	61.46	1 vs 2, t(691.78) = 3.97, p < .001	1 vs 2, t(718.41) = 2.92, p = .004	1 vs 2, t(669.83) = 4.41, p < .001	1 vs 2, W = 72646.5, p < .001	9.44 (1.97)	21.02 (4.56)	13.74 (5.26)	1.80 (1.70)
	2 Male	641	38.54					8.88 (2.23)	18.72 (4.77)	12.70 (4.82)	1.26 (1.72)
Family_ status	1 Single	747	44.92		1 vs 2, W = 97179, p = .001		1 vs 2, W = 51645.5, p = .010	9.32 (2.06)	19.59 (4.90)	13.99 (5.19)	1.51 (1.64)
	2 Married/In partnership	916	55.08					9.16 (2.11)	20.53 (4.64)	12.84 (5.00)	1.66 (1.8)
Economical_ status	1 Unemployed	100	6.01		2 vs 3, t(621.97) = 2.32, p < .001; 3 vs 4, t(55.78) = -2.71, p = .001	2 vs 3, t(656.28) = 0.72, p < .001		8.95 (1.73)	20.25 (4.67)	13.48 (6.14)	1.68 (1.83)
	2 Employed	525	31.57					9.10 (1.98)	20.08 (4.62)	11.98 (4.65)	1.16 (1.51)
	3 Student	962	57.85					9.34 (2.17)	20.08 (4.90)	14.30 (5.12)	1.88 (1.79)
	4 Entrepreneur	76	4.57					9.28 (2.23)	20.6 (4.67)	11.59 (4.21)	1.23 (1.72)
Education	1 Higher vocational school or lower	1371	82.44		1 vs 3, z = -3.44, p = .002	1 vs 3, t(118.55) = -0.71, p < .001; 2 vs 3, t(174.95) = -0.61, p = .010		9.16 (2.17)	20.10 (4.73)	13.66 (5.17)	1.67 (1.79)
	2 University bachelor	158	9.50					9.63 (1.76)	20.43 (4.54)	12.40 (4.34)	1.57 (1.60)
	3 University master or Dr.	134	8.06					9.40 (1.66)	19.87 (5.43)	11.78 (5.17)	0.96 (1.16)

Note. RMET = Reading Mind in Eyes Test, TEQ = Toronto Empathy Questionnaire, SIAS = Social Interaction Anxiety Scale, SMDS = Social Media Disorder Scale, G_DIF= Generalised Difficulty in identifying feelings, OLSIS = Overall Loneliness Severity and Impairment Scale; t values refer to use of the Games-Howell test, z value refers to use of the Dunn test. Values in last 4 columns represents mean and standard deviation of a total score.

Results of Correlation Analysis

Results of the correlation analysis revealed that, in contrast to our hypothesis (H1), the RMET score was not associated with excessive social media use. In line with our hypothesis (H3), there was a significant positive relationship between difficulties in identifying feelings and excessive social media use. In accordance with our hypothesis (H5), a significant positive link between social anxiety and excessive social media use was observed. Across all significant relationships found, the strength of the correlation was rather small (.36, -.24). More detailed results of the correlation analysis can be found in Table 2.

Table 2

Correlation Table with Means (M) and Standard Deviations (SD)

	1	2	3	4	5	6	7	M	SD
1. SMDS	-							1.60	1.73
2. RMET	.03	-						9.24	2.08
3. TEQ	.05	.21***	-					20.12	4.79
4. SIAS	.26***	.02	-.05	-				13.32	5.11
5. OLSIS	.20***	.08	.07	.28***	-			4.55	4.08
6. G_DIF	.15***	-.21***	-.20***	.36***	.25***	-		22.11	9.75
7. Age	-.23***	-.05	.02	-.24***	-.15**	-.09	-	25.29	9.92
8. Gender	-.20***	-.13***	-.24***	-.10	-.15***	.00	.09**	1.39	0.49

Note. RMET = Reading Mind in Eyes Test; TEQ = Toronto Empathy Questionnaire; SIAS = Social Interaction Anxiety Scale; SMDS = Social Media Disorder Scale; G_DIF = Generalised Difficulty in Identifying feelings; OLSIS = Overall Loneliness Severity and Impairment Scale. Spearman's correlations were used; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$.

Structural Equation Modelling

Mediation Analysis

In the first step, we created a SEM model, including empathy as a mediator of the relationship between the difficulty in identifying feelings and social anxiety (Model 1). Although there was a significant direct effect of difficulty in identifying feelings on social anxiety (c-path) and also on empathy (a-path), the indirect effect was not significant (Table 3). In the second step, we removed variable empathy from the model and replaced it with the RMET score as a new mediator (Model 2). In this second model, there was a significant direct effect of difficulty in identifying feelings on the RMET score (a-path). However, in contrast, with H4, the mediating effect of the RMET score was non-significant. Finally, we added empathy into Model 2 as a second mediator and tested whether the inclusion of the two mediators would result in a significant indirect effect of at least one mediator (Table 3). Results indicated

that there was no indirect effect of either mediator on the link between difficulty in identifying feelings and social anxiety (Figure 2).

Figure 2

The SEM Diagram, Depicting Mediating of the RMET and the TEQ (N = 1737)
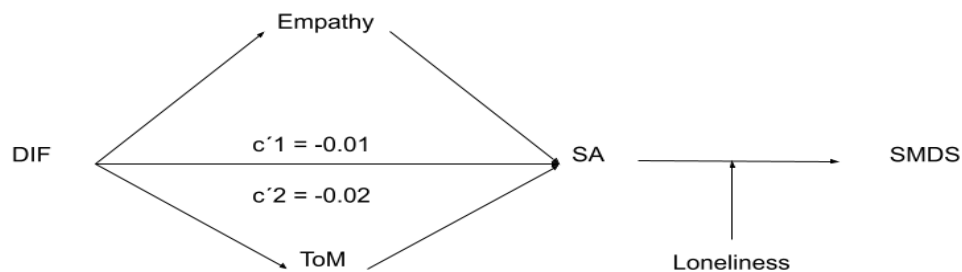
Note. DIF = Difficulty in identifying feelings; SMDS = Social Media Disorder Scale; ToM = Theory of Mind; SA = Social Anxiety; in each of these models, socio-demographic variables will be controlled; $c'1$ = indirect effect of empathy; $c'2$ = indirect effect of ToM.

Table 3

Direct and Indirect Effects of the Three SEM Models

Direct and mediated effects	*p*-value	Beta	*B*	[95% CI]
Model 1				
G_DIF - SIAS (direct)	$p < .001$	.46	0.53	[0.41, 0.65]
TEQ - SIAS (direct)	$p = .231$	.06	0.06	[-0.04, 0.16]
G_DIF - TEQ (direct)	$p < .001$	-.23	-0.25	[-0.36, -0.14]
G_DIF - TEQ - SIAS (indirect)	$p = .245$	-.01	-0.02	[-0.04, 0.01]
Model 2				
G_DIF - SIAS (direct)	$p < .001$	.45	0.53	[0.41, 0.65]
RMET - SIAS (direct)	$p = .494$	.04	0.04	[-0.08, 0.16]
G_DIF - RMET (direct)	$p < .001$	-.28	-0.30	[-0.41, -0.18]
G_DIF - RMET - SIAS (indirect)	$p = .502$	-.01	-0.01	[-0.05, 0.02]
Model 3				
G_DIF - SIAS (direct)	$p < .001$	.47	0.55	[0.42, 0.68]
SIAS - SMDS (direct effect)	$p < .001$	.28	0.25	[0.14, 0.37]
SIAS - OLSIS - SMDS (indirect effect)	$p = .131$	.03	0.03	[-0.01, 0.07]
G_DAF - TEQ - SIAS (indirect effect)	$p = .297$	-.01	-0.01	[-0.04, 0.01]
G_DAF - RMET - SIAS (indirect effect)	$p = .421$	-.02	-0.02	[-0.06, 0.03]

Note. RMET = Reading Mind in Eyes Test, TEQ = Toronto Empathy Questionnaire, SIAS = Social Interaction Anxiety Scale, SMDS = Social Media Disorder Scale, G_DIF = Generalised Difficulty in Identifying feelings, OLSIS = Overall Loneliness Severity and Impairment Scale.

Model Fit

The model including empathy (Model 1) as a mediator did explain the data significantly better than the model without empathy: $\chi^2(254) = 454.27$; $p < .001$. In the model where ToM was a mediator (Model 2) of the relationship between difficulty in identifying feelings and social anxiety, model fit was slightly better as compared to the previous model (Table 4). However, the chi-square difference test was not significant: $\chi^2(195) = 146.89$; $p = .996$. When both empathy and ToM were present as mediators (Model 3), the model did not explain the data well. In fact, this model explained data significantly worse as compared to models where empathy and ToM were mediators separately. Therefore, these results complement the results of mediation analysis, where both empathy and ToM were non-significant predictors of social anxiety.

Table 4

Goodness of Fit Indices Values of Models Tested In SEM

Model	χ^2	df	*p*-value	CFI	TLI	RMSEA [95% CI]	SRMR
Baseline model	1298.83	396	< .001	.879	.867	.055 [.052 – .058]	.060
Empathy as mediator	1794.93	650	< .001	.872	.862	.050 [.048 – .053]	.063
ToM as mediator	1931.97	845	< .001	.865	.857	.041 [.039 – .044]	.056
Empathy and ToM mediators	2527.97	1155	< .001	.857	.848	.041 [.039 – .044]	.061

Note. CFI = Comparative Fit Index; TLI = Tucker-Lewis index; RMSEA = Root Mean Square Error of Approximation; CI = Confidence Interval; SRMR = Standardized Root Mean Square Residual; SEM = Structural Equation Modelling.

Discussion

The aim of this study was to examine the interplay between components of emotional intelligence (i.e., empathy, ToM and alexithymia) and excessive social media use. It was revealed that there is a medium-positive relationship between difficulty in identifying feelings and social anxiety. Moreover, a significant-weak positive association was found between social anxiety and both loneliness and excessive social media use. However, loneliness was unrelated to social media use. Similarly, there was no significant mediating effect of empathy and Theory of Mind on the link between difficulty in identifying feelings and social anxiety.

Our findings revealed a positive association between high alexithymia (i.e., difficulty in identifying feelings) and social anxiety. One of the possible explanations is that the difficulty in identifying the emotions of other people produces anxiety due to confusion and uncertainty about what other people might feel, e.g., towards a

person having these difficulties. This can consequently result in the avoidance of real-life social interactions. This explanation is supported by a similar study to ours, in which social anxiety and avoidance were found to be positively associated with alexithymia (Dalbudak et al., 2013). Additionally, the following studies further investigated and subsequently supported this relation, such as Kaur and Kaur (2015) or Cheok and Proeve (2019). Furthermore, the relation between alexithymia and social anxiety is even stronger when individuals are currently suffering from other psychological disorders such as depression, as pointed out by Ertekin et al. (2015).

Our findings revealed a significant positive association between social anxiety and excessive social media use. This finding is in line with other studies indicating that social anxiety is a significant predictor of Internet addiction (Mozafari et al., 2018). The association between excessive social media use and social anxiety can be explained by the fact that individuals with social anxiety are compensating for unfulfilled social needs by using social media excessively (O'Day & Heimberg, 2021). This explanation was supported by many studies (Carruthers et al., 2019; Dobrean et al., 2016; Stănculescu & Griffiths, 2022). Nevertheless, social media often fails to provide compensation for real-life social interaction.

In line with our findings, previous studies also found a significant relation between social anxiety and loneliness (Johnson et al., 2001; Lim et al., 2016; Wang et al., 2019). Moreover, a meta-analytic study by Mahon et al. (2006) found that anxiety, along with gender, depression, shyness, and self-esteem, are significant predictors of loneliness. The relationship between loneliness and social anxiety can be explained by the tendency of people having social anxiety to avoid interpersonal contact. This avoidance of interpersonal contact can result in the absence of close relationships and, consequently, in loneliness.

In correlational analysis, we found a significant positive association between loneliness and excessive social media use. However, in the mediation analysis, no such association was found. The primary reason for this discrepancy could be explained by the mediating effect of social anxiety on the link between excessive social media use and loneliness. Concerning the relationship between excessive social media use and loneliness in general, the results of previous studies are heterogeneous. While some authors found a significant association between excessive use of social media and loneliness (O'Day & Heimberg, 2021), other researchers such as Schwartz-Lifshitz et al. (2022) found no association between these two concepts. Although some studies did not find a significant association, there are theoretical reasons to expect that this relationship, in fact exists. For instance, Pittman (2018) stated that social media use reduces loneliness and increases happiness, adding that frequent use of social media leads to a heightened sense of connection and perceived intimacy with others. This discrepancy between theory and the results of certain studies could be explained by differences in several factors, such as the type of loneliness. Although higher use of certain social media can be negatively linked with decreased emotional loneliness, it could be unrelated or

inversely related to social loneliness. Moreover, other key factors, such as the social media platform, intended purpose, or user-consumed content, might play an important role. For example, both Pittman and Reich (2016) and Yang (2016) examined Instagram and its positive/negative effects on loneliness. They found out that, although Instagram reduced a sense of loneliness when browsing and interacting with others, the effect was observed only through image-based interaction, and text-based interaction appears to be ineffectual. Moreover, Yang (2016) found that Instagram broadcasting, in turn, was actually associated with higher levels of loneliness. Taken together, even though social media use has been found to reduce loneliness, it is important to consider more underlying factors with regard to frequent social media use, such as content, purpose, and platform, but also other mediating factors when measuring loneliness (such as different types of loneliness), which can significantly impact the research results.

The results of the data analysis indicate no statistically significant association between Theory of Mind measured by RMET and social anxiety. This is in contrast with the results of a study by Hezel and McNally (2014), who investigated how socially-anxious and non-socially-anxious perform in two Theory of Mind tasks, one of them being RMET. They found a statistically significant association between social anxiety and Theory of Mind. Similarly, in a study by Lenton-Brym et al. (2018), individuals with high social anxiety performed worse in RMET than individuals with low social anxiety. These findings are also supported by other studies (Alvi et al., 2020; Colonnesi et al., 2017; Washburn et al., 2016), all of which have found a significant negative association between the ability to recognize mental states of others and social anxiety. This inconsistency of results between the present study and previous works could possibly be explained by the low psychometric parameters of the RMET in the present study.

Similarly, as in the case of ToM, the results indicated no statistically significant association between empathy and social anxiety. This contradicts findings from a systematic review by Pittelkow et al. (2021) that found a small significant relation between affective empathy and social anxiety. The absence of this relationship in our study could be explained by the measure used to assess empathy in the present study: the TEQ was developed primarily to assess affective empathy, but in some parts, it also measures cognitive empathy (Spreng et al., 2009). As meta-analytic evidence suggests that affective empathy is positively related to affective empathy but unrelated to cognitive empathy (Pittelkow et al., 2021), it is possible that the positive effect of affective empathy on social anxiety was cancelled out due to the effect of cognitive empathy.

Implications for Practice

The results of this study indicate a relationship between social and emotional problems (social anxiety, identifying one's own emotions) and excessive use of social media. This finding can be considered an argument for a more comprehensive diagnosis and therapy intervention in the case of a population that suffers from or is at risk of one of the above-mentioned presentations. This is especially true for the clinical and counselling areas: administering questionnaires that detect, for example, the excessive use of social media can be a useful guide for a psychologist to assess possible related disorders such as social anxiety or problems in contact with one's emotions, etc. In more detail, knowing that excessive use of social media is related to social anxiety, therapists could target interventions to reduce it. Consequently, these healthy changes in the use of social networks can have a positive impact on an individual's emotionality and social interaction.

Another implication resulting from our findings is that individuals (e.g., students) who spend extensive time on social media are more likely to have higher symptoms of social anxiety. This finding implies that measuring screen time spent on social media could be used as a predictor of social anxiety symptoms. More precisely, if a smartphone app assessing the use of social media would be developed, it could send an automatic message providing contact for psychologists to people who are using social media excessively. Connecting these people with psychologists could, in turn, decrease the degree of social anxiety symptoms these people might suffer.

Implications for Research

The findings present several implications for future research. Due to the concurrent absence of research examining the relations between excessive or problematic social media use and emotional recognition, or rather, emotional intelligence in general, more research is needed to resolve the existing knowledge gaps in this subject matter. This also applies to research that examines the relationship between high alexithymia and excessive social media use, which has been greatly exacerbated due to the COVID-19 pandemic. Therefore, further research is required to investigate the changes that the pandemic has brought and how they have impacted not only individuals suffering from alexithymia but also their positive and negative emotional recognition. Finally, future research should explore how we can use social media to increase the emotional literacy of people suffering from high alexithymia.

Limitations

However, the study design also encompasses some limitations. One of these is the cross-sectional design of the study, which does not allow us to draw any conclusions about causality. In future studies, this could be addressed by using other research designs. The second limitation of the present study is the sampling method. As the data were collected using snowball and convenience sampling methods, the generalizability of the results is limited. Relatedly, most of the participants in the present study were students from a single university. This further restricts generalizability of our results. The third limitation lies in the validity of some instruments that have been used in the study, such as RMET, which have not been validated in the Czech environment. Relatedly, some of the measuring tools used in the present study (e.g., RMET) had low internal consistency. This could be one of the reasons why we failed to detect a statistically significant effect of emotional recognition on social anxiety in our mediation model. This could be addressed in future studies by using different measures, whose reliability would be sufficiently high. Lastly, it is important to note that our data might also be influenced by the COVID-19 pandemic, which might have affected the willingness to respond, the degree of social media use, and loneliness.

Conclusions

The aim of this study was to examine the association between components of emotional intelligence and excessive social media use. The study introduced Theory of Mind and empathy as potential mediating variables between alexithymia and social anxiety. Additionally, it explored loneliness as a mediating variable between social anxiety and excessive social media use. We found a significant relationship between alexithymia and Theory of Mind and empathy. However, our results did not support a mediating effect of ToM and empathy on the relationship between alexithymia and social anxiety. Finally, we observed a positive relationship between social anxiety and excessive social media use as well as between social anxiety and loneliness, but on the other hand, we have not found any statistically significant relationship between loneliness and excessive social media use. Taken together, further research should identify other variables that might help to explain the relationship between alexithymia, social anxiety, and excessive social media use.

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„Ne mogu te razumjeti jer ne mogu razumjeti sebe": povezanost aleksitimije, pretjerane upotrebe društvenih mreža, empatije i teorije uma

Sažetak

Društvene su mreže relativno nov fenomen koji utječe na živote ljudi diljem svijeta. Broj korisnika društvenih mreža nedavno je dosegao milijarde, a ta se brojka svake godine povećava. Rezultati prijašnjih istraživanja pokazali su da pretjerano korištenje društvenih mreža može imati negativne učinke na mentalno i fizičko zdravlje. Stoga je važno istražiti koji psihološki čimbenici mogu pridonijeti pretjeranomu korištenju društvenih mreža. Socijalna anksioznost i aleksitimija snažni su prediktori pretjeranoga korištenja društvenih mreža, međutim, malo se zna o ulozi empatije i teorije uma u pretjeranome korištenju društvenih mreža. Stoga je primarni cilj ovoga istraživanja bio ispitati medijacijski učinak empatije i teorija uma u odnosu između aleksitimije i socijalne anksioznosti. Sudjelovalo je ukupno 1737 ispitanika (M_{dobi} = 25.28, SD_{dobi} = 10.00; 60.83 % žena). Sudionici su dali svoje procjene na mjerama empatije, socijalne anksioznosti, teorije uma, usamljenosti i pretjerane upotrebe društvenih mreža. Medijatorski efekti empatije i teorije uma provjereni su pomoću strukturalnoga modeliranja. Dobivena je pozitivna povezanost između poteškoća u identificiranju osjećaja (aleksitimija) i socijalne anksioznosti: B = 0.53 (95 % CI [0.41 – 0.65], $p <$ .001). Također, utvrđena je značajna pozitivna povezanost između socijalne anksioznosti i pretjeranoga korištenja društvenih mreža: B = 0.28, 95 % CI [0.14 – 0.37], $p <$ .001; dok usamljenost nije bila povezana s korištenjem društvenih mreža. Slično tomu, nije dobiven značajan medijatorski efekt empatije i teorije uma na vezu između poteškoća u identificiranju osjećaja i socijalne anksioznosti. Buduća bi istraživanja trebala ispitati mogućnost generalizacije dobivenih rezultata u različitim kulturnim/jezičnim okruženjima. Primarno ograničenje provedenoga istraživanja proizlazi iz presječnoga nacrta koji onemogućava stvaranje uzročno-posljedičnih odnosa između istraženih konstrukata.

Ključne riječi: teorija uma, empatija, korištenje društvenih mreža, društvene mreže, socijalna anksioznost