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Research Article

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Speech and Language Processing Abilities in Saudi Children With Speech Sound Disorders and Language Disorders

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Abstract

From a clinical practice perspective, the number of children with speech disorders is the largest, and there are also many children with both language disorders and speech disorders. However, there are currently few research papers on how these two communication disorder subcategories co-occur in Saudi, and our knowledge is quite limited. This paper chooses to start with speech processing ability to explore the relationship between speech disorders and language disorders and possible connections. A total of 34 children with speech disorders aged between 5 and 6 years participated in this study. They came from two preschools and were recruited to participate in the study after being diagnosed with speech disorders. The results showed that the two groups of children had similar abilities in this aspect, which was the most superficial commonality between the two groups. The corrected scores of non-word repetition showed that the performed similarly to the two normal control groups, but the scores of the speech-language disorder group were still lower than the mean scores of the control groups.

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INTRODUCTION

In the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), published by the American Psychiatric Association in 2013, there are four subcategories under communication disorders: (1) language disorder; (2) speech sound disorder; (3) childhood-onset fluent disorder (stuttering); and (4) social (pragmatic) communication disorder (Eissa, 2018a; Eissa & Omaima, 2019; Vitulano et al., 2024). From the perspective of diagnostic criteria, these four categories of disorders cover different levels of communication performance, from speech accuracy (speech sound disorder) to fluency (childhood-onset fluent disorder), and from the reception and use of vocabulary and sentence structure (language disorder) to oral and non-verbal communication in social interaction (social (pragmatic) communication disorder). However, DSM-5 also points out that children with language disorders, especially those with expression defects, may also suffer from speech disorders. In addition, language disorders are closely related to neurodevelopmental disorders such as specific learning disabilities (literacy and calculation), attention deficit/hyperactivity disorder, autism spectrum disorder and developmental coordination disorder, and are also related to social (pragmatic) communication disorders (Das et al., 2024; Eissa, 2018b; El Banna & Eissa Saad, 2019). In other words, language disorders are the most widely involved in communication disorders and have a certain core position.

PROBLEM STATEMENT

From a clinical practice perspective, the number of children with speech disorders is the largest, and there are also many children with both language disorders and speech disorders. However, there are currently few research papers on how these two communication disorder subcategories co-occur in Saudi, and our knowledge is quite limited. This paper chooses to start with speech processing ability to explore the relationship between speech disorders and language disorders and possible connections.

LITERATURE REVIEW

CHILDREN'S SPEECH DISORDERS

According to the diagnostic criteria of DSM-5, children with speech disorders do not have obvious neurophysiological causes such as intellectual disability or cleft lip and palate, have normal hearing, normal non-verbal intelligence, no obvious neurological symptoms, and do not show behavioral symptoms of autism, but their speech is usually difficult to understand (McCabe et al., 2024). In general, the speech characteristics of children with speech disorders are similar to those of younger normal children, the development process of phoneme pronunciation accuracy is roughly the same as that of normal children, and vowels have higher accuracy than consonants (Stoel-Gammon & Herrington, 1990). However, children with speech disorders also make some errors that are rare in normal children (Dodd et al., 2002), and there are also cases of pronunciation disorder, that is, some words have several different pronunciations in the same test (Dodd & McCormack 1995). Dodd & McCormack (1995) further standardized these pronunciation variation phenomena as the basis for the classification of speech disorder subtypes.

Some children with speech sound disorders have problems with pronunciation accuracy only, but still have adequate vocabulary, can produce grammatically complex sentences, and have good oral comprehension. A significant number of children in this category also show deficits in other language areas, such as insufficient vocabulary and inability to understand complex sentences (Shriberg et al., 2017).

NON-WORD REPETITION AND VOCABULARY LEARNING

In fact, there has long been a consensus in the literature on the relationship between speech development and vocabulary growth. Vocabulary learning involves paired processing of speech and

word meaning, and clear speech memory is an important condition for recognizing vocabulary. For young children, the speech memory of words is initially based on syllables, without fine segmentation. At around 3 years old, the speech information units of vocabulary begin to be refined and transformed into segmental units that are more effective in the process of vocabulary recognition and retrieval (Walley, 1993). Stoel-Gammon (1989) examined two 2-year-old children with delayed language development and found that there was a positive correlation between their vocabulary and the types of speech they mastered, that is, children who could correctly pronounce multiple phonemes had a larger vocabulary. Mirak & Rescorla (1998) used a similar method to test 37 children with language expression disorders and obtained the same results. Schwartz & Leonard (1982) pointed out that when learning vocabulary, young children often avoid words with unfamiliar phonetic forms, and this avoidance strategy has also been found in children with speech disorders.

The first to widely use non-word repetition tasks to detect children's phonological working memory was the British scholar Gathercole's team. Their research showed that the non-word repetition performance of normal children and children with speech disorders was positively correlated with language ability development (Gathercole & Baddeley, 1989). Listening to and repeating unfamiliar sounds is similar to some aspects of children's vocabulary learning in terms of process, so children's phonological working memory will directly affect the effectiveness of vocabulary learning, and their research did find that there was a high correlation between non-word repetition and vocabulary comprehension in 4- to 5-year-old children. In another longitudinal study (1992), Gathercole's team found that children's phonological memory at the age of four or five can effectively predict their later performance in learning vocabulary in elementary school. This predictive causal relationship also appeared in children with developmental language disorders (Gathercole & Baddeley, 1990). Later, many studies also agreed with the predictive role of phonological working memory deficits in children with language disorders (Bishop et al., 1996; Botting & Conti-Ramsden, 2001; Ellis et al. 2000; Gathercole et al., 1994; Gray, 2003; Conti-Ramsden et al., 2001). Based on these findings, poor performance in non-word repetition is also regarded as a risk marker for developmental language disorders. In recent years, some genetic studies on language disorders have also used non-word repetition as a key behavioral indicator (Peter et al., 2011).

There are two different explanations in the literature for children's difficulties in non-word repetition. One is based on the significant positive correlation between the accuracy of non-word repetition and other short-term memory tests (such as number or word memory), and then infers that the difficulty lies in the insufficient working memory capacity to process semantic information. Another view is that the difficulty comes from the children's insufficient phonological ability, because repeating non-words involves many processes of processing speech. From the recognition of speech acoustic signals and the segmentation of speech units at the receiving end to the planning and execution of speech muscle movements during production, the lack of ability in any link will have a negative impact on the non-word repetition task (Edwards & Lahey, 1998). Kirchner & Klatzky (1985) found that the speech repetition ability of children with language disorders is worse than that of normal children of the same age, and Bowey (1996) reported the association between speech sensitivity and speech memory of 5-year-old children. These research results all support the potential speech processing factors in non-word repetition tasks, that is, children's performance in repeating non-words may be closely related to their speech abilities.

THE PRESENT STUDY

This study explored the difficulties of children with speech disorders in speech processing ability, compared the performance of two groups of children with speech and language disorders and those with only speech disorders in three test tasks, and verified the relationship between speech processing ability and vocabulary learning ability reported in the literature. Based on the research results in the literature, the prediction of this study is that the children with speech disorders will have poor performance in repeating non-words, and this will affect the learning of new words.

RESEARCH QUESTION

Will children with speech disorders have poor performance in repeating non-words, and will this affect the learning of new words?

METHODS

PARTICIPANTS

A total of 34 children with speech disorders aged between 5 and 6 years participated in this study. They came from two preschools and were recruited to participate in the study after being diagnosed with speech disorders. After diagnosis, these children were not affected by hearing impairment, neurological damage or language and intelligence retardation. Language ability was evaluated using the "Preschool Language Scale 4" (Zimmerman et al., 2002). The cutoff point was set at the 10th percentile. Those with scores above the cutoff point belonged to the speech disorder group, with a total of 25 children; there were 15 children with scores below the cutoff point, who had more extensive language disorder characteristics and met the diagnostic criteria for language disorders, and belonged to the speech-language disorder group. Two typically developing control groups were also tested: an age-matched group, age range is 5 years 11 months to 6 years, and a younger group, age range is 4 years 11 months to 5 years 1 month. The four groups of subjects were tested for vocabulary ability using the Peabody Picture Vocabulary Test, and the average sentence length of the first 100 sentences was obtained from the 30-minute free-language sample.

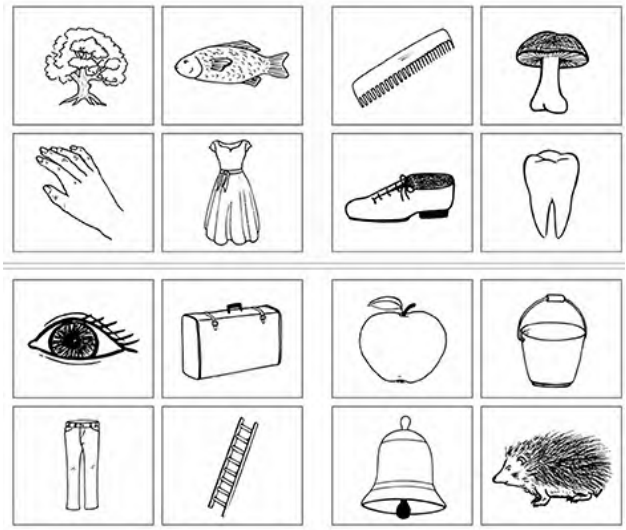
TEST TASKS

This study has three main tests: picture naming task, non-word repetition task, and quantifier elicitation and learning task, which respectively test the children's speech, phonological working memory, and vocabulary learning abilities. The details of each task are described below.

1. PICTURE NAMING

The task materials consisted of 16 pictures printed on 10 cm × 21 cm cards. At the beginning of the task, the experimenter showed the 16 pictures to the subjects one by one, and asked the subjects to say the name of the object in the picture and repeat it once. If the subject did not recognize the object in the picture, the experimenter provided the pronunciation of the target word and asked the subject to imitate it twice. The pronunciations collected were recorded and two analyses were performed. A content validity index was calculated at the item level (I-CVI = 0.90). The scale has test-retest reliability of .67 (see Figure 1).

Figure 1. *Picture Naming*



2. NON-WORD REPETITION

The aim of this test is to test the phonological working memory of the children. The entire test includes 3 practice questions and 16 formal test questions, each of which consists of 3 disyllabic non-words. There are no repeated syllables in each test. At the beginning of the task, the experimenter told the children to repeat some new words and to "say them exactly the same." The test started with 3 practice questions, repeating a disyllabic non-word each time, and entering the formal test after completing 3 non-words. A content validity index was calculated at the item level (I-CVI = 0.90). The scale has test-retest reliability of .62.

RESULTS

1. PICTURE NAMING TASK

Table 1 shows the statistical analysis. This showed that there were significant differences among the four groups [F (3,45) = 10.12, p < .05]. After post hoc comparison, only the difference between the two disorder groups was not significant (speech disorder group mean = 8.52, SD = 5.09; speech-language disorder group mean = 8.64, SD = 5.31). The results showed that the pronunciation accuracy of the speech disorder group and speech-language disorder group was at the same level.

Table 1. *Repeated-measures ANOVA by group*

Picture naming task	SS	df	MS	F	P	ηp2
Group	12.37	0.00	12.37	10.12	0.00	0.08
Error	99.73	87.00	1.10			

2. NON-WORD REPETITION TASK

Table 2 shows the scoring results of the non-word repetition task. Among the 4 groups, the speech-language disorder group had the lowest score (mean = 7.78), the speech disorder group was slightly higher (mean = 8.45), but still lower than the age-matched group (mean = 13.56) and the young group (mean = 12.26). One-way analysis of variance showed that there were significant differences between the groups [F (3, 45) = 8.19, p < .05]. Post hoc t-tests showed that children in both disorder groups performed worse than the age-matched group.

Table 2. *Scoring of non-word repetition task*

Group	Average (maximum = 16 points)	Standard Deviation	Correct rate (%)
The age-matched group	13.56	2.12	84.75
The young group	12.26	3.13	76.62
Speech disorder group	8.45	5.26	52.81
Speech-language disorder group	7.78	6.53	48.62

DISCUSSION

The picture naming task was used to test the pronunciation accuracy of the speech disorder group and the speech-language disorder group. The results showed that the two groups of children had similar abilities in this aspect, which was the most superficial commonality between the two groups.

Speech disorders may involve dysfunction of the oral motor system and the speech phonological system, and there is no need for there to be any correlation or conflict between these two causes. In the analysis of articulatory variation, both the speech-language disorder group and the the speech disorder group had fairly stable alternative pronunciations, and the two scores of the non-word repetition task indeed demonstrated that their pronunciation errors affected their repetition performance (Finestack et al., 2024). The corrected scores of non-word repetition showed

that the performed similarly to the two normal control groups, but the scores of the speech-language disorder group were still lower than the mean scores of the control groups (Gordon et al., 2024; Montgomery et al., 2024). The non-word repetition ability of the the speech-language disorder group is consistent with the results of studies on children with developmental language disorders in the literature (Bishop et al., 1996; Botting & Conti-Ramsden, 2001; Ellis et al., 2000; Gathercole et al., 1994; Gray, 2003).

At the level of phonological ability, when learning new words, children need to record the speech signal first, and perform segmentation and decoding (Edwards & Lahey 1998), and then enter the vocabulary comparison and analysis. The phonological system of children in the speech-language disorder group has not yet matured, and the efficiency of phonetic analysis and decoding is low. They perform poorly in the phonetic processing link of new word learning, resulting in difficulties in matching the phonetic form of new words with the meaning of words, resulting in grammatical and matching errors. It is also possible that some children use avoidance strategies and use universal quantifiers to answer the number of objects because they cannot master the phonetic form of new quantifiers. If these inferences are correct, then the phonetic problems faced by children in the speech-language disorder group are the source of their difficulties in non-word repetition and new word learning.

On the other hand, the speech disorder group had a smaller vocabulary and their pronunciation accuracy was also below the age expectation, just like the speech-language disorder group, but the root of their pronunciation problems should be in the oral motor system.

CONCLUSION

This study required the subjects to perform two tasks to explore the different performances of Saudi children with speech and language disorders in non-word repetition and vocabulary learning, and observed the association between phonological working memory, speech analysis, and vocabulary learning. In addition, the non-word repetition of both disorder groups was underestimated due to pronunciation errors. After correcting the scores, only the non-word repetition of the speech-language disorder group was worse than that of the age-matched control group, and there was more pronunciation variation. These results show that the main differences between children with speech disorders and children with speech-grammatical disorders are the variability of incorrect pronunciation and the ability to repetition non-words.

LIMITATIONS AND FUTURE RESEARCH DIRECTION

Although the sample size of the subjects tested in this study is small, an important research direction has been explored, that is, it is necessary to strengthen the research on the speech processing ability of children with speech disorders, understand the differences between the two subcategories of speech disorders and language disorders from multiple perspectives, and improve the clinical efficacy of treatment for children with speech disorders.

Availability of Data: Upon request from the author
Conflicts of Interest: None
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REFERENCES

Bishop, D.V.M., North, T., & Donlan, C. (1996). Nonword repetition as a behavioural marker for inherited language impairment: Evidence from a twin study. *Journal of Child Psychology and Psychiatry, 37*, 391-403

Botting, N., & Conti-Ramsden, G. (2001). Non-word repetition and language development in children with specific language impairment (SLI). *International Journal of Language and Communication Disorders, 36*, 421-432.

Conti-Ramsden, G., Botting, N., & Faragher, B. (2001). Psycholinguistic markers for specific language impairment (SLI). *Journal of Child Psychology and Psychiatry, 42*, 741-748.

Das, A., Alam, N., Bhattacharjee, A., Pal, D. & Sao, R. (2024). Speech and language disorder: Assessment and intervention approaches. *International Journal of Social Impact, 9*(1), 101-113. DIP: 18.02.013/20240901, DOI: 10.25215/2455/0901013

Dodd, B., Crosbie, S., Zhu, H., Holm, A., & Ozanne, A. (2002). *The Diagnostic evaluation of articulation and phonology.* Psych-Corp

Dodd, B., & McCormack, P. (1995). A model of the speech processing for differential diagnosis of phonological disorders. In B. Dodd (Ed.), *Differential diagnosis and treatment of children with speech disorder* (pp. 65-89). Whurr.

Edwards, J., & Lahey, M. (1998). Nonword repetitions of children with specific language impairment: Exploration of some explanations for their inaccuracies. *Applied Psycholinguistics, 19,* 279-309.

Eissa , M. A. (2018a). Issues related to identification of children with specific learning disorders(SLDs): insights into DSM-5. *Psycho-Educational Research Reviews*, *7*(1), 106–111. Retrieved from https://www.perrjournal.com/index.php/perrjournal/article/view/254

Eissa, M. A. (2018). Issues related to ıdentification of children with autism spectrum disorders (ASDs): Insights from DSM-5. *Psycho-Educational Research Reviews*, *7*(3), 62–66. https://www.perrjournal.com/index.php/perrjournal/article/view/232

Eissa, M. A., & Omaima , M. K. (2019). Childhood-onset fluency disorder (stuttering): An interruption in the flow of speaking. *Psycho-Educational Research Reviews*, *8*(3), 11–13. Retrieved from https://www.perrjournal.com/index.php/perrjournal/article/view/150

El Banna, A. E. S., & Eissa Saad, M. A. (2019). Attention-deficit/hyperactivity disorder: Insights from DSM-5. *Psycho-Educational Research Reviews*, *8*(Special Issue), 25–29. Retrieved from https://www.perrjournal.com/index.php/perrjournal/article/view/169

Ellis Weismer, S., Tomblin, J.B., Zhang, X., Buckwalter, P., Chynoweth, J.G., & Jones, M. (2000). Nonword repetition performance in school-age children with and without language impairment. Journal of Speech, Language, and Hearing Research, 43, 865-878.

Finestack, L. H., Ancel, E., Lee, H., Kuchler, K., & Kornelis, M. (2024). Five additional evidence-based principles to facilitate grammar development for children with developmental language disorder. *American Journal of Speech-Language Pathology, 33*(2), 552–563. https://doi.org/10.1044/2023_AJSLP-23-00049

Gathercole, S.E., & Baddeley, A.D. (1989). Evaluation of the role of phonological STM in the development of vocabulary in children: A longitudinal study. *Journal of Memory and Language, 28*, 200-213.

Gathercole, S.E., & Baddeley, A.D. (1990). Phonological memory deficits in language disordered children: Is there a causal connection? *Journal of Memory and Language*, 29, 336-360.

Gathercole, S. E., Willis, C. S., Emslie, H., & Baddeley, A. D. (1992). Phonological memory and vocabulary development during the early school years: A longitudinal study. *Developmental Psychology, 28*(5), 887–898. https://doi.org/10.1037/0012-1649.28.5.887

Gathercole, S.E., Willis, C.S., Baddeley, A.D., & Emslie, H. (1994). The children's test of nonword repetition: A test of phonological working memory. *Memory*, 2, 103-27.

Gordon, K. R., Storkel, H. L., Lowry, S. L., & Sultani, M. J. (2024). A word-learning intervention pilot study utilizing principles of retrieval- and criterion-based learning for children with developmental language disorder. *American Journal of Speech-Language Pathology, 33*(2), 530–551. https://doi.org/10.1044/2023_AJSLP-23-00037

Gray, S. (2003). Diagnostic accuracy and test-retest reliability of nonword repetition and digit span tasks administered to preschool children with specific language impairment. *Journal of Communication Disorders, 36*, 129-151.

Kirchner, D. M., & Klatzky, R. L. (1985). Verbal rehearsal and memory in language-disordered children. *Journal of Speech & Hearing Research, 28*(4), 556–565. https://doi.org/10.1044/jshr.2804.556

McCabe, P., Korkalainen, J. & Thomas, D. (2024) Diagnostic uncertainty in childhood motor speech disorders: A review of recent tools and approaches. *Curr Dev Disord Rep* 11, 105–112 https://doi.org/10.1007/s40474-024-00295-x

Mirak J, &Rescorla L. (1998) Phonetic skills and vocabulary size in late talkers: Concurrent and predictive relationships. *Applied Psycholinguistics*, *19*(1), 1-17. https://doi.org/10.1017/S0142716400010559

Montgomery, J. W., Gillam, R. B., & Plante, E. (2024). Enhancing syntactic knowledge in school-age children with developmental language disorder: The promise of syntactic priming. *American Journal of Speech-Language Pathology, 33*(2), 580– 597. https://doi.org/10.1044/2023_AJSLP-23-00079

Peter, B., Raskind, W. H., Matsushita, M., Lisowski, M., Vu, T., Berninger, V. W., Wijsman, E. M., & Brkanac, Z. (2011). Replication of CNTNAP2 association with nonword repetition and support for FOXP2 association with timed reading and motor activities in a dyslexia family sample. *Journal of Neurodevelopmental Disorders*, *3*(1), 39-49. https://doi.org/10.1007/s11689-010-9065-0

Shriberg LD, Strand EA, Fourakis M, Jakielski KJ, Hall SD, Karlsson HB, Mabie HL, McSweeny JL, Tilkens CM, & Wilson DL. (2017) A Diagnostic Marker to Discriminate Childhood Apraxia of Speech From Speech Delay: I. Development and Description of the Pause Marker. *J Speech Lang Hear Res., 60*(4):S1096-S1117. https://doi.org/10.1044/2016_JSLHR-S-15-0296

Stoel-Gammon, C. (1989). Prespeech and early speech development of two late talkers. *First Language, 9,* 207-223. http://dx.doi.org/10.1177/014272378900900607

Stoel-Gammon C, & Herrington PB. (1990)Vowel systems of normally developing and phonologically disordered children. *Clin Linguist Phon. 4*(2), 145-60. https://doi.org/10.3109/02699209008985478

Vitulano, L.A., Vitulano, M.L., King, R.A., Yazgan, M.Y., Leckman, J.F. (2024). Neurodevelopmental disorders: stereotypical movement disorders and tic disorders. In: Tasman, A., *et al.* Tasman's psychiatry. Springer, Cham. https://doi.org/10.1007/978-3-030-51366-5_45

Walley, A. C. (1993). The role of vocabulary development in children's spoken word recognition and segmentation ability. *Developmental Review,* 13, 286-350. http://dx.doi.org/10.1006/drev.1993.1015

Zimmerman, I. L., Steiner, V. G., & Pond, R. E. (2002). *Preschool Language Scale, Fourth Edition (PLS-4)* [Database record]. APA PsycTests.

Research Article

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The Effects of Principles of Powerful Learning Environment on Motivation to Learn Among Students with Learning Disabilities

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Abstract

The aim was to investigate the effects of principles of powerful learning environment (PLE) on motivation to learn among students with learning disabilities (LD). A sample of 56 students in 8th grade with LD in two middle schools were recruited. The research used the quasi-experimental approach due to its suitability to the nature of the research, which relies on the experimental design based on two groups, one experimental and the other control, and by using the pre- and post testing of the two groups. The effects of the principles of (PLE)were assessed using ANCOVA, repeated-measures, pre- post- and follow up testing design. Using a pre-test–intervention–post-test, and follow up design, it has been shown that (PLE) was effective in improving motivation to learn among students with LD. The results found by this study using (PLE) indicate the effectiveness of this method with students with LD.

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INTRODUCTION

Individuals with LD are characterized by inaccurate or slow and effortful word reading (Eissa, 2015; Elhoweris, 2017; Gomaa, 2015 ; Mostafa, 2017),difficulty understanding the meaning of what is read(El Banna, 2019; Hendi, 2015), difficulties with spelling (Kader & Eissa, 2016; Mohammed, 2014; Nassar, 2015), difficulties mastering number sense, number facts, or calculation (APA, 2013; Eissa, 2018)and difficulties with mathematical reasoning (ElAdl, 2020; Khalik, 2014).

The traditional approaches to teaching and learning are not compatible with the characteristics of students with LD, as it leads to them feeling bored, as well as making them passive and more hostile and resistant to the teacher (Eissa & Mostafa, 2013). Therefore, teaching methods appropriate to the characteristics of this category must be followed, taking into account their learning methods, providing them with a positive and enjoyable atmosphere for learning, integrating them in the learning process with every activity, challenging their abilities and arousing their desire to learn, enthusiasm and vitality (Gomaa, 2014; Winarti etal., 2022).

Students who are competent with digital technologies can access learning resources through a variety of online media, such as YouTube, social media sites, tablets, mobile devices, and video games (Camilleri & Camilleri, 2021; Johannesen et al., 2019). Motivated and techno-confident students can draw from these online resources to clarify and reinforce what they have learned in lectures (Pillutla et al., 2020).

The concept of “powerful learning environments” is an embodiment of the main ideas of the constructivist approach to teaching and learning (Ahmady & Khani, 2022). This approach is based on the belief that students should be directed to build knowledge that is meaningful and useful in their own lives (Cilliers,2021). The focus is primarily on “how” students learn and not “what” they learn (Muhammad,2021). PLE framework is also based on the belief that the success of teaching and learning activities depends on the ingenuity of teachers in creating a classroom climate conducive to active learning through which learners construct their reality in social interactions with others (Ahmady & Khani, 2022). PLEs also refer to environments designed in such a way as to enhance the learning processes necessary to achieve desired learning outcomes (Placklé et al.,2018; Roos et al.,2021)

PLEs promote optimal learning processes. They provide rich and authentic contexts and tasks as possible. These environments also provide links to the world outside of school, stimulating active and independent and collaborative learning and adapting curricula to individual pupils' needs and abilities (Placklé et al.,2018). PLEs also provide increased opportunities for reflection through which students develop deeper understanding and awareness of cognitive and metacognitive as well as increased opportunities to develop their skills and motivation to learn through cooperation with others (Ahmady & Khani, 2022).

PLEs combine the advantages of active learning, constructivist learning, cooperative learning, case-based learning, as well as problem-based learning, where they start teaching from what the student knows and can do, take student motivation into account, provide more feedback to students and seek to empower the student and focus on competencies rather than knowledge as well as support the use of examples and discussions, all in an atmosphere full of care and attention of the teacher (Albayrak & Serin,2022). Accordingly, this line of reasoning leads to a theoretical conclusion that " PLEs have the potential to improve motivation to learn for students with LD, but this conclusion remains in need of empirical research to prove its validity (Placklé et al.,2020).

On the other hand, students with LD suffer from neglecting homework, not entering academic competitions, and unwillingness to participate in school activities. They also suffer from distraction and hypersensitivity, and they believe that they cannot learn and are afraid of failure, and they also suffer from lack of motivation to learn (Eissa,2012, Mostafa ,2017).

PURPOSE

The aim was to investigate the effects of Principles of Powerful Learning environment on Motivation to Learn Among Students with LDs. It is assumed that instructional program based on the principles of PLEs will improve motivation to learn among students with LDs.

LITERATURE REVIEW

PLEs are based on constructivist theory. Constructivists assert that pupils are not just passive recipients of knowledge, but actively participate in constructing their own meaning. PLEs enable students to gain new knowledge and then put it into practice (Sinakou et al., 2019). In addition, PLEs provide students with opportunities for discovery and research and investigation. they provide them with immediate feedback, clear models for performing various tasks, and show them the cognitive and metacognitive components of the tasks assigned to them (Placklé et al.,2020).

There are many factors that facilitate learning in PLEs, namely: matching the student's previous knowledge, skills, plans, interests, values and needs, taking the student's motivation into account, paying attention to feedback, and teaching organized in a logical way for the learner, as well as providing the opportunity for work collaboration with peers, using examples and discussions, paying attention to the context of performance (so that knowledge and skill can be benefited from), caring for students, and finally integrating assessment and learning (Könings et al., 2005;De Corte,1990). There is now a broad consensus that effective learning occurs when learning environments are 'powerful' stimulating learning which is "constructive, cumulative, self regulated, goal-oriented, situated, collaborative' and taking into account 'individually different process of meaning construction and knowledge building" (De Corte, 1996, 106).

POWERFUL LEARNING ENVIRONMENTS ARE BASED ON THE FOLLOWING PRINCIPLES:

Learner Centered: A learner-centered learning environment aims to ensure that any activity in the classroom begins by paying close attention to learners' ideas, knowledge, skills, attitudes, learners' preconceptions about the topic, their cognitive experiences, their cultural and social backgrounds, and their cognitive abilities, which provide the basis from which new learning begins (Baeten et al.,2016;Moreeng & Toit, 2013; Schelfhout et al., 2006)

Knowledge Centered: A knowledge-centered learning environment is characterized by an emphasis on what is taught, and why is it taught? How should knowledge be organized to support the development of learners' experiences? In addition to how to master the learning content, knowledge should not be taken as a list of facts and formulas relevant to its field. Instead, learners' knowledge must be organized around key concepts or big ideas that guide thinking (Baeten et al.,2016).

Assessment Centered: Assessment is the key feature of a knowledge-centered learning environment, a learner-centered learning environment, and one of the challenges in the classroom is the absence of a direct link between instructional objectives and assessment, as teachers tend to see assessment as separate from the teaching and learning process. Therefore, assessment should be used as an educational opportunity to improve learning, rather than only assessing learners. The focus of evaluation has changed with the advent of the results-based approach. Learners are no longer required to demonstrate not only their knowledge but also their skills and values (Glasgow & Hicks, 2003; Kotze, 2002).

Community Centered: Community-centeredness means developing rules and channels of communication between the classroom and the outside world to support core learning values, as learning is influenced by the context in which it takes place. A community-centered learning environment also includes setting a set of classroom management standards, whereby each class operates according to the set of explicit or implicit cultures or standards that affect interactions between individuals. This set of standards in turn mediates learning, and standards established in the

classroom have powerful effects on academic achievement. These standards may support students in revealing their preconceptions about the topic and their questions, and a community-centered learning environment focuses on developing a sense of community for the classroom environment by helping learners solve problems by building on each other's knowledge, asking questions and suggesting answers (De Corte & Masui, 2004)

HYPOTHESES

1- The experimental group (that is exposed to the instructional design based on the principles of PLEs) will gain better motivation to learn test scores in post test over the control group (that is taught in a traditional way).

2- PLEs is effective in improving motivation to learn of experimental group, and this effect is still evident a month later.

METHODS

PARTICIPANTS

A sample of 56 students in grade 8 with LD in two middle schools in Kafr EL Sheikh Governorate, Egypt was invited to participate in the study. Criteria of inclusion were as follows: 1) demonstrating low achievement scores according to teacher's reference (i.e., at least 1.5 [SD] below their same age people (Mourad, 2018, P.109), though their normal levels of intellectual functioning (Mourad, 2012), b) the absence of any neurological or motor disorders, 3) Low motivation to learn score. The sample was randomly divided into two groups; experimental (n= 26, 16 boys, 57.14% and 10 girls, 35.71%) and control (n= 28 ,20 boys, 71.42% and 8 girls 28.57%). The two groups were matched on age, IQ, and motivation to learn test score (See table 1). Table 1. shows that all t- values did not reach significance level. This indicated that the two groups did not differ in age, IQ, and Motivation to learn (pre-test).

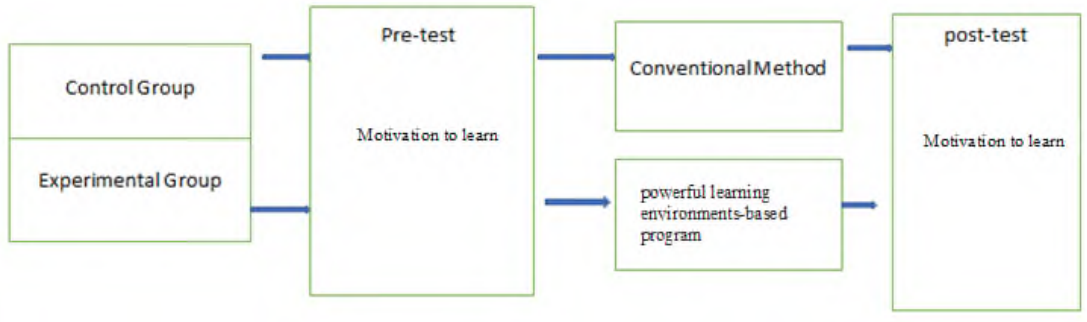
Table 1. *Pretest Mean Score, Standard Deviations and T-Value for Age (By Month), IQ, And Motivation to Learn.*

Variable	*Group*	*N*	*M*	*SD*	*T*	*P.*
Age	Experimental	28	167.6	1.96	-.081	-
	Control	28	167.9	2.01		
IQ	Experimental	28	113.93	4.45	-.251	-
	Control	28	114.20	4.24		
Motivation to learn	Experimental	28	75.21	3.00	-.587	-
	Control	28	75.67	3.52		

RESEARCH MODEL

The research used the quasi-experimental approach due to its suitability to the nature of the research, which relies on the experimental design based on two groups, one experimental and the other control, and by using the pre- and post-testing of the two groups (see fig.1).

Figure1. *Research Model*



DATA COLLECTION INSTRUMENT

Intrinsic and Extrinsic Motivational Orientations Scale (Mourad Ali Eissa, 2012). It is a 30-items scale. The Intrinsic and Extrinsic Motivational Orientations Scale consists of six subscales; three for Intrinsic Motivation (Challenge, Curiosity, Independent Mastery; 15 items), and three for Extrinsic Motivation (Easy Work, Pleasing Teacher, and Dependence on Teacher; 15 items). A three point Likert scale (agree=3, Uncertain= 2, and Disagree=1) was used. A pilot study was completed for 15 students with IDs in order to determine the clarity of the questionnaire, and unclear questions were updated. Answering the questionnaire took approximately 20 minutes.

Reliability analysis using Cronbach's Alpha showed that the scale used in this research was reliable as shown in Table 2.

Table 2. *Reliability Analysis*

Variable	*Cronbach's Alpha Based on Standardized Items*	*Remarks*
Intrinsic Motivation	0.87	Reliable
Extrinsic Motivation	0.89	Reliable
The whole scale	0.91	Reliable

The content validity of the scale was examined by a group of 5 experts. They assessed the relevance of each item using a four-point Likert scale (where 1 represents "irrelevant" and 4 represents "highly relevant"). They provided suggestions and comments. The 20 items were judged to be quite or highly relevant. A content validity index was calculated at the item level (I-CVI = 0.90).

PROCEDURE

Middle school students who participated met the following established criteria to be included in the study: 1) demonstrating low achievement scores according to teacher's reference (i.e., at least 1.5 [SD] below their same age people (Mourad, 2018, P.109), though their normal levels of intellectual functioning (Mourad, 2012), b) the absence of any neurological or motor disorders, 3) Low motivation to learn score. All the 56 students completed Intrinsic and Extrinsic Motivational Orientations Scale, which assesses students' intrinsic and extrinsic motivational orientations. Thus data was reported for the students who completed the study.

To design the program, the researcher prepared a list of principles for designing instruction based on PLEs, including a set of integrated principles related to student characteristics, educational objectives, learning content, teaching and learning strategies, and finally assessment methods.

There are some instructional strategies that are compatible with the characteristics and principles of PLEs, including: reciprocal teaching, cooperative learning in large groups and in small groups, and peer teaching. In addition to the aforementioned strategies, the researcher used the lecture strategy, discussion, brainstorming, think-pair share, what I know and what I want to know strategy, modeling, think-aloud strategy, project-based learning strategy, case-based learning strategy, and strategy-based learning strategy, scaffolding, context-based learning strategy, and problem-based learning strategy.

The program was also based on a variety of open and closed-ended group and individual educational activities, where students were given the opportunity to practice creative thinking skills, in an educational environment full of support, praise, care and feedback. Implementation of the program requires (120) minutes each week, including activities and workshops.

DATA ANALYSIS

The effects of the instructional program based on the principles of PLEs were assessed using ANCOVA, repeated-measures, pre- post- and follow up testing design.

FINDINGS

HYPOTHESES TESTING

Table 3 shows data on ANCOVA analysis. The table shows that the (F) value was (93.210, P < 0.01).

Table 3. *ANCOVA Analysis*

Source	*Type 111 sum of squares*	*df*	*Mean square*	*F*	*P*
PRE	1.823	1	1.823		
GROUP	143.115	2	71.557	93.210	0.01
ERROR	198.115	52	99.057		
TOTAL	867.142	55			

Table 4 shows t test results for the differences in post- test mean scores between experimental and control groups in motivation to learn scale. The table shows that (t) vale was (6.45, P < 0.01) in the favor of experimental group.

Table 4. *T- Test Results.*

Group	*N*	*Mean*	*Std. deviation*	*T*	*P*
Experimental	28	110.63	1.11	6.45	0.01
Control	28	78.89	2.10		

Table 5. shows data on repeated measures analysis for motivation to learn scale. The table shows that there are statistical differences between measures (pre- post- follow up) at the level (0.01).

Table 5. *Repeated Measures Analysis for Motivation to Learn Scale*

Source	*Type 111 sum of squares*	*df*	*Mean square*	*F*	*Sig.*
Between groups	432.360	1	432.360		0.01
Error 1	98.883	54	1.831	119.105	
Between Measures	572.223	2	286.111	101.102	0.01
Measures x Groups	396.886	2	198.443	98.013	0.01
Error 2	238.709	108	2.210		

Table 6. shows that there are statistical differences between pre and post measures in favor of post-test, and between pre and follow up measures in favor of follow up test, but no statistical differences between post and follow up test.

Table 6. *Scheffe Test for Multi- Comparisons in Motivation to Learn Scale*

Measure	*Pre* *M= 75.21*	*Post* *M= 110.63*	*Follow up* *M= 109.12*
Pre	--	--	--
Post	7.69*	--	--
Follow up	7.32*	.12	--

DISCUSSION

Using a pre-test–intervention–post-test, and follow up design, it has been shown that the instructional program based on the principles of PLEs was effective in improving motivation to learn among students with LD. The results found by this study using that the instructional design based on the principles of PLEs indicate the effectiveness of this method with students with LD.

This is an indication of encouraging curricula that have the potential of learning environments full of power, and that allow learners the opportunity to be more active and integrated. Also, identifying the characteristics, capabilities, and competencies of PLEs may help identify reasons why this educational reform is gaining more attention.

This may be due to the fact that stimulating learning environments are environments that promote active learning and constructive learning and provide opportunities for cooperative activities among students, as they provide learning experiences in their context and in real situations, including curricula, teaching processes and learning contexts to enable students to facilitate the acquisition of productive knowledge. In addition to learning and thinking skills, these environments create appropriate learning conditions for learning activities and processes that enable pupils to learn productively and solve problems.

This may also be due to the fact that stimulating learning environments are environments centered around the learner, knowledge, community and assessment, and provide a positive and enjoyable atmosphere for learning, and create multiple and thought-provoking opportunities that challenge students' abilities and arouse their desire to learn and enthusiasm with the aim of achieving efficient and optimal learning and enabling them to achieve the maximum of their potentials and abilities.

There are many factors that facilitate learning in PLEs, namely: matching the student's previous knowledge, skills, plans, interests, values and needs, taking the student's motivation into account, paying attention to feedback, and teaching organized in a logical way for the learner, as well as providing the opportunity for work Collaboration with peers, using examples and discussions, paying attention to the context of performance (so that knowledge and skill can be benefited from), caring for students, and finally integrating assessment and learning.

The program used in the current study led to the activation of the student's previous knowledge and previous experiences; And then building new knowledge from the pre-existing knowledge, showing the student new skills or knowledge through modeling, giving the student the opportunity to apply his new knowledge and skills, and finally integrating the newly acquired skills and knowledge into the student's realistic activities.

This result may be due to the characteristics of the PLEs, which are learner-centered, where explanations are provided for different ideas and difficult concepts (Baeten et al.,2016;Paas & Kester, 2006). This result may also be due to the fact that the program has taken into account the feature of knowledge-centered, which is characterized by providing clear instructions and explanation of the tasks required of students, helping students to organize information, understanding the relationships between various topics, encouraging students to provide different answers to questions, and clarifying how to analyze sources of information for students, and finally allowing the use of different sources of information (Bransford et al.,2000 ;De Corte & Masui, 2004).

This result may also be due to the fact that the program has taken into account the feature of assessment-centered, as the assessment allowed students to choose the method of evaluation, choose the projects required of them, obtain immediate and sufficient feedback, and finally gave them the opportunity to ask questions to ensure their understanding of the topic (Glasgow and Hicks, 2003; Kotze, 2002).

In addition, the program allowed community-centered learning that made students feel comfortable asking questions from their teachers inside and outside the classroom, and allowing them to discuss ideas with their friends, as well as teachers walking around the classroom to provide guidance to students, and students listening to advice from their classmates study, as well as the learner sharing books with colleagues, helping them with their work, receiving help from colleagues, teamwork and further explaining the nature of PLEs (De Corte & Masui, 2004).

As ElAdl & Eissa (2019) assert, it is favorable to change the teaching and learning environment from that of teacher dominance (teacher-centered approach) into that of student autonomy (learner-centered learning approach). So, the educational environments that give students the opportunity to experience activities for sure motivate students to learn and succeed, as well as being creative thinker.

CONTRIBUTIONS

Theoretically, this research contributes to the body of knowledge in some aspects. The present study expanded the literature by revealing the effectiveness of an instructional program based on the principles of PLEs to improve motivation to learn among students with LD. Traditional classroom instructions fall short of providing an immediate learning environment, faster evaluations, and more engagement. In contrast, digital learning tools and technology fill this void.

CONCLUSION

Educators design PLEs, from classroom and e-learning environments to complete educational curricula, such as problem-based learning and competency-based learning. However, designing an educational environment that is well suited to reach modern education goals is not a guarantee of practical success. Implementation is crucial in determining the realistic characteristics of the learning environment that affect students' learning; Since educators other than designers often apply already designed learning environments, it is useful to study the concepts teachers have about learning and teaching. PLEs help develop learners' cognitive abilities by using specific tools of support called cognitive tools and learning scaffolding, which help learners in cognitive processes such as: planning the learning process, understanding data from experience, or preparing hypotheses. Through these tools, PLEs improve learners' cognitive power. They are also tools to enhance, support and facilitate the acquisition of knowledge and practice of skills, and they encourage students to participate in the challenges of the learning process offered by the learning environment.

Therefore, PLEs combine the advantages of active learning, constructivist learning, cooperative learning, case-based learning, as well as problem-based learning where they start teaching from what the student knows and can do, takes student motivation into account, and provides more feedback to students. It seeks to empower the student and focuses on competencies rather than knowledge and supports the use of examples and discussions. All this is done in an atmosphere full of care and attention of the teacher. Although modern information and communication technology is very suitable for implementing PLEs, this is not necessarily the case. Many attempts to use computer-based education and training programs or many smart education systems adhere to a more traditional concept of learning that focuses on the transfer and preservation of elements of knowledge and skills. On the other hand, the training in solving problems without relying on technological devices developed by Schoenfeld (1985) is an example of how to design PLEs that enable active, constructive and collaborative learning (van & Paas,2003).

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

The research is not without limitations. The sample used in this research was limited to students in grade 8 with LD in two middle schools in Kafr EL Sheikh Governorate. In that case, it is recommended to include students from other geographical area, grades or other disabilities, resulting in an in-depth analysis. It is needed to support the generalizability of the findings in this study by considering larger populations. Further research is needed to support the generalizability of the findings in this study by considering larger populations from different geographical areas.

REFERENCES

Ahmady, S., & Khani, H. (2022). The Development of the Framework of Effective Teaching-Learning in Clinical Education: A Meta-Synthesis Approach. *Education Research International*, *2022*, 1–12. https://doi.org/10.1155/2022/4751931

Albayrak, F. & Serin, N. (2022). The effect of task-based out-of-class activities on language learning processes to create a natural language environment in teaching Turkish to foreigners. *Psycho-Educational Research Reviews,* 11(1), 404–423. https://doi.org/10.52963/PERR_Biruni_V11.N1.26

American Psychiatric Association (2013) *Diagnostic and Statistical manual of mental disorders.* Washington DC, APA.

Baeten, M., Dochy, F., Struyven, K. et al. (2016). Student-centred learning environments: an investigation into student teachers' instructional preferences and approaches to learning. *Learning Environ Res* 19, 43–62. https://doi.org/10.1007/s10984-015-9190-5

Bransford, J., Brown, A., & Cocking, R. (2000). How People Learn: Brain, Mind, Experience, and School: Expanded Edition.

Camilleri, M. A., & Camilleri, A. C. (2021). The Acceptance of learning management systems and video conferencing technologies: Lessons learned from COVID-19. *Technology, Knowledge and Learning*. https://doi.org/10.1007/s10758-021-09561-y

Cilliers, E.(2021) Reflecting on social learning tools to enhance the teaching-learning experience of generation Z learners. *Front. Educ.* 5, 606533. https://doi.org/10.3389/feduc.2020.606533

De Corte, E. (1990). Towards powerful learning environments for the acquisition of problem solving skills. *European Journal of Psychology of Education*, 5(1),5–19. http://www.jstor.org/stable/23422222

De Corte, E. (1996). *Instructional psychology: Overview. In international encyclopedia of developmental and instructional Psychology*; De Corte, E., Weinert, F.E., Eds.; Wheatons: Oxford, UK, pp. 37–38.

De Corte, E. & Masui, C. (2004). The CLIA model. A framework for designing powerful learning environments for thinking and problem solving. European *Journal of Psychology of Education*, XIX(4), 365‑384. https://doi.org/10.1007/BF03173216

Eissa, M. (2012). The effects of advance graphic organizers strategy intervention on academic achievement, self efficacy, and motivation to learn social studies in learning disabled second year prep students. *Psycho-Educational Research Reviews*, 1(1), 11–21. Retrieved from https://www.perrjournal.com/index.php/perrjournal/article/view/395

Eissa, M. (2015). The Effectiveness of a Self Regulated Learning- Based Training Program on Improving Cognitive and Metacognitive EFL Reading Comprehension of 9th Graders with Reading Disabilities. *Psycho-Educational Research Reviews*, 4(3), 49–59. Retrieved from https://www.perrjournal.com/index.php/perrjournal/article/view/323

Eissa , M. (2018). Issues related to identification of children with specific learning disorders (SLDs): insights into DSM-5. *Psycho-Educational Research Reviews,* 7(1), 106–111. Retrieved from https://perrjournal.com/index.php/perrjournal/article/view/254

Eissa, M. & Mostafa, A. (2013). The Effects of Differentiated Instruction by Integrating Multiple Intelligences and Learning Styles on Solving Problems, Achievement In, and Attitudes Towards Math in Six Graders with Learning Disabilities in Cooperative Groups. *Psycho-Educational Research Reviews*, 2(2), 31–43. Retrieved from https://www.perrjournal.com/index.php/perrjournal/article/view/379

ElAdl, A. (2020). Effectiveness of a brain-based learning theory in developing mathematical skills and scientific thinking among students with learning disabilities in Oman. *Psycho-Educational Research Reviews*, 9(2), 67–74. Retrieved from https://perrjournal.com/index.php/perrjournal/article/view/132

ElAdl, A. & Eissa, M. (2019). Effect of a Brain-Based Learning Program on Working Memory and Academic Motivation among Tenth Grade Omanis Students. *Psycho-Educational Research Reviews*, 8(1), 42–50. Retrieved from https://www.perrjournal.com/index.php/perrjournal/article/view/191

ElBanna, A. (2019). The effects of multiple intelligences training program on improving reading comprehension skills of reading of the disabled primary six students. *Psycho-Educational Research Reviews*, 8(1), 64–69. Retrieved from https://www.perrjournal.com/index.php/perrjournal/article/view/194

Elhoweris, H. (2017). The Impact of Repeated Reading Intervention on Improving Reading Fluency and Comprehension of Emirati Students with Learning Disabilities. *Psycho-Educational Research Reviews*, *6*(2), 36–48. Retrieved from https://perrjournal.com/index.php/perrjournal/article/view/274

Glasgow, N. & Hicks, C. (2003). What successful teachers do: 91 research-based classroom strategies for new and veteran teachers? California: Thousand Oaks.

Gomaa, O. (2014). The effect of differentiating instruction using multiple intelligences on achievement in and attitudes towards science in middle school students with learning disabilities. *Psycho-Educational Research Reviews*, *3*(3), 110–118. Retrieved from https://perrjournal.com/index.php/perrjournal/article/view/351

Gomaa, O. M. K. (2015). The effect of reciprocal teaching intervention strategy on reading comprehension skills of 5th grade elementary school students with reading disabilities. *Psycho-Educational Research Reviews*, 4(2), 39–45. Retrieved from https://perrjournal.com/index.php/perrjournal/article/view/330

Hendi, W. (2015). The Effect of concept maps on reading comprehension skills of elementary school students with reading disabilities. Psycho-Educational Research Reviews, 4(2), 46–51. Retrieved from https://www.perrjournal.com/index.php/perrjournal/article/view/331

Johannesen, M., Mifsud, L., & Øgrim, L. (2019). Identifying social presence in student discussions on Facebook and canvas. *Technology, Knowledge and Learning*, 24(4), 641–657.

Kader, F. & Eissa, M. (2016). The effectiveness of story mapping on reading comprehension skills of children with ADHD. *Psycho-Educational Research Reviews*, 5(1), 3–9. Retrieved from https://perrjournal.com/index.php/perrjournal/article/view/312

Khalik, A. (2014). The effect of metacognitive strategy training on student mathematical problem solving process and contemplative thinking skills in primary school children with learning disabilities. *Psycho-Educational Research Reviews*, 3(2), 3–11. Retrieved from https://www.perrjournal.com/index.php/perrjournal/article/view/353

Könings, K. & van M. (2005). Towards more powerful learning environments through combining the perspectives of designers, teachers and students. *British Journal of Educational Psychology* 75: 645–660. https://doi.org/10.1348/000709905X43616.

Kotze, G. (2002). Issues related to adapting assessment practices. South African Journal of Education, 22(1),76-80.

Mohammed, M. (2014). The effect of differentiating instruction using multiple intelligences on improving reading comprehension of 5th graders with learning disabilities. *Psycho-Educational Research Reviews*, *3*(2), 12–20. Retrieved from https://perrjournal.com/index.php/perrjournal/article/view/354

Moreeng, B. & Toit, E. (2013). The powerful learning environment and history learners in the Free State Province. *Yesterday&Today,* 9, 45-66.

Mostafa, A. (2017). The effect of using multiple intelligences on some basic reading skills of first graders at-risk for reading disabilities. *Psycho-Educational Research Reviews*, 6(3), 109–116. Retrieved from https://perrjournal.com/index.php/perrjournal/article/view/267

Mostafa, A. (2017). The effects of advance graphic organizers strategy intervention on motivation to learn science in primary six students with learning disabilities. *Psycho-Educational Research Reviews*, *6*(3), 93–99. Retrieved from https://perrjournal.com/index.php/perrjournal/article/view/265

Muhammad, A. (2021). Social constructivist approach: opinions of history teachers at intermediate secondary schools *European Journal of Educational Research*, 10(3), 1423-1436. https://doi.org/10.12973/eu-jer.10.3.1423

Nassar, E. (2015). The effects of advance graphic organizers strategy intervention on improving reading comprehension of struggling readers in primary five. *Psycho-Educational Research Reviews*, 4(1), 25–30. Retrieved from https://perrjournal.com/index.php/perrjournal/article/view/336

Paas, F., & Kester, L. (2006). Learner and Information Characteristics in the Design of Powerful Learning Environments. *Applied Cognitive Psychology*, 20(3), 281–285. https://doi.org/10.1002/acp.1244

Pillutla, V. S., Tawfik, A. A., & Giabbanelli, P. J. (2020). Detecting the depth and progression of learning in massive open online courses by mining discussion data. *Technology, Knowledge and Learning*, 25(4), 881–898. https://doi.org/10.1007/s10758-020-09434-w

Placklé I, Könings K., Jacquet W, Libotton A, van Merriënboer J.& Engels, N. (2018). Students embracing change towards more powerful learning environments in vocational education. *Educational Studies*, 44(1), 26–44. https://doi.org/10.1080/03055698.2017.1331840

Placklé I, Könings K., Jacquet W, Libotton A, van Merriënboer J. & Engels, N. (2020). Powerful learning environments in secondary vocational education: towards a shared understanding. *European Journal of Teacher Education*, 43(2), 224–242. https://doi.org/10.1080/02619768.2019.1681965

Roos, L., Trasberg, K. &Kõiv, K. (2021). Characteristics of powerful learning environments in VET transition program for at-risk students: qualitative insights from teachers and support specialists implementing the program. *Empirical Res Voc Ed Train* 13, 19. https://doi.org/10.1186/s40461-021-00123-1

Schelfhout, W., Dochy, F., Janssens, S., Struyven, K., & Gielen, S. (2006). Towards an equilibrium model for creating powerful learning environments during teacher training internships. *European Journal of Teacher Education*, 29(4), 471‑503. https://doi.org/10.1080/02619760600944787

Sinakou, E.; Donche, V.; Boeve-de, J.& Van, P. (2019). Designing powerful learning environments in education for sustainable development: A conceptual framework. *Sustainability*, 11, 5994. https://doi.org/10.3390/su11215994

van Merriënboer, J. & Paas, F. (2003). Powerful Learning and the Many Faces of Instructional Design: Toward a Framework for the Design of Powerful Learning Environments. In Unravelling Basic Components and Dimensions of Powerful Learning Environments, edited by E. de Corte, L. Verschaffel, N. Entwistle, and J. J. G. van Merriënboer, 3–20. Oxford: Elsevier Science.

Winarti, A. & Putranta, H. (2022). Improving learners' metacognitive skills with self-regulated learning based problem-solving. *International Journal of Instruction*, *15*(1), 139- 154. https://doi.org/10.29333/iji.2022.1528a

Research Article

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The Mediating Role of Rumination and Emotion Regulation on the Relationship between Perceived Stress and Problematic Smartphone Use Among Adolescents

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Abstract

Smartphones have become the most commonly used Internet tool for young people. This study aims to explore the relationship between perceived stress and problematic smartphone use, as well as the mediating role of rumination and emotion regulation. 500 middle school students participated. This study employed random sampling method. SPSS macro PROCESS program was used to test the mediation effect. This study found that there is a significant positive correlation between perceived stress and problematic smartphone use among junior high school students. The mediation effect test results show that perceived stress can not only positively predict problematic smartphone use, but also indirectly and positively predict problematic smartphone use. This result reveals the relationship between rumination and emotional regulation. The level of individual rumination directly predicts emotions.

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INTRODUCTION

Smartphones have become the most commonly used Internet tool for young people (Fathalla, 2019). The benefits of the Internet and smartphones are unquestionable, but if smartphones are used inappropriately, it will cause safety problems. Problematic smartphone use has quickly become an important area of research for scholars. Excessive use of smartphones can lead to impaired daily life functions and bring adverse consequences. For example, excessive use late at night can lead to sleep problems, affected daily work and study (Mayerhofer et al., 2024), slow reaction speed (Zhang, & Yang, 2024) and increase in depression (Bouazza et al., 2023).

Studies have shown that adolescents who are exposed to more stressful events are more likely to fall into the Internet and cause problematic Internet use (Aziz et al., 2024; Xue et al., 2023). When faced with family conflicts, academic pressure and peer pressure, adolescents are more inclined to turn their attention to the Internet (Aziz et al., 2024; Chen et al., 2024; Saad, 2020), and expect to be released and relieved from the Internet. A few studies have jointly explored the impact of cognitive and emotional factors on problematic smartphone use. As indicated by Jeong &Bae's(2024) results, perceived stress was positively related to smartphone addiction. Rumination mediated the relationship between perceived stress and smartphone addiction.

The I-PACE model (the Interaction of Person-Affect-Cognition-Execution model) proposed by Brand et al. (2016) believes that personal characteristics, affective and cognitive responses, and individual executive function factors (Execution) will lead to the formation of Internet use problems. Specific Internet use disorders (such as Internet game addiction, Internet gambling addiction, Internet pornography addiction, Internet shopping addiction, or Internet social addiction) are considered to be the result of the interaction between inducing variables (such as neurobiological factors and psychological qualities), moderating variables (such as coping styles and Internet-related cognitive biases), and mediating variables (such as affective and cognitive responses). Internet use may bring us some kind of positive experience, which will strengthen our attention bias and craving for Internet use cues. This experience will also consolidate Internet-related cognitive biases and coping styles. All these consolidation mechanisms will make us repeat the behavior of social network use.

LITERATURE REVIEW

THE RELATIONSHIP BETWEEN PERCEIVED STRESS AND PROBLEMATIC SMARTPHONE USE

Perceived stress refers to the emotional experience of tension, anxiety, fear and other emotions generated through cognitive evaluation when an individual faces challenging and threatening situations (Attia et al., 2022). According to the Internet compensation theory and use gratification theory (Wei et al., 2024), individuals' motivation and behavior to use the Internet are induced by negative emotions, social anxiety and study pressure in life, and the Internet can provide the satisfaction, security and online social support that individuals need. Stress is significantly positively related to problematic smartphone use (Jiang & Zhang, 2024) Teenagers who experience more life stress are more likely to be addicted to mobile phones (Zhang et al., 2024).

Once an individual finds that they can get satisfaction from mobile phone network interaction, they will be more inclined to regard using mobile phones and the Internet as an effective coping method, causing the individual's brain to automatically adjust when dealing with stress and negative emotions. Initiate the method of turning to mobile phone networks to relieve discomfort and thereby become dependent on mobile phones (Lian et al., 2021). Some studies support this view and find that psychological distress and stress are related to problematic Internet use among adolescents (Anand et al., 2021; Cai et al., 2023; Mougharbel et al., 2023). Accordingly, hypothesis 1 is set forward:

H.1. Stress perception positively predicts problematic smartphone use among adolescents.

THE MEDIATING ROLE OF RUMINATION

Stressful life events have a significant positive prediction effect on rumination (Van Grieken et al., 2023). People go online because they want to relieve negative emotions caused by stressors specifically, ruminators may psychologically escape negative thoughts by playing games or visiting websites on their smartphones. Internet compensation theory has gained empirical support in explaining ruminants' excessive smartphone use (Benedetto et al., 2024).

Ruminists may turn to smartphones to relieve rumination by searching in large quantities for information related to the problem (KHOO et al., 2021). In order to support this view, the research found that in common People who ruminate are more likely to frequently use smartphones to send text messages (Şakiroğlu et al., 2017; Turan& Yılmaz,2024). Therefore, it is conceivable that ruminants will use smartphones to manage their ruminations, and smartphones may play a compensatory coping role. Accordingly, hypothesis 2 is set forward:

H.2. Rumination plays a mediating role between perceived stress and problematic smartphone use.

THE MEDIATING ROLE OF EMOTION REGULATION

The person-emotion-cognition-executive model (Brand et al., 2016) emphasizes that Internet use disorders are caused by the interaction between inducing factors (psychological traits, biological traits), moderating factors (coping styles, cognitive biases), mediating factors (emotions, cognitive reactions) and decreased executive function. Emotion regulation theory believes that there are two most commonly used emotion regulation strategies for individuals: cognitive reappraisal and expression suppression. Cognitive reappraisal is an individual's way of alleviating his or her negative emotions by changing his or her cognition of events. It is a proactive emotion regulation strategy; while expression suppression is an individual's effort to control his or her negative emotions and reduce the occurrence of emotional experiences, but in fact the emotions do not improve. It is a reactive emotion regulation strategy. The former is an adaptive strategy, while the latter is a non-adaptive strategy (Brand et al., 2016).

Studies have shown that expression suppression is associated with negative outcomes (Yan et al., 2022). Cognitive reappraisal is associated with positive outcomes (Pauw et al., 2022). When individuals suffer from stressful events in life for a long time and are unable to cope with them, they will experience negative emotions such as anxiety and depression, which will lead to difficulty in emotion regulation (Pauw et al., 2022). Stress positively predicts difficulty in emotion regulation (Zhou et al., 2024).

Adolescents facing stressful life events are more inclined to adopt maladaptive strategies (Kamel,2018), and the maladaptive strategy of expression inhibition is significantly positively correlated with problematic smartphone use (Saad & Kamel, 2020). An increasing number of studies have found that emotion regulation deficits are related to problematic social media use (Saad,2020). Accordingly, hypothesis 3 is set forward:

H.3. Emotion regulation plays a mediating role between perceived stress and problematic smartphone use.

MEDIATING EFFECT OF RUMINATION AND EMOTION REGULATION

Rumination refers to the phenomenon that individuals constantly think about the causes of negative emotions and the possible serious consequences, but do not take positive and effective measures to solve the problem (Joubert et al., 2022). Current research on rumination is closely related to negative emotions, such as anxiety and depression. According to cognitive emotion regulation strategies, individuals are more inclined to adopt non-adaptive strategies when they are lost in thought (Zhou & Zhou, 2024).

When they adopt expression inhibition strategies to adjust their emotions, they are prone to negative emotions such as anxiety and depression, and negative cognitive emotions can cause individuals to become dependent on mobile phones (Cui et al., 2024). Information processing theory believes that the control, retention and processing of information will continuously consume individuals' limited information resources, thereby affecting their response and decision-making abilities (Lai et al., 2022).

When individuals fall into rumination and adopt emotion regulation strategies, they need to consume their own psychological resources to cope with other activities. Insufficient psychological resources and lack of self-regulation and control ability lead to irrational decisions and negative coping (Zagaria et al., 2023). Smartphones and the Internet are the "best" coping methods for individuals. Other studies have found that rumination can positively predict emotional exhaustion (Liu, 2024). Negative stress life events induce individuals to have rumination, and rumination will shift the individual's attention to negative emotions and cognition, leading to their emotional coping style regulation (Liu, 2024). Studies have found that the frequency of use of expression suppression strategies significantly predicts college students' mobile phone dependence (Zhang & Jiang,2017). Accordingly, hypothesis 4 is set forward:

H.4.: Rumination and emotion regulation play a chain mediating role in the mechanism of the influence of perceived stress on problematic smartphone use.

Thus, this study intends to explore the relationship between perceived stress and problematic smartphone use, as well as the mediating role of rumination and emotion regulation.

METHODS

SAMPLE

Random sampling was used to select middle school students from four middle schools in Nasr City, Egypt. 600 questionnaires were distributed. After eliminating invalid questionnaires, 500 valid questionnaires were collected, and the effective recovery rate reached 83.3%. The age of the subjects was between 13 and 15 years old. The sample included 280 boys and 220 girls; 100 were in the first grade, 300 were in the second grade, and 100 were in the third grade.

DATA COLLECTION INSTRUMENTS

The Arabic version of the Cohen perceived stress scale (Ali et al., 2021). İt is a 10- item scale. Responses come at a 5-point response scale (0 = never, 1 = almost never, 2 = sometimes, 3 = fairly often, 4 = very often). A total score of the PPS-10 is obtained by summing up all item scores. Higher scores denote higher levels of perceived stress. The scale has internal reliability of r=. 92 and test-retest reliability of .78.

Rumination scale (Marchetti et al., 2018). It is an 8- item scale. The scale used a 4-point Likert-type scale, ranging from 1 (almost never) to 4 (almost always). In this study, the internal consistency coefficient of the scale was 0.92. A back translation was performed by a bilingual Arabic-English person. The translated English version, when compared to the original one, proved to be semantically equivalent.

The Arabic version of Cognitive Emotion Regulation Questionnaire (Saad& Kamel, 2020). This study adopted the positive reappraisal from this scale. It has 8 items. In this study, the internal consistency coefficient of the subscale was 0.92.

The Arabic version of Smartphone Addiction Scale (Fathalla, 2019). It is a 10 items with a 6-point Likert scale from 1 = strongly disagree, 6 = strongly agree. Total scores typically range from 10 –60, with higher score indicating Problematic Smartphone Usage. In this study, the internal consistency coefficient of the subscale was 0.90.

RESULTS

DESCRIPTIVE STATISTICS ANALYSIS

As shown in Table 1, perceived stress is significantly and positively correlated with rumination, emotional regulation (expressive suppression), and problematic smartphone use. Rumination, emotional regulation (expressive suppression), and problematic smartphone use are significantly related. There is a significant positive correlation between emotional regulation (expressive suppression) and problematic smartphone use. There is a significant negative correlation between perceived stress and emotional regulation (cognitive reappraisal). Emotion regulation (cognitive reappraisal) was not related to problematic smartphones.

Table 1. *Descriptive statistics of each variable and correlation matrix*

Variable	M	S D	1	2	3	4	5
1. Perceived stress	3.18	1.02	-				
2. Rumination	3.00	1.05		-			
3. Cognitive Reappraisal	3.02	1.00	—0.17	0.19	-		
4. Expression inhibition	3.10	1.01	0.39	0.36	0.30	-	
5. Problematic smartphone use	3.11	1.03	0.37	0.40	0.13	0.41	-

Note: n = 500. p < 0.01.

CHAIN MEDIATION MODEL TEST

As can be seen from Table 2, the model fitting index RMSEA = 0 09, CFI = 0 94, TLI = 0 92, SR MR = 0 04, Data versus model The fit is good. Perceived stress significantly and positively predicts problematic smartphone use among adolescents (β = 0 61, t = 8 45, p < 0 001).Thus, hypothesis 1 is supported. Secondly, the mediating effect of rumination on perceived stress and problematic smartphone use was analyzed. The results found that the model fitting index RMSEA = 0 08, CFI = 0 94, TLI = 0 92, SRMR = 0 0 4. The data fits the model well. Bias correction The quantile Bootstrap mediation effect significance test results show that the 95% confidence interval of the mediating effect of rumination on stress perception and problematic smartphones is [0. 28, 0. 54], the interval does not include 0, and the mediating effect is significant, that is, rumination thinking is the mediating variable between perceived stress and problematic smartphone use. Thus, hypothesis is supported. The mediating effect of emotion regulation (expression suppression) between perceived stress and problematic smartphone use was analyzed again. The results found that the model fitting index RMSEA = 0 08, CFI = 0 94, TLI = 0 92, SRMR = 0 04.

The results of the bias-corrected percentile Bootstrap mediation effect significance test show that the 95% interval of the mediating effect of emotion regulation (expression suppression) on perceived stress and problematic smartphone use is [0 27, 0 49], and the interval Excluding 0, the mediating effect is significant, that is, emotion regulation (expression suppression) is the mediating variable between perceived stress and problematic smartphone use. Hypothesis 3 is supported.

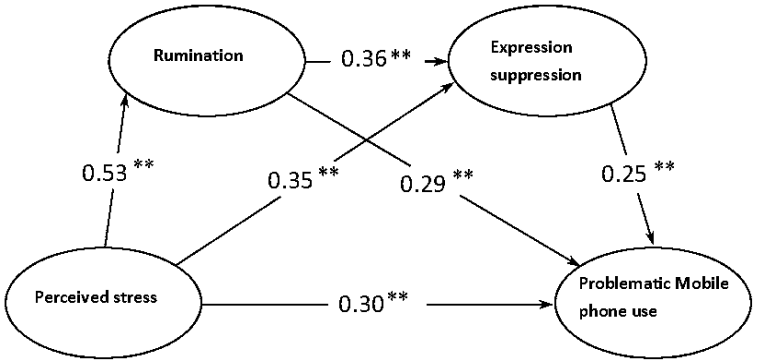
Finally, the chain mediation model is analyzed. Model fitting index RMSEA = 0 08, CFI = 0 94, TLI = 0 92, SRMR = 0 04. Figure 1 shows that perceived stress can significantly and positively predict rumination (β = 0.53, t=18.33, p<0 001). Rumination thinking can significantly and positively predict emotion regulation (expression suppression) (β = 0.36, t = 3. 18, p<0 001), and emotion regulation (expression suppression) can significantly and positively predict problematic smartphone use (β = 0.25, t = 3. 88, p <0 001). Perceived stress can significantly and positively predict emotion regulation (expressive suppression) (β = 0. 35, t = 3. 19, p <0 001) . Rumination can positively predict problematic smartphone use (β = 0.29, t = 3. 87, p < 0 001). In addition, the direct effect of perceived stress on problematic smartphone use is still significant (β = 0.30, t = 4. 13, p < 0 001). Bias correction percentage Bootstrap significance test of mediation effect and mediation effect results. The effect value and effect size are shown in Table 2. The 95% confidence interval of the chain

mediation effect of rumination and emotion regulation (expressive suppression) between stress perception and problematic smartphone use is [0. 01, 0 .09], the interval does not include 0, the chain mediation effect is significant, hypothesis 4 is supported.

Table 2 *Analysis of the Effects of Perceived Stress on Problematic Smartphone Use*

Path	Effect	Boot SE	95%CI	Effect size (%)
Perceived stress → rumination → problematic smartphone use	0.17	0.5	[0.13- 0.33]	26.77
Perceived stress → Expressive suppression → Problematic smartphone use	0.08	0.4	[0.8-0.28]	13.22
Perceived stress → Rumination → Expressive inhibition → Problematic smartphone use	0.4	0.2	[0.02-0.18]	8.20
Direct effect	0.30	0.5	[0.01-0.07]	46.17
Indirect effect	0.28	0.6	[0.23-0.36]	49.19
Total effect	0.54	0.8	[0.40-0.70]	

Figure 1 *Results of the Chain Mediation Effect Model Between Perceived Stress and Problematic Smartphone Use*



(Note: p<0.01)

DISCUSSION

The aim of this study was to explore the relationship between perceived stress and problematic smartphone use, as well as the mediating role of rumination and emotion regulation. This study found that there is a significant positive correlation between perceived stress and problematic smartphone use among junior high school students. The mediation effect test results show that perceived stress can not only positively predict problematic smartphone use, but also indirectly and positively predict problematic smartphone use.

Individuals with high perceived stress are more likely to engage in problematic smartphone use, which is consistent with prior studies (e.g. Yang et al., 2021; Zhang et al., 2022), and supports the Internet compensation theory (Kardefelt-Winther, 2014), indicating that when individuals experience negative life events, negative emotions, and stress, they tend to seek emotional and social support on the Internet to relieve their own stress and loneliness.

Adolescents are in adolescence and are susceptible to stressful events in life. When they face pressure in adapting to a new environment, interpersonal relationships, academics, and society and are unable to cope effectively, they will look for resources on the Internet to relieve discomfort (Li et al., 2022). The inclusiveness and convenience of mobile phones have made them the best choice for relieving stress. The prevalence of mobile phone use and the existence of various social media software and virtual games have made mobile phones an increasingly popular way for teenagers to

relieve stress. Over time, teenagers will become addicted to online social networking and develop problematic smartphone use.

The structural equation model found that in addition to the direct effect of perceived stress on problematic smartphone use, rumination also had an indirect effect on problematic smartphone use, with the indirect effect reaching 27.82%. Specifically, perceived stress positively predicted rumination, and rumination also positively predicted problematic smartphone use. This is consistent with previous research results (Feng & Dou, 2024). The stress response model of rumination believes (Robinson & Alloy, 2003) that individuals who have experienced stressful events are more likely to fall into rumination. This causes individuals to shift their attention from negative events to their mobile phones, leading to problematic mobile phone use.

Perceived stress has a negative impact on problematic smartphone use through emotion regulation (expressive suppression). Specifically, stress perception positively predicts emotion regulation. At the same time, emotion regulation (expressive suppression) also positively predicts problematic smartphone use. When faced with pressure, students who are not good at expressing their thoughts may turn their negative emotions to their mobile phones. Cognitive reappraisal is a positive emotion regulation strategy. Adolescents who are good at using cognitive reappraisal strategies will be more proactive in thinking about and solving problems. , look optimistically at some sudden crises and adverse events in life. Previous research has also shown that cognitive reappraisal is related to positive outcomes (Shumet al., 2024), and expression inhibition is related to negative outcomes.

CONCLUSION

This study verified the hypothesis that perceived stress has an indirect effect on problematic smartphone use through the chain mediation effect of rumination and emotion regulation. This may reflect the role of rumination and emotion regulation in the relationship between perceived stress and problematic smartphone use in adolescents. Rumination plays an important role. Long-term exposure to stress can cause adolescents to develop negative emotions of anxiety and depression. This result reveals the relationship between rumination and emotional regulation. The level of individual rumination directly predicts emotions. Regulatory strategies, rumination and expression inhibition are significantly positively correlated. According to the stress response model and the Internet compensation theory, long-term exposure to stress and other stressful events will trigger rumination in individuals. Individuals who adopt expression suppression strategies to regulate their emotions will transfer their negative emotions to the mobile phone network and gain satisfaction from it, which will lead to problematic smartphone use.

LIMITATIONS

This study is not without limitations. The most important of which is that it is a cross-sectional study, which makes it difficult to reveal the impact of adolescents' perceived stress regarding the effects of problematic smartphone use, future longitudinal studies with large samples should be conducted to explore the influencing factors and mechanisms of problematic smartphone use among adolescents. Gender differences were not addressed. Future research should consider the differences based on gender.

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REFERENCES

Ali, A. M., Hendawy, A. O., Ahmad, O., Sabbah, H. A., Smail, L., & Kunugi, H. (2021). The Arabic version of the Cohen Perceived stress scale: Factorial validity and measurement invariance. *Brain Sciences*, *11*(4), 419. https://doi.org/10.3390/brainsci11040419

Van Grieken, A., Luo, J., Horrevorts, E. M. B., Mieloo, C. L., Kruizinga, I., Bannink, R., & Raat, H. (2023). The longitudinal association between potential stressful life events and the risk of psychosocial problems in 3-year-old children. *Frontiers in Public Health*, *11*. https://doi.org/10.3389/fpubh.2023.1100261

Anand, N., Sharma, M. K., & Marimuthu, P. (2021). Problematic Internet Use and its Association with Psychological Stress among Adolescents. *Indian Journal of Social Psychiatry*, *37*(3), 269–274. https://doi.org/10.4103/ijsp.ijsp_225_21

Attia, M., Ibrahim, F. A., Elsady, M. A., Khorkhash, M. K., Rizk, M. A., Shah, J., & Amer, S. A. (2022). Cognitive, emotional, physical, and behavioral stress-related symptoms and coping strategies among university students during the third wave of COVID-19 pandemic. *Frontiers in Psychiatry*, *13*. https://doi.org/10.3389/fpsyt.2022.933981

Aziz, M., Chemnad, K., Al-Harahsheh, S., Abdelmoneium, A. O., Baghdady, A., & Ali, R. (2024). Depression, stress, and anxiety versus internet addiction in early and middle adolescent groups: the mediating roles of family and school environments. *BMC Psychology*, *12*(1). https://doi.org/10.1186/s40359-024-01659-z

Benedetto, L., Rollo, S., Cafeo, A., Di Rosa, G., Pino, R., Gagliano, A., Germanò, E., & Ingrassia, M. (2024). Emotional and Behavioural Factors Predisposing to Internet Addiction: The Smartphone Distraction among Italian High School Students. *International Journal of Environmental Research and Public Health*, *21*(4), 386. https://doi.org/10.3390/ijerph21040386

Bouazza, S., Abbouyi, S., Kinany, S. E., Rhazi, K. E., & Zarrouq, B. (2023). Association between Problematic Use of Smartphones and Mental Health in the Middle East and North Africa (MENA) Region: A Systematic Review. *International Journal of Environmental Research and Public Health*, *20*(4), 2891. https://doi.org/10.3390/ijerph20042891

Brand, M., Young, K. S., Laier, C., Wölfling, K., & Potenza, M. N. (2016). Integrating psychological and neurobiological considerations regarding the development and maintenance of specific Internet-use disorders: An Interaction of Person-Affect-Cognition-Execution (I-PACE) model. *Neuroscience & Biobehavioral Reviews*, *71*, 252–266. https://doi.org/10.1016/j.neubiorev.2016.08.033

Cai, Z., Mao, P., Wang, Z., Wang, D., He, J., & Fan, X. (2023). Associations between problematic internet use and mental health Outcomes of Students: A Meta-analytic review. *Adolescent Research Review*, *8*(1), 45–62. https://doi.org/10.1007/s40894-022-00201-9

Chen, J., Li, S., & Nie, Y. (2024). Parent-adolescent conflict and problematic internet use among Chinese adolescents: the mediating role of depression and the moderating role of school climate. *BMC Psychology*, *12*(1). https://doi.org/10.1186/s40359-024-01781-y

Cui, M., Wang, S., Gao, Y., Hao, Y., & Dai, H. (2024). The effect of emotion regulation strategies on nomophobia in college students: The masking role of resilience. *Heliyon*, *10*(9), e30075. https://doi.org/10.1016/j.heliyon.2024.e30075

Fathalla, M. M. (2019). Egyptian Validation of Smartphone Addiction Scale Short Version for Adolescents (SAS-SV). *Psycho-Educational Research Reviews*, *8*(3), 7–10. Retrieved from https://www.perrjournal.com/index.php/perrjournal/article/view/149

Feng, B., & Dou, G. (2024). Depression and smartphone addiction among college students: The Mediating effect of emotional exhaustion. *ALPHA PSYCHIATRY, 25*(2), 269-276. https://doi.org/10.5152/alphapsychiatry.2024.231496

Jeong, J., & Bae, S. (2024). The relationship between perceived stress and smartphone addiction: the mediating effect of rumination and the mediated moderating effect of mindfulness. *Psychiatry Investigation*, *21*(4), 340–351. https://doi.org/10.30773/pi.2022.0288

Jiang, S., & Zhang, L. (2024). Perceived stress of COVID-19 pandemic and problematic mobile phone use during quarantine conditions among Chinese adolescents: a mediated moderation model. *Frontiers in Psychology*, *15*. https://doi.org/10.3389/fpsyg.2024.1333869

Joubert, A. E., Moulds, M. L., Werner-Seidler, A., Sharrock, M., Popovic, B., & Newby, J. M. (2022). Understanding the experience of rumination and worry: A descriptive qualitative survey study. *British Journal of Clinical Psychology*, *61*(4), 929–946. https://doi.org/10.1111/bjc.12367

Kamel, O. (2018). The Relationship between Adaptive / Maladaptive Cognitive Emotion Regulation Strategies and Cognitive Test Anxiety among University Students. *Psycho-Educational Research Reviews*, *7*(1), 100-105. Retrieved from https://perrjournal.com/index.php/perrjournal/article/view/253

Khoo, S. S., & Yang, H. (2021). Mental disengagement mediates the effect of rumination on smartphone use: A latent growth curve analysis. *Computers in Human Behavior*, *120*, 106757. https://doi.org/10.1016/j.chb.2021.106757

Kardefelt-Winther, D. (2014). A conceptual and methodological critique of internet addiction research: Towards a model of compensatory internet use. *Computers in Human Behavior, 31,* 351–354. https://doi.org/10.1016/j.chb.2013.10.059

Lai, S. A., Pang, K. Y., Siau, C. S., Chan, C. M. H., Tan, Y. K., Ooi, P. B., Ridzuan, M. I. B. M., & Ho, M. C. (2022). Social support as a mediator in the relationship between perceived stress and nomophobia: An Investigation among Malaysian university students during the COVID-19 pandemic. *Current Psychology*, *42*(25), 21659–21666. https://doi.org/10.1007/s12144-022-03256-y

Li, Y., Xu, Z., Hao, Y., Xiao, P., & Liu, J. (2022). Psychosocial impacts of mobile game on K12 students and trend exploration for future educational mobile games. *Frontiers in Education*, *7*. https://doi.org/10.3389/feduc.2022.843090

Lian, S., Sun, X., Niu, G., Yang, X., Zhou, Z., & Yang, C. (2020). Mobile phone addiction and psychological distress among Chinese adolescents: The mediating role of rumination and moderating role of the capacity to be alone. *Journal of Affective Disorders*, *279*, 701–710. https://doi.org/10.1016/j.jad.2020.10.005

Liu,M.(2024) *The relationship between perceived stress, rumination, mobile phone addiction and academic achievement, and the protective effect of mental health literacy: A moderated chain mediation effect in the context of the Czech Republic and China*. Ústav pedagogiky a sociálních studií

Marchetti, I., Mor, N., Chiorri, C., & Koster, E. H. W. (2018). The Brief State Rumination Inventory (BSRI): validation and psychometric evaluation. *Cognitive Therapy and Research*, *42*(4), 447–460. https://doi.org/10.1007/s10608-018-9901-1

Mayerhofer, D., Haider, K., Amon, M., Gächter, A., O'Rourke, T., Dale, R., Humer, E., Probst, T., & Pieh, C. (2024). The Association between Problematic Smartphone Use and Mental Health in Austrian Adolescents and Young Adults. *Healthcare*, *12*(6), 600. https://doi.org/10.3390/healthcare12060600

Mougharbel, F., Chaput, J., Sampasa-Kanyinga, H., Hamilton, H. A., Colman, I., Leatherdale, S. T., & Goldfield, G. S. (2023). Heavy social media use and psychological distress among adolescents: the moderating role of sex, age, and parental support. *Frontiers in Public Health*, *11*. https://doi.org/10.3389/fpubh.2023.1190390

Pauw, L. S., Medland, H., Paling, S. J., Moeck, E. K., Greenaway, K. H., Kalokerinos, E. K., Hinton, J. D. X., Hollenstein, T., & Koval, P. (2022). Social Support Predicts Differential Use, but not Differential Effectiveness, of Expressive Suppression and Social Sharing in Daily Life. *Affective Science*, *3*(3), 641–652. https://doi.org/10.1007/s42761-022-00123-8

Robinson, L. A., & Alloy, L. B. (2003). Negative Cognitive Styles and Stress-Reactive Rumination Interact to Predict Depression: A Prospective Study. *Cognitive Therapy and Research, 27*, 275-292. http://dx.doi.org/10.1023/A:1023914416469

Saad, M. A. E. (2020). Self-Regulated Learning and Academic Procrastination as Predictors of Smartphone Addiction among Second Year-Middle School Learning Disabled Students. *Revista Amazonia Investiga*, *9*(26), 236–243. https://doi.org/10.34069/ai/2020.26.02.27

Saad, M. & Kamel , O. (2020). Arabic Adaptation of Adolescents Version of the Cognitive Emotion Regulation Questionnaire: Validity and Reliability. *Psycho-Educational Research Reviews*, *9*(1), 61–65. Retrieved from https://perrjournal.com/index.php/perrjournal/article/view/142

Şakiroğlu, M. ., Gülada, G., Uğurcan, S., Kara, N., & Gandur, T. (2017). The Mediator Effect of Mindfulness Awareness on The Relationship Between Nomophobia and Academic University Adjustment Levels in College Students. *Psycho-Educational Research Reviews*, *6*(3), 69–79. Retrieved from https://perrjournal.com/index.php/perrjournal/article/view/263

Shum, C., Dockray, S., & McMahon, J. (2024). The Relationship between Cognitive Reappraisal and Psychological Well-Being During Early Adolescence: A scoping review. *The Journal of Early Adolescence*, *45*(1), 104–133. https://doi.org/10.1177/02724316241231918

Turan, Z., & Yılmaz, R. M. (2024). Do personality traits influence nomophobia? An investigation of the Big five personality traits and nomophobia levels in university students. Psycho-Educational Research Reviews, 13(1). https://doi.org/10.52963/PERR_Biruni_V13.N1.03

Wei, D., Chan, L., Du, N., Hu, X., & Huang, Y. (2024). Gratification and its associations with problematic internet use: A systematic review and meta-analysis using Use and Gratification theory. *Addictive Behaviors*, *155*, 108044. https://doi.org/10.1016/j.addbeh.2024.108044

Xue, Y., Xue, B., Zheng, X., Shi, L., Liang, P., Xiao, S., Dong, F., Zhang, J., Chen, Y., Liu, Y., Qin, Z., & Zhang, C. (2023). Associations between internet addiction and psychological problems among adolescents: description and possible explanations. *Frontiers in Psychology*, *14*. https://doi.org/10.3389/fpsyg.2023.1097331

Yan, C., Ding, Q., Wang, Y., Wu, M., Gao, T., & Liu, X. (2022). The effect of cognitive reappraisal and expression suppression on sadness and the recognition of sad scenes: An event-related potential study. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.935007

Yang, H., Liu, B., & Fang, J. (2021). Stress and problematic smartphone use severity: smartphone use frequency and fear of missing out as mediators. *Frontiers in Psychiatry*, *12*. https://doi.org/10.3389/fpsyt.2021.659288

Zagaria, A., Vacca, M., Cerolini, S., Terrasi, M., Bacaro, V., Ballesio, A., Baglioni, C., Spinhoven, P., & Lombardo, C. (2023). Differential Associations of Cognitive Emotion Regulation Strategies with Depression, Anxiety, and Insomnia in Adolescence and Early Adulthood. *International Journal of Environmental Research and Public Health*, *20*(10), 5857. https://doi.org/10.3390/ijerph20105857

Zhang, Y., Han, M., Lian, S., Cao, X., & Yan, L. (2024). How and when is academic stress associated with mobile phone addiction? The roles of psychological distress, peer alienation and rumination. *PLoS ONE*, *19*(2), e0293094. https://doi.org/10.1371/journal.pone.0293094

Zhang, J., & Jiang, Y. (2017). Study on the effect of college students' emotion regulation strategies on interpersonal distress and mobile phone addiction. *Modern Preventive Medicine, 44*(18), 3356-3359.

Zhang, L., & Yang, B. (2024). Aggressiveness mediates the relationship between self-esteem and problematic smartphone use. *Social Behavior and Personality an International Journal*, *52*(5), 13019E-13028E. https://doi.org/10.2224/sbp.13019

Zhou, L., Qiao, C., Huang, J., Lin, J., Zhang, H., Xie, J., Yuan, Y., & Hu, C. (2024). The impact of recent life events, internalizing symptoms, and emotion regulation on the Severity of Non-Suicidal Self-Injury in Adolescents: A Mediation analysis. *Neuropsychiatric Disease and Treatment*, *Volume 20*, 415–428. https://doi.org/10.2147/ndt.s444729

Zhou, Y., & Zhou, Y. (2024). Non-adaptive cognitive emotion regulation mediates the relationship between disease uncertainty and acute stress disorder in patients with ischaemic stroke. *Frontiers in Psychiatry*, *15*. https://doi.org/10.3389/fpsyt.2024.1319848

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Parent-Child Attachment and Middle School Students' Depression: The Mediating Role of Intolerance of Uncertainty and Moderation of Emotion Regulation

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Abstract

This study aims to investigate the mediating role of Intolerance of uncertainty and moderating role of emotional regulation in the effect of parent-child attachment on middle school students' depression. A total of 450 questionnaires were distributed, and 400 valid questionnaires were collected, with an effective rate of 88.8%. Mplus7.4 was used to test for common method bias, SPSS 25.0 was used to perform descriptive statistics, reliability analysis, and correlation analysis on the data, and Model 4 in the SPSS macro PROCESS program was used to test the mediation effect, and Model 14 was used to test the moderation effect. The results show that intolerance of uncertainty partially mediates the relationship between parent-child attachment and students' depression. Results show that emotion regulation plays a moderating role in the relationship between intolerance of uncertainty and depression.

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INTRODUCTION

Depression is a common mental health problem during this period, mainly manifested by low mood, slow thinking, decreased interest, physical discomfort (Dugyala& Poyrazli, 2021). Adolescent depression has become a mental health problem that cannot be ignored. The family is the soil for adolescents to learn and grow, and has an important impact on the mental health development of adolescents. Parent-child attachment is a special emotional bond established between a child and the primary caregiver (Ali et al., 2021).

According to attachment theory, a safe and warm parent-child relationship is crucial to the mental health of adolescents (Ferreira et al., 2024). Some studies have shown that insecure parent-child attachment between parents and children may be one of the main causes of depression in adolescents, and adolescents with secure attachment are less at risk of developing depressive symptoms (Spruit et al., 2020; Iwanski et al., 2021). These research results illustrate that high-quality parent-child attachment is one of the predictors of depression in adolescents.

In addition to family environmental factors, adolescent depression is also affected by individual factors (Zhou et al., 2021). Incorrect cognitive evaluation of life events in adolescents is also a major cause of depression. Intolerance of uncertainty reflects an individual's cognitive bias in perceiving, interpreting, and reacting to uncertain situations or events (Carnahan et al., 2022). Prior research has confirmed that intolerance of uncertainty is significantly related to depression and can predict the level of depression in adolescents (Andrews et al., 2023).

Intolerance of uncertainty is also related to individual attachment styles. Research has found that individuals who have experienced secure attachment in early childhood show more active exploration characteristics in the face of uncertain environments and are less intolerant of uncertainty; conversely, individuals who have experienced insecure attachment are less able to tolerate uncertainty in uncertain environments. Being more in a passive state, tending to view uncertainty as stress, their intolerance of uncertainty is higher (Yildiz & Iskender, 2021).

In a longitudinal study, Zdebik et al. (2018) found that ambivalent and disorganized attachment styles are risk factors for individuals to develop high intolerance of uncertainty, and the findings indicate that these insecure attachment styles in childhood can predict individual Intolerable levels of uncertainty in adulthood 15 years later.

Emotion regulation refers to an individual's ability to identify and adjust emotion regulation strategies to adapt to specific situational needs (Aydın & Ünlü Kaynakçı, 2022; Specker et al., 2024). This ability to flexibly choose strategies can help individuals release negative emotions to achieve the purpose of readaptation (Kamel,2018; Saad & Omaima, 2020). Studies have found that individuals with high emotion regulation can better cope with stress (Galatzer-Levy et al., 2012) and reduce the clinical manifestations of most depressive symptoms (Gao et al., 2013), while people with impaired emotion regulation show higher levels of depression (Chen & Bonanno, 2021).

Emotion regulation can not only enable individuals to reduce negative emotions in response to stress challenges, but also protect individuals when risk factors appear. For example, Bonanno et al. (2011) found that college students with high flexibility had lower levels of stress after trauma exposure. In contrast, college students with low flexibility were more stressed under conditions of high trauma exposure. Individual differences in cognition have different effects on emotion regulation. According to uncertainty reinforcement theory, individuals who cannot tolerate higher levels of uncertainty will regard upcoming events as stressful and negative, and have stronger unpleasant emotions. At the same time, they tend to adopt maladaptive strategies, such as avoidance and withdrawal, to avoid or control their emotional experiences (Kamel, 2018).

This extreme emotional feeling and limited regulatory ability reflect that individuals with high intolerance to uncertainty cannot regulate emotions adaptively, that is, they have poor ability to flexibly choose strategies according to the situation. Zhang (2019) found that intolerance to uncertainty can significantly negatively predict adults' emotion regulation, which in turn affects the negative emotions they experience in subsequent tasks. It can be inferred that individuals with high emotion regulation can flexibly choose and adjust strategies according to different situations, and they have relatively less depression caused by intolerance to uncertainty; while individuals with low emotion regulation, because they cannot flexibly choose effective regulation strategies, they may cause more depression due to intolerance to uncertainty.

Based on the above research, this study aims to investigate the mediating role of Intolerance of uncertainty and moderating role of emotional regulation in the effect of parent-child attachment on middle school students' depression.

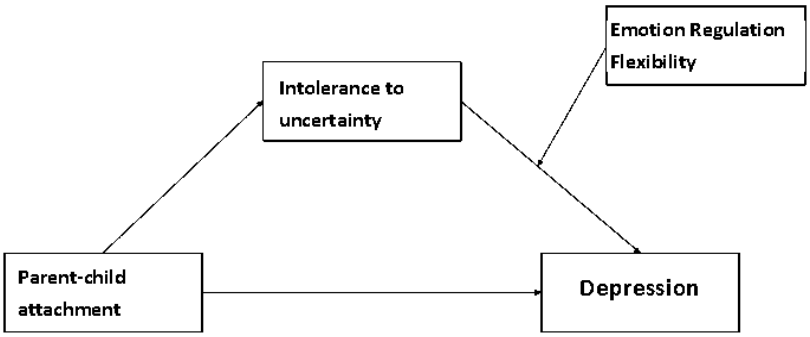
This study constructed a moderated mediation model to examine the impact of parent-child attachment on adolescent depression, as well as the mediating role of intolerance of uncertainty and the moderating role of emotion regulation (See Figure 1).

HYPOTHESES

H1: Intolerance to uncertainty mediates the relationship between parent-child attachment and adolescent depression.

H2: Emotion regulation moderates the relationship between intolerance to uncertainty and adolescent depression.

Figure 1. *Proposed Model for The Impact of Parent-Child Attachment On Students Depression*



METHODS

SAMPLE

A random sampling method was adopted, and paper questionnaires were distributed in 3 middle schools in Cairo City. A total of 450 questionnaires were distributed, and 400 valid questionnaires were collected, with an effective rate of 88.8%. Students were aged between 13 and 15 years old (M = 14.00, SD = 1.60). They were in middle school. All speak Arabic language, with normal IQ. Among them, there were 180 boys (45%) and 220 girls (55%) (See Table 1).

Table1. *Demographic Characteristics of Participants in the Study*

	Variable	N	%
Gender	Male	180	45
	Female	220	55
Parent Age	25-29	200	50
	30-35	120	30
	36-40	80	20
Education status	Primary school	100	25
	Middle school	100	25
	Graduate	200	50
Number of siblings	1	100	25
	2	80	20
	3	120	30
	more than 3	100	25

MEASUREMENT TOOLS

Parent-Child Attachment Scale (Yin et al., 2021). This scale encompassed three sub-scales of mother-child attachment, father-child attachment, and peer attachment. Each sub-scale contained 10 questions measuring three dimensions (trust, communication, and alienation). A five-point scale from 1 (never) to 5 (always) was employed. Higher scores indicated the higher quality of attachment. Two subscales of mother-child attachment and father-child attachment were selected. The Scale was translated into Arabic. The translation was performed independently by two assistant professors in English department. The two translations were compared. Subsequently, a third assistant professor in English department translated the Arabic version back into English to confirm equivalence with the original. The scale has internal reliability of r=. 91 and test-retest reliability of .75.

Intolerance of uncertainty questionnaire (Tezi, 2022). The scale is a self-report 5-point Likert scale for adults ("1" is not suitable for me at all, "2" is slightly suitable for me, "3" is somewhat suitable for me, "4" is very suitable for me and "5" is completely suitable for me). It is a suitable scale. Item 1 of the scale is reverse coded. The total score that can be obtained from the scale varies between 12 and 60. Higher scores indicate higher intolerance of uncertainty. The internal consistency and validity and reliability of the Intolerance of Uncertainty Scale, which consists of 12 items, have been demonstrated. The scale has internal reliability of r=. 93 and test-retest reliability of .78.

Emotion Regulation Questionnaire (Huang et al., 2014). The scale has 10 items, divided into two dimensions: evaluation flexibility and expression flexibility. A 7-point scoring system is used, and the higher the total score, the better the emotion regulation. The Scale was translated into Arabic. The translation was performed independently by two assistant professors in English department. The two translations were compared. Subsequently, a third assistant professor in English department translated the Arabic version back into English to confirm equivalence with the original. The Cronbach's α coefficient of the scale in this study is 0.90.

Depression scale: The Center for Epidemiological Survey Depression Scale (CES-D; Radloff (1977) was used to measure the depression of adolescents. The scale is a single dimension with 20 items and a 4-point scoring system to assess the frequency of depression in the individual "in the past week". Some items were reverse-scored and added to other items to obtain the total score of the scale. The higher the total score, the higher the degree of depression. The Cronbach's α coefficient of the scale in this study was 0.90.

DATA ANALYSIS

Mplus7.4 was used to test for common method bias, SPSS 25.0 was used to perform descriptive statistics, reliability analysis, and correlation analysis on the data, and Model 4 in the SPSS macro PROCESS program (Hayes, 2013) was used to test the mediation effect, and Model 14 was used to test the moderation effect.

RESULTS

TESTING FOR COMMON BIAS

The data in this study come from subjects' self-reports, and there may be common method bias, so the test was conducted by controlling for unmeasured potential method factors. A two-factor model is established, and a method factor with all items as indicators is added to the original trait factor. If the trait factor model and the two-factor model are significantly different, it indicates the existence of serious common method bias. The results show: ΔCFI = 0.032, ΔTLI = 0.030, ΔRMSEA = 0.004, ΔSRMR = 0.015, the changes in CFI and TLI do not exceed 0.1, and the changes in RMSEA and SRMR do not exceed 0.05, indicating that there is no serious common method bias.

DESCRIPTIVE STATISTICS AND CORRELATION ANALYSIS

The results in Table 2 show that father-child attachment and mother-child attachment are significantly positively correlated with emotional regulation flexibility and significantly negatively correlated with intolerance of uncertainty and depression; intolerance of uncertainty is significantly negatively correlated with emotional regulation flexibility. , was significantly positively correlated with depression; emotional regulation flexibility was significantly negatively correlated with depression.

Table 2. *Descriptive Statistics and Correlation Analysis Results*

	M	*SD*	1	2	3	4	5
1 Father-child attachment	44.90	5.13	1				
2 Mother-son attachment	52.66	4.19	0.50***	1			
3 Intolerance of uncertainty	29.87	3.16	−0.29***	−0.30***	1		
4 Emotional regulation flexibility	48.30	4.20	0. 40***	0.37***	−0.30***	1	
5 Depression	21.55	4.88	−0.43***	−0.50***	0.54***	−0.39***	1

Note: ***p < 0.001.

TEST OF MODERATED MEDIATION EFFECTS

First, Model 4 in the PROCESS macro was used to test the mediating effect of intolerance of uncertainty between parent-child attachment and depression. The results show that father-child attachment has a negative predictive effect on intolerance of uncertainty (β = −0.28, t = − 9.66, p < 0.001), and intolerance of uncertainty has a positive predictive effect on depression. (β = 0.47, t = 20.06, p < 0.001), father-child attachment can significantly negatively predict depression (β = −0.37, t = −15.81, p < 0.001). The Bootstrap method test shows that the mediation should be −0.11, and the 95% confidence interval is [−0.14, −0.08], indicating that intolerance of uncertainty plays a partial mediating role between father-child attachment and depression, and the mediating effect accounts for 23.10% of the total effect. Mother-child attachment has a significant predictive effect on intolerance of uncertainty (β = −0.29, t = −10.12, p < 0.001), and intolerance of uncertainty has a significant predictive effect on depression (β = 0.43, t = 17.41, p < 0.001), mother-child attachment can directly predict depression (β = −0.38, t = −16.36, p < 0.001). The Bootstrap test showed that the mediating effect was −0.12, and the 95% confidence interval was [−0.15, −0.09], indicating that intolerance of uncertainty also played a partial mediating role between mother-child attachment and depression, and the mediating effect accounted for 23.29% of the total effect. Secondly, Model 14

was used to test the moderating effect of spirituality on emotion regulation. The results are shown in Table 3 and Table 4. The interaction term between emotion regulation and intolerance of uncertainty has a significant predictive effect on depression, indicating that emotion regulation plays a moderating role in the relationship between intolerance of uncertainty and depression.

Table 2. *Testing the Mediation with Father-Child Attachment as Independent Variable*

	Outcome variable: Intolerance of uncertainty			*Outcome variable: Depression*		
	β	*t*	95% CI	*β*	*t*	95% CI
Gender	−0.11	−2.11	[−0.23, 0.02]	0.18	4.01***	[0.07, 0.27]
Grade	0.02	0.28	[−0.02, 0.03]	−0.03	−3.02**	[−0.07, −0.01]
Father-child attachment	−0.28	−9.66***	[−0.32, −0.24]	−0.30	−13.00***	[−0.32, −0.20]
Intolerance of uncertainty				0.47	19.87***	[0.42, 0.47]
Emotion Regulation				−0.27	−10.13***	[−0.24, −0.17]
Interaction				−0.06	−3.12**	[−0.10, −0.02]
R2		0.06			0.44	
F		27.12***			170.11***	

Table 4. *Testing the Mediation with Mother-Child Attachment as Independent Variable*

	Outcome variable: Intolerance of uncertainty			*Outcome variable: Depression*		
	β	*t*	95% CI	*β*	*t*	95% CI
Gender	−0.08	−1.44	[−0.20, 0.05]	0.21	3.89***	[0.14, 0.28]
Grade	0.00	0.26	[−0.02, 0.03]	−0.05	−3.00**	[−0.07, −0.01]
Father-child attachment	−0.29	−10.12***	[−0.35, −0.24]	−0.34	−13.00***	[−0.37, −0.29]
Intolerance of uncertainty				0.43	17.41***	[0.37, 0.43]
Emotion Regulation				−0.24	−10.01***	[−0.28, −0.20]
Interaction				−0.05	−3.11**	[−0.10, −0.02]
R2		0.06			0.45	
F		25.77***			176.22***	

Figures 2 and 3 show the effect of emotional regulation flexibility, which was divided into high and low according to plus or minus one standard deviation for a simple slope test. In father-child attachment, when emotion regulation is low, intolerance of uncertainty has a significant positive predictive effect on depression (β = 0.48, t = 17.22, p < 0.001); when emotion regulation is high When, the predictive effect of intolerance of uncertainty on depression was significantly slowed down (β = 0.40, t = 11.66, p < 0.001). In mother-child attachment, when emotion regulation is low, uncertainty depression has a significant positive predictive effect (β = 0.45, t = 12.33, p < 0.001); when emotion regulation is high, the predictive effect of intolerance of uncertainty on depression was significantly slowed down (β = 0.35, t = 10.88, p < 0.001). The results all show that the impact of intolerance of uncertainty on depression will decrease as situational adjustment flexibility increases.

Figure 2. *The Moderated Effect of Emotional Regulation Flexibility in Father-Child Attachment*

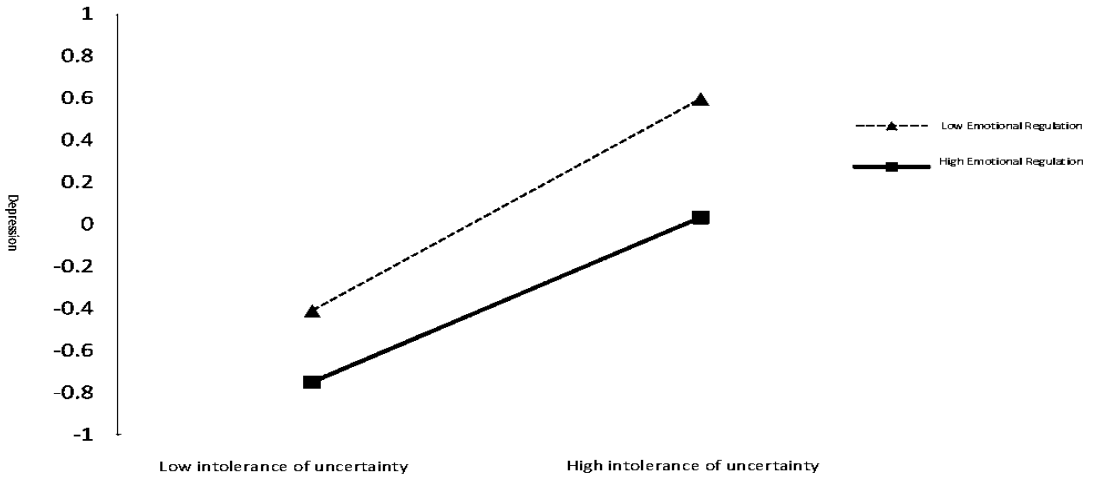
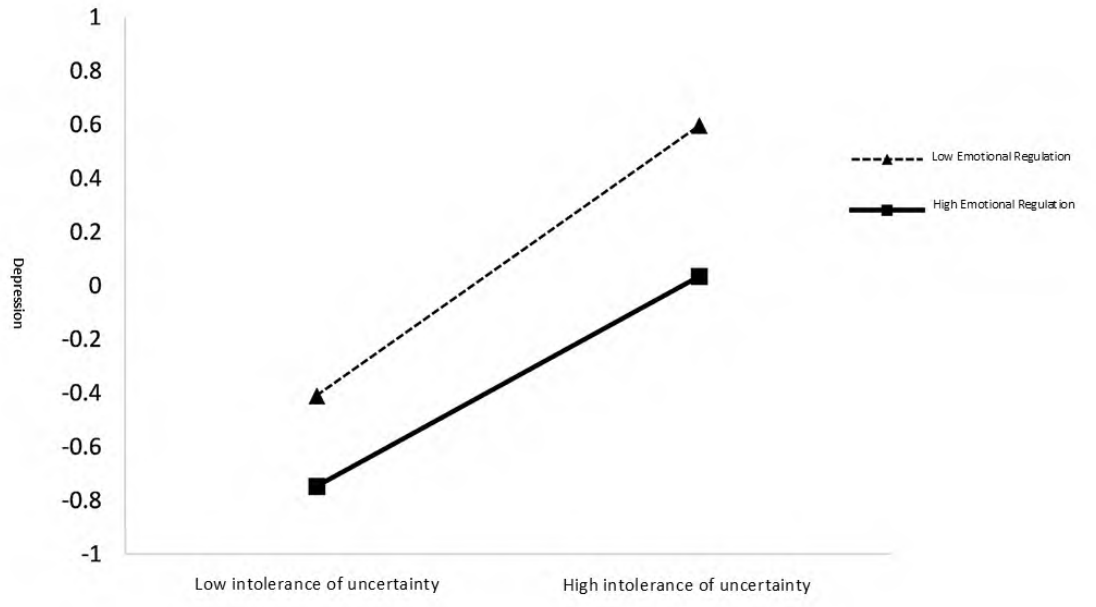


Figure 3. *The Moderated Effect of Emotional Regulation Flexibility in Mother-Child Attachment*



DISCUSSION

THE MEDIATING ROLE OF INTOLERANCE OF UNCERTAINTY

Aligned with prior theoretical and empirical research (Carleton, 2016; Einstein, 2014; Hebert and Dugas, 2019; Sahib et al., 2023), the results show that intolerance of uncertainty partially mediates the relationship between parent-child attachment and students' depression. Parent-child attachment can not only directly predict students' depression, but also indirectly affect depression through the mediating effect of intolerance of uncertainty. Secure parent-child attachment will enable adolescents to explore the surrounding environment more confidently and adopt effective emotion regulation strategies when facing negative emotions. On the contrary, adolescents with insecure parent-child attachment are prone to form negative self-representations and representations of others, and adopt avoidance strategies. Destructive adjustment strategies, leading to negative emotions such as depression and anxiety (Eilert & Buchheim, 2023). The results of this

study once again confirm that high-quality parent-child attachment can reduce depressive symptoms in adolescents (Rodrigues et al., 2024).

In addition, results show that parent-child attachment significantly and negatively predicts intolerance of uncertainty, and intolerance of uncertainty significantly and positively predicts depression. Previous research has shown that individuals who experience secure attachment have lower levels of intolerance of uncertainty (Brown & Whiteside, 2008), while individuals who experience insecure attachment have higher levels of intolerance of uncertainty (Yüksel, 2014). Securely attached individuals regard the attachment object as a "safe base", have the motivation to actively explore when facing uncertain environments, and can adopt effective coping strategies to resolve uncertainty and reduce the resulting negativity.

On the contrary, individuals with insecure attachment are worried about their ability to effectively cope with uncertain environments, and are more eager to obtain certainty (Cooke et al., 2019). Therefore, they regard uncertainty as a threat and adopt avoidance, procrastination, and impulsive decision-making and other negative coping methods, which in turn leads to an increase in negative emotions (Yildiz & Iskender, 2021). The above results suggest that a safe and warm parent-child relationship can effectively reduce the level of intolerable uncertainty in adolescents and reduce the risk of depression in adolescents.

THE MODERATING ROLE OF EMOTIONAL REGULATION

Results show that emotion regulation plays a moderating role in the relationship between intolerance of uncertainty and depression. Among adolescents with low emotion regulation, the impact of intolerance of uncertainty on depression is stronger. With the level of emotion regulation, the impact of intolerance of uncertainty on adolescent depression was significantly reduced. On the one hand, the results of this study confirm that emotion regulation can serve as a protective factor for individual mental health. Previous research has found that emotional regulation affects an individual's environmental adaptability and mental health. High emotional regulation can enable college students to better cope with stress (Galatzer-Levy et al., 2012).

CONCLUSIONS

The results of this study suggest that adolescents' emotion regulation may play a protective role against the negative effects of intolerance of certainty. Therefore, parents and teachers need to cultivate adolescents' sensitivity to the environment, enrich their adaptive strategies for regulating emotions, and pay attention to their emotional states in a timely manner to improve their emotional regulation flexibility and promote healthy mental development.

LIMITATIONS

This study has some limitations. First, the study adopted a cross-sectional questionnaire survey method, so the causal relationship between variables cannot be directly confirmed. In the future, longitudinal follow-up research can be used to explore the causal relationship between variables. Second, the study only verified the mediating effect of intolerance of uncertainty and the moderating effect of emotional regulation flexibility. Future research can add more variables to the model to explore the impact mechanism of parent-child attachment on adolescent depression.

REFERENCES

Ali, E., Letourneau, N., & Benzies, K. (2021). Parent-Child Attachment: A Principle-Based Concept Analysis. *SAGE Open Nursing*, *7*. https://doi.org/10.1177/23779608211009000

Andrews, J. L., Li, M., Minihan, S., Songco, A., Fox, E., Ladouceur, C. D., Mewton, L., Moulds, M., Pfeifer, J. H., Van Harmelen, A., & Schweizer, S. (2023b). The effect of intolerance of uncertainty on anxiety and depression, and their symptom networks, during the COVID-19 pandemic. *BMC Psychiatry*, *23*(1). https://doi.org/10.1186/s12888-023-04734-8

Aydın, G., & Ünlü Kaynakçı, F. Z. (2022). Mindfulness, Valuing, and Emotion Regulation in the Prediction of Psychological Distress among University Students. *Psycho-Educational Research Reviews*, *11*(3), 623–635. https://doi.org/10.52963/PERR_Biruni_V11.N3.16

Bonanno, G. A., Pat-Horenczyk, R., & Noll, J. (2011). Coping Flexibility and Trauma: The Perceived Ability to Cope with Trauma (PACT) Scale. *Psychological Trauma: Theory, Research, Practice, and Policy,* 3, 117. https://doi.org/10.1037/a0020921

Brown, A. M., & Whiteside, S. P. (2008). Relations among Perceived Parental Rearing Behaviors, Attachment Style, and Worry in Anxious Children. *Journal of Anxiety Disorders*, 22, 263-272. https://doi.org/10.1016/j.janxdis.2007.02.002

Carleton, R. N. (2016). Into the unknown: A review and synthesis of contemporary models involving uncertainty. *Journal of Anxiety Disorders*, *39*, 30–43. https://doi.org/10.1016/j.janxdis.2016.02.007

Carnahan, N.D., Carter, M.M. & Sbrocco, T. (2022). Intolerance of Uncertainty, Looming Cognitive Style, and Avoidant Coping as Predictors of Anxiety and Depression During COVID-19: a Longitudinal Study. *J Cogn Ther* 15, 1–19 . https://doi.org/10.1007/s41811-021-00123-9

Chen, S., & Bonanno, G. A. (2021). Components of Emotion Regulation Flexibility: Linking Latent Profiles to Depressive and Anxious Symptoms. *Clinical Psychological Science*, 9, 236-251. https://doi.org/10.1177/2167702620956972

Cooke, J. E., Kochendorfer, L. B., Stuart-Parrigon, K. L., Koehn, A. J., & Kerns, K. A. (2018b). Parent–child attachment and children's experience and regulation of emotion: A meta-analytic review. *Emotion*, *19*(6), 1103–1126. https://doi.org/10.1037/emo0000504

Dugyala, M. & Poyrazli, S. (2021). Social Anxiety, Depression, Coping Self-Efficacy, and Coping Strategies among College Students. *Psycho-Educational Research Reviews*, *10*(3), 411–425. https://doi.org/10.52963/PERR_Biruni_V10.N3.26.

Eilert, D. W., & Buchheim, A. (2023). Attachment-Related Differences in Emotion Regulation in Adults: A Systematic Review on Attachment Representations. *Brain Sciences*, *13*(6), 884. https://doi.org/10.3390/brainsci13060884

Einstein, D. A. (2014). Extension of the transdiagnostic model to focus on intolerance of uncertainty: A review of the literature and implications for treatment.*Clinical Psychology: Science and Practice, 21*(3), 280–300. https://doi.org/10.1111/cpsp.12077

Ferreira, T., Matias, M., Carvalho, H., & Matos, P. M. (2023). Parent-partner and parent-child attachment: Links to children's emotion regulation. *Journal of Applied Developmental Psychology*, *91*, 101617. https://doi.org/10.1016/j.appdev.2023.101617

Galatzer-Levy, I. R., Burton, C. L., & Bonanno, G. A. (2012). Coping Flexibility, Potentially Traumatic Life Events, and Resilience: A Prospective Study of College Student Adjustment. *Journal of Social and Clinical Psychology*, 31, 542. https://doi.org/10.1521/jscp.2012.31.6.542

Gao, Z., Li, X., Xu, L. & Li, B. (2013). The role of emotion regulation flexibility in patients with depression. *Chinese Journal of Health Psychology, 21*(9), 1294-1296.

Hayes, A. F. (2013). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach.* The Guilford Press

Huang M, Tang G, Yi X, Sun S. (2014). Moderation and harmony: the role of emotion regulation flexibility. *Chinese Social Psychology Review*, Vol. 8 (pp. 88-112). Social Sciences Academic Press.

Hebert, E. A., & Dugas, M. J. (2019). Behavioral experiments for intolerance of uncertainty: Challenging the unknown in the treatment of generalized anxiety disorder. *Cognitive and Behavioral Practice, 26*(2), 421–436. https://doi.org/10.1016/j.cbpra.2018.07.007

Iwanski, A., Lichtenstein, L., Mühling, L. E., & Zimmermann, P. (2021). Effects of father and mother attachment on depressive symptoms in middle Childhood and Adolescence: The Mediating role of emotion regulation. *Brain Sciences, 11*(9), 1153. https://doi.org/10.3390/brainsci11091153

Kamel, O. (2018). The Relationship between Adaptive / Maladaptive Cognitive Emotion Regulation Strategies and Cognitive Test Anxiety among University Students. *Psycho-Educational Research Reviews*, *7*(1),100 – 105. https://www.perrjournal.com/index.php/perrjournal/article/view/253

Radloff, L. S. (1977). The CES-D scale. *Applied Psychological Measurement, 1*(3), 385–401. https://doi.org/10.1177/014662167700100306

Rodrigues, G. A., Obeldobel, C. A., Kochendorfer, L. B., Brumariu, L. E., Fareri, D. S., & Kerns, K. A. (2024). Parent-child attachment security and depressive symptoms in early adolescence: The mediating roles of gratitude and forgiveness. *Child Psychiatry and Human Development, 55*(1), 262–273. https://doi.org/10.1007/s10578-022-01394-9

Saad, M. A. E. ., & Omaima , M. K. (2020). Arabic Adaptation of Adolescents Version of the Cognitive Emotion Regulation Questionnaire: Validity and Reliability. *Psycho-Educational Research Reviews*, *9*(1), 61–65. Retrieved from https://www.perrjournal.com/index.php/perrjournal/article/view/142

Sahib, A., Chen, J., Cárdenas, D., & Calear, A. (2023). Intolerance of uncertainty and emotion regulation: A meta-analytic and systematic review. *Clinical Psychology Review, 101*, 102270. https://doi.org/10.1016/j.cpr.2023.102270

Specker, P., Sheppes, G., & Nickerson, A. (2024). Does Emotion Regulation Flexibility Work? Investigating the Effectiveness of Regulatory Selection Flexibility in Managing Negative Affect. *Social Psychological and Personality Science*, *15*(5), 561-569. https://doi.org/10.1177/19485506231189002

Spruit, A., Goos, L., Weenink, N., Rodenburg, R., Niemeyer, H., Stams, G. J., & Colonnesi, C. (2019). The Relation Between Attachment and Depression in Children and Adolescents: A Multilevel Meta-Analysis. *Clinical Child and Family Psychology Review*, *23*(1), 54–69. https://doi.org/10.1007/s10567-019-00299-9

Tezi, Y.(2022) *Investigation of the relationship between intolerance of uncertainty and psychological distress among university students during the COVID-19 Pandemic*. Doctoral thesis.

Yin, H., Qian, S., Huang, F., Zeng, H., Zhang, C. J. P., & Ming, W. (2021). Parent-Child attachment and social adaptation behavior in Chinese college students: The Mediating role of school bonding. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.711669

Yildiz, B., & Iskender, M. (2021). The Secure Attachment Style Oriented Psycho-Educational Program for Reducing Intolerance of Uncertainty and Academic Procrastination. *Current Psychology,* 40, 1850-1863. https://doi.org/10.1007/s12144-018-0112-4

Yüksel, B. (2014). *Attachment, Positive and Negative Emotion Regulation, and Intolerance of Uncertainty in Anxiety: Searching for an Integrative Model.* Unpublished Master Thesis, University of Hacettepe

Zhang, M. (2019). *The influence of uncertainty tolerance on adults' emotion regulation flexibility.* Master's thesis, Guizhou Normal University.

Zdebik, M. A., Moss, E., & Bureau, J. F. (2018). Childhood Attachment and Behavioral Inhibition: Predicting Intolerance of Uncertainty in Adulthood. *Development and Psychopathology*, 30, 1225-1238. https://doi.org/10.1017/S0954579417001614

Zhou, X., Zhen, R., & Wu, X. (2020). Insecure Attachment to Parents and PTSD among Adolescents: The Roles of Parent–Child Communication, Perceived Parental Depression, and Intrusive Rumination. *Development and Psychopathology*, *33*(4), 1290–1299. https://doi.org/10.1017/s0954579420000498

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Post-Traumatic Growth of Parents of Children with Autism Spectrum Disorder and Intellectual Disabilities: A Literature Review

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Abstract

This study intends to review the research on posttraumatic growth of parents of children with ASD and ID. A search for potentially eligible papers was undertaken across seven databases; PubMed, Medline, Web of Science, PsycINFO, CINAHL, PTSDpubs and EMBASE. The search time limit is from the establishment of the database to December 2023. The search terms include: post-traumatic growth, autism, intellectual disability, parent, father, mother, caregiver. Based on the search strategy, 68 relevant documents were initially retrieved, and 55 articles were obtained after eliminating 13 duplicate documents. By reading the titles and abstracts, 15 articles that were irrelevant to the topic were excluded, and 40 articles were initially included. After excluding 19 articles whose full texts could not be downloaded, 21 studies were finally included, including 11 studies on parents of children with autism, 5 studies on parents of children with ID, and 5 studies on parents of children with disabilities (including both parents of children with ASD and ID). Among them, there are 6 qualitative studies. The sample sizes of qualitative research are 10, 11 and 13 respectively, and the sample size of quantitative research ranges from 88 to 205.

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INTRODUCTION

Families of children with autism spectrum disorder(ASD) and intellectual disabilities(ID) need to bear more responsibilities and burdens than normally developing families. Parents of children with disabilities will encounter many difficulties when raising their children. Children with ASD and ID and their parents are particularly in need of special attention (Byraa & Ćwirynkało, 2020). Worldwide, the number of special children represented by ASD is increasing rapidly, which not only affects the healthy physical and mental development of children, but also brings huge mental pressure to parents (Eissa,2015,2016,2017,2018,2022; Mostafa, 2018). Due to the specific behaviors exhibited by ASD, communication between parents of children with ASD and their children is restricted, making parents prone to a series of problems (Qin et al., 2021).

Parents of children with ID face more challenges and require more efforts than parents of typically developing children (Luijkx et al., 2017), such as limited social support, low mood, stress, and anxiety (Marsh et al., 2018), for parents, acceptance of their child's diagnosis of ASD or ID and the various issues encountered in caregiving. It is undoubtedly a traumatic experience, but there is also post-traumatic growth (Smith-Young et al., 2020).

Post-Traumatic Growth (PTG) refers to individuals experiencing challenging situations. Positive psychological changes experienced after life crisis events (Smith-Young et al., 2020). This study intends to review the research on posttraumatic growth of parents of children with ASD and ID to provide inspiration for future related research.

METHODS

This systematic review was conducted and reported in this study. A search for potentially eligible papers was undertaken across seven databases; PubMed, Medline, Web of Science, PsycINFO, CINAHL, PTSDpubs and EMBASE. The search time limit is from the establishment of the database to December 2023. The search terms include: post-traumatic growth, autism, intellectual disability, parent, father, mother, caregiver.

LITERATURE INCLUSION AND EXCLUSION CRITERIA

Inclusion criteria: 1) The research subjects are parents/fathers/mothers of children with ASD and/or ID; 2) The research content is post-traumatic growth; 3) Publicly published academic journal papers and master's and doctoral theses. Exclusion criteria: 1) Documents whose full text cannot be downloaded; 2) Duplicate or identical documents. 3) Review the literature.

LITERATURE SCREENING AND DATA EXTRACTION

Literature screening and data extraction were performed independently by the author. Firstly, the literature was initially screened by reading the title and abstract of the paper, and then secondary screening was carried out by reading the full text to finally decide which literature to include in this study. The content of data extraction mainly includes authors, research methods, research samples and important results. Based on the search strategy, 68 relevant documents were initially retrieved, and 55 articles were obtained after eliminating 13 duplicate documents. By reading the titles and abstracts, 15 articles that were irrelevant to the topic were excluded, and 40 articles were initially included. After excluding 20 articles whose full texts could not be downloaded, 20 studies were finally included, including 10 studies on parents of children with autism, 5 studies on parents of children with ID, and 5 studies on parents of children with disabilities (including both parents of children with ASD and ID). Among them, there are 6 qualitative studies. The sample sizes of qualitative research are 10, 11 and 13 respectively, and the sample size of quantitative research ranges from 88 to 205.

RESULTS

Different terms have been used in the literature to refer to positive outcomes of being a mother of a child with disability. The most frequently used include: posttraumatic growth (PTG) (CounselmanCarpenter, 2016), stress-related growth (Rubin and Schreiber-Divon, 2014), personal growth (Strecker et al., 2014), benefits or benefit-finding (McConnell et al., 2014), the positive impact of having a disabled child or positive impact(s) (Blacher and Baker, 2007), positive perceptions (Vilaseca et al., 2013), positive contributions (Hastings et al., 2005), transformations (Pelchat et al., 2009), positive aspects (Kenny and McGilloway, 2007), and positive experiences (Kimura and Yamazaki, 2013).

Research on PTG among mothers of children with developmental disabilities revealed the largest positive change with regard to appreciation of life, relations with others and personal strength, as well as minor change with regard to spirituality (Strecker et al, 2014). In their phenomenological study, Zhang et al. (2015) found positive change in the aftermath of a traumatic event in mothers of children with autism.

Qualitative research results show that the growth experience of parents of children with ASD is mainly reflected in four aspects: restarting the cycle of life, understanding the joys and sorrows of life, developing one's own potential, and increasing interpersonal benefits (Zhang, 2014). Results of another qualitative study indicated that a new philosophy of life, appreciation of life, relationships with others, personal strength, and spiritual changes were five areas of posttraumatic growth in mothers of children with ASD (Zhang et al., 2015). Empirical studies have found that the post-traumatic growth of parents/fathers/mothers of children with ASDis generally at a medium level (Zhang, 2014; Qin et al., 2021; Zhang et al ., 2013).

Qualitative research found that parents of children with ID will experience five stages of post-traumatic growth, namely the pain time, the struggle time, the exhaustion time, the passive acceptance time, and the active growth time; their growth is mainly reflected in positive changes in personality, including self-esteem, adaptation, sense of responsibility, patience, and empathy (Cheng et al., 2022). Empirical studies have found that fathers or mothers of children with intellectual disabilities have higher levels of PTG and score highest in the following two areas: appreciation of life and positive changes in relationships with others (Byraa & Ćwirynkało, 2020; Kiełb et al., 2019).

FACTORS INFLUENCİNG POST-TRAUMATIC GROWTH OF PARENTS OF AUTISTIC CHILDREN

Qualitative research has found that thinking about the meaning of events, adhering to attitude tendencies, social support, effective coping styles, peer role models and self-efficacy are the main factors promoting PTG in parents of autistic children (Zhang Wei, 2014; Zhang et al., 2015) . Empirical research has found that social support, gender, quiet self characteristics, psychological resilience, family functioning, rumination, self-compassion and active coping are the main influencing factors of post-traumatic growth of parents of autistic children (Chan et al., 2020; Ebrahim & Alothman, 2021; Qin et al., 2021; Wayment et al., 2019; Zhang et al., 2013). Positive and effective coping styles can help parents of special children reduce their negative emotional experiences and encourage their self-expression, self-presentation and help-seeking. Although different coping styles will lead to different positive changes in them, they will ultimately promote their post-traumatic growth(Chan et al., 2020).

Results of Hong (2024) indicated that parents of children with ASD were above average in their post-traumatic growth; particularly those with children with milder symptoms and of higher family income levels. First-married parents had significantly higher post-traumatic growth than the Not first-married (i.e., remarried, divorced, widowed). Parents reporting with social support, quiet ego, and psychological capital had higher post-traumatic growth.

RISK AND PROTECTIVE FACTORS FOR POSTTRAUMATIC STRESS AND POSTTRAUMATIC GROWTH

As empirical studies indicated, Parenting trauma showed an adverse effect on developing PTS and a positive role in promoting PTG. Social support was protective in its correlation with lower levels of PTS and higher levels of PTG. Barriers to care were associated with increased PTS, but unrelated to PTG. Negative parenting showed a significant, but small, correlation with more severe PTS and was unrelated to PTG (Xiong et al., 2022).

Parents with high self-efficacy have more confidence, courage and ability to cope with difficulties. Specifically, grappling with difficulties helps parents develop a greater appreciation for what is important and valuable in life, while also helping to cope with the broader challenges associated with it. Raising a child with an intellectual disability forces parents to use as many resources as possible, develop potential, and make efforts that may not always be successful. In the face of severe traumatic events and life challenges, basic beliefs about the world play a decisive role in perceiving the difficulties encountered and one's own resources that may be available to deal with them(Byraa & Ćwirynkało, 2020; Kiełb et al., 2019).

When facing traumatic events, adequate support can effectively help individuals reduce negative emotions, change their negative perceptions of events, increase problem-solving abilities, and experience more post-traumatic growth (Li &Hu, 2022). In the process of post-traumatic growth, highly educated parents are better able to understand and reconstruct their views of life and values in the face of difficulties, and are better able to truly understand the needs of their children, thereby making the greatest possible psychological, life and social changes. Parents with settled marriages have higher levels of post-traumatic growth than divorced parents because the former can receive more social support in raising and educating children with disabilities(Li &Hu, 2022).

INTERVENTION STUDIES

A study implemented a 6-week solution-focused group therapy and found that, in comparison to the control group, couples receivingSFBT improved in cohesion, consensus, and satisfaction, as measured withthe Dyadic Adjustment Scale. It should be noted that affectional expressionwas not related to the independent variables. Participants also reported lessintense arguments, blaming their partner, more affection and problem-solv-ing, and greater focus on solutions and the use of tools (Zimmerman et al., 1997) .

Bristol, Gallagher, and Holt (1993) found that mothers who participated in a psychoeducational treatment program, which informed them of their child’s diagnosis, reported greater decreases in depressive symptoms in comparison to mothers without treatment. Similarly, Tonge et al. (2006) discovered that a 20-week parent education and skills training program for parents improved their mental health. Lastly, Acceptance and Commitment Therapy (ACT), was provided to parents raising a child with ASD in a 2-day, group workshop format (Blackledge & Hayes, 2006). Results from this study showed improvements on the Beck Depression Inventory, Brief Symptom Inventory, and the Global Severity Index.

DISCUSSION

There are obvious differences in the areas of growth between parents of children with ID and parents of children with ASD. The growth of parents of children with ID is mainly reflected in the dimension of appreciating life, while the growth of parents of children with ASD is mainly reflected in the dimension of personal strength. A possible reason for this difference lies in the fact that parents' efforts to cope with the difficulties posed by children with ID lead them to gain a greater appreciation for important and valuable things in life (Byraa & Ćwirynkało, 2020), thereby improving the “appreciation” achieve greater growth in life. The personal strength dimension has the highest

score, perhaps because parents of children with ASD receive insufficient support and therefore need to tap more of their own potential to cope with the pressure of caring for children (Zhang, 2014).

Little attention has been paid to the mechanisms influencing posttraumatic growth of parents of children with ASD and ID, and only 2 studies have been reported. The research by Byraa and Ćwirynkało (2020) found that general self-efficacy can significantly mediate the relationship between basic hope and post-traumatic growth total score and its various dimensions. Bak (2018) examined the role of adaptive cognitive emotion regulation strategies and disability acceptance attitudes in adult attachment and post-traumatic growth, but found no significant mediating effects.

REFERENCES

Bakmiha. (2018). The Relationship between Adult attachment and Posttraumatic Growth of Parents who have Children with Disabilities: The Mediating Effects of Adaptive Cognitive Emotion Regulation Strategies and Acceptance Attitude of Disability. *The Korean Journal of Rehabilitation Psychology, 25*(2), 225–242.

Blacher, J., & Baker, B. L. (2007). Positive impact of intellectual disability on families. *American Journal on Mental Retardation, 112*(5), 330. https://doi.org/10.1352/0895-8017(2007)112

Blackledge, J. T., & Hayes, S. C. (2006). Using acceptance and commitment training in the support of parents of children diagnosed with autism. *Child & Family Behavior Therapy, 28*(1), 1-18. https://doi.org/10.1300/j019v28n01_01

Bristol, M. M., Gallagher, J. J., & Holt, K. D. (1993). Maternal depressive symptoms in autism: Response to psychoeducational intervention. *Rehabilitation Psychology, 38*(1), 3-10.

Byra, S., & Ćwirynkało, K. (2020). Do beliefs influence posttraumatic growth in fathers of children with intellectual disabilities? *Research in Developmental Disabilities, 104*, 103687. https://doi.org/10.1016/j.ridd.2020.103687

Chan, B. S. M., Deng, J., Li, Y., Li, T., Shen, Y., Wang, Y., & Yi, L. (2019). The Role of Self-Compassion in the Relationship between Post-Traumatic Growth and Psychological Distress in Caregivers of Children with Autism. *Journal of Child and Family Studies*, *29*(6), 1692–1700. https://doi.org/10.1007/s10826-019-01694-0

Cheng, S., Cheng, S., Liu, S., & Li, Y. (2022). Parents' pandemic stress, parental involvement, and family quality of life for children with autism. *Frontiers in Public Health*, *10*. https://doi.org/10.3389/fpubh.2022.1061796

Counselman-Carpenter, E. A. (2016). The presence of posttraumatic growth (PTG) in mothers whose children are born unexpectedly with Down syndrome. *Journal of Intellectual & Developmental Disability, 42*(4), 351–363. https://doi.org/10.3109/13668250.2016.1247207

Ebrahim, M. T., & Alothman, A. A. (2021). Resilience and social support as predictors of post-traumatic growth in mothers of children with autism spectrum disorder in Saudi Arabia. *Research in Developmental Disabilities, 113*, 103943. https://doi.org/10.1016/j.ridd.2021.103943

Eissa, M. A. (2015). The effectiveness of a joint attention training program on improving communication skills of children with autism spectrum disorder. *International Journal of Psycho-Educational Sciences, 4*(3), 3-12. Retrieved from https://www.perrjournal.com/index.php/perrjournal/article/view/318

Eissa, M. (2016). The effectiveness of social stories among children and adolescents with autism spectrum disorders: Meta-analysis. *Psycho-Educational Research Reviews*, *5*(2), 51–60. Retrieved from https://www.perrjournal.com/index.php/perrjournal/article/view/306

Eissa, M. (2017). A systematic review of autism spectrum disorder in children and adolescents: Social deficits and intervention. *Psycho-Educational Research Reviews*, *6*(2), 12–22. Retrieved from https://www.perrjournal.com/index.php/perrjournal/article/view/271

Eissa, M. (2018). The effectiveness of a life skills training based on the response to intervention model on improving functional communication skills in children with autism. *Psycho-Educational Research Reviews*, *7*(3), 56–61. Retrieved from https://www.perrjournal.com/index.php/perrjournal/article/view/231

Eissa, M. (2022). Reading comprehension and literacy instruction for students with autism spectrum disorder. *Technium Social Sciences Journal*, *38*(1), 151–159. https://doi.org/10.47577/tssj.v38i1.7941

Hastings, R. P., Kovshoff, H., Brown, T., Ward, N. J., Espinosa, F. D., & Remington, B. (2005). Coping strategies in mothers and fathers of preschool and school-age children with autism. *Autism, 9*(4), 377–391. https://doi.org/10.1177/1362361305056078

Hong, M. (2024). Post-traumatic growth in Chinese parents of children with autism spectrum disorder: Statuses and personal factors. *Journal of Psychology in Africa*, *34*(2), 147–153. https://doi.org/10.1080/14330237.2024.2335862

Kenny, K., & McGilloway, S. (2007). Caring for children with learning disabilities: an exploratory study of parental strain and coping. *British Journal of Learning Disabilities, 35*(4), 221–228. https://doi.org/10.1111/j.1468-3156.2007.00445.x

Kiełb, K., Bargiel-Matusiewicz, K. M., & Pisula, E. (2019). Posttraumatic stress Symptoms and posttraumatic growth in mothers of children with intellectual disability – The role of Intrusive and Deliberate ruminations: a preliminary report. *Frontiers in Psychology, 10*. https://doi.org/10.3389/fpsyg.2019.02011

Kimura, M., & Yamazaki, Y. (2013). The lived experience of mothers of multiple children with intellectual disabilities. *Qualitative Health Research*, *23*(10), 1307–1319. https://doi.org/10.1177/1049732313504828

Li, Q., & Hu, J. (2022). Post-traumatic growth and Psychological resilience during the COVID-19 Pandemic: a Serial Mediation model. *Frontiers in Psychiatry*, *13*. https://doi.org/10.3389/fpsyt.2022.780807

Luijkx, J., Van Der Putten, A. a. J., & Vlaskamp, C. (2017). Time use of parents raising children with severe or profound intellectual and multiple disabilities. *Child Care Health and Development*, *43*(4), 518–526. https://doi.org/10.1111/cch.12446

Marsh, L., Warren, P., & Savage, E. (2018). "Something was wrong": A narrative inquiry of becoming a father of a child with an intellectual disability in Ireland. *British Journal of Learning Disabilities*, *46*(4), 216–224. https://doi.org/10.1111/bld.12230

McConnell, D., Savage, A., Sobsey, D., & Uditsky, B. (2014). Benefit-finding or finding benefits? The positive impact of having a disabled child. *Disability & Society*, *30*(1), 29–45. https://doi.org/10.1080/09687599.2014.984803

Mostafa, A. (2018). Investigating the effect of multisensory approach on improving emergent literacy skills in children with autism disorder. *Psycho-Educational Research Reviews*, *7*(1), 94–99. Retrieved from https://www.perrjournal.com/index.php/perrjournal/article/view/252

Pelchat, D., Levert, M., & Bourgeois-Guérin, V. (2009). how do mothers and fathers who have a child with a disability describe their adaptation/ transformation process? *Journal of Child Health Care*, *13*(3), 239–259. https://doi.org/10.1177/1367493509336684

Qin, X., Feng, Y., Qu, F., Luo, Y., Chen, B., Chen, M., Zou, Y., & Zhang, L. (2020). Posttraumatic Growth Among Parents of Children with Autism Spectrum Disorder in China and Its Relationship to Family Function and Mental Resilience: A Cross-Sectional Study. *Journal of Pediatric Nursing*, *57*, e59–e67. https://doi.org/10.1016/j.pedn.2020.10.026

Rubin, O., & Schreiber-Divon, M. (2014). Mothers of adolescents with intellectual disabilities: The "meaning" of severity level. *Psychology*, *05*(06), 587–594. https://doi.org/10.4236/psych.2014.56069

Smith-Young, J., Chafe, R., & Audas, R. (2020). "Managing the Wait": Parents' experiences in accessing diagnostic and treatment services for children and adolescents diagnosed with autism spectrum disorder. *Health Services Insights*, *13*. https://doi.org/10.1177/1178632920902141

Strecker, S., Hazelwood, Z. J., & Shakespeare-Finch, J. (2013). Postdiagnosis personal growth in an Australian population of parents raising children with developmental disability. *Journal of Intellectual & Developmental Disability*, *39*(1), 1–9. https://doi.org/10.3109/13668250.2013.835035

Tonge, B., Brereton, A., Kiomall, M., Mackinnon, A., King, N., & Rinehart, N. (2006). Effects on Parental Mental Health of an education and skills training program for parents of young children with autism: a randomized controlled trial. *Journal of the American Academy of Child & Adolescent Psychiatry*, *45*(5), 561–569. https://doi.org/10.1097/01.chi.0000205701.48324.26

Vilaseca, R., Ferrer, F., & Olmos, J. G. (2013). Gender differences in positive perceptions, anxiety, and depression among mothers and fathers of children with intellectual disabilities: a logistic regression analysis. *Quality & Quantity*, *48*(4), 2241–2253. https://doi.org/10.1007/s11135-013-9889-2

Wayment, H. A., Al-Kire, R., & Brookshire, K. (2018). Challenged and changed: Quiet ego and posttraumatic growth in mothers raising children with autism spectrum disorder. *Autism*, *23*(3), 607–618. https://doi.org/10.1177/1362361318763971

Xiong, T., McGrath, P. J., Stewart, S. H., Bagnell, A., & Kaltenbach, E. (2022). Risk and protective factors for posttraumatic stress and posttraumatic growth in parents of children with intellectual and developmental disorders. *European Journal of Psychotraumatology*, *13*(1). https://doi.org/10.1080/20008198.2022.2087979

Zhang W (2014). *Study on the effect of solution-focused short-term group intervention on post-traumatic growth of parents of autistic children*. Doctoral dissertation, Shanghai: Second Military Medical University

Zhang, W., Yan, T. T., Barriball, K. L., While, A. E., & Liu, X. H. (2013). Post-traumatic growth in mothers of children with autism: A phenomenological study. *Autism*, *19*(1), 29–37. https://doi.org/10.1177/1362361313509732

Zhang, W., Yan, T. T., Du, Y. S., & Liu, X. H. (2013). Relationship between Coping, Rumination and Posttraumatic Growth in Mothers of Children with Autism Spectrum Disorders. Research in Autism Spectrum Disorders, 7, 1204-1210. https://doi.org/10.1016/j.rasd.2013.07.008

Zimmerman, T. S., Prest, L. A., & Wetzel, B. E. (1997). Solution-focused couples therapy groups: An empirical study. *Journal of Family Therapy*, *19*(2), 125–144. https://doi.org/10.1111/1467-6427.00044

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