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The Effectiveness of Mentalization-Based Treatment on Mindfulness and Perceived Social Support in Adolescents

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Article Info

Article Notes

Received: March 24, 2023

Accepted: August 23, 2023

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Keywords:

Mentalization-based treatment

Mindfulness

Perceived social support

Students

Adolescents

Abstract

Adolescence is a critical period marked by significant changes in social relationships and emotional development. In light of the importance of promoting mental health in this age group, this study aimed to investigate the effectiveness of a mentalization-based treatment intervention on mindfulness and perceived social support among female adolescents aged 12-15 years in Tehran.

A pretest-posttest control group design was employed, with participants randomly assigned to either the intervention group, which received the mentalization-based treatment, or the control group, serving as a comparison for evaluating the intervention's effectiveness. The Mindful Attention Awareness Scale (MAAS) and the Multidimensional Scale of Perceived Social Support Questionnaire (MSPSS) were used to measure mindfulness and perceived social support, respectively.

The mentalization-based treatment intervention focused on enhancing the participants' ability to understand and interpret their own and others' mental states, fostering empathy, and improving interpersonal relationships.

Data analysis was performed using Multivariate Analysis of Covariance (MANCOVA) to assess the impact of the mentalization-based treatment on mindfulness and perceived social support in female adolescents. The results indicated a significant improvement in both mindfulness and perceived social support after the intervention ($P < 0.01$).

In conclusion, the findings suggest that mentalization-based treatment holds promise as an effective approach to enhance mental health outcomes, particularly in promoting mindfulness and perceived social support in female adolescents. Future attention should be given to the implementation of this intervention to support the well-being of adolescents during this critical developmental stage.

Introduction

Sixteen percent of the world's population consists of 1.3 billion adolescents aged between 10 and 19 years old¹. Therefore, identifying the problems and disabilities that arise during this period and taking effective measures to address them plays a crucial role in preventing problems in adulthood and laying the foundation for a healthy society². Adolescence is a critical period of development, and as such, it is one of the most important periods in life. This period causes profound physical and psychological changes in individuals, leading to changes in their physical and mental health³. Psychologists generally agree that adolescence is the most sensitive and important developmental period for any human being, and they are socially impressionable⁴.

Adolescents often strive to fit in, gain social acceptance, and maintain a positive social standing among their peers. They may engage in activities or behaviors to demonstrate their social worth or conform to social norms in order to avoid exclusion or rejection. This drive to protect themselves from being left out or marginalized is a significant aspect of their adolescent experience. It is important for parents, educators, and society as a whole to provide support, guidance, and understanding to help adolescents navigate these challenges and foster their social and emotional well-being⁵. Therefore, identifying the factors that predict psychological well-being among this group is crucial for researchers and also care providers.

Based on a psychopathological-developmental perspective, two specific factors, mindfulness and social support, have been confirmed to play a significant role in the psychological adjustment of individuals⁶. This perspective highlights the importance of studying both the risk factors that contribute to a person's vulnerability to mental disorders and the protective factors that mitigate these risks and foster positive adaptation^{7,8}.

Social support refers to the understanding, care, and presence of a reliable network during challenging times⁹, as well as the various supportive actions provided by others¹⁰. Additionally, it encompasses one's experience of the value, respect, support, and understanding received from others, which can come from different sources, such as family, friends, teachers, society, or any social group one depends on¹¹. Social support has been evaluated in two dimensions in the literature: perceived social support or received social support¹².

Perceived social support encompasses the sense of assistance and support one believes they receive from significant individuals in their life, such as family and friends. It is subjective and based on one's own perception, taking into account their circumstances and the consideration they believe these sources of support provide^{13,14}.

Perceived social support is a readily available factor that effectively enhances overall well-being, particularly psychological well-being, by reducing feelings of loneliness and improving various psychological aspects¹⁵. Decades of research have consistently shown a strong correlation between perceived social support and improved mental health^{16,17,18,19,20,21}. According to Feeney and Collins²², social support leads to better emotional regulation, increased positive effects, and decreased negative effects. Additionally, social support aids in effective acceptance and coping with stressors, challenges, and problems, whether they are perceived as manageable or unmanageable. The characteristics of social support resemble those of mindfulness, which has the potential to help individuals maintain focus on the present moment rather than becoming isolated and preoccupied with the

past or future concerns. As a result, mindfulness may serve as the mechanism that elucidates the connection between perceived social support and overall well-being²².

Mindfulness is defined as the ability to perceive the present moment without measurement and judgment, and is considered an enhancing factor in improving individual well-being and social support²³. This awareness extends to personal thoughts and feelings, as well as the environment, without labeling them as good or bad. Mindfulness helps regulate individual cognitive assessments and provides an objective assessment of experiences. Additionally, mindfulness allows for more adaptive coping and management of undesirable stimuli²³. People who possess higher levels of mindfulness report better emotional and behavioral self-regulation²⁴. Research has shown that mindfulness is directly related to people's mental health²⁵. Up until now, research on mindfulness has been approached through various avenues. Numerous quantitative studies have delved into the connection between mindfulness and psychological adjustment within non-clinical cohorts, encompassing students and adults. The aforementioned studies' outcomes generally indicate that mindfulness exhibits a negative association with psychological maladjustments, including depression and anxiety^{26,27}, while concurrently demonstrating a positive correlation with wholesome cognitive processes like reduced rumination and enhanced executive function²⁸. Furthermore, mindfulness exhibits a more adaptive emotional performance, as evidenced by lower perceived stress, heightened emotional well-being, and improved emotion regulation²⁸.

Researchers have emphasized both of these variables as predictors of students' mental health. For example, in a sample of 630 undergraduates in the Philippines, self-efficacy and three types of perceived social support (i.e., family, friends, and others important) acted as important predictors of psychological well-being. It should be noted that while social support is a well-established predictor of psychological adjustment with a strong body of research support, mindfulness aspects were stronger predictors of adaptation than social support domains²⁸. In another study conducted with a sample of college students in a different cultural context, it was found that both perceived social support and mindfulness were significant predictors of mental health outcomes. The research revealed that higher levels of perceived social support and mindfulness were associated with better psychological well-being and reduced symptoms of distress²⁹. This suggests that both social support and mindfulness play important roles in promoting students' mental health.

Although research strongly supports the importance of mindfulness and perceived social support in the psychological adjustment and well-being of individuals, few studies have been conducted to find ways to improve

these constructs and achieve a high level of mental health. In recent years, the concept of mentalization and related theoretical structures have become increasingly important frameworks for understanding psychopathology in clinical and research fields. In colloquial terms, mentalization refers to the ability to “keep the mind in mind” and understand the inner mental processes of oneself and others, such as thoughts, feelings, needs, desires, motivations, and their relationship to behavior^{30,31}. Mentalization is a key factor in the ability to develop a coherent organizational self, differentiate oneself from others, understand others’ behavior, and have a close relationship with one’s capacity to regulate and control impulses and self-organizational experience³². Schema-based therapy focuses on enhancing mentalization through a dynamic psychotherapy approach³⁶. The resulting framework of mentalization-based therapy (MBT) was originally developed as a response to borderline personality disorder (BPD) and is now used as a key clinical framework for the treatment of several disorders, such as post-traumatic stress disorder, eating disorders, and depression^{33,34}. In some cases, MBT has also been used as a framework for social work, such as interventions in schools³².

The broad applicability of MBT is based on the assertion that not only impaired mentalization leads to severe conditions necessitating psychological therapy, but also enhancing the ability to understand is a fundamental factor in achieving therapeutic success across different disorders. In essence, MBT aims to restore mental capacity development, akin to physiotherapy targeting specific muscle groups³⁵.

Mentalization-Based Therapy (MBT) seeks to alleviate negative psychological symptoms by fostering the understanding of mental states and their connection to behavior, both in oneself and others. This includes navigating complex interpersonal situations, which is closely associated with higher levels of cognition, such as metacognition. In MBT, individuals develop more detailed and nuanced mental representations of their own and others’ thoughts and feelings, creating second-order mental representations that build upon primary perceptions^{36,37}.

In recent years, mentalization theory has gained recognition as a theoretical framework that highlights the importance of social cognition in understanding psychopathology and psychotherapy. Given the relevance of mindfulness and perceived social support in predicting mental health, particularly during adolescence, it is valuable to explore methods for enhancing these factors among adolescents. Therefore, this study aims to investigate whether mentalization can improve perceived social support and mindfulness skills in adolescents.

Materials and Methods

The research method employed in this study followed

a practical and empirical approach and was designed as a complete experiment with a control group, utilizing a pretest-posttest design. Measurements were taken both before and after the intervention or treatment. The control group was utilized as a comparison to assess the effectiveness of the intervention or treatment under investigation.

The statistical population of the research included all female students studying in the first year of Asieh High School during the academic year 2021-2022, estimated to be around 320 individuals. The sampling method used was simple random sampling, where approximately 120 students were randomly selected from the list of students in the school. Subsequently, the students completed the questionnaires at the school under the supervision of the researcher and administrative staff. Finally, those students who scored lower in both measured constructs (mindfulness and perceived social support) compared to other students and also volunteered to participate were invited to take part in the study (58 students). Other criteria for participation included non-participation in any other concurrent research project, obtaining parental consent for their children’s participation, and the ability to regularly attend sessions (both by the participants and their parents) (33 students). Additionally, individuals with specific physical and psychological illnesses were excluded from the research sample based on their school records and self-reported information to improve the study’s accuracy (1 student). Ultimately, a total of 32 individuals were randomly assigned to two groups (were randomised 1:1): control and experimental (16 individuals in each group).

The Mindful Attention Awareness Scale (MAAS) is a 15-item questionnaire developed by Brown and Ryan³⁸ to assess individuals’ mindfulness and attention to present moment experiences in daily life. These items are rated on a six-point Likert scale, ranging from one for «almost always» to six for «rarely.» The total score on the MAAS ranges from 15 to 90, with higher scores indicating higher levels of mindfulness. The questionnaire demonstrates good internal consistency, with Cronbach’s alpha coefficients ranging from 0.80 to 0.87, indicating high convergent validity. Furthermore, its discriminant validity has been established through its negative correlations with measures of depression and anxiety, and its positive correlations with measures of positive affect and self-esteem. The test-retest reliability of the MAAS has been reported as consistent within one month. In a study by Ghorbani et al.³⁹ the Persian version of the MAAS exhibited a Cronbach’s alpha of 0.81 among a sample of 723 students. The questionnaire’s reliability in this study was reported as 0.78.

The Multidimensional Scale of Perceived Social Support (MSPSS) is a self-report questionnaire designed by Zimet et al.⁴⁰ to measure individuals’ perceptions of social support from various sources. The questionnaire consists of 12 items

divided into three dimensions and uses a Likert response scale ranging from 1= strongly disagree to 7= strongly agree. Higher scores indicate a greater perception of social support. The MSPSS demonstrates high internal consistency reliability, with Cronbach's alpha coefficients ranging from 0.85 to 0.91. It also exhibits good test-retest reliability. In the present study, the reliability of the MSPSS was reported as 0.81.

Implementation Method

Over a period of 10 sessions (8 sessions for students and 2 sessions for parents), each lasting 60 minutes, group-based mindfulness training was conducted with the experimental group. During this time (2 months), the control group did not receive any interventions related to the research objective. At the end, after conducting the posttest for both the experimental and control groups, the results obtained from administering the questionnaires in both groups were

analyzed. The criteria for participants' inclusion included non-participation in other therapeutic and educational interventions, lack of physical and psychological illnesses, and informed consent of the participants. Absence from sessions, neglect of class activities and therapeutic assignments by the students were the criteria for participants' withdrawal from the study (fortunately, all members, including students and their parents, responsibly participated in the research). The research data were analyzed using multivariate analysis of covariance (MANCOVA).

After the completion of the research, intervention was also implemented for the members of the control group in order to adhere to ethical considerations. Throughout all stages, from sampling to intervention on the control group, members' information remained confidential, and they were assured that this information would be used anonymously solely for the purposes of the research.

Table 1: Mentalization- based treatment sessions (Bleiberg, 2013)⁴¹

Session Name	Session Objective	Activities and Session Content
Session 1	Introduction and Research Objectives	In the first session, we introduced the research project, explained the research variables, and emphasized the importance of regular participation. We also introduced the concept of mentalization, which involves understanding one's own thoughts and feelings, as well as those of others.
Session 2	Assessed Adolescent Mental State	In the second session, we conducted a mind reading test based on eye position to assess the adolescents' mental state. Through interviews, participants reflected on challenging situations and described their thought processes and emotional responses. This allowed us to evaluate their mentalization skills and identify areas for improvement. We also examined their individual profiles to understand their strengths and weaknesses in mentalization
Session 3	Taught Mentalization Skills and Attitudes	In the third session, we taught participants the essential skills and attitudes for effective mentalization. Concepts like curiosity, hope, flexibility, and receptiveness to oneself and others were introduced. Through interactive activities and discussions, participants actively cultivated these qualities, fostering an environment that promoted enhanced mentalization.
Session 4	Coped with Traumatic Emotions - Adaptive Emotion Management Training	In the fourth session, we provided training on coping with traumatic emotions. Participants learned adaptive emotion management techniques to help them regulate their emotions effectively in challenging situations. This training equipped them with practical tools and strategies to cope with emotional distress and promote mental well-being.
Session 5	Explored Family Functioning and Identified Stressors	In the fifth session, we examined family functioning and identified stressors within families. We investigated how family members engage in mentalization and how various stressors can influence this capacity. Participants actively discussed and engaged in exercises to explore their family dynamics, identify stressors, and analyze their impact on mentalization within the family unit.
Session 6	Strengthened Intimacy, Trust, and Empathy in Groups and Families	In the sixth session, our focus was on enhancing mentalization within groups and families by fostering intimacy, trust, empathy, and support. Participants actively participated in activities and exercises aimed at promoting understanding and connectedness. Furthermore, we delved into the distinctions between cognitive and emotional mentalization, emphasizing their unique aspects and interconnected nature.
Session 7	Managed Mentalization Breakdowns and Coped with Anxiety	During the seventh session, participants received training in managing mentalization breakdowns. We practiced understanding our own thoughts and emotions as well as those of others, especially during moments of anxiety or distress. Participants learned to recognize symptoms of anxiety and develop effective coping strategies.
Session 8 (Parents)	Introduced Mentalization to Parents and Caregivers	In the eighth session, we introduced mentalization to parents and caregivers. We emphasized the importance of mentalizing in the context of parent-child relationships. Parents learned how to apply mentalization skills in their interactions with their children to foster healthy emotional development.
Session 9 (Parents)	Explored Challenging Relationships and Practiced Mental Building	The ninth session focused on challenging relationships and provided parents with opportunities to practice mentalization skills. Participants explored their own experiences within relationships and developed strategies for enhancing mentalization in challenging situations. The session aimed to strengthen parents' ability to support their children's mentalizing capacities.
Session 10	Planned for Mentalization Skills and Summed up Questionnaires	During the final session, we reviewed the mentalization skills covered throughout the program and encouraged participants to reflect on their progress. We also revisited the questionnaires used at the beginning of the research project to measure any changes in participants' mentalization abilities.

Statistical Analysis

To examine the assumption of normality, the kurtosis and skewness tests were employed, and the tests indicated that the kurtosis and skewness values for all research variables fall within the range of (-2 and +2), thereby confirming this assumption. Therefore, it can be concluded that the distribution of scores in these variables is normal.

One of the important assumptions of the parametric tests is the homogeneity of variance-covariance matrices, which is tested using the M-box test. Since the significance level of the M-box test statistic (F) is greater than 0.05 and the test is not significant, it can be inferred that the assumption of homogeneity of variance-covariance matrices is met.

For examining the assumption of homogeneity of variances, the Levene’s test was used, and the significance level of the Levene’s test statistic (F) ($p > 0.05$) indicated that the assumption of homogeneity of variances is valid.

To test the assumption of homogeneity of regression slopes, the results showed that there is no interaction between groups and pre-test scores ($p > 0.05$), indicating that the regression slopes are equal for all variables. Therefore, the assumption of homogeneity of regression slopes is also satisfied.

One of the important assumptions of multivariate analysis of covariance is the linearity assumption regarding the relationship between the pre-test and post-test. This assumption was examined using the ANOVA test for each variable individually, and the F statistic for linearity was significant at a level less than 0.05. Thus, it can be concluded that a linear relationship exists between the pre-test and post-test in this structure, confirming the linearity assumption.

Result

Descriptive Statistics

The experimental group had a mother’s education rate of 12.5% for master’s degree, 31.2% for bachelor’s degree, 50% for diploma, and 6.2% for other degrees. The control group had a mother’s education rate of 18.7% for doctoral education, 25% for above, 43.7% for

bachelor’s degree, and 12.5% for diploma. The mean age of the experimental group was 13.68, and for the control group, it was 13.87.

Descriptive data from the pre-test and post-test showed that the mean scores of mindfulness and perceived social support in the experimental group significantly changed compared to the control group.

Table 2 shows that the mean scores for mindfulness and perceived social support for the intervention group were 64.20 and 46.13 before the intervention, respectively, and 70.6 and 53.73 after the intervention. The mean scores for the control group were 72.53 and 50.66 before the intervention, respectively, and 67.73 and 50.66 after the intervention.

The table above shows that the scores of the experimental group have undergone changes after the intervention. To confirm the research hypotheses and ensure that the changes in the post-test results of the control group are not due to random variation, an analysis of covariance (MANCOVA) test was used. The use of this test requires several initial assumptions to be met.

Hypothesis Tests

Considering that the assumptions for using the analysis of covariance test have been met (Statistical Analysis section), the results of testing the research hypothesis are presented in the following sections.

Table 3 presents the results of the analysis of covariance conducted on the research variables. Based on the F values, their significance levels, and the interaction between group membership and the independent variable (mentalization-based treatment), it can be argued that the difference in the adjusted means of the scores of the intervention group

Table 2: The descriptive statistics for the pre- and post-test scores

Variable	Groups	number	Pre-test scores		Post-test scores	
			Mean	SD	Mean	SD
Mindfulness	Intervention	16	64.20	12.68	70.06	10.92
	Control	16	72.53	6.98	67.73	6.93
Perceived social support	Intervention	16	46.13	5.99	53.73	5.44
	Control	16	50.66	6.37	50.66	8.86

Table 3: Multivariate analysis of covariance for the effect of group membership (MANCOVA)

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Group	Post-test mindfulness	705.537	1	705.537	9.098	0.006	25.9%
	Post-test perceived social support	330.801	1	330.801	10.782	0.003	29.3%
Error	Post-test mindfulness	2016.315	26	77.551			
	Post-test perceived social support	797.694	26	30.681			

is significant in terms of mindfulness and perceived social support in the post-intervention stage. In other words, the intervention program had a significant effect on the post-intervention scores of the intervention group, confirming the effectiveness of mentalization-based treatment on mindfulness ($F=9.09$; $p<0.05$) and perceived social support ($F=10.78$; $p<0.05$). Additionally, Eta squares indicate that mentalization-based treatment explains 25% of the variance in mindfulness and 29% of the variance in perceived social support.

Discussion

The present study was conducted to determine the impact of mentalization based treatment on mindfulness and perceived social support in female students. The results indicated that mentalization based treatment significantly affected mindfulness skills and perceived social support in students.

Previous studies have shown that mentalization-based training is an effective approach in enhancing individuals' understanding and awareness of their own and others' emotions, thoughts, and experiences in a more profound and conscious manner. This increased awareness enables individuals to better examine and reflect on their emotions and thoughts in their behaviors and actions. Additionally, it facilitates improved evaluation and regulation of their mental experiences, empowering them to respond more effectively and consciously to various challenges and situations. In other words, mentalization-based treatment has proven its effectiveness in terms of self-regulation, personal development, and self-awareness, leading to notable changes in self-perception and increased self-regulation in students.

In other words, this skill helps individuals gain a deeper and more conscious understanding of their own and others' inner experiences. As a result, they can better comprehend their strengths and behaviors and regulate their emotional responses in various situations. It appears that mentalization training can have several positive effects in the context of students:

Self-regulation: When individuals become more aware of their emotions and thoughts, they gain better abilities to manage their emotional responses and needs. This enhanced self-regulation can lead to improved decision-making and constructive reactions to challenges and pressures.

Personal development: Mentalization training can promote personal growth by inspiring students to explore their inner world and gain a deeper understanding of themselves. This process of self-discovery can lead to increased self-acceptance and compassion towards oneself.

Self-awareness: Increased self-awareness allows

students to identify and comprehend their strengths, weaknesses, and areas for growth. This awareness can provide a foundation for personal and academic development.

Changes in self-perception: As students develop a deeper understanding of their emotions and thoughts, they may experience positive changes in how they perceive themselves. This can lead to increased self-esteem and self-confidence.

By strengthening this capacity, individuals gain a better understanding of their internal states, which leads to increased self-esteem and self-worth. For example, Park et al.⁴² found a correlation between an individual's perception of their psychological states and their self-esteem. Consequently, mentalization-based treatment indirectly contributes to enhancing mindfulness skills by promoting self-awareness, self-regulation, and self-esteem. This improved mentalization enables individuals to gain a deeper understanding of their mental and emotional experiences and effectively manage them, thus strengthening their mindfulness skills.

Furthermore, empathy plays a vital role in the process of mentalization, as it involves understanding not only one's own thoughts and feelings but also those of others. Practicing this skill allows individuals to infer and comprehend the mental states of both themselves and others, such as beliefs, intentions, desires, and emotions. Since one of the essential exercises conducted in mentalization training sessions was related to empathy, this participation in sessions has helped students develop a deeper sense of empathy towards others. They become more attuned to the emotional experiences of their peers and better understand others' perspectives and feelings. As a result, students can develop stronger empathetic abilities, positively impacting their perceived social support.

The social support refers to an individual's inherent belief in having access to social resources, such as emotional, institutional, and informational support, from their social networks. By improving their empathetic abilities through mentalization-based treatment, students respond to interactions and emotions of their peers, teachers, and family members. This heightened empathetic understanding fosters more meaningful and supportive connections with others, leading to a higher perception of social support.

By evaluating and valuing empathy in relationships, students become more sensitive to the emotions and thoughts of others. This increased awareness of others' experiences enables them to respond better and more empathetically, reinforcing a positive feedback loop of empathy and social support. Consequently, mentalization training plays a crucial role in enhancing students' capacity

for empathy, strengthening their connections and support from others, and ultimately leading to a higher perception of social support.

For example, when students become more aware of the emotions and struggles of their classmates, there is a possibility of offering sincere support and encouragement to them. They may lend a listening ear during times of stress or provide assistance when needed. These acts of empathy and support strengthen the connections between students and create a positive and supportive social environment.

In conclusion, mentalization-based treatment strengthens the capacity for empathy, enabling individuals to better understand and respond to the emotions and thoughts of others. In other words, students' social support improves because they experience more meaningful and supportive interactions within their social networks. This understanding underscores the importance of incorporating mentalization-focused interventions in educational settings to promote empathy and strengthen social support among students.

One of the main limitations of this research is the constraint of the research period overlapping with the exam days, leading to unpredictable delays in scheduling sessions for students and their parents, potentially influencing the post-test results in the research variables. Moreover, the inability to conduct the predetermined number of parent sessions and the limited sample size due to the lack of cooperation from parents and time constraints in examining both genders (girls and boys) have restricted the generalizability of the results.

Conclusion

Given the significant impact of mentalization-based treatment on the research variables, focusing on enhancing mentalization capacity in students appears to be a relevant strategy. By helping students recognize and focus on their own and others' emotions, they can be more present, detached from past and future anxieties, and lead more mindful lives. Additionally, students with higher mentalization capacity can benefit more from the support of their peers and loved ones, fostering positive emotional feelings towards their parents, teachers, and life in general, resulting in increased motivation, satisfaction, commitment, and self-confidence in their studies. Consequently, mentalization-based treatment can be an effective factor in improving mindfulness skills and perceived social support in female students.

Considering the significant impact of the intervention on mentalization and the improvement of mindfulness skills and perceived social support in students, it is suggested to take this matter seriously and pay more attention to it. Incorporating the teaching of these skills as a preventive measure against adolescent problems and a step towards

improving their quality of life would be beneficial. Additionally, mentalization-focused interventions can be utilized by school counselors and psychologists for the prevention or treatment of adolescent and student issues.

Conflict of Interest

The authors state no conflict of interest in the study.

Funding

The authors acknowledge that they have not received any financial support for all stages of the study, writing and publication of the paper.

Acknowledgements

The researchers wish to thank all the individuals who participated in the study.

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