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Explaining association between interpersonal communication competence and depression through need satisfaction, anxiety, and stress

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Abstract
The cognitive evaluation of the process of interpersonal communication may be a risk factor of depression. Interpersonal communication competence assesses how people display performance on communication and has been proposed to impact directly need satisfaction, indirectly anxiety, stress, and depression. The main purpose of the present cross-sectional study was to examine the mediation roles of need satisfaction, anxiety, and stress in the association between interpersonal communication competence and depression. Correlational and mediation analysis were performed to test conceptual model of depression. Correlational analysis revealed that depression was associated with interpersonal communication competence, anxiety, and stress. Additionally, interpersonal communication competence was associated with need satisfaction, anxiety, and stress. As for mediation analysis, it was concluded that the serial mediation role of need satisfaction, anxiety, and stress in the association between interpersonal communication competence and depression was significant. A new conceptual model provided empirical evidences as to the prodrome of depression. Therefore, it was supposed that these findings would be effective in psychological interventions of depression.

Keywords Depression · Interpersonal communication competence · Need satisfaction · Anxiety · Stress

Introduction

In recent years, the situation regarding the mental health of young people has become a public issue (Han et al., 2023). Furthermore, the prevalence of depression among young people has increased dramatically in the last decade (Collishaw, 2015). In addition to pharmacological (Fellendorf et al., 2023; Gabriel et al., 2020) and psychological treatment (Biagianti et al., 2023; Davis et al., 2023; Mansor et al., 2022) protocols, factors underlying depression have being investigated. However, increases in the prevalence and relapse of depression encourage us to test new theoretical models that may explain depression. In present study, the potential role of interpersonal communication competence, need satisfaction (NS), anxiety (Anx) and stress (Str) as determinants of depression was handled. Accordingly, it was assumed that interpersonal communication competence may be a determinant on depression through Anx and Str by enabling psychological needs to be met. Therefore, the determination of the role of interpersonal communication competence on depression through NS, Anx, and Str represents the originality and novelty of the current study.

The present research aimed to contribute to the literature on depression by investigating the relative impact of interpersonal communication competence, NS, Anx and Str on depression. This was done by testing a model depicting the relationships between variables. In this study, the hypothetical model was evaluated by answering the following research questions:

Research Question 1: To what extent does interpersonal communication competence affect depression?
Research Question 2: To what extent do NS, Anx, and Str mediate the effects of interpersonal communication competence on depression?

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Theoretical framework

Depression

Depression is differentiated from normal mood swings and short-lived responses to difficulties (Beck & Bredemeier, 2016). It was assessed as a mental disorder that is characterized by deficits in psychological, cognitive and emotional processes and includes wide heterogeneous symptoms (Alshaya, 2022). These symptoms include unwillingness to carry out daily experiences, intense sadness, decreased interest and motivation, sleep problems, and problems with eating behaviours (American Psychiatric Association, 2013). Depression, which refers to a mostly chronic condition requiring long-term clinical intervention (Hardeveld et al., 2013), defines a variety of mood-related concepts and challenges (Thapar et al., 2022). Despite the remediable nature of depression, relapse is quite common (Fournier et al., 2022; Mueller et al., 1999). In addition, depression may signal the onset of some psychopathological disorders (bipolar disorder and schizophrenia etc.) (Goodwin & Jamison, 2007; Upthegrove et al., 2017) and its comorbidity is one of the most common mental problems (Adams et al., 2016; Kraepelien et al., 2022; Otte, 2008). In other words, there were different psychopathologies associated with depression or presenting a cause-effect context.

Depression is an important mental disorder that negatively affects the lives of individuals (Clayborne et al., 2019; Johnson et al., 2018). Negative cognitions that cause depression adversely affect individuals' evaluation of their lives (Beck et al., 1983). In the literature, depression was associated with well-being (Zhao et al., 2022), life satisfaction (Mamani-Benito et al., 2022; Ooi et al., 2022), job performance (Parent-Lamarche et al., 2020; Sun et al., 2022), substance abuse (Myntti & Armstrong, 2022), behavioural addictions (Chen et al., 2022a, 2022b; Sayeed et al., 2020), social relationships (Sommerlad et al., 2021). In addition to its association with psychological variables, there were studies showing that depression is also related to physiological structures (Ma et al., 2023; Polityńska et al., 2022; Yan et al., 2023; Yao et al., 2022). When these studies were examined, it was seen that depression is a primary and secondary problem. In other words, while depression may be a determinant of some mental disorders, psychological structures or physiological symptoms, it also appears as an outcome variable in some cases. However, in both cases (primary and secondary), cognitive impairments seem to adversely affect the lives of individuals. According to the Cognitive-Behavioural Approach, which offers help to depressed individuals with therapy practices along with assessments of the nature of depression, irrational beliefs and dysfunctional attitudes were predisposing factors in the development of depression (Beck, 2005). These beliefs and functions shape individuals' perception and interpretation of life events in an undesirable format (Beck, 1995). As a result, the individual reacts emotionally and behaviourally without being aware of these negative beliefs and functions. Negative emotions and behaviours accompanying adverse evaluations can be considered as the cause of the individual's depression.

Associations among depression, anxiety and stress

Depression was affected by biological, psychological and social factors (Slavich & Irwin, 2014). Studies investigating the etiology of depression based on psychology indicated impairment in cognitive evaluation structures and loss of function in patients with depression (Beck, 1995, 2005). There may be various reasons for experiencing changes in cognitive assessment. Str and Anx have a large place among these reasons. Anx is the combination of negative emotions and thoughts that do not give pleasure to the individual (Barlow, 2002). Str can be shown as an important concept that can be related to the threshold or situation expressed here. Str is a result of intense demands and expectations that disturb the physiological, psychological and social structure (Lazarus, 1993). These intense demands and expectations can also manifest themselves more intensely in the changes in the life or in situations that require adaptation (Antoni et al., 2023). Anx, which can also be associated with uncertainty in the future, seems likely to affect the individual in stressful situations.

Need satisfaction

The concept of psychological needs was employed by theorists in two different ways. In the first of these, needs were defined as the wishes of the person who are motivated to exhibit the behaviour in the face of various situations. According to this widely accepted approach, the strength of needs, which were also considered as individual differences, is very important. It was stated that the strength of needs is regulated by learning processes that can change as a result of mutual interaction in the social environment. Furthermore, in the first approach, needs were also evaluated as predictors of other personality traits, behaviours and psychological experiences (Ryan & Deci, 2008). Secondly, needs were included in a restricted structure and considered as processes necessary for the development and well-being of the organism. This use of needs led researchers to determine the degree of satisfaction with needs rather than the strength of needs (Ryan, 1995).

According to the Self-Determination Theory (SDT), needs were considered both as an organic need and as a psychological construct. Needs were accepted as structures that

enable individuals to integrate with the environment and to be well by realizing the goals (Deci & Ryan, 1985a; Ryan & Deci, 2000a). Three basic needs were emphasized within the theoretical components of self-determination theory. The need for autonomy (*i*), the need for competence (*ii*) and the need for relatedness (iii) were considered crucial in terms of psychological development and well-being (Lataster et al., 2022). Moreover, it was claimed that these three basic psychological needs are universal. According to the SDT, individuals who can meet these needs adequately can be better by managing their development and progress (Deci & Ryan, 1985b; Ryan & Deci, 2000b). The NS was associated with the satisfaction of three basic psychological needs and was conceptualized in this way in the literature (Ryan & Deci, 2008). Ryan and Deci (2000b) emphasized the self-management capacities of individuals and the concept of autonomy. Autonomy in its simplest form is self-direction and self-determination. In other words, autonomy is the individuals' taking responsibility by making evaluations in the cognitive processes that form the infrastructure of behaviours (Ryan & Grolnick, 1986). Competence was stated as a cumulative result of individuals' interactions with their environment, their learning and their ability to adapt. In a broader context, competence was handled as the capacity of the organism to exhibit effective relationships with its environment in order to maintain its continuity (Deci & Ryan, 1985a). According to the SDT, relatedness is a combination of the feelings of belonging and being connected to the community in which they live by establishing close relationships with other people (Ryan & Deci, 2008). Since the need to be related is very important, individuals are highly motivated to understand, know or love other people (Ryan & Deci, 2006). Therefore, in order to satisfy the need for relatedness, individuals need to feel that they have an important place in other people's lives (Ryan & Deci, 2008).

Interpersonal communication competence

Communication is a phenomenon based on a psychological and social process that focuses on the mutual sharing of feelings, thoughts, experiences, and information between at least two people (Kaya, 2011). Individuals who know the nature and process of communication were considered as knowledge about communication. Having knowledge about communication is an indispensable element of maintaining interpersonal communication. However, it alone is not sufficient to define interpersonal communication competence (Beebe et al., 2014). Communication competence is the knowledge and ability to effectively use appropriate communication models in an interaction (Bostrom, 1984). In addition to knowledge about communication, being talented and motivated are important indicators for interpersonal communication competence (Almeida, 2004). Talent is associated with how contact information can be transformed into performance (Miller & de Winstanley, 2002). Motivation, on the other hand, represents the desire and intention to use the knowledge and ability. In other words, the individual should have a desire to communicate with others and maintain the established communication (Beebe et al., 2014). Briefly, knowledge, ability and motivation are integral components of interpersonal communication competence.

There were various approaches that investigate the structure of interpersonal communication competence (Austin, 1962; Grice, 1975; Schramm, 1971). The present study was basically designed in line with the relational approach of Spitzberg and Cupach (1984, 1989). The relational approach focused on the listener's expectations and views. Competent communication is a process in which interpersonal impressions are formed and satisfactory results are obtained from an interaction. The definition of necessary skills depends on the characteristics of the relationship in which they emerge. Competence itself is a dyadic or interpersonal impression and should include the perspectives of both interactors. The relational approach focuses on the bidirectional relationship between appropriate and effective behaviours (Spitzberg, 1983). As a result, meaning in the relational model is the product of a communicative activity that combines knowledge, ability and motivation factors. However, to demonstrate competent communication, it was emphasized that in addition to these three factors, the individual must have some specific skills. Self-disclosure, empathy, social relaxation, assertiveness, interaction management, expressiveness, being supportive, sincerity, environmental control (Rubin & Martin, 1994) were presented as the factors that help the individual to transform competent communication into performance.

Depression and interpersonal communication

Individuals with problems in mental health conditions were reported to have problems with communication (Chiariello & Orvaschel, 1995; Segrin, 1996; Uebelacker et al., 2003). Depression is a mental health problem that occurs as a result of deterioration in these mental health conditions. Most individuals with depression experience speech impairments and speak with long pauses (Stassen et al., 1991). In this respect, it can be stated that difficulties in interpersonal communication can be both a determinant of depression and a structure that can negatively affect the course of depression. Individuals who are not competent in interpersonal communication may have problems in listening, understanding, verbalizing what they understand and relaxing themselves in communication. These problems may become anxiety-inducing experiences for the individual and cause him/her to avoid

communicating. As a result, the individual may avoid communication-based experiences in order to experience less Anx and Str. A reflection of this has been already listed among the symptoms of depression. A reduction in normal daily activities and relationships was presented among these symptoms (American Psychiatric Association, 2013; Liang et al., 2023). In other words, the relationship between interpersonal communication and depression may be a vicious circle. While having problems in interpersonal communication indicates a predisposition to depression, the depressed individual may experience visible communication problems in many areas such as work, school, social life, and relationships with others.

Conceptual framework

Studies were carried out to understand depression in a multidimensional way (Adabla & Nabors, 2022; Davey & Harrison, 2022; de Castro et al., 2023; Kasa et al., 2022; Kim et al., 2022; Zamiri-Miandoab et al., 2022). These studies included many constructs such as the causes and consequences of depression, comorbidity status. In addition, increased prevalence of depression was reported (Johns et al., 2022; Shorey et al., 2022). This increase needs to be discussed because depression is associated with morbidity (Li et al., 2022), disability (Wang et al., 2022), and mortality (Scierka et al., 2022). In the treatment of depression, psychotherapy interventions have been frequently used in addition to the pharmacological approach (Driessen et al., 2022; Wittenborn & Hosseinichimeh, 2022). Although depression has a treatable nature, it has been known that relapses occur frequently (Chen et al., 2022a, 2022b). In this case, exploring structures that can cause depression may offer opportunities to prevent the problem from occurring. As it is known, depression is a psychopathology affected by various factors (Choi et al., 2022; Liaqat et al., 2022; Wu et al., 2022; Zhang et al., 2022a, 2022b). Among these factors, cognitive processes were also included (Schricker et al., 2022; Zhang et al., 2022a, 2022b). The existence of a dysfunctional way of thinking comes to the fore in these cognitive processes (Beck, 2005). However, the existence of some additional cognitions and experiences that lead the individual to a dysfunctional way of thinking should not be ignored (Beck, 1995). In other words, dysfunctional thinking style may be a predisposing factor for depression, while the individual's psychological, cognitive and social deficiencies may develop dysfunctional thinking styles adversely. In line with this point of view, the conceptual framework of the present study has been developed. In present study, a "serial mediation model" was designed to reveal the direct and indirect associations between interpersonal communication competence and depression (Fig. 1). More specifically, interpersonal communication competence effects on depression consisted of both direct and indirect effects. In this model, interpersonal communication competence was the independent variable and depression was the dependent variable. In addition, NS, Anx and Str are serial mediating variables in the association between interpersonal communication competence and depression. The rationality of the conceptual structure was based on the existing literature that answers the question of what the determinants of depression might be (Beck, 1995, 2005; Beck & Bredemeier, 2016; Remes et al., 2021; Zenebe et al., 2021; Zineldin, 2021).

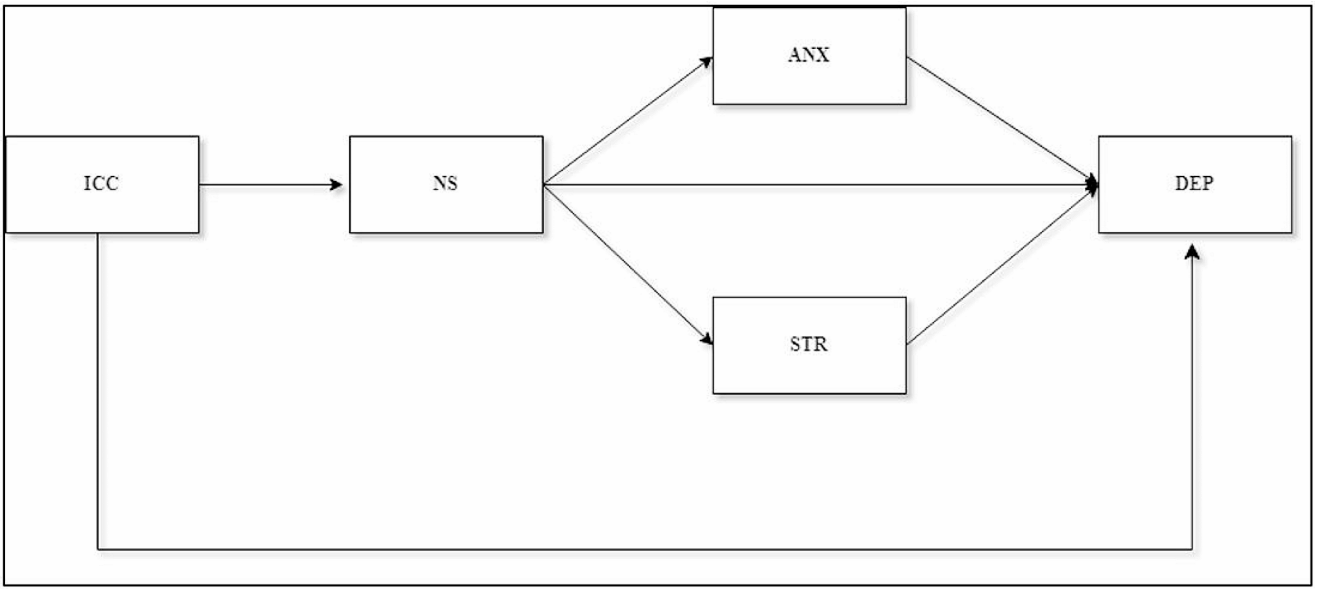


Fig. 1 Conceptual model of the association between interpersonal communication and depression. Note. ICC = Interpersonal Communication Competence, NS = Need Satisfaction, ANX = Anxiety, STR = Stress, DEP = Depression

The first part of this model was based on empirical research findings showing that communication is directly related to depression (First et al., 2021; Hall et al., 2020; Segrin, 1996). It can be stated that the studies including these empirical findings were based on the cognitive model and communication model of depression. According to the cognitive model, dysfunctional processes can make the individual vulnerable to depression. These dysfunctional attitudes generally have a rigid and perfectionist structure (Beck, 1967). Alford and Beck (1997) stated that being able to make sense of experiences was the critical competence that makes people human. The role of dysfunctional cognitive processes in the evaluation of experiences or events can be clearly seen. The frequent use of maladaptive cognitions can negatively affect the individual's mood (Nelson, 1977). Therefore, the rigid and dysfunctional beliefs refer risky processes in terms of depression. As for the relational model of depression, inadequacies and difficulties in relationships may increase the risk of depression (Klaus et al., 1996). According to another assumption, inability to be competent in the communication process may predispose the development of irrational beliefs and, consequently, the development of depression.

This belief system can affect the way individuals evaluate their basic psychological needs. As a result of not being satisfied with their basic psychological needs, individuals may be exposed to intense Anx and Str. Recent cross-sectional studies reported significant associations between basic psychological needs and Anx (Erden & Aliyev, 2022; Liu et al., 2022, Li et al., 2022). Similarly, empirical findings indicated that basic psychological needs were also related to Str (Çınar-Tanriverdi & Karabacak-Çelik, 2022; Verdone & Murray, 2021). Inadequacy in managing Anx and Str has the potential to negatively affect individual life (Mertens et al., 2020). It can be thought that the cognitive structure that triggers Anx and Str may be a causal risk factor in the occurrence of depression (Bittner et al., 2004; Çıkrıkçı et al., 2022). Therefore, it was proposed that interpersonal communication competence has direct and indirect effects on depression through NS, Anx and Str.

Method

Research group

Data in the present cross-sectional study obtained online questionnaires. 428 data were included in the analysis. The research group consisted of Turkish university students. The research group was composed of 284 (66.4%) female, 141 (32.9%) and 3 (0.7%) university students who did not want to specify their gender. The mean age was 21.86 (SD = 2.89) and the age range was between 18 and 33. 13.1% of the study group were freshman (n = 56), 50.5% were sophomore (n = 216), 28.3% were junior (n = 121) and 8.2% were senior (n = 35) students.

Procedure and ethical approval

Participation in the research was based on volunteerism. Participants were informed about the purpose of the study and written informed consent was obtained for participation. The privacy, reputation and rights of the participants were guaranteed. In addition to these ethical procedures, this study was evaluated as ethically appropriate by the ethics committee of the university (Date: 11.11.2021, Decision No: 24.05). The data were collected with online questionnaires. The links of the questionnaires were shared with the students through their social media accounts. To collect data, it was meant to be sent to the students' Whatsapp groups. In order to accomplish this goal, a representative from each class was contacted, and via this representative, a link to the surveys was distributed to the students' class groups. The data collection process was completed in a total of 10 days. It took approximately 15 min for each student to fulfil the measures.

Measures

Depression, Anxiety, and Stress Scale (DASS-21)

The Depression, Anxiety and Stress Scale (DADS) with 42 items was developed by Lovibond and Lovibond (1995) to determine the depression, anxiety and stress levels. Several studies showed that the short form of this measure provides similar estimation (Brown et al., 1997; Henry & Crawford, 2005; Mahmoud et al., 2012). DASS-21 had three subscales: depression, anxiety, and stress. The internal consistency coefficients for depression, anxiety and stress sub-dimensions of the original form were 0.94, 0.87, 0.91 respectively (Antony et al., 1998). The Turkish adaptation study of DASS-21 was carried out by Yılmaz, Boz and Aslan (2017). The measure consisted of 21 items with a four-point Likert-type assessment (e.g. “I couldn't seem to experience any positive feeling at all”, “I was aware of dryness of my mouth”, “I found it hard to wind down”). In current study, the internal consistency coefficients were calculated as 0.90 for depression, 0.84 for anxiety and 0.89 for stress.

Interpersonal Communication Competence Scale (ICCS)

The ICCS, which allows to evaluate competence in the communication process based on the relational approach, was developed by Huang and Lin (2018). The ICCS consisted

of factors assessing four key skill areas (listening skill, social relaxation skill, empathy skill, expressiveness skill). The ICCS, which has a five-point Likert-type assessment, consisted of 15 items (e.g. "In conversations with friends, I know what topics we talk about"). The reliability coefficient for the original form of ICCS was reported as 0.83. ICCS was adapted into Turkish by Çikrıkci and Çinpolat (2021). Within the current study, the internal consistency coefficient for the ICCS was found as 0.82.

Basic Psychological Need Satisfaction Scale (BPNSS)

The BPNSS was developed by Deci and Ryan (1991) to determine the need satisfaction based on self-determination theory. The three subscales of the BPNNS were relatedness, competency, and autonomy. The BPNNS, which had a seven-point Likert-type assessment, consisted of 21 items (e.g. "I feel like I am free to decide for myself how to live my life"). BPNSS was adapted to Turkish by Bacanlı and Cihangir-Çankaya (2003). The internal consistency coefficient of the Turkish form was 0.83. Within the current study, the internal consistency coefficient for the BPNNS was 0.87.

Data analysis

The present cross-sectional study focused on exploring the role of mediating variables in the association between the independent variable and the dependent variable in a correlational perspective. There was no any missing data. To achieve this purpose, firstly, the correlations between the variables were examined with the Pearson Product-Moment Correlation Coefficient. Secondly, the mediation model was performed in line with the recommendations of Hayes (2018). Conceptual structure was tested with Process Macro Model 81. In the mediation model, interpersonal communication competence was the independent variable (X), need satisfaction (NS; M1), anxiety (Anx; M2) and stress (Str; M3) mediating variables, and depression (Y) the dependent variable. SPSS 24.0 package program was used in data analysis. Direct and indirect effects were examined with the bootstrapping method (10000 samples with 90% confidence interval).

Results

Associations among variables

Associations between variables were examined with zero-order correlations. Table 1 showed significant positive correlations between interpersonal communication competence and NS, and significant negative correlations between interpersonal communication competence and all three measures of mental health (Anx, Str, and depression). Correlation analysis revealed that interpersonal communication competence was negatively associated with Anx (r = -0.21, p < 0.01; 95% CI [- 0.309, -0.113]), Str (r = -0.19, p < 0.01; 95% CI [-0.283, -0.090]), and depression (r = -0.36, p < 0.01; 95%CI [-0.443, -0.263]), whereas positively associated with NS (r = 0.53, p < 0.01; 95% CI [0.458, 0.600]). Depression was negatively correlated with NS (r = -0.59, p < 0.01; 95% CI [-0.648, -0.520]). On the other hand, depression was positively correlated with Anx (r = 0.64, p < 0.01; 95% CI [. 570, 0.700]), and Str (r = 0.67, p < 0.01; 95% CI [0.614, 0.727]). Additionally, NS and was negatively associated with Anx (r = -0.35, p < 0.01; 95% CI [-0.435, -0.255]) and Str (r = -0.40, p < 0.001; 95% CI [-0.479, -0.310]). Finally, the positive significant correlation between Anx and Str was determined (r = 0.63, p < 0.01; 95% CI [0.568, 0.690]). Means, standard deviations, correlation coefficients were presented in Table 1.

Mediation analysis

Mediation analysis procedures recommended by Hayes (2018) were applied to examine the serial mediation of NS, Anx, and Str in the association between interpersonal communication competence and depression. Mediation analysis was performed with the Process Macro (Model 81).

For the direct effect of interpersonal communication competence on depression, path c in Fig. 2 indicated a significant negative effect of interpersonal communication competence on depression (β = -0.36, p < 0.001; 95%CI [-0.342, -0.205]). Therefore, interpersonal communication competence predicted depression significantly (R^2) at 0.13. In addition, path a1 in Fig. 2 showed that the effect of

Table 1 Associations among variables

Variable	M	SD	1	2	3	4	5
ICC (1)	60.54	7.87	1				
NS (2)	98.74	17.18	.53**	1			
ANX (3)	6.54	5.31	-.21**	-.35**	1		
STR (4)	8.87	5.88	-.19**	-40**	.63**	1	
DEP (5)	7.42	6.06	-.36**	-.59**	.64**	.67**	1

ICC Interpersonal Communication Competence, *NS* Need Satisfaction, *ANX* Anxiety, *STR* Stress, *DEP* Depression. *k* (bootstrapping sample) = 10,000

** p < .01

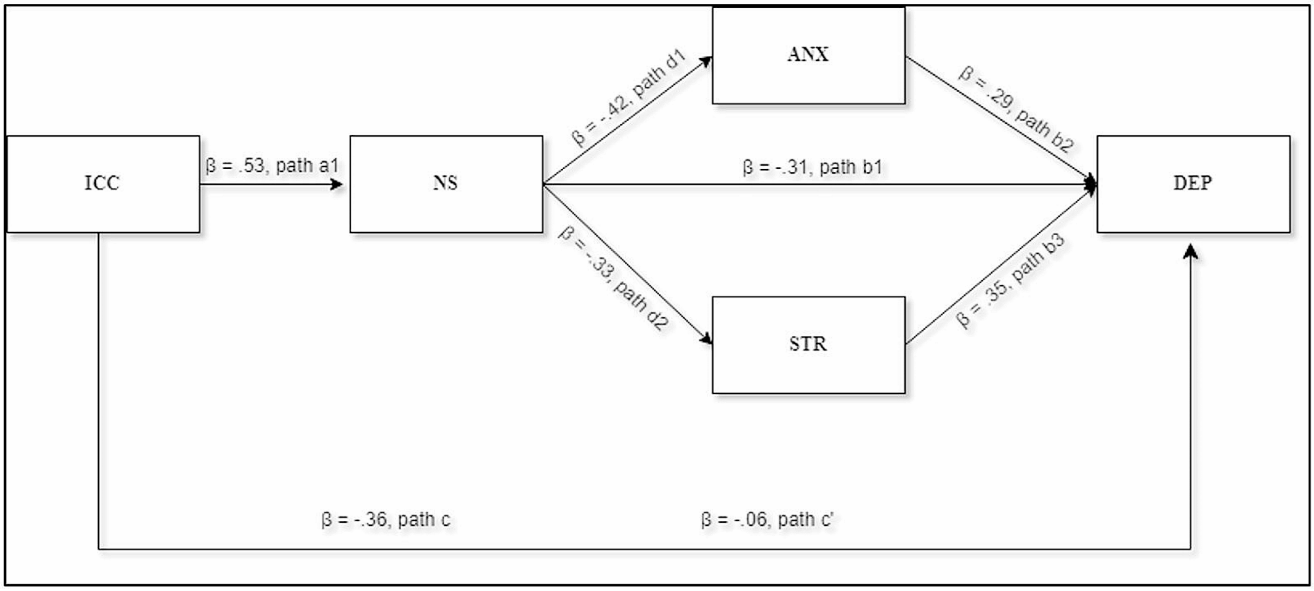


Fig. 2 Mediation model from ICC to DEP through NS, ANX, and STR. Note. ICC = Interpersonal Communication Competence, NS = Need Satisfaction, ANX = Anxiety, STR = Stress, DEP = Depression

interpersonal communication competence on NS ($\beta = 0.53$, $p < 0.001$; 95%CI [0.990, 1.341]) was significant. On the other hand, the effect interpersonal communication competence on Anx ($\beta = -0.04$, $p > 0.05$; 95%CI [-0.097, 0.045], path a2) and Str ($\beta = -0.03$, $p > 0.05$; 95%CI [-0.051, 0.103], path a3) was not significant. As seen in Fig. 2, NS was a significant predictors of Anx ($\beta = -0.42$, $p < 0.001$; 95%CI [-0.178, -0.107], path d1) and Str ($\beta = -0.33$, $p < 0.001$; 95%CI [- 0.134, -0.068], path d2). Finally, the predictors of depression, which was considered as the dependent variable, were investigated. Path b1, b2, b2 in Fig. 2 revealed that NS ($\beta = -0.31$, $p < 0.001$; 95%CI [-0.136, -0.084], Anx ($\beta = 0.29$, $p < 0.001$; 95% CI [0.248, 0.421]) and Str ($\beta = 0.35$, $p < 0.001$; 95%CI [0.282, 0.442]) were significant predictors of depression, whereas interpersonal communication competence was not statistically accounted for depression. In other words, the mediation analysis was applied by integrating variables of NS, Anx, and Str into the variables of interpersonal communication competence and depression. Results revealed that the path coefficient between interpersonal communication competence and depression reduced ($\beta = -0.06$, $p > 0.05$; 95%CI [-0.099, 0.007], path c'). The path diagram of mediation model was presented in Fig. 2.

According to the results of present analysis, the serial mediation of NS, Anx and Str was significant in the association between ICC and Dep. In short, the total indirect effect of ICC on Dep was significant ($\beta = -0.29$, $SE = 0.03$; 95%CI [-0.366, -0.220]). Table 2 showed statistical findings related to the paths tested in the mediation analysis. Accordingly, the serial mediation role of NS ($\beta = -0.16$, $SE = 0.02$; 95%CI [-0.217, -0.119]), Anx ($\beta = -0.05$, $SE = 0.01$; 95%CI [-0.078, -0.028]), and Str ($\beta = -0.08$, $SE = 0.01$; 95%CI [-0.110, -0.049]) was significant.

Table 2 Standardized indirect effects

Indirect effects	β	95% CI		SE
		Lower	Upper	
ICC→NS→DEP	-.16	-.217	-.119	.02
ICC→ANX→DEP	-.01	-.049	.024	.01
ICC→STR→DEP	.01	-.029	.054	.02
ICC→NS→ANX→DEP	-.05	-.078	-.028	.01
ICC→NS→STR→DEP	-.08	-.110	-.049	.01

ICC Interpersonal Communication Competence, *NS* Need Satisfaction, *ANX* Anxiety, *STR* Stress, *DEP* Depression. *k* (bootstrapping sample) = 10,000

Discussion

The present study sought how and to what extent interpersonal communication competence is related to depression through NS, Anx and Str. The results indicated that the direct effects of interpersonal communication competence on need satisfaction and depression were significant. Moreover, NS had direct effects on Anx, Str, and depression. For direct effects, it was determined that Anx and Str had direct effect on depression. The indirect effect of interpersonal communication competence on depression through NS was significant, whereas the indirect effect of interpersonal communication competence on depression through Anx and Str was not. Additionally, the indirect effect of interpersonal communication competence on depression through NS and

Anx was significant. Similarly, the indirect effect of interpersonal communication competence on depression through NS and Str was significant. In this part of the research, we discussed the research findings, reflected the limitations, and provided clinical and research recommendations.

Associations among interpersonal communication competence, need satisfaction and depression

Our analyses showed that interpersonal communication competence has a direct effect on NS and depression. Different results were obtained in a limited number of studies examining the associations between these variables. Wright et al. (2013) reported that there was no significant association between depression and communication competence. Query (1992) concluded that depression did not differ in individuals with high and moderate communication skills. On the other hand, Kwon and Paek (2016) reported a significant negative correlation between depression and communication competence. This finding was consistent with our finding. According to the findings obtained in the present study, inability to be competent in interpersonal communication may be a predisposing factor for depression. Thanks to interpersonal communication competence, individuals can evaluate their potential in the relational context (Beebe et al., 2014). If this evaluation is negative, it may be a prodrome for depression.

The mediation role of need satisfaction, anxiety, and stress on depression

Another major finding of the study was that interpersonal communication competence is indirectly associated with depression through NS, Anx and Str. This finding may confirm that being competent in interpersonal communication can meet the basic psychological needs. Meeting basic psychological needs can reduce Anx and Str. As a reflection of this situation, it was suggested that depression can be reduced. Communication was thought to be an important element in providing satisfaction from basic psychological needs. Although the needs for autonomy, competence and relatedness were of a universal nature, the individuals need to display performance in order to make implications that they can satisfy these needs. In order to embed behaviours, cognitions and attitudes into performance, the individual needs to interact with the environment. Ryan and Deci (2008) stated that the strength of needs is regulated by learning processes that can change as a result of mutual interaction in the social environment. Therefore, it was assumed that the structure, maintenance and assessment of this mutual interaction may be directly related to interpersonal communication competence. According to SDT, individuals who meet their basic psychological needs adequately can manage their development more effectively (Ryan & Deci, 2000b). Our finding indicated that individuals with adequate satisfaction may be less prone to Anx, Str, and depression Ryan and Deci (2000a) stated that needs contribute to the well-being by enabling healthy development. Thus, it was focused on the assumption that psychopathological symptoms can be seen if needs are not met. The findings of the current study presented empirical findings to support our hypothesis. Needs were a significant predictor of Anx and Str associated with depression.

Anx and Str, in which cognitive elements are dominant, can lead to negative evaluation of life events. For instance, Garber and Weersing (2010) made an implication regarding the components of rumination and Anx in explaining depression. According to this implication, rumination came after Anx and caused depression. In other words, the individual with Anx ruminates life events in the mind. This process cause the cognitive structure to function negatively and depression is almost inevitable. Similarly, Str (Lazarus & Folkman, 1984), which can occur as a result of social environment and interaction with other people, can affect an individual's perceptions and evaluations. The fact that these perceptions and experiences are negative can make dysfunctional statuses in the cognitive structure active. In other words, Str and the dysfunctional statuses can be the prodrome of depression. In a recent meta-analytic structural equation modelling study, Cikrikci et al. (2022) presented the validity of the model indicating that depression can be explained by Str and Anx.

As a consequence, an evaluation was made based on variables with different theoretical assumptions in the explanation of depression. It can be suggested that an individual who is competent in interpersonal communication can be protected from dysfunctional cognitions that lead to the development of Anx, Str and depression by meeting their basic psychological needs. In other words, it was assumed that NS may also be a protective factor against Anx, Str and depression. The findings of the present study made important contributions to the depression literature. Specialists who work clinically with depression and psychopathologies comorbid with depression may notice that these individuals have problems in their communication patterns during the whole therapy process. Problems with communication may reduce both the prognosis of the psychopathology and the gains that can be obtained from the therapy process. Therefore, the current research empirically confirmed that clinicians should focus on improving patients' communication competencies in the treatment of depression. The present study clarified the association between depression and interpersonal communication competence. In addition, the description of the association between interpersonal

communication competence and anxiety and stress, which can be seen as comorbid with depression, will make important contributions to the depression literature.

Limitations

The present study has some limitations. The self-report measures were used in data collection process. The fact that the data analysed in the study was collected by considering the cross-sectional pattern creates an obstacle to observing the changes that may occur over time. Because of the nature of cross-sectional design, deciding the cause and effect implications among variables was not possible. To get these implications, longitudinal and experimental studies should be performed in future. Additionally, this study was conducted with quantitative research approach and it can be possible to reconsider with different research approaches. Qualitative, experimental or longitudinal studies will provide more reliable results in eliminating these limitations. Since the study included university students in a city in Turkey, it can be important to conduct future studies with other cultures and age groups in order to generalize the results. Furthermore, the convenience sampling approach was used to choose the study's sample. As a result, the constraints imposed by randomization make it challenging to generalize the data collected to the population. As another limitation of the study was social desirability and response bias. Participants may have presented themselves as they wished to be rather than as they actually were. For example, they may have considered themselves more competent in communication and underreported depressive symptoms. To eliminate this limitation, it was stated to the participants that the results of the measures would not be shared with third parties and would be used in a scientific study. One of the limitations of the present study was that the sample only consisted of university students. In the further attempts, conducting researches with different research groups (e.g., clinical sample, older, cancer patients etc.) can facilitate the understanding of the associations among interpersonal communication competence and depression, as well need satisfaction, Anx, and Str.

Conclusion

The results of the current study explored associations in investigating depression among college students in terms of interpersonal communication competence, NS, Anx, and Str. In addition, the present study is the first to examine the serial mediating role of NS, Anx, and Str in the association between interpersonal communication competence and depression. The results revealed empirical evidence that NS, Anx and Str fully mediated the association of interpersonal communication competence with depression.

Implications

One of the most significant theoretical implications of this study was its contribution to the depression literature. Although the findings were not unexpected, they were important in terms of describing the direct and indirect associations between depression and interpersonal communication competence. In the current study, a sequential mediation model explaining depression was tested. According to this model, NS, Anx and Str were important factors in explaining depressive symptoms. Future studies focusing on the interaction between these factors will increase the reliability of the present study. Consequently, the present study may contribute to the existing literature on depression and expand the procedures that clinicians can apply in practice. The findings of the present study have identified different variables that clinicians can apply or test in the process of reducing depression. However, it should be noted that since the interactions identified in the study were two-paired, no clear cause and effect inference can be made. In essence, clinicians can focus on meeting the basic psychological needs of depressed individuals, which will result in a reduction in anxiety and stress levels. As a consequence of an increase in the level of NS and a decrease in Anx and Str levels, depressive symptoms may decrease. Furthermore, the author presents a compelling argument for the necessity of enhancing the satisfaction of fundamental psychological needs in individual and group psychotherapies for the treatment of depression.

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Data availability The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethical approval The ethical suitability of the study was approved by the Social and Human Sciences Research Ethics Committee of the university where the first researcher works. Additionally, all procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Conflict of interest The author(s) declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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