

**IMPACT OF SCREEN TIME AND SLEEP PATTERNS ON BEHAVIORAL
AND EMOTIONAL REGULATION OF CHILDREN WITH AUTISM
SPECTRUM DISORDER: MODERATING ROLE OF
PARENTAL INVOLVEMENT**



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DISORDER: MODERATING ROLE OF PARENTAL INVOLVEMENT**

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IN

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By

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DECLARATION

I, Mr. Muhammad Zuhair, Registration No. 510-FSS/MSCP/F23 student of MS in Clinical Psychology, session 2023-2025, hereby declare that the matter printed in the thesis titled: Impact of Screen Time and Sleep Patterns on Behavioral and Emotional Regulation of Children with Autism Spectrum Disorder: Moderating Role of Parental Involvement. was my own work and had not been printed, published and submitted as research work, thesis or publication in any form in any University, Research Institution etc in Pakistan or abroad.

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RESEARCH COMPLETION CERTIFICATE

Certified that the research work contained in this thesis titled: **IMPACT OF SCREEN TIME AND SLEEP PATTERNS ON BEHAVIORAL AND EMOTIONAL REGULATION OF CHILDREN WITH AUTISM SPECTRUM DISORDER: MODERATING ROLE OF PARENTAL INVOLVEMENT**. Had been carried out and completed by Mr. Muhammad Zuhair, Registration No: 510- FSS/MSCP/F23 under my supervision.

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DEDICATION

All praise and gratitude were due to Almighty Allah (SWT), the Most Beneficent and Merciful, whose divine will and blessings enabled me to reach this significant milestone in my academic journey. It was through His guidance, the heartfelt prayers of my parents, and the unwavering support and dedication of my teachers that I had been able to successfully complete my MS thesis. I would like to dedicate this work to my beloved parents and my supervisor, whose crucial roles and constant support had been instrumental throughout this endeavor. I am deeply thankful to my supervisor, Dr. Mazhar Iqbal Bhatti, for his invaluable guidance, insightful feedback, and continuous encouragement throughout the course of this research. His mentorship had been a cornerstone in the completion of this thesis. My sincere appreciation also extends to my peer group for their encouragement, cooperation, and warm wishes, which had kept me motivated. I am especially grateful to my family for their endless support, love, and motivation that carried me through challenging times.

Table of Content

	PageNo.
List of Table	i
List of Annexures	ii
Acknowledgement	iii
Abstract	iv
Chapter 1 Introduction	1
Screen Time	3
Sleep patterns	4
Emotional regulation	4
Behavior regulation	4
Literature Review	5
Rationale of the study	11
Significance of the study	12
Problem statement	12
Objectives	13
Hypothesis	13
Conceptual Framework	14
Chapter 2 Method	15
Research Design	15
Data collection method	15
Population	15
Sampling Technique	15
Inclusion criteria	15
Exclusion criteria	16
Instruments	16

	Screen Time Questionnaire	16
	Children's Sleep Habits Questionnaire	16
	Autism Spectrum Screening Questionnaire	17
	Emotional Regulation Questionnaire	17
	Parenting Practices Questionnaire	18
	Procedure	19
	Data Analysis	20
	Ethical Consideration	21
Chapter 3	Results	22
Chapter 4	Discussion	39
	Limitation and Suggestion	44
	Implications	46
	Conclusion	47
	References	48
	Appendices	55

List of Tables

Table No	Table Heading	Page No.
Table 1	Sociodemographic Characteristics of Participants	22
Table 2	Psychometric Properties of Study Major Variable	25
Table 3	Correlation of Screen time and Sleep patterns with Behavioral and Emotional regulation and Parental Involvement	27
Table 4	Simple linear regression analysis demonstrating effect of Screen time and Sleep pattern on the prediction of Behavioral regulation among Autistic Children	29
Table 5	Simple linear regression analysis demonstrating effect of Screen time and Sleep pattern on the prediction of Emotional regulation among Autistic Children	31
Table 6	Moderating effect of Parental involvement on Screen time and Behavioral regulation	33
Table 7	Moderating effect of Parental involvement on Screen time and Emotional regulation	34
Table 8	Moderating effect of Parental involvement on Sleep patterns and Behavioral regulation	35
Table 9	Moderating effect of Parental involvement on Sleep patterns and Emotional regulation	36
Table 10	Multiple linear regression analysis demonstrating effect of Demographics on the prediction of Screen time among Autistic Children	37
Table 11	Multiple linear regression analysis demonstrating effect of Demographics on the prediction of Sleep patterns among Autistic children	38

List of Annexures

		Page No.
Annexure – A	Informed Consent	55
Annexure – B	Demographic Sheet	56
Annexure – C	Screen Time Questionnaire	57
Annexure - D	Children’s Sleep Habits Questionnaire	58
Annexure - E	Autism Spectrum Screening Questionnaire	60
Annexure - F	Emotional Regulation Questionnaire	62
Annexure - G	Parenting Practices Questionnaire	63

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I solemnly declare that the current research entitled: Impact of Screen Time and Sleep Patterns on Behavioral and Emotional Regulation of Children with Autism Spectrum Disorder: Moderating Role of Parental Involvement was my personal work. It was not plagiarized nor copied from any other sources, and that I had followed all the research and ethical protocols. I am submitting this research to Department of Psychology, Faculty of Social Sciences, International Islamic University Islamabad as a partial fulfillment for the award of the degree of MS in Clinical Psychology. I also declare that I would not use this research for my degree program in future.

Abstract

This study investigated the impact of screen time and sleep patterns on the behavioral and emotional regulation of children with Autism Spectrum Disorder (ASD), with a specific focus on the moderating role of parental involvement. Autism Spectrum Disorder is a complex neurodevelopmental condition characterized by deficits in social communication and the presence of restricted, repetitive behaviors. Children with ASD often face significant challenges in emotional and behavioral regulation, which are critical for their social integration and daily functioning. These regulatory difficulties were hypothesized to be further influenced by external environmental factors, specifically excessive screen time and disrupted sleep patterns, which are prevalent issues in contemporary pediatric populations. Prolonged screen exposure has been increasingly linked in recent literature to attention deficits, emotional dysregulation, and poor sleep quality. Simultaneously, sleep disturbances such as sleep onset delay, night waking's, and reduced sleep duration are known to exacerbate behavioral rigidity and emotional volatility in neurodiverse children. Despite the established individual impacts of these variables, there is limited research on their combined effect within the cultural context of Pakistan, nor on the protective mechanisms that might mitigate these effects. Consequently, this study posited that parental involvement acts as a crucial moderator, potentially buffering the adverse effects of high screen usage and poor sleep on the child's regulatory abilities. Using a correlational research design, data were collected from a sample of 120 children aged 4–12 years (M = 50% Male, 50% Female) diagnosed with ASD, recruited from special education centers and clinics in Rawalpindi and Islamabad. Standardized instruments were employed to measure the key variables, including the Screen Time Questionnaire (STQ) for media habits, the Children's Sleep Habits Questionnaire (CSHQ) for sleep quality, the Emotion Regulation Questionnaire (ERQ) and (ASSQ) Autism Spectrum Questionnaire, behavioral checklists for regulatory outcomes, and the Parenting Practices Questionnaire (PPQ) to assess the level of parental engagement. The results of the study provided robust empirical support for the proposed hypotheses. Descriptive statistics

revealed variability in sleep habits and screen exposure among the participants. Pearson correlation analysis indicated a significant negative correlation between screen time and both behavioral regulation ($r = -.39$, $p < .001$) and emotional regulation ($r = -.43$, $p < .001$). Conversely, sleep patterns showed a significant positive correlation with behavioral ($r = .28$, $p < .001$) and emotional regulation ($r = .44$, $p < .001$). Regression analyses further quantified these impacts. Simple linear regression demonstrated that screen time and sleep patterns significantly predicted behavioral regulation, explaining 17% of the variance ($R^2 = .17$, $F = 11.78$, $p < .001$), and emotional regulation, explaining 24% of the variance ($R^2 = .24$, $F = 18.64$, $p < .001$). Screen time emerged as a strong negative predictor, while healthy sleep patterns were a positive predictor. Crucially, moderation analysis using Hayes' PROCESS Model 1 confirmed the buffering role of parental involvement. The interaction between screen time and parental involvement was significant for both behavioral ($B = 0.02$, $p < .001$) and emotional regulation ($B = 0.01$, $p < .04$). Similarly, parental involvement significantly moderated the relationship between sleep patterns and regulation outcomes. These findings indicate that active parental monitoring and engagement can significantly reduce the detrimental impact of screen time and enhance the developmental benefits of good sleep hygiene. In conclusion, this study establishes that while excessive screen time and poor sleep are detrimental to the self-regulation of autistic children, parental involvement serves as a vital protective factor. The findings underscore the necessity for holistic interventions that not only target the child's biological and behavioral patterns but also empower parents with strategies to manage media consumption and establish consistent sleep routines. These evidence-based recommendations are essential for clinicians, educators, and families aiming to improve the quality of life and developmental trajectories of Children with ASD.

Keywords: Autism Spectrum Disorder (ASD), Screen Time, Sleep Patterns, Behavioral Regulation, Emotional Regulation, Parental Involvement, Moderation Analysis.

INTRODUCTION

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition that impairs the social communication, interest, and behavior of a child. It is characterized by a wide range of symptoms and severity, often manifesting as difficulties in social interaction, verbal and nonverbal communication, and restricted or repetitive behaviors. Among all the factors that influence the welfare and development of autistic children, the regulation of behavior and emotion had a great deal to do because it affects significantly their social interaction, learning, and quality of life. Emotional and behavioral regulation refers to the ability to monitor, evaluate, and modify emotional reactions and behavioral responses to accomplish goals and function adaptively. For children with ASD, these regulatory processes were often compromised due to underlying neurological differences, making them more susceptible to environmental stressors. Such regulatory processes were complicated and were influenced by various extrinsic factors, including screen time and sleep patterns (Liloia et al., 2024). In the modern digital era, the environment in which children develop has shifted dramatically. Screen use had been a contentious concern in recent years given that extended periods of screen time can potentially damage the mental health and behavior of children. The ubiquity of digital devices—smartphones, tablets, and computers—has made screen time an integral part of daily life for most families. However, for neurodiverse children, the implications of this digital saturation are profound. Too much time on screens had been directly linked to poor ability to sustain attention, greater emotional dysregulation, and lower quality sleep. Research suggests that the rapid-fire stimuli of many digital programs may overstimulate the sensory systems of autistic children, leading to sensory overload and subsequent behavioral outbursts (Ophir et al., 2023). These effects may worsen in autistic children who were already challenged through poor sensory processing and even worse self-regulation abilities. While typically developing children

might recover quickly from digital overstimulation, children with ASD often lack the intrinsic soothing mechanisms to return to a baseline state of calm. Furthermore, excessive screen time often displaces other critical developmental activities, such as physical play, face-to-face social interaction, and sleep. However, it is important to note that not all screen time is inherently negative. Controlled and intentional screen time, like educational apps or sensory-friendly programs, could be of benefit to children with ASD (Su et al., 2024). The distinction between passive consumption (e.g., watching videos) and active engagement (e.g., educational games) is a critical area of investigation, particularly regarding how these different modalities impact the neuroplasticity of the developing autistic brain. Sleep, another vital component, was often sacrificed in autistic children. Sleep disorders, such as failure to fall asleep (sleep onset latency), too many wake-ups (sleep fragmentation), and reduced sleep periods, were common and tend to exacerbate behavioral and emotional problems. Biological factors, such as irregular melatonin secretion, often predispose children with ASD to sleep difficulties. When these biological vulnerabilities interact with environmental factors like screen light exposure (blue light), which suppresses melatonin, the result is often a chronic state of sleep deprivation. Poor sleep impacts not only the child's daytime functioning—manifesting as irritability, aggression, and hyperactivity but also the family dynamics, increasing stress on caregivers (Nogay & Adeli, 2024). A sleep-deprived child is less capable of utilizing coping strategies for emotional regulation, creating a vicious cycle of dysregulation. Parent involvement was an active moderator for the above processes. The family system plays a pivotal role in the therapeutic and developmental outcomes of children with ASD. Parents, who had their child screened, can be closely monitoring their screen and sleep habits better reduce the negative impact that affects some forms of behavioral and emotional regulation. Parental involvement goes beyond mere supervision; it encompasses the emotional climate of the home, the consistency of routines, and the responsiveness of the

parent to the child's cues. Recent studies emphasize that "co-regulation"—where the parent assists the child in managing emotional arousal—is a precursor to self-regulation. Furthermore, parents being actively involved in trying to understand the individual needs and responding thereto help an environment build for the mechanisms of coping and emotional stability (Uddin et al., 2024). The interaction between these variables is complex. While screen time may degrade sleep quality, and poor sleep may degrade behavior, an involved parent can intervene at multiple points in this chain. They can enforce "tech-free" zones before bedtime to protect sleep hygiene, or they can co-view media with the child to mediate the content and prevent overstimulation. This study sought to investigate how screen time and sleep patterns affect the behavior and emotional regulation of children with ASD within this triadic framework. By examining the moderating role of parental involvement, this research aimed to move beyond simple cause-and-effect models to a more nuanced understanding of family dynamics. Through these studies, the research sought to provide empirical evidence-based recommendations that may guide caregivers, clinicians, and educators in how to support children with autism in their behavioral and emotional development.

Screen Time

The definition of screen time is the amount of time spent by a person in the day on device screens; this may be smartphones, tablets, computers, televisions, and even gaming consoles. Screen time is either active (for browsing, gaming, or work) or passive in nature (such as watching videos or scrolling through social media) (Zink et al., 2024). In the context of ASD, screen time is often used as a "digital pacifier" or a tool for respite by parents, which complicates the measurement of its impact.

Sleep Patterns

Sleep patterns include the consistency, timing, and quality of sleep over a given period. These include metrics such as total sleep duration in hours per night, sleep onset latency as time taken to fall asleep, wakefulness after sleep onset, and consistency of sleep-wake cycles (e.g., bedtime and wake-up time) (L.-H. Chen et al., 2024). For autistic children, sleep patterns are frequently irregular due to disruptions in circadian rhythms and sensory sensitivities to the sleep environment.

Emotional Regulation

It refers to a person's capacity to recognize and monitor as well as to regulate the response with the aid of an emotion. The degree to which such an ability may exist may be gauged with self-soothing behaviors, expression of emotion, recovery from states of negative emotions. Generally, self-reports, observations, and psychometric measures measure such emotional regulation (Springstein & English, 2023). In ASD, deficits here often present as "meltdowns" or prolonged distress.

Behavioral Regulation

It refers to the ability to control and regulate behavior according to social norms, goals, or situational demands. Inhibitory control that was, the resistance to impulse-behavior toward achievement of goal-directedness, as well as adaptive modification of behaviors with a change in circumstances falls within its purview. Measurement: behavioral regulation can be ascertained through structured tasks, observations, or behavioral questionnaires (Arul Selvan, 2024).

Literature Review

The increasing integration of digital technology into daily life has significantly altered the developmental environment of children, including those diagnosed with Autism Spectrum Disorder (ASD). Among the most critical concerns emerging from contemporary research are the combined effects of screen time usage and sleep patterns on the behavioral and emotional regulation of autistic children. Emotional regulation refers to the ability to monitor, evaluate, and modify emotional reactions in a socially acceptable manner, while behavioral regulation involves controlling impulses and maintaining goal-directed behaviors. For autistic children, who already face challenges in these domains, excessive screen exposure and disrupted sleep may intensify existing difficulties. This literature review synthesizes current research to explore how screen time and sleep patterns influence behavioral and emotional regulation in autistic children, highlighting the biological, psychological, and environmental mechanisms involved, as well as the moderating role of parental involvement.

Screen Time and Behavioral Outcomes in Autistic Children; The use of digital screens has become an integral part of childhood, offering both educational opportunities and recreational engagement. However, research increasingly suggests that excessive screen exposure may have unintended negative consequences, particularly for autistic children. Ophir et al. (2023) reported that increased screen time is strongly associated with poor sleep quality and reduced sleep duration, which subsequently impacts cognitive functioning, emotional stability, and behavioral regulation. Autistic children, compared to their typically developing peers, tend to spend significantly more time engaged in sedentary activities, particularly screen-based entertainment such as tablets, smartphones, and televisions (Hale et al., 2018).

One reason for this increased reliance on screens is their predictability and structured nature. Many digital platforms provide repetitive, rule-based content that aligns with the systemizing cognitive style commonly observed in autism. Screens often offer a controlled

environment free from unpredictable social demands, making them particularly appealing to autistic children. While this predictability may reduce anxiety in the short term, excessive dependence on screens can limit opportunities for social interaction, emotional learning, and adaptive behavior development (Ebrahim, 2022).

The displacement hypothesis provides a useful framework for understanding this phenomenon. According to this theory, time spent on screens displaces time that could otherwise be devoted to face-to-face interactions, physical play, and emotionally rich social experiences. These activities are essential for developing emotional regulation skills, such as empathy, frustration tolerance, and self-control. Cardy et al. (2021) observed that during periods of increased stress, such as the COVID-19 pandemic, screen time among autistic children rose dramatically. This increase was associated with noticeable regressions in social communication skills and a rise in repetitive and restrictive behaviors, highlighting the potential long-term developmental costs of excessive screen exposure.

Furthermore, Kiing et al. (2024) found that high screen usage among preschool-aged children with developmental challenges was inversely related to social-emotional competence. Their findings suggest that the —digital pacifier effect, in which screens are used to soothe or occupy children, may undermine the development of internal self-soothing and emotional regulation mechanisms. Rather than learning to manage emotions through interaction, reflection, or guided support, children may become reliant on external digital stimuli to regulate distress.

Physiological Impacts of Screen Exposure on Sleep; Beyond behavioral displacement, screen time directly affects sleep physiology, which is already compromised in many autistic children. Digital devices emit short-wavelength blue light, which suppresses melatonin production. Melatonin plays a crucial role in regulating the sleep–wake cycle, and its dysregulation has been widely documented in individuals with ASD. Ophir et al. (2023) emphasized that screen exposure before bedtime can significantly delay sleep onset and reduce overall sleep quality, compounding existing sleep difficulties in autistic children.

This biological disruption is particularly concerning because sleep serves as a foundational process for emotional regulation and brain development. When sleep is delayed or fragmented due to screen exposure, the brain's ability to process emotions, consolidate memories, and regulate stress responses becomes impaired. As a result, autistic children may exhibit heightened irritability, increased emotional reactivity, and greater difficulty managing transitions or changes in routine.

Prevalence and Nature of Sleep Disturbances in Autism; Sleep disturbances are highly prevalent among autistic children, with estimates suggesting that between 50% and 80% experience chronic sleep problems (Cardy et al., 2021; Ebrahim, 2022). These disturbances include difficulties falling asleep, frequent night awakenings, early morning waking, and reduced total sleep duration. Such sleep challenges are not merely secondary symptoms but are increasingly recognized as core features of the autistic neurotype.

Kiing et al. (2024) noted that many autistic children experience persistent cognitive hyperarousal, describing a difficulty in —switching off their thoughts at bedtime. This heightened arousal interferes with sleep onset and contributes to poor sleep quality. Liloia et al. (2024) further explored the neurobiological basis of this phenomenon, suggesting that structural and functional brain differences in ASD may impair arousal regulation systems. These neurological differences make autistic children more vulnerable to sleep disruptions, particularly when combined with environmental factors such as screen exposure.

Sensory hypersensitivity also plays a significant role in sleep disturbances. Likhitweera et al. (2024) reported that sensitivities to sound, light, texture, or temperature can make the sleep environment uncomfortable or distressing for autistic children. For example, minor household noises or changes in lighting may trigger awakenings, leading to fragmented and non-restorative sleep. Additionally, disrupted or inconsistent bedtime routines further exacerbate sleep difficulties, emphasizing the importance of structured and predictable pre-sleep environments.

Sleep and Emotional Regulation; A growing body of literature underscores the critical role of sleep in emotional regulation, particularly for autistic children. Berenguer et al. (2024) highlighted that sleep is not a passive state but an active process involving emotional processing and neural reorganization. During sleep, especially rapid eye movement (REM) sleep, the brain integrates emotional experiences and reduces emotional intensity associated with stressful events.

Poor sleep quality and insufficient sleep duration have been consistently linked to increased emotional dysregulation, anxiety, and problem behaviors in autistic children. Berenguer et al. (2024) demonstrated that children with disrupted sleep exhibit greater difficulty managing frustration, increased emotional outbursts, and heightened sensitivity to stressors. Neurobiologically, sleep deprivation compromises the functioning of the prefrontal cortex, which plays a key role in inhibiting impulsive emotional responses. When this —brake system is weakened, emotional reactions become more intense and less controlled.

Gull and Ruth Sravani (2024) further emphasized the importance of sleep for memory consolidation and brain plasticity. These processes are essential for learning new coping strategies, adapting to social expectations, and developing flexible behavior patterns. In the absence of restorative sleep, autistic children may struggle to generalize learned skills, leading to stagnation or regression in emotional and behavioral development.

The Interconnected Nature of Screen Time, Sleep, and Regulation; The relationship between screen time, sleep, and emotional regulation is not linear but bidirectional and multifaceted. Excessive screen use can disrupt sleep, while poor sleep can increase reliance on screens as a coping mechanism for fatigue or irritability. This cyclical pattern intensifies emotional and behavioral challenges, creating a self-perpetuating loop that is difficult to break without targeted intervention.

Cardy et al. (2021) observed that children who experienced sleep deprivation were more likely to engage in prolonged screen use during the day, possibly as a means of self-regulation or stimulation. Unfortunately, this increased screen exposure further delayed sleep onset, reinforcing

the negative cycle. Understanding this interdependence is essential for developing effective interventions that address both screen habits and sleep hygiene simultaneously.

The Moderating Role of Parental Involvement; Parental involvement plays a crucial moderating role in the relationship between screen time, sleep, and emotional regulation in autistic children.

X. Chen et al. (2024) emphasized that parental influence extends beyond rule enforcement to include modeling, guidance, and emotional support. The concept of parental monitoring has evolved into active mediation, where in parents engage with their child's media use by discussing content, setting consistent boundaries, and participating in shared screen activities.

Healthy screen habits, such as limiting screen time before bed and encouraging non-digital calming activities, can significantly improve sleep outcomes. Establishing structured bedtime routines that include relaxation techniques, such as reading or sensory-friendly activities, helps signal the transition from wakefulness to sleep. When parents actively support these routines, autistic children are more likely to experience improved sleep quality and emotional stability.

Parental involvement also functions as an external regulatory system. Through co-regulation strategies such as soothing verbal cues, physical reassurance, and calm behavioral modeling parents help autistic children manage overwhelming emotions. Over time, these external supports facilitate the development of internal self-regulation skills.

Impact on Family Well-Being: The effects of sleep disturbances extend beyond the child to the entire family system. Lu et al. (2024) highlighted the bidirectional relationship between child sleep problems and parental well-being. Parents of autistic children with sleep difficulties often experience chronic sleep deprivation, increased stress, and emotional exhaustion. These factors can reduce parental patience, consistency, and emotional availability, inadvertently worsening the child's regulatory challenges.

Lu et al. (2024) found that parents who received training and support in sleep hygiene were better equipped to implement effective routines. These interventions not only improved child sleep outcomes but also enhanced parental mental health, breaking the negative cycle of mutual

dysregulation.

Emerging Holistic Perspectives; Recent research has begun to explore the physiological dimensions of parental intervention and lifestyle regulation. Su et al. (2024) and L.-H. Chen et al. (2024) suggested that lifestyle-focused parental strategies—encompassing diet, physical activity, and sleep hygiene—may influence gut-brain axis markers associated with ASD. These findings point toward a more holistic understanding of emotional and behavioral regulation, in which biological, environmental, and relational factors interact dynamically.

This perspective positions parents not merely as regulators of screen time but as architects of a supportive lifestyle that promotes neurological and emotional well-being. By fostering balanced routines, limiting excessive screen exposure, and prioritizing sleep health, parents can create an environment that supports optimal developmental outcomes for autistic children.

In summary, the literature clearly demonstrates that screen time usage and sleep patterns play a significant role in shaping the behavioral and emotional regulation of autistic children. Excessive screen exposure contributes to sleep disruption, limits opportunities for social learning, and exacerbates emotional dysregulation. Sleep disturbances, in turn, impair emotional processing, cognitive flexibility, and adaptive behavior. These factors are deeply interconnected, forming complex feedback loops that influence child development.

Parental involvement emerges as a critical moderating factor capable of mitigating these risks. Through active mediation, structured routines, and co-regulation strategies, parents can help autistic children develop healthier sleep habits and improved emotional regulation. As research continues to evolve, a holistic, family-centered approach that integrates screen management, sleep hygiene, and parental support appears essential for promoting well-being and developmental success in autistic children.

Rationale of the study

Children with Autism Spectrum Disorder (ASD) face significant challenges in managing emotions and behaviors, which profoundly affect their ability to interact socially and diminish their overall quality of life. These difficulties were often exacerbated by external factors, such as screen time and sleep patterns, which can either support or hinder their development. Prolonged screen exposure, especially non-educational content, had been linked to heightened hyperactivity, attention problems, and reduced opportunities for meaningful social engagement. Similarly, poor sleep quality, common among children with ASD, worsens emotional instability, leading to increased irritability, mood swings, and behavioral difficulties.

Parental involvement emerges as a critical factor in moderating these adverse effects. Parents can play a vital role in managing screen exposure and ensuring consistent, high-quality sleep routines, which were essential for emotional and behavioral regulation. However, despite the known importance of these factors, there was limited research exploring how screen time, sleep patterns, and parental involvement interact, particularly within the unique cultural and caregiving context of Pakistan.

This study aimed to fill this gap by investigating the combined impact of screen time, sleep patterns, and parental involvement on the behavioral and emotional regulation of children with ASD. The findings would provide evidence-based recommendations for parents, educators, and clinicians to address these challenges effectively. By identifying practical strategies, the study sought to enhance developmental outcomes, reduce behavioral and emotional difficulties, and ultimately improve the quality of life for children with ASD and their families.

Significance of the study

This study explores how screen time and sleep patterns affect behavioral and emotional regulation in children with autism spectrum disorder (ASD). It aimed to identify key patterns contributing to behavioral and emotional challenges, guiding tailored interventions. The research would also offer evidence-based strategies to improve sleep and manage screen used, potentially reducing emotional instability. By focusing on the role of parental involvement, the study highlights how parents can positively impact their child's screen habits and sleep quality, supporting effective parenting guidelines and training programs.

Problem statement

Children with Autism Spectrum Disorder (ASD) frequently face challenges in emotional and behavioral regulation, worsened by excessive screen time and poor sleep patterns, impacting their social interactions and quality of life. While parental involvement was crucial in addressing these factors, limited research exists on their combined effects, especially in culturally specific settings like Pakistan. This study aimed to bridge this gap by exploring how screen time, sleep patterns, and parental involvement collectively influence emotional and behavioral regulation in children with ASD, offering evidence-based strategies to enhance developmental outcomes and overall well-being.

Objectives

1. To investigate the relationship between screen time and behavioral regulation in children with ASD.
2. To examine the association between sleep patterns and emotional regulation in children with ASD.
3. To assess how screen time impacts sleep quality and, subsequently, behavior in children with ASD.
4. To identify if the relationship between screen time/sleep patterns and behavioral/emotional regulation was influenced by the moderating role of parental involvement

Hypothesis

1. Increased screen time will have a positive correlation with behavioral dysregulation in children with ASD.
2. Poor sleep patterns will have a positive correlation with emotional dysregulation in children with ASD.
3. Parental involvement will have a moderating role between the relationship of screen time/sleep patterns and behavioral/emotional regulation.

Conceptual Framework

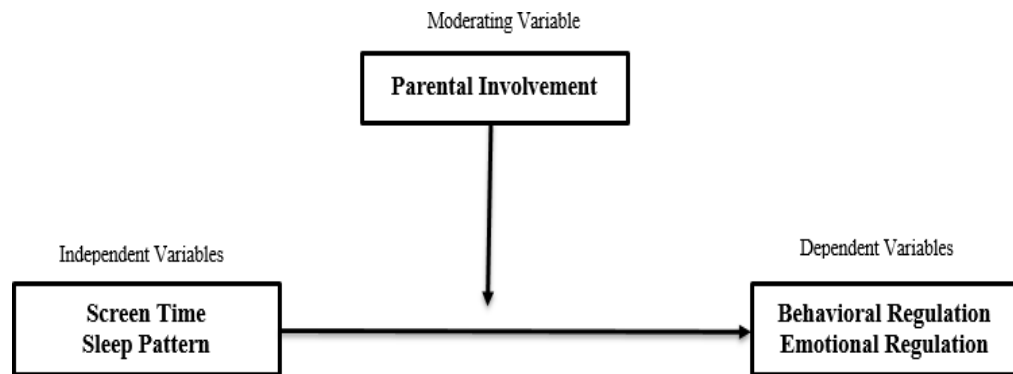


Figure 1: Conceptual framework depicting relationship among variables

METHOD

Research Design

A correlational research design was used to examine the relationships between screen time, sleep patterns, and their impact on behavioral and emotional regulation in children with autism spectrum disorder (ASD). This design allowed the measurement of the strength and direction of associations among the variables.

Data Collection Method:

- **Questionnaire:** Standardized questionnaires was administered to parents or caregivers of children with ASD to gather data on screen time, sleep habits, and behavioral/emotional outcomes.
- **Observation/Parent Report:** Observations from parents/caregivers on children's screen time and sleep habits were assessed the impact on behavior and emotional regulation.
- **Psychometric Tools:** Used validated tools to assess the levels of screen time and sleep quality, and specific instruments to measure behavioral and emotional regulation in children with ASD.

Population

Children diagnosed with autism spectrum disorder (ASD) 120 from Rawalpindi and Islamabad from different sittings, where special services provided for ASD children.

Sampling Technique:

Purposive Sampling was used through ASD clinics, special education centers, and support groups to recruit participants. This approach allowed to access a diverse sample of children with ASD and their parents/caregivers.

Inclusion criteria

1. Children aged **4 to 12 years** diagnosed with autism spectrum disorder by psychologist or

Psychiatrist.

2. Children who were currently living with their parents or primary caregivers.
3. Children who used screen devices (TV, tablets, smartphones, etc.) for at least 30 minutes per day.
4. Availability of a parent or caregiver who can provide reliable information about the child's screen time, sleep patterns, and behavior.

Exclusion Criteria

1. Children with severe intellectual disabilities or multiple comorbid psychiatric conditions that could complicate the assessment of behavior and emotional regulation.
2. Children who were on medication that significantly affects sleep patterns or behavior.
3. Families who were not willing or able to complete the questionnaires or participate in observational assessments.

Instruments

ScreenQ Measure of Screen-Based Media used (ScreenQ)

The ScreenQ was developed by Jenny Radesky and colleagues in 2020. The ScreenQ is a parent-report questionnaire designed to assess young children's screen-based media used in alignment with pediatric guidelines. It includes 15 items covering four key domains: access to and frequency of screen media used, content and context of media exposure, and caregiver-child interaction during screen used. Each item was scored on a Likert scale, and higher total scores reflect patterns of media used that were less consistent with health recommendations. The ScreenQ had demonstrated acceptable internal consistency, with Cronbach's alpha values typically ranging from 0.70 to 0.85, indicating good reliability in measuring screen media habits and their potential developmental impacts.

Children's Sleep Habits Questionnaire (CSHQ)

Children's Sleep Habits Questionnaire (CSHQ) was developed by Judith A. Owens and

colleagues in 2000. The CSHQ is a parent-report instrument designed to screen for sleep problems in children aged 4 to 12 years. It consists of 22 items grouped into eight subscales: Bedtime Resistance, Sleep Onset Delay, Sleep Duration, Sleep Anxiety, Night Wakings, Parasomnias, Sleep-Disordered Breathing, and Daytime Sleepiness. Each item was rated on a 3-point Likert scale: 1 ("Rarely"), 2 ("Sometimes"), and 3 ("Usually"), reflecting the frequency of sleep behaviors over a typical week. The CSHQ had shown good internal consistency, with Cronbach's alpha values typically above 0.70, indicating reliable measurement of various dimensions of children's sleep behaviors.

Autism Spectrum Screening Questionnaire (ASSQ)

The Autism Spectrum Screening Questionnaire (ASSQ) was developed by Ehlers, Gillberg, and Wing in 1999. The ASSQ is a parent- or teacher-report screening tool designed to identify autism spectrum symptoms in children aged 4 to 16 years, particularly those with normal intellectual functioning. It consists of 28 items that assess social interaction, communication difficulties, restricted and repetitive behaviors, and other behavioral characteristics commonly associated with Autism Spectrum Disorder. Each item was rated on a 3-point scale: 0 ("Not true"), 1 ("Somewhat true"), and 2 ("Certainly true"). The ASSQ had demonstrated good internal consistency, with Cronbach's alpha values typically above 0.80. It can be effectively used to measure behavioral patterns and aspects of behavioral regulation in autistic children, making it a valuable tool in early detection and support planning.

Emotion Regulation Questionnaire (ERQ)

The Emotional Regulation Questionnaire (ERQ) was developed by James J. Gross and Oliver P. John in 2003. The ERQ is a self-report measure designed to assess individual differences in the habitual use of two emotion regulation strategies: Cognitive Reappraisal and Expressive Suppression. It consists of 10 items, with 6 items measuring Cognitive Reappraisal (the tendency to change one's thoughts to alter emotional impact) and 4 items measuring Expressive Suppression (the tendency to inhibit emotional expression). Each item was rated

on a 7-point Likert scale ranging from 1 ("Strongly disagree") to 7 ("Strongly agree"). The ERQ had demonstrated good psychometric properties, with Cronbach's alpha values generally above 0.75 for both subscales, indicating acceptable to strong internal reliability.

Parenting Style Questionnaire (PSQ)

The Parenting Style Questionnaire (PSQ) was developed by Robinson, Mandleco, Olsen, and Hart in 1995. The PSQ is a self-report instrument designed to assess parenting behaviors and categorize them into three primary parenting styles: Authoritative, Authoritarian, and Permissive. It consists of 32 items, items are assigned to each parenting style. Responses were rated on a 5-point Likert scale ranging from 1 ("Never") to 5 ("Always"), indicating the frequency with which parents engage in specific behaviors. The questionnaire evaluates dimensions such as warmth, discipline, communication, and control. The PSQ had demonstrated good internal consistency, with Cronbach's alpha values typically ranging from 0.70 to 0.85 for its subscales, indicating reliable assessment of parenting practices across different styles.

Procedure

The procedure for this study outlines to investigate the impact of screen time and sleep patterns on behavioral and emotional regulation in children with autism spectrum disorder (ASD), considering the moderating role of parental involvement. The target comprised children aged 4–12 years diagnosed with ASD, who were receiving care at institutions managing ASD in Rawalpindi and Islamabad. Participants was selected using purposive sampling, drawing from rehabilitation centers, special education schools, and autism management clinics in these cities. The inclusion criteria required children to have a clinical diagnosis of ASD verified by a diagnostic report, and the willingness of their parents or primary caregivers to participate and provide informed consent. Exclusion criteria included children with co-occurring neurological disorders, such as epilepsy, and incomplete caregiver responses.

For data collection, the study employed several standardized tools. The Screen Time Questionnaire (STQ) assessed screen usage habits, while the Children's Sleep Habits Questionnaire (CSHQ) measured sleep patterns. Autism Spectrum Screening Questionnaire (ASSQ) assessed behavioral regulation and emotional regulation was evaluated using the Emotion Regulation Checklist (ERC), and the moderating role of parental involvement was examined through the Parenting Practices Questionnaire (PPQ). Ethical approval for the study was first be obtained from an Institutional Review Board (IRB). Subsequently, permission was sought from the identified institutions to approach caregivers of children meeting the inclusion criteria.

Caregivers was provided with structured questionnaires, either in physical form or digitally, based on their preference. Clear instructions was provided to ensure proper understanding of the questions, and adequate time was allowed for them to complete the forms. Confidentiality was strictly maintained by coding the data to anonymize personal information. Written informed consent was obtained from all participants, and they was assured of their right to withdraw from the study at any stage without any consequences. The data collection process would adhere to ethical standards to protect the participants' rights and well-being.

Data Analysis

- Used descriptive statistics to summarize participant demographics, screen time habits, sleep quality, and emotional/behavioral characteristics. Present data used means, standard deviations, frequencies, and percentages to provide an overview.
- Performed a Pearson correlation to examine the relationship between screen time, sleep patterns, and behavioral/emotional regulation.
- Conducted a multiple regression analysis to explore the impact of screen time and sleep patterns on emotional and behavioral regulation. Used linear regression to identify the strength and significance of each predictor.
- Used moderation analysis to investigate the role of parental involvement in moderating the effects of screen time and sleep on emotional and behavioral outcomes. Utilize a Statistical tool (e.g., SPSS, R) with moderation analysis features to assess how different levels of parental involvement influence the relationships.
- Tested the formulated hypotheses regarding the influence of screen time, sleep, and parental involvement on behavioral and emotional regulation using appropriate p- values and confidence intervals.

Ethical Consideration

Ethical approval was obtained from Ethical Review Board, Department of Psychology, IIUI and Ethics Committee of International Islamic University, Islamabad. In addition, all necessary information was provided to the participants and written declaration regarding consent was take with a total affirmation and assurance regarding privacy and confidentially to the process and gathered data. To ensure confidentiality, the data collected was not shared with anyone and the names of the participants were nowhere mentioned in the report of data file.

RESULTS

Table 1*Sociodemographic Characteristics of Participants (N=120)*

Variable	Categories	<i>f</i>	%
Gender			
	Male	60	50%
	Female	60	50%
Age			
	4 years - 8 years	68	56.7%
	9 years – 12 years	52	43.3%
Parents			
	Both parents	69	57.5%
	Single parent	30	25%
	Separated parent	21	17.5%
Birth order			
	1 st born	50	41.7%
	2 nd born	15	12.5%

	Middle child	14	11.7%
	Last born	10	8.3%
	Single born	31	25.8%
Socio-economic status			
	Low	15	12.5%
	Middle	60	50%
	High	45	37.5%

Table 1 presents the sociodemographic characteristics of the participants. The sample consisted of 120 children, among whom 50.0% were male (n = 60) and 50.0% were female (n = 60). The majority of the participants (56.7%) were aged between 4 and 8 years (n = 68), followed by those aged 9-12 years (43.3%, n = 52). In terms of parental status, 57.5% of the children lived with both parents (n = 69), whereas 25.0% belonged to single-parent households (n = 30) and 17.5% (n = 21) had separated parents.

Regarding birth order, most participants were first-born children (41.7%, n = 50), followed by single-born children (25.8%, n = 31), second-born (12.5%, n = 15), middle-born (11.7%, n = 14), and last-born children (8.3%, n = 10).

Concerning socioeconomic status, half of the participants belonged to the middle class (50.0%, n = 60), while 37.5% (n = 45) were from the high socioeconomic group and 12.5% (n = 15) were from the low socioeconomic group.

In terms of additional demographic characteristics, the distribution across birth order categories shows a higher representation of first-born and single-born children, while fewer participants were second-born, middle-born, or last-born. The socioeconomic background

further indicates that most children came from families situated within the middle class, with smaller proportions representing high and low socioeconomic groups.

Overall, the demographic data suggest that the majority of participants were young children, equally distributed across gender, primarily living with both parents, and largely belonging to the middle socioeconomic class, with a considerable proportion being first-born or single- born.

Table 2*Psychometric Properties of Study Major Variable (N=120)*

Measures	K	α	Range		M	SD	Skew.	Kurt.
			Min	Max				
SQ	15	.69	5	26	17.33	5.39	-.08	-.37
CSHQ	22	.91	7	165	72.60	38.62	.27	-.86
ASSQ	28	.79	12	49	28.33	9.38	-.03	-.96
ERQ	10	.75	12	68	41.88	13.28	-.49	-.09
PSQ	32	.91	45	137	94.48	27.36	-.17	-1.32

Note. SQ=Screening Questionnaire; CSHQ=Children Sleeping Habit Questionnaire; ASSQ=Autism Spectrum Screening Questionnaire; ERQ=Emotional Regulation Questionnaire; PSQ=Parenting Style Questionnaire; Skew = Skewness; Kurt = Kurtosis

Table 2 displays the psychometric properties and descriptive statistics of the study variables. The Screening Questionnaire (SQ) ($\alpha = .69$) showed moderate variability with an approximately normal distribution (skewness = -0.08 , kurtosis = -0.37). The Children's Sleep Habit Questionnaire (CSHQ) ($\alpha = .91$) demonstrated high variability and a near-normal distribution pattern (skewness = 0.27 , kurtosis = -0.86). The Autism Spectrum Screening Questionnaire (ASSQ) ($\alpha = .79$) showed moderate variability with an almost symmetrical distribution (skewness = -0.03 , kurtosis = -0.96). The Emotional Regulation Questionnaire (ERQ) ($\alpha = .75$) exhibited slight negative skewness (-0.49) and a nearly flat distribution (kurtosis = -0.09), indicating a balanced spread of emotional regulation scores. The Parenting Style Questionnaire (PSQ) ($\alpha = .91$) showed high variability with mild negative

skewness (-0.17) and low kurtosis (-0.32), suggesting that responses were widely distributed across parenting styles. Overall, reliability coefficients ranged from .69 to .91, indicating acceptable to excellent internal consistency across the scales.

Table 3

Correlation of Screen time and Sleep patterns with Behavioral and Emotional regulation and Parental Involvement (N = 120)

Variable	1	2	3	4	5
1. Screen Time	-	-	-	-	-
2. Sleep Patterns	-.53**	-	-	-	-
3. Behavioral Regulation	-.39**	.28**	-	-	-
4. Emotional Regulation	-.43**	.44**	.61**	-	-
5. Parental Involvement	-.73**	.59**	.56**	.63**	-

Note: Correlations marked with an asterisk () were significant at $p < .05$ whereas those marked with an asterisk (**) were significant at $p < .01$*

Table 3 presents the Pearson product–moment correlations among the study variables. Results indicated a significant negative correlation between screen time and sleep patterns, $r(120) = -.53$, $p < .001$, suggesting that higher screen exposure was associated with poorer sleep quality. Screen time also showed significant negative correlations with behavioral regulation, $r(120) = -.39$, $p < .001$, and emotional regulation, $r(120) = -.43$, $p < .001$, indicating that increased screen used was linked to weaker behavioral and emotional control. A strong negative correlation was also found between screen time and parental involvement, $r(120) = -.73$, $p < .001$, reflecting that greater screen time corresponded with lower parental engagement. Furthermore, sleep patterns demonstrated significant positive correlations with behavioral regulation, $r(120) = .28$, $p < .001$, emotional regulation, $r(120) = .44$, $p < .001$, and parental involvement, $r(120) = .59$, $p < .001$, suggesting that healthier sleep routines coincide with stronger regulation abilities and greater parental support. Additionally, behavioral regulation showed significant positive correlations with emotional regulation, r

(120) = .61, $p < .001$, and parental involvement, $r(120) = .56$, $p < .001$, while emotional regulation was positively correlated with parental involvement, $r(120) = .63$, $p < .001$. Overall, the findings indicate that higher screen time was consistently associated with poorer sleep, reduced regulation capacities, and lower parental involvement among children.

Table 4

Simple linear regression analysis demonstrating effect of Screen time and Sleep pattern on the prediction of Behavioral regulation among Autistic Children (N=120)

	Behavioral regulation	
		95% CI
	Model 1 <i>B</i>	LL, UL
(constant)	35.77***	[27.28, 44.25]
Screen time	-.56	[-.90, -.22]
Sleep Patterns	.03	[-.02, .08]
R^2	.17	
F	11.78***	

*Note: *** $p < .000$; LL = Lower limit; UL = Upper Limit*

Table 4 a simple linear regression analysis was conducted to examine whether screen time and sleep patterns significantly predict behavioral regulation among autistic children. The overall model was significant, $F(1, 120) = 11.78$, $p < .001$, explaining 17% of the variance in behavioral regulation ($R^2 = .17$). Screen time emerged as a significant negative predictor of behavioral regulation, with an unstandardized coefficient of $B = -0.56$, 95% CI $[-0.90, -0.22]$, indicating that greater screen exposure was associated with poorer behavioral regulation. Sleep patterns also contributed to the model, with an unstandardized coefficient of $B = 0.03$, 95% CI $[-0.02, 0.08]$, suggesting that healthier sleep routines show a small positive

relationship with indicates that this effect may be less. The constant for the model was 35.77, with a 95% confidence interval of [27.28, 44.25], representing the predicted behavioral regulation score when both predictors were held at zero.

Table 5

Simple linear regression analysis demonstrating effect of Screen time and Sleep pattern on the prediction of Emotional regulation among Autistic Children (N=120)

	Emotional regulation	
		95% CI
	Model 1 <i>B</i>	LL, UL
(constant)	45.92***	[34.36, 57.49]
Screen time	-.66	[-1.13, -.19]
Sleep Patterns	.10	[.03, .17]
R^2	.24	
F	18.64***	

*Note: *** $p < .000$; LL = Lower limit; UL = Upper Limit*

A simple linear regression analysis was conducted to examine whether screen time and sleep patterns significantly predict emotional regulation among autistic children. The overall model was significant, $F(2, 117) = 18.64$, $p < .001$, explaining 24% of the variance in emotional regulation ($R^2 = .24$). Screen time emerged as a significant negative predictor of emotional regulation, with an unstandardized coefficient of $B = -0.66$, 95% CI $[-1.13, -0.19]$, indicating that higher screen exposure was associated with lower emotional regulation. Sleep patterns showed a significant positive effect, with an unstandardized coefficient of $B = 0.10$, 95% CI $[0.03, 0.17]$, suggesting that better sleep patterns were

associated with improved emotional regulation. The constant value was 45.92, with a 95% confidence interval of [34.36, 57.49], representing the predicted emotional regulation score when both predictors were held at zero.

Table 6*Moderating effect of Parental involvement on Screen time and Behavioral regulation (N=120)*

Predictor	<i>B</i>	<i>SEB</i>	<i>t</i>	<i>P</i>	95% CI
					<i>LL, UL</i>
Constant	-32.16	12.72	-2.53	.01	[-57.36, -6.96]
Screen Time	-2.14	.60	3.57	.00	[-3.34, -.95]
Parental Involvement	.62	.12	5.14	.00	[.38, .86]
Screen Time*Parental Involvement	.02	.01	-3.64	.00	[.01, .04]
<i>R</i> ²		.39			
<i>F</i>		24.68***			

*Note; (***)* $p < .001$; *LL* = Lower Limit; *UL* = Upper Limit

A moderation analysis using Hayes' (2022) PROCESS Model 1 examined whether parental involvement moderates the relationship between screen time and behavioral regulation among autistic children ($N = 120$). The overall model was significant, $F(3, 116) = 24.68, p < .001, R^2 = .39$. Screen time negatively predicted behavioral regulation ($B = -2.14, p < .001$), while parental involvement positively predicted behavioral regulation ($B = 0.62, p < .001$). The interaction between screen time and parental involvement was significant ($B = 0.02, p < .001$), indicating that parental involvement moderates the relationship between screen time and behavioral regulation.

Table 7*Moderating effect of Parental involvement on Screen time and Emotional regulation (N=120)*

Predictor	<i>B</i>	<i>SEB</i>	<i>t</i>	<i>P</i>	95% CI
					<i>LL, UL</i>
Constant	-16.44	17.82	-.92	.04	[-51.74, 18.86]
Screen Time	-1.39	.84	1.66	.02	[-2.27, 3.07]
Parental Involvement	.58	.17	3.42	.01	[.24, .91]
Screen Time*Parental Involvement	.01	.01	1.52	.04	[.03, .00]
<i>R</i> ²		.42			
<i>F</i>		27.18***			

*Note; (***)* $p < .001$; *LL* = Lower Limit; *UL* = Upper Limit

A moderation analysis using Hayes' (2022) PROCESS Model 1 examined whether parental involvement moderates the relationship between screen time and emotional regulation among autistic children ($N = 120$). The overall model was significant, $F(3, 116) = 27.18$, $p < .001$, $R^2 = .42$. Screen time negatively predicted emotional regulation ($B = -1.39$, $p = .02$), while parental involvement positively predicted emotional regulation ($B = 0.58$, $p = .01$). The interaction between screen time and parental involvement was significant ($B = 0.01$, $p = .04$), indicating that parental involvement moderates the relationship between sleep pattern and behavioral regulation.

Table 8

Moderating effect of Parental involvement on Sleep patterns and Behavioral regulation
(N=120)

Predictor	<i>B</i>	<i>SEB</i>	<i>t</i>	<i>P</i>	95% CI <i>LL, UL</i>
Constant	15.04	4.88	3.08	.00	[5.38, 24.69]
Sleep pattern	.12	.08	1.47	.04	[.04, .29]
Parental Involvement	.15	.06	2.43	.02	[.03, .27]
Sleep patterns *Parental Involvement	.001	.001	1.24	.01	[.003, -.001]
<i>R</i> ²		.33			
<i>F</i>		19.18***			

*Note; (***)* $p < .001$; *LL* = Lower Limit; *UL* = Upper Limit

A moderation analysis using Hayes' (2022) PROCESS Model 1 examined whether parental involvement moderates the relationship between sleep pattern and behavioral regulation among autistic children ($N = 120$). The overall model was significant, $F(3, 116) = 19.18$, $p < .001$, $R^2 = .33$. Sleep pattern positively predicted behavioral regulation ($B = 0.12$, $p = .04$), while parental involvement positively predicted behavioral regulation ($B = 0.15$, $p = .02$). The interaction between sleep pattern and parental involvement was significant ($B = 0.001$, $p = .01$), indicating that parental involvement moderates the relationship between sleep pattern and behavioral regulation.

Table 9

Moderating effect of Parental involvement on Sleep patterns and Emotional regulation
(N=120)

Predictor	<i>B</i>	<i>SEB</i>	<i>t</i>	<i>P</i>	95% CI
					<i>LL, UL</i>
Constant	7.19	6.48	1.11	.03	[-5.65, 20.03]
Sleep pattern	.15	.11	1.33	.02	[-.07, .37]
Parental Involvement	.35	.08	4.35	.00	[.19, .52]
Sleep patterns *Parental Involvement	.001	.001	1.08	.03	[.001, .004]
<i>R</i> ²		.41			
<i>F</i>		26.94***			

*Note; (***)* $p < .001$; *LL* = Lower Limit; *UL* = Upper Limit

A moderation analysis using Hayes' (2022) PROCESS Model 1 examined whether parental involvement moderates the relationship between sleep pattern and emotional regulation among autistic children ($N = 120$). The overall model was significant, $F(3, 116) = 26.94$, $p < .001$, $R^2 = .41$. Sleep pattern positively predicted emotional regulation ($B = 0.15$, $p = .02$), while parental involvement positively predicted emotional regulation ($B = 0.35$, $p < .001$). The interaction between sleep pattern and parental involvement was significant ($B = 0.001$, $p = .03$), indicating that parental involvement moderates the relationship between sleep pattern and emotional regulation.

Table 10

Multiple linear regression analysis demonstrating effect of Demographics on the prediction of Screen time among Autistic children (N=120)

Predictors	Screen time	
	Model 1 B	95% CI LL, UL
(constant)	29.86	[25.69, 34.07]
Gender	-7.98	[-9.32, -6.65]
Age	-1.64	[-3.01, -.27]
Parent	.50	[-.37, 1.37]
Birth order	.23	[-.18, .64]
Socio-economic status	.15	[-.87, 1.18]
R ²	.56	
F	28.98***	

A multiple linear regression analysis was conducted to examine whether demographic variables (gender, age, parent status, birth order, and socioeconomic status) predict screen time among autistic children (N = 120). The overall model was significant, $F(4, 115) = 28.98$, $p < .001$, indicating that the set of demographic factors significantly predicted screen time. The model explained 56% of the variance in screen time ($R^2 = .56$).

Table 11

Multiple linear regression analysis demonstrating effect of Demographics on the prediction of Sleep patterns among Autistic children (N=120)

Predictors	Sleep patterns	
	Model 1 B	95% CI LL, UL
(constant)	38.06	[2.92, 73.19]
Gender	44.01	[32.85, 55.16]
Age	-15.16	[-26.63, -3.69]
Parent	-1.63	[-8.91, 5.65]
Birth order	2.51	[-.89, 5.90]
Socio-economic status	.15	[-14.69, 2.48]
R ²	.39	
F	15.04***	

A multiple linear regression analysis was conducted to examine whether demographic variables (gender, age, parent status, birth order, and socioeconomic status) predict sleep patterns among autistic children (N = 120). The overall model was significant, $F(5, 114) = 15.04$, $p < .001$, indicating that the set of demographic factors significantly predicted sleep patterns. The model explained 39% of the variance in sleep patterns ($R^2 = .39$).

DISCUSSION

The present research intended to examine the impact of screen time and sleep patterns on the behavioral and emotional regulation of children with Autism Spectrum Disorder, while also exploring the moderating role of parental involvement in these relationships. The findings of this research provide valuable insights into how digital media exposure and sleep routines influence children's self-regulation capacities and how parental engagement may serve as a protective factor in mitigating the negative effects of high screen time and irregular sleep patterns.

The finding as mentioned in Table 3 that screen time was significantly and negatively correlated with behavioral regulation fully supports the study's hypothesis that higher screen exposure was associated with weaker behavioral control among autistic children. This result was consistent with previous research demonstrating that excessive screen time predicts reduced executive functioning and behavioral regulation in children. For instance, Twenge and Campbell (2018) showed that greater digital media exposure was connected to decreased attention and behavioral control among children. Similarly, Madigan et al. (2019) observed that increasing screen used negatively damaged children's behavioral regulating abilities. These findings correspond with past research demonstrating that prolonged screen exposure may impair children's self-regulatory capacities due to disturbed routines and diminished opportunity for parent-guided activities. As a result, the current finding supports the notion that behavioral regulation decreases with increasing screen time, supporting the negative correlation that had been proposed.

The significant positive correlation found between sleep patterns and behavioral regulation, as well as between parental involvement and behavioral regulation, as mentioned in Table 3, supports the study's hypothesis that healthier sleep routines and higher parental engagement were associated with stronger behavioral control among autistic children.

In accordance with previous research demonstrating that adequate sleep enhances self-regulation and behavioral outcomes in children. Beebe et al. (2010) discovered that consistent sleep patterns help to increase concentration, emotional stability, and behavioral control. Similarly, Sadeh et al. (2009) found that children with appropriate sleep routines had better behavioral regulation and responsiveness to parental supervision. These converging data support the current study's conclusion that promoting healthy sleep patterns and active parental participation was a substantial predictor of improved behavioral regulation, confirming the hypothesised positive association.

The finding that screen time and sleep patterns significantly predicted behavioral regulation, as mentioned in Table 4, fully supports the study's hypothesis that higher screen exposure and poorer sleep routines were associated with weaker behavioral regulation among autistic children. The result, showing that these predictors explained 17% of the variance in behavioral regulation, highlights the considerable impact of daily routines and digital media exposure on children's self-regulatory capacities. This finding was consistent with prior studies that had demonstrated strong predictive relationships between screen time, sleep patterns, and behavioral outcomes. For example, Madigan et al. (2019) discovered that increasing screen exposure strongly predicted poorer behavioral regulation in children. Similarly, Beebe et al. (2010) found that children with inconsistent sleep schedules had worse levels of behavioral control and attention.

The finding that screen time and sleep patterns significantly predicted emotional regulation, as mentioned in Table 5, was in full agreement with the study's hypothesis that higher screen exposure and poorer sleep routines were associated with lower emotional regulation among autistic children. The result, showing that these predictors explained 24% of the variance in emotional regulation, highlights the considerable impact of daily routines and digital media exposure on children's emotional self-regulation. This discovery was consistent

with earlier research that had revealed similar tendencies in infant development studies. For example, Madigan et al. (2019) discovered that increasing screen exposure in children was associated with worse emotional control and increased irritability. Similarly, Beebe et al. (2010) found that inconsistent sleep practices in children were associated with poor emotional control and increased mood instability. These consistent findings support the current study's conclusion that excessive screen time and poor sleep habits were both important predictors of poorer emotional regulation outcomes.

The moderation analysis using Hayes' (2022) PROCESS Model 1, as mentioned in Tables 6 and 7, revealed that parental involvement significantly moderated the relationships between screen time and behavioral regulation, as well as screen time and emotional regulation among autistic children. Higher parental involvement buffered the negative impact of greater screen exposure on behavioral regulation, while simultaneously creating the negative influence of excessive screen time on emotional regulation. These findings were consistent with previous research highlighting the protective role of parental engagement in children's self-regulatory development. For example, Valcan et al. (2020) found that enhanced parental participation reduced the negative effects of excessive screen used on children's behavioral control, but Lee and Byun (2021) discovered that engaged parenting reduced behavioral issues in children with more screen time. Similarly, Molfese et al. (2019) discovered that supportive parenting enhanced the benefits of adequate sleep on children's emotional functioning, and Sadeh et al. (2015) discovered that parental guidance enhanced the positive impact of regular sleep routines on emotional regulation, focusing on the moderating role of parental support in improving both behavioral and emotional self-regulatory ability.

The moderation analysis using Hayes' (2022) PROCESS Model 1, as mentioned in Tables 8 and 9, revealed that parental involvement significantly moderated the relationships between sleep patterns and both behavioral and emotional regulation among autistic children.

Parental involvement strengthened the positive effects of healthier sleep routines on behavioral control and emotional functioning. These findings were consistent with previous research highlighting the protective role of parental engagement in children's self-regulatory development. For example, Mindell et al. (2017) observed that parental participation increased the positive impact of adequate sleep on children's behavioral outcomes, whereas El-Sheikh et al. (2013) discovered that involved parenting improved sleep-related behavioral control. Similarly, Sadeh et al. (2015) found that parental guidance increased the benefits of consistent sleep routines on children's emotional regulation, and Astill et al. (2012) found that supportive parenting strengthened the correlation between healthy sleep patterns and emotional well-being, demonstrating the moderating effect of parental involvement in improving both behavioral and emotional self-regulatory capacities.

The present study, as reported in Tables 10 and 11, found that demographic variables such as gender, parent status, birth order, age, and socioeconomic status significantly predicted screen time and sleep patterns among autistic children. The overall models explained 56% of the variance in screen time and 39% of the variance in sleep patterns, highlighting the notable influence of demographic characteristics on these behaviors. These findings were consistent with previous research indicating that demographic factors can shape children's screen exposure and sleep routines. For example, Przybylski and Weinstein (2019) observed that older children and those from lower socioeconomic backgrounds had more screen time, whereas Hale and Guan (2015) discovered that age and family environment strongly influenced sleep duration and quality in children. Similarly, Hiscock et al. (2007) discovered that parental characteristics and familial demographics influenced children's sleep patterns, and Twenge and Campbell (2018) found that gender and age differences influenced fluctuations in screen engagement, illustrating the importance of demographic variables for assessing both screen used and sleep behaviors in autistic children.

The findings of this study regarding the moderating role of parental involvement align with the broader theoretical framework of the "Family Systems Theory," which posits that the behavior of a child cannot be understood in isolation from the family unit. The significant interaction effects observed in Tables 6 through 9 suggest that parental engagement serves as a buffer against environmental stressors. This supports the recent work of Lu et al. (2024), who emphasized that in families of children with ASD, the parent's ability to maintain structured routines is a primary determinant of the child's developmental trajectory. When parents are involved, they essentially "lend" their prefrontal cortex to the child, providing the external organization and emotional stability that the child may lack internally. This co-regulation is particularly vital when the child is fatigued from poor sleep or overstimulated by screen exposure. Furthermore, the relationship between screen time and emotional dysregulation observed in this study echoes the findings of Kiing et al. (2024) and Zink et al. (2024), who identified a "dose-response" relationship between media use and emotional lability. The current study adds to this body of knowledge by demonstrating that this relationship is not deterministic; it can be altered by parental intervention. This is a crucial clinical implication: while it may be difficult to completely eliminate screen time or instantly cure sleep disorders in autistic children, increasing parental involvement is a tangible and achievable intervention target. The specific finding that healthy sleep patterns positively predict behavioral regulation (Table 4) is corroborated by Berenguer et al. (2024), who found that sleep continuity was a stronger predictor of daytime executive functioning than total sleep duration. This suggests that for autistic children, the quality and consistency of sleep—factors heavily influenced by parental bedtime routines—are paramount. The current study's results validate the importance of sleep hygiene interventions as a first-line treatment for behavioral issues in ASD, potentially reducing the need for pharmaceutical interventions. Additionally, the demographic predictors

identified in Tables 10 and 11 offer a nuanced view of how family context shapes these variables. The finding that socioeconomic status influences screen time aligns with the "digital divide" literature, but in the context of ASD, it may also reflect the availability of alternative therapeutic activities. Families with higher resources may have access to sensory gyms, occupational therapy, or outdoor spaces that serve as alternatives to screen time. This highlights the need for policy-level interventions to provide accessible recreational alternatives for families of autistic children across all socioeconomic strata, as suggested by recent sociological analyses of ASD care (Uddin et al., 2024). Finally, the strong negative correlation between screen time and parental involvement ($r = -.73$) raises an important question about causality. Does high screen time lead to parent withdrawal, or do parents use screens when they are unable to engage? The literature suggests a bidirectional effect. Ebrahim (2022) described parental "technoference," where technology interrupts parent-child interactions. However, in the context of ASD, parents often report high levels of parenting stress, and screens may be used as a necessary coping mechanism for the parent to gain respite. Future interventions must therefore be compassionate, helping parents find respite strategies that do not rely solely on digital devices, thereby preserving the critical parent-child connection that fosters emotional regulation.

Limitations and Suggestions

Following are the limitations of this study:

1. The size of the sample constrains the statistical power of the study and may reduce the generalizability of the findings to the broader population of autistic children.
2. Since purposive sampling was used, the sample may not represent all autistic children, leading to potential sampling bias. This limits external validity and the ability to generalize results to other populations or cultural contexts.
3. The cross-sectional survey design captures data at a single point in time, which prevents the inference of causal relationships between screen time, sleep patterns,

parental involvement, and behavioral or emotional regulation.

4. All data were obtained using self-report questionnaires, which may be influenced by response biases, including social desirability, memory inaccuracies, or over-reporting behaviors.
5. The study does not account for fluctuations in screen time, sleep patterns, or parental involvement over time, which may vary due to school schedules, daily routines, or environmental factors.
6. Factors such as the severity of autism symptoms, comorbid conditions, or family dynamics were not statistically controlled, which might have influenced both behavioral and emotional regulation outcomes.
7. The conceptualization of parental involvement may differ across families, limiting how accurately the instrument reflects the actual engagement of caregivers in daily child activities.
8. Since the study focused specifically on autistic children within certain cities and age ranges, the findings may not apply to children outside of these demographics or those with other developmental conditions.

Following were the suggestions:

1. Future research should involve larger and more diverse samples to enhance the generalizability and statistical robustness of findings concerning screen time, sleep patterns, and self-regulation in autistic children.
2. Employing random or stratified sampling techniques could help reduce sampling bias and better represent the broader population of autistic children and families.
3. Longitudinal studies should be conducted to examine changes in screen time, sleep patterns, parental involvement, and self-regulation over time, enabling stronger causal inferences.

4. Including qualitative interviews or mixed-method designs can provide deeper insights into children's lived experiences, family routines, and the role of parental involvement in regulating behavior and emotions.
5. Future studies should examine additional moderating or mediating factors, such as emotional support, cognitive interventions, or sleep hygiene practices, to better understand mechanisms linking screen time and sleep to self-regulation.
6. Replicating the study across different cultural or educational settings could reveal whether the observed relationships were consistent across environments or specific to contexts.

Implications of this study

The results of this study carry significant implications for research, clinical practice, and family interventions. The observed negative relationships between screen time and both behavioral and emotional regulation, and the positive associations of healthy sleep patterns with self-regulation, highlight the urgent need for targeted behavioral and sleep interventions for autistic children. These findings suggest that excessive screen use may hinder self-regulatory capacities, while consistent sleep routines support emotional and behavioral stability. Moreover, the moderating effect of parental involvement emphasizes the importance of engaged parenting in mitigating the negative effects of screen time and enhancing the benefits of good sleep habits. Therefore, healthcare providers, educators, and caregivers should collaboratively develop structured routines, monitor screen exposure, and actively participate in daily activities to promote optimal behavioral and emotional outcomes in autistic children.

Conclusion

In conclusion, the present study demonstrated that screen time negatively impacts behavioral and emotional regulation, while healthy sleep patterns positively influence these outcomes among autistic children. Parental involvement was found to significantly moderate these relationships, buffering the negative effects of screen time and enhancing the positive effects of adequate sleep. These findings underscore the critical role of structured daily routines, limited screen exposure, and active parental engagement in supporting the self-regulatory development of autistic children. Overall, the study highlights the need for holistic interventions that address behavioral, emotional, and environmental factors while promoting family involvement to improve overall child well-being.

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APPENDICES

Annexure A: Informed Consent

You are invited to participate in a research study "impact of screen time and sleep patterns on behavioral and emotional regulation of children with autism spectrum disorder: moderating role of parental involvement". This study is being conducted by Muhammad Zuhair, MS Scholar, Department of Psychology, International Islamic University, Islamabad.

Your participation involves completing a questionnaire assessing these factors. Participation was voluntary, and you can withdraw at any time. All information will be kept confidential and used solely for research purposes. Your responses were anonymous.

Some questions might cause mild distress; you can choose not to answer or withdraw if uncomfortable. Your contribution will help advance understanding of mental health factors among psychologists.

By completing the questionnaire, you indicate informed consent. If you have any queries or concerns, please feel free to contact me at muhammad.mscp510@student.iiu.edu.pk.

Signature: _____

Annexure B: Demographic Sheet

Gender	1) Male	2) Female
Age	1) 4-8 years	2) 9-12 years
Parents	1) Both parents	2) Single parents
	3) Separated parent	
Birth order	1) 1st born	2) 2nd born
	3) Middle child	4) Last born
	5) Single child	
Socio economic status	1) Low	2) Middle
	3) High	

Annexure C: Screen Time Questionnaire

Item	Domain of Use	Description of Item Content	Points
1	Access	Presence of a bedroom screen (TV, game system, portable, computer w/Internet) Y/N	0-2
2	Access	Child has a portable device? Y/N	0-2
3	Access	Does child use during meals? Y/N	0-1
4	Access	Does child use on school nights? Y/N	0-1
5	Access	Does child use while waiting for things outside of house (e.g. in line)? Y/N	0-1
6	Frequency	Age started using any screen media Over 18 m/o (0), 13-18 (1), 0-12 (2)	0-2
7	Frequency	Hours per day of combined screen use Less than 1 (0), 1-2.9 (1), 3 or more (2)	0-2
8	Frequency	Child use at bedtime to help fall asleep? Never (0), Sometimes (1), Often (2)	0-2
9	Frequency	Child use to help calm down when upset? Never (0), Sometimes (1), Often (2)	0-2
10	Content	Use of violent media? Never (0), Sometimes (1), Often (2)	0-2
11	Content	Child chooses shows and/or downloads apps by himself/herself? Never (0), Sometimes (1), Often (2)	0-2
12	Content	Pace of most media used: slow more talking or singing (0), fast more action (1)	0-1
13a	Interactivity	Usually views TV/videos with grownup (0) or alone (1)?	0-1
13b	Interactivity	Usually uses video games/apps with grownup (0) or alone (1)?	0-1
14	Interactivity	During TV/movies, how often does grownup discuss and/or ask questions? Often (0), Sometimes (1), Never (2)	0-2
15	Interactivity	After watching or playing, how often does grownup discuss what it was about and/or why they liked it? Often (0), Sometimes (1), Never (2)	0-2
Total possible			0-26

Table 1: ScreenQ Content, Administration and Scoring. A total of 15 items distributed among 4 domains: access to screens, frequency of use, media content, and human interactivity/co-viewing. The administration form is scripted at a 6th-grade reading level. Total possible score is 26 points, with higher score reflecting greater developmental and health risk.

Annexure D: Children's Sleep Habits Questionnaire

NICHD SECCYD—Wisconsin

CHILDREN'S SLEEP HABITS QUESTIONNAIRE (ABBREVIATED)

The following statements are about your child's sleep habits and possible difficulties with sleep. Think about the past week in your life when you answer the questions. If last week was unusual for a specific reason, choose the most recent typical week. Unless noted, check Always if something occurs every night, Usually if it occurs 5 or 6 times a week, Sometimes if it occurs 2 to 4 times a week, Rarely if it occurs once a week, and Never if it occurs less than once a week.

BEDTIME

Write in your child's usual bedtime: Weeknights _____:_____ am/pm

Weekends _____:_____ am/pm

	7 Always	5-6 Usually	2-4 Sometimes	1 Rarely	0 Never
1. Child goes to bed at the same time at night.	()	()	()	()	()
2. Child falls asleep within 20 minutes after going to bed.	()	()	()	()	()
3. Child falls asleep alone in own bed.	()	()	()	()	()
4. Child falls asleep in parent's or sibling's bed.	()	()	()	()	()
5. Child falls asleep with rocking or rhythmic movements.	()	()	()	()	()
6. Child needs special object to fall asleep (doll, special blanket, stuffed animal, etc.).	()	()	()	()	()
7. Child needs parent in the room to fall asleep.	()	()	()	()	()
8. Child resists going to bed at bedtime.	()	()	()	()	()
9. Child is afraid of sleeping in the dark.	()	()	()	()	()

SLEEP BEHAVIOR

Write in your child's usual amount of sleep each day (combining nighttime sleep and naps):

_____ hours and _____ minutes

	7 Always	5-6 Usually	2-4 Sometimes	1 Rarely	0 Never
10. Child sleeps about the same amount each day.	()	()	()	()	()
11. Child is restless and moves a lot during sleep.	()	()	()	()	()

	7 Always	5-6 Usually	2-4 Sometimes	1 Rarely	0 Never
12. Child moves to someone else's bed during the night (parent, sibling, etc.).	()	()	()	()	()
13. Child grinds teeth during sleep (your dentist may have told you this).	()	()	()	()	()
14. Child snores loudly.	()	()	()	()	()
15. Child awakens during the night and is sweating, screaming, and inconsolable.	()	()	()	()	()
16. Child naps during the day.	()	()	()	()	()
Write in the number of minutes the nap usually lasts: _____ minutes					

WAKING DURING THE NIGHT

	7 Always	5-6 Usually	2-4 Sometimes	1 Rarely	0 Never
17. Child wakes up once during the night.	()	()	()	()	()
18. Child wakes up more than once during the night.	()	()	()	()	()

MORNING WAKE UP

Write in the time child usually wakes up in the morning: Weekdays: _____ : _____ am/pm

Weekends: _____ : _____ am/pm

	7 Always	5-6 Usually	2-4 Sometimes	1 Rarely	0 Never
19. Child wakes up by him/herself.	()	()	()	()	()
20. Child wakes up very early in the morning (or, earlier than necessary or desired).	()	()	()	()	()
21. Child seems tired during the daytime.	()	()	()	()	()
22. Child falls asleep while involved in activities.	()	()	()	()	()

Annexure E: Autism Spectrum Screening Questionnaire

Instructions:

Please read each statement below and indicate whether this young person stands out as different from other people of their age in the following ways by selecting No, Somewhat, or Yes.

		No	Somewhat	Yes
1	is old-fashioned or precocious	0	1	2
2	is regarded as an "eccentric professor" by the other children	0	1	2
3	lives somewhat in a world of his/her own with restricted idiosyncratic intellectual interests	0	1	2
4	accumulates facts on certain subjects (good rote memory) but does not really understand the meaning	0	1	2
5	has a literal understanding of ambiguous and metaphorical language	0	1	2
6	has a deviant style of communication with a formal, fussy, old-fashioned or "robot like" language	0	1	2
7	invents idiosyncratic words and expressions	0	1	2
8	has a different voice or speech	0	1	2
9	expresses sounds involuntarily; clears throat, grunts, smacks, cries or screams	0	1	2
10	is surprisingly good at some things and surprisingly poor at others	0	1	2
11	uses language freely but fails to make adjustment to fit social contexts or the needs of different listeners	0	1	2
12	lacks empathy	0	1	2
13	makes naive and embarrassing remarks	0	1	2
14	has a deviant style of gaze	0	1	2
15	wishes to be sociable but fails to make relationships with peers	0	1	2
16	can be with other children but only on his/her terms	0	1	2
17	lacks best friend	0	1	2

		No	Somewhat	Yes
18	lacks common sense	0	1	2
19	is poor at games: no idea of cooperating in a team, scores 'own goals'	0	1	2
20	has clumsy, ill coordinated, ungainly, awkward movements or gestures	0	1	2
21	has involuntary face or body movements	0	1	2
22	has difficulties in completing simple daily activities because of compulsory repetition of certain actions or thoughts	0	1	2
23	has special routines: insists on no change	0	1	2
24	shows idiosyncratic attachment to objects	0	1	2
25	is bullied by other children	0	1	2
26	has markedly unusual facial expression	0	1	2
27	has markedly unusual posture	0	1	2
28	Who is completing this questionnaire?	1	2	3

Developer Reference:

Ehlers, S., Gillberg, C., & Wing, L. (1999). A screening questionnaire for Asperger syndrome and other high-functioning autism spectrum disorders in school age children. *Journal of Autism and Developmental Disorders*, 29(2), 129-141. <https://doi.org/10.1023/a:1023040610384>

Annexure F: Emotional Regulation Questionnaire

The Emotion Regulation Questionnaire is designed to assess individual differences in the habitual use of two emotion regulation strategies: cognitive reappraisal and expressive suppression.

Citation

Gross, J.J., & John, O.P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, 85, 348-362.

Instructions and Items

We would like to ask you some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave. Although some of the following questions may seem similar to one another, they differ in important ways. For each item, please answer using the following scale:

1-----2-----3-----4-----5-----6-----7
strongly neutral strongly
disagree agree

1. ____ When I want to feel more *positive* emotion (such as joy or amusement), I *change what I'm thinking about*.
2. ____ I keep my emotions to myself.
3. ____ When I want to feel less *negative* emotion (such as sadness or anger), I *change what I'm thinking about*.
4. ____ When I am feeling *positive* emotions, I am careful not to express them.
5. ____ When I'm faced with a stressful situation, I make myself *think about it* in a way that helps me stay calm.
6. ____ I control my emotions by *not expressing them*.
7. ____ When I want to feel more *positive* emotion, I *change the way I'm thinking about* the situation.
8. ____ I control my emotions by *changing the way I think about* the situation I'm in.
9. ____ When I am feeling *negative* emotions, I make sure not to express them.
10. ____ When I want to feel less *negative* emotion, I *change the way I'm thinking about* the situation.

Note

Do not change item order, as items 1 and 3 at the beginning of the questionnaire define the terms "positive emotion" and "negative emotion".

Scoring (no reversals)

Reappraisal Items: 1, 3, 5, 7, 8, 10; Suppression Items: 2, 4, 6, 9.

Annexure G: Parenting Practices Questionnaire

Name: _____ Date: _____

Instructions: The following questionnaire aims to assess different aspects of your parenting style. Please read each statement carefully and choose the answer that best describes how you or your spouse typically behave in your role as a parent. There are no right or wrong answers.

Items	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Always (5)
1. He encourages / I encourage our child to talk about the child's troubles.	☐	☐	☐	☐	☐
2. He finds / I find it difficult to discipline our child.	☐	☐	☐	☐	☐
3. He gives / I give praise when our child is good.	☐	☐	☐	☐	☐
4. He spansks. I spank when our child is disobedient.	☐	☐	☐	☐	☐
5. He punishes / I punish by taking privileges away from our child with little if any explanation.	☐	☐	☐	☐	☐
6. He spoils / I spoil our child.	☐	☐	☐	☐	☐
7. He gives / I give comfort and understanding when our child is upset.	☐	☐	☐	☐	☒
8. He yells / I yell or shout when our child misbehaves.	☐	☐	☐	☐	☐
9. He scolds / I scold and criticize to make our child improve.	☐	☐	☐	☐	☐
10. He grabs / I grab our child when being disobedient.	☐	☐	☐	☐	☐
11. He states / I state punishments to our child and does not actually do them.	☐	☐	☐	☐	☐
12. He is / I am responsive to our child's feelings or needs.	☐	☐	☐	☐	☐
13. He allows / I allow our child to give input into family rules.	☐	☐	☐	☐	☐
14. He gives / I give our child reasons why rules should be obeyed.	☐	☐	☐	☐	☐

Items	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Always (5)
15. He punishes / I punish by putting our child off somewhere alone with little if any explanation.	☐	☐	☐	☐	☐
16. He helps / I help our child to understand the impact of behavior by encouraging our child to talk about the consequences of own actions.	☐	☐	☐	☐	☐
17. He takes / I take our child's desires into account before asking the child to do something.	☐	☐	☐	☐	☐
18. He explodes / I explode in anger towards our child.	☐	☐	☐	☐	☐
19. He threatens / I threaten our child with punishment more often than actually giving it.	☐	☐	☐	☐	☐
20. He uses / I use physical punishment as a way of disciplining our child.	☐	☐	☐	☐	☐
21. He gives / I give into our child when the child causes a commotion about something.	☐	☐	☐	☐	☐
22. He slaps / I slap our child when the child misbehaves.	☐	☐	☐	☐	☐
23. He has / I have warm and intimate times together with our child.	☐	☐	☐	☐	☐
24. He encourages / I encourage our child to freely express (himself)(herself) even when disagreeing with parents.	☐	☐	☐	☐	☐
25. He scolds / I scold or criticize when our child's behavior doesn't meet our expectations.	☐	☐	☐	☐	☐
26. He shows / I show respect for our child's opinions by encouraging our child to express them.	☐	☐	☐	☐	☐
27. He explains / I explain to our child how we feel about the child's good and bad behavior.	☐	☐	☐	☐	☐
28. He uses / I use threats as punishment with little or no justification.	☐	☐	☐	☐	☐

Items	Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Always (5)
29. He takes / I take into account our child's preferences in making plans for the family.	☐	☐	☐	☐	☐
30. He states / I state : because I said so, or I am your parent and I want you to.	☐	☐	☐	☐	☐
31. He explains / I explain the consequences of the child's behavior.	☐	☐	☐	☐	☐
32. He states / I state the reasons for rules.	☐	☐	☐	☐	☐

Total scores

Authoritative parenting style: Authoritarian parenting style: Permissive parenting style:

Scoring

To calculate an overall score for authoritative parenting style, average the responses to the following 15 items: 1, 3, 5, 7, 9, 11, 12, 14, 18, 21, 22, 25, 27, 29, and 31.

For the authoritarian parenting style, mean the scores of these 12 items: 2, 4, 6, 10, 13, 16, 19, 23, 26, 28, 30, and 32.

To determine the overall score for permissive parenting style, average the 5 items: 8, 15, 17, 20, and 24.

This scoring protocol yields three continuous variables—mean scores for each parenting style—rather than categorical variables.

Interpretation

- **Authoritative parenting:** This style strikes a balance between warmth and structure, emphasizing support, affection, regulation, and fostering autonomy.
- **Authoritarian parenting:** Characterized by high demands and low responsiveness, this approach often involves elements such as physical coercion and verbal hostility.
- **Permissive parenting:** Defined by indulgence and leniency, permissive parenting focuses on granting freedoms and exhibits a lack of firm boundaries.

References

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- Oliveira, T. D., Costa, D. de S., Albuquerque, M. R., Malloy-Diniz, L. F., Miranda, D. M., & de Paula, J. J. (2018). Cross-cultural adaptation, validity, and reliability of the Parenting Styles and Dimensions Questionnaire – Short Version (PSDQ) for use in Brazil. *Revista Brasileira de Psiquiatria*, 40(4), 410–419. <https://doi.org/10.1590/1516-4446-2017-2314>