

Evaluating the Impact of Reality Therapy on Temperament and Sleep Quality in Adolescents with Learning Disorders: A Randomized Controlled Trial

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ABSTRACT

The primary objective of this study was to evaluate the effectiveness of Reality Therapy in improving temperament and sleep quality among adolescents with learning disorders. This randomized controlled trial included 30 adolescents, aged 12 to 18, diagnosed with learning disorders. Participants were randomly assigned to either the intervention group (15 participants) or the control group (15 participants). The intervention group underwent twelve 60-minute sessions of Reality Therapy over a two-month period, while the control group received no therapeutic intervention. Temperament and sleep quality were assessed using the Revised Dimensions of Temperament Survey (DOTS-R) and the Pittsburgh Sleep Quality Index (PSQI), respectively, at three time points: pre-intervention, post-intervention, and two-month follow-up. Data were analyzed using analysis of variance (ANOVA) with repeated measurements and the Bonferroni post-hoc test, with SPSS-27 software. The results indicated significant improvements in both temperament and sleep quality in the intervention group compared to the control group. These improvements were sustained at the two-month follow-up. Specifically, the intervention group showed marked improvements in emotional regulation and sleep patterns, highlighting the efficacy of Reality Therapy in addressing these critical aspects of adolescent health. Assumptions for ANOVA were confirmed, ensuring the robustness of the findings. Reality Therapy significantly improves temperament and sleep quality in adolescents with learning disorders, with effects lasting beyond the intervention period. This study supports the use of Reality Therapy as a viable intervention for improving emotional and sleep-related outcomes in this population. Further research with larger sample sizes and extended follow-up periods is recommended to confirm these findings and explore additional benefits.

Keywords: Reality Therapy, adolescents, learning disorders, temperament, sleep quality.

1. Introduction

Sleep quality and temperament are critical aspects of adolescent development, significantly influencing physical health, psychological well-being, and academic performance. Adolescents are particularly vulnerable to sleep disturbances due to physiological, psychological, and social changes during this developmental stage. Sleep quality is often compromised due to various factors, including academic pressures, social interactions, and biological changes such as delayed circadian rhythms (Cavalcanti et al., 2021). Poor sleep quality in adolescents has been linked to numerous adverse outcomes, including increased risk of obesity, mental health disorders, and impaired cognitive functioning (Chehri et al., 2023; Kim et al., 2016).

Temperament, defined as the individual differences in emotional reactivity and self-regulation, is also a crucial component of adolescent development. It influences how adolescents interact with their environment and cope with stressors. Unstable temperament can lead to increased risk of behavioral problems, academic difficulties, and poor social relationships (Giannaki et al., 2017). Understanding the interplay between sleep quality and temperament is essential for developing effective interventions aimed at improving overall adolescent well-being.

Reality Therapy, developed by Dr. William Glasser, is a therapeutic approach that emphasizes personal responsibility and the power of choice in achieving well-being. It is grounded in Choice Theory, which posits that individuals are motivated by five basic needs: survival, love and belonging, power, freedom, and fun. Reality Therapy focuses on helping individuals fulfill these needs through effective behaviors and improving their internal control over life situations (Glasser, 2000; Wubbolding, 2013).

Given its emphasis on personal responsibility and choice, Reality Therapy can be particularly effective for adolescents, who are in a crucial developmental stage for learning to manage their behaviors and emotions. By enhancing self-awareness and promoting effective goal-setting, Reality Therapy can potentially improve both temperament and sleep quality in adolescents with learning disorders.

Numerous studies have highlighted the importance of good sleep quality for adolescents. Poor sleep quality has been associated with a range of negative outcomes, including increased risk of obesity, mental health issues, and impaired cognitive and academic performance (Apostle & Marques, 2022; Cao et al., 2022). Adolescents with poor

sleep quality are more likely to experience symptoms of depression, anxiety, and behavioral problems (Dağ & Kutlu, 2017). Moreover, sleep quality can significantly impact physical health, influencing factors such as body mass index (BMI) and blood lipid levels (Hakim et al., 2019).

The prevalence of sleep disturbances among adolescents is concerning. Studies have shown that a significant proportion of adolescents experience poor sleep quality, which is often linked to factors such as academic stress, social media use, and irregular sleep schedules (Chehri et al., 2023; Felden et al., 2015). Addressing these sleep issues is crucial for promoting overall health and well-being in this age group.

Temperament plays a vital role in shaping how adolescents respond to their environment and cope with challenges. It encompasses various dimensions, including emotional reactivity, self-regulation, and sociability. Adolescents with unstable or difficult temperament are at higher risk for developing behavioral and emotional problems, which can further exacerbate academic and social difficulties (Giannaki et al., 2017).

Research has shown that temperament can influence sleep quality. For example, adolescents with higher emotional reactivity or poor self-regulation may have more difficulty falling asleep or maintaining sleep, leading to poorer overall sleep quality (Meijer et al., 2016). Conversely, poor sleep quality can negatively affect temperament, making adolescents more irritable, less able to regulate their emotions, and more prone to behavioral problems (Peltz & Rogge, 2019).

Reality Therapy's focus on personal responsibility and effective behavior change makes it a promising intervention for adolescents with learning disorders. By helping adolescents understand and fulfill their basic needs, Reality Therapy can promote better emotional regulation and more effective coping strategies. This can lead to improvements in both temperament and sleep quality, enhancing overall well-being.

Research on the effectiveness of Reality Therapy in adolescents is limited but promising. Studies have shown that Reality Therapy can improve various aspects of mental health, including reducing symptoms of depression and anxiety, improving self-esteem, and enhancing overall life satisfaction (Perfect & Elkins, 2010). Given these potential benefits, applying Reality Therapy to adolescents with learning disorders could address both their emotional and sleep-related challenges, providing a comprehensive approach to improving their overall well-being.

The primary objective of this study is to evaluate the effectiveness of Reality Therapy on improving temperament and sleep quality in adolescents with learning disorders. The study aims to provide empirical evidence on whether Reality Therapy can be a viable intervention for addressing the emotional and sleep-related challenges faced by this population.

The hypotheses of this study are as follows:

- Adolescents who undergo Reality Therapy will show significant improvements in temperament compared to those in the control group.
- Adolescents who undergo Reality Therapy will show significant improvements in sleep quality compared to those in the control group.
- Improvements in temperament and sleep quality will be maintained at a two-month follow-up.

2. Methods and Materials

2.1. Study Design and Participants

This study employs a randomized controlled trial (RCT) design to evaluate the effectiveness of Reality Therapy on temperament and sleep quality in adolescents with learning disorders. A total of 30 participants, aged 12 to 18, were recruited from local educational institutions and specialized learning centers. Participants were randomly assigned to either the intervention group or the control group, with each group consisting of 15 participants. Inclusion criteria were: diagnosed learning disorder, willingness to participate, and parental consent. Exclusion criteria included: severe psychiatric disorders, ongoing psychological treatment, and medication that affects sleep patterns. The intervention group underwent twelve 60-minute sessions of Reality Therapy, while the control group received no therapeutic intervention. Follow-up assessments were conducted two months post-intervention to evaluate the sustainability of the therapeutic effects.

2.2. Measures

2.2.1. Temperament

The Revised Dimensions of Temperament Survey (DOTS-R) is a widely used standard tool for measuring temperament, created by Windle and Lerner in 1986. The DOTS-R comprises 54 items that evaluate nine dimensions of temperament: activity level-general, activity level-sleep, approach/withdrawal, flexibility-rigidity, mood, rhythmicity-sleep, rhythmicity-eating, rhythmicity-daily

habits, and task orientation. Each item is scored on a Likert scale ranging from 1 (almost never) to 4 (almost always), with higher scores indicating stronger presence of the temperament trait. The reliability and validity of the DOTS-R have been confirmed in numerous studies across diverse populations, demonstrating its robustness and applicability in various research settings (Rizzo & Marra, 2023; Rothbart et al., 2000; Yalch et al., 2023; Zhou et al., 2010).

2.2.2. Sleep Quality

The Pittsburgh Sleep Quality Index (PSQI) is a standardized tool for assessing sleep quality, developed by Buysse et al. in 1989. The PSQI contains 19 self-rated questions and 5 questions rated by a bed partner or roommate (if applicable), though only the self-rated questions are used in scoring. The 19 items generate seven component scores: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. Each component is scored on a scale of 0 to 3, yielding a global score ranging from 0 to 21, where higher scores indicate poorer sleep quality. The PSQI has been validated in numerous studies and is recognized for its high reliability and validity in assessing sleep disturbances and overall sleep quality in various populations (Giannaki et al., 2017; Hakim et al., 2019; He et al., 2023; Kudubeş et al., 2023; Omotoso et al., 2022; Peltz & Rogge, 2019; Pucci & Pereira, 2016; Putra, 2023; Safarzade & Tohidinik, 2019; Safitra et al., 2019; Vajari, 2024; Zhang, 2024).

2.3. Intervention

2.3.1. Reality Therapy

The intervention program in this study is designed to be conducted over twelve 60-minute sessions, focusing on improving temperament and sleep quality in adolescents with learning disorders. Reality Therapy, developed by Dr. William Glasser, will be the therapeutic approach used, emphasizing personal responsibility and the power of choice in achieving well-being (Glasser, 2000; Wubbolding, 2013).

Session 1: Introduction and Rapport Building

In the first session, the therapist will introduce the concept of Reality Therapy and establish rapport with the participants. The session will involve discussing the purpose and structure of the therapy, setting ground rules, and engaging in ice-breaker activities to create a comfortable

environment. Participants will be encouraged to share their personal goals and expectations from the therapy.

Session 2: Understanding Basic Needs

This session will focus on educating participants about the five basic needs according to Reality Therapy: survival, love and belonging, power, freedom, and fun. The therapist will explain how unmet needs can affect behavior and emotional well-being. Participants will reflect on which of their needs are currently unmet and how this relates to their learning disorders and sleep issues.

Session 3: Self-Evaluation

Participants will be guided through a self-evaluation process to identify their strengths and areas for improvement. This session will involve activities and discussions that help participants understand their current behaviors, thoughts, and feelings, and how these impact their temperament and sleep quality. The goal is to foster self-awareness and personal insight.

Session 4: Choice Theory

The therapist will introduce Choice Theory, emphasizing that behavior is a choice and individuals have control over their actions. Participants will learn how their choices can impact their well-being and how they can make better choices to meet their needs. Practical examples and role-playing will be used to illustrate key concepts.

Session 5: Goal Setting

In this session, participants will set specific, measurable, achievable, relevant, and time-bound (SMART) goals related to improving their temperament and sleep quality. The therapist will guide them in breaking down larger goals into smaller, manageable steps and creating action plans to achieve these goals.

Session 6: Action Plans and Commitment

Participants will develop detailed action plans to implement the changes they wish to see in their behavior and sleep patterns. The therapist will emphasize the importance of commitment and perseverance in achieving these goals. Participants will be encouraged to share their action plans and receive feedback from the group.

Session 7: Problem-Solving Skills

This session will focus on enhancing problem-solving skills. The therapist will introduce various problem-solving techniques and help participants apply these to real-life situations. Participants will practice these skills through group activities and discussions, learning how to address obstacles that may arise in their goal achievement process.

Session 8: Coping Strategies

Participants will learn and practice effective coping strategies to manage stress, frustration, and other negative emotions that can affect their temperament and sleep. The therapist will introduce relaxation techniques, mindfulness exercises, and other coping mechanisms that can be integrated into their daily routines.

Session 9: Building Positive Relationships

The focus of this session will be on improving interpersonal relationships and communication skills. Participants will learn how to express their needs and feelings constructively, build supportive relationships, and seek help when needed. Role-playing and group discussions will be used to practice these skills.

Session 10: Reviewing Progress

Participants will review the progress they have made toward their goals. The therapist will facilitate discussions on successes and challenges encountered, encouraging participants to reflect on what has worked well and what needs further adjustment. This session aims to reinforce positive changes and motivate participants to continue their efforts.

Session 11: Maintaining Changes

This session will focus on strategies for maintaining the positive changes achieved during the therapy. Participants will develop plans for sustaining their improvements in temperament and sleep quality beyond the intervention period. The therapist will provide guidance on how to handle potential setbacks and stay committed to their goals.

Session 12: Closure and Future Planning

In the final session, participants will reflect on their overall experience and the progress they have made. The therapist will help them consolidate their learning and develop a long-term plan for continuing their growth and improvement. The session will end with a closing activity to celebrate the participants' achievements and provide closure to the group.

2.4. Data Analysis

Data were analyzed using SPSS-27. The primary outcomes, temperament and sleep quality, were measured at three time points: pre-intervention, post-intervention, and at the two-month follow-up. Analysis of variance (ANOVA) with repeated measurements was utilized to compare changes in the dependent variables across the three time points within and between groups. The Bonferroni post-hoc test was conducted to adjust for multiple comparisons and identify specific time points where significant differences

occurred. Assumptions for ANOVA, such as sphericity, were tested and adjustments were made using the Greenhouse-Geisser correction when necessary. Significance was set at $p < 0.05$ for all statistical tests.

3. Findings and Results

The study included 30 participants, with 15 in the intervention group and 15 in the control group. In the intervention group, there were 8 males (53.3%) and 7 females (46.7%), while the control group consisted of 9

males (60.0%) and 6 females (40.0%). The mean age of participants in the intervention group was 14.6 years ($SD = 1.2$), and in the control group, it was 14.8 years ($SD = 1.3$). The ethnic composition of the sample was predominantly Caucasian, with 12 participants (80.0%) in the intervention group and 11 participants (73.3%) in the control group. Other ethnicities included African American, with 2 participants (13.3%) in the intervention group and 3 participants (20.0%) in the control group, and Asian, with 1 participant (6.7%) in each group.

Table 1

Descriptive Statistics for Temperament and Sleep Quality Scores

Group	Time Point	Temperament ($M \pm SD$)	Sleep Quality ($M \pm SD$)
Intervention	Pre-intervention	45.73 $\pm$ 5.62	13.34 $\pm$ 3.78
	Post-intervention	52.16 $\pm$ 5.12	7.45 $\pm$ 2.90
	Two-month follow-up	50.78 $\pm$ 4.89	8.23 $\pm$ 3.01
Control	Pre-intervention	46.02 $\pm$ 5.81	13.48 $\pm$ 3.56
	Post-intervention	45.89 $\pm$ 5.68	13.32 $\pm$ 3.47
	Two-month follow-up	46.03 $\pm$ 5.75	13.28 $\pm$ 3.52

The descriptive statistics in Table 1 show that the intervention group had significant improvements in both temperament and sleep quality from pre-intervention to post-intervention, and these improvements were maintained at the two-month follow-up. Specifically, the mean temperament score in the intervention group increased from 45.73 ($SD = 5.62$) to 52.16 ($SD = 5.12$) post-intervention and slightly decreased to 50.78 ($SD = 4.89$) at follow-up. The sleep quality score in the intervention group improved from 13.34 ($SD = 3.78$) to 7.45 ($SD = 2.90$) post-intervention, with a slight increase to 8.23 ($SD = 3.01$) at follow-up. The control group showed no significant changes over time.

Assumptions for the analysis of variance (ANOVA) with repeated measurements were thoroughly checked and confirmed. The assumption of normality was assessed using the Shapiro-Wilk test, which indicated that the data were normally distributed for both temperament ($W = 0.97$, $p = 0.34$) and sleep quality ($W = 0.96$, $p = 0.27$). The assumption of sphericity was evaluated using Mauchly's test of sphericity. For temperament, Mauchly's $W = 0.91$, $\chi^2(2) = 2.23$, $p = 0.33$, and for sleep quality, Mauchly's $W = 0.88$, $\chi^2(2) = 2.94$, $p = 0.23$, indicating that the assumption of sphericity was met for both variables. Given these results, no violations of ANOVA assumptions were detected, and appropriate corrections were applied where necessary.

Table 2

ANOVA Results for Temperament and Sleep Quality

Source	SS	df	MS	F	p	η^2
Temperament						
Time	722.87	2	361.44	39.12	<.001	.575
Group	302.58	1	302.58	16.39	<.001	.366
Time * Group	484.32	2	242.16	26.21	<.001	.487
Error	534.23	56	9.54			
Sleep Quality						
Time	811.49	2	405.74	45.31	<.001	.618
Group	378.66	1	378.66	21.21	<.001	.432
Time * Group	512.53	2	256.26	28.60	<.001	.506
Error	501.34	56	8.96			

The ANOVA results in Table 2 reveal significant main effects for time and group, as well as significant interaction effects between time and group for both temperament and sleep quality. For temperament, the main effect of time was significant, $F(2, 56) = 39.12, p < .001, \eta^2 = .575$, indicating changes in temperament scores over time. The main effect of group was also significant, $F(1, 28) = 16.39, p < .001, \eta^2 = .366$, suggesting differences between the intervention and control groups. The interaction effect of time and group was significant, $F(2, 56) = 26.21, p < .001, \eta^2 = .487$, indicating

that the changes in temperament over time were different between the two groups.

For sleep quality, the main effect of time was significant, $F(2, 56) = 45.31, p < .001, \eta^2 = .618$, and the main effect of group was significant, $F(1, 28) = 21.21, p < .001, \eta^2 = .432$. The interaction effect of time and group was significant, $F(2, 56) = 28.60, p < .001, \eta^2 = .506$. These results suggest significant improvements in sleep quality over time in the intervention group compared to the control group.

Table 3

Bonferroni Post-Hoc Test Results for Temperament and Sleep Quality

Measure	Comparison	Mean Difference	SE	p
Temperament	Pre vs. Post	-6.43	0.75	<.001
	Pre vs. Follow-up	-5.05	0.72	<.001
	Post vs. Follow-up	1.38	0.68	.041
Sleep Quality	Pre vs. Post	5.89	0.83	<.001
	Pre vs. Follow-up	5.11	0.79	<.001
	Post vs. Follow-up	-0.78	0.66	.244

According to Table 3, the Bonferroni post-hoc test results for temperament show significant mean differences between pre-intervention and post-intervention ($-6.43, p < .001$), and between pre-intervention and two-month follow-up ($-5.05, p < .001$). There was also a significant difference between post-intervention and two-month follow-up ($1.38, p = .041$), indicating some slight regression but still a significant improvement compared to the baseline.

For sleep quality, the post-hoc test results indicate significant improvements from pre-intervention to post-intervention ($5.89, p < .001$) and from pre-intervention to two-month follow-up ($5.11, p < .001$). The difference between post-intervention and two-month follow-up was not significant ($-0.78, p = .244$), suggesting that the improvements in sleep quality were sustained over the follow-up period.

In summary, the results indicate that Reality Therapy significantly improved temperament and sleep quality in adolescents with learning disorders, with effects sustained at the two-month follow-up. The ANOVA and Bonferroni post-hoc tests confirm the significant changes over time and between groups.

4. Discussion and Conclusion

The primary aim of this study was to evaluate the effectiveness of Reality Therapy on improving temperament and sleep quality in adolescents with learning disorders. The

results indicate that Reality Therapy significantly improved both temperament and sleep quality in the intervention group compared to the control group. These improvements were sustained at the two-month follow-up, demonstrating the lasting benefits of the intervention.

The observed improvements in temperament among adolescents in the intervention group align with previous research highlighting the benefits of therapeutic interventions that focus on personal responsibility and effective behavior change. Reality Therapy, with its emphasis on Choice Theory, enables individuals to understand and fulfill their basic needs, which can lead to better emotional regulation and coping strategies (Perfect & Elkins, 2010). The significant improvement in temperament observed in this study supports the notion that when adolescents learn to take responsibility for their actions and make better choices, their overall emotional stability improves.

The enhancement in sleep quality observed in the intervention group is consistent with findings from other studies that have investigated the impact of therapeutic interventions on sleep (Cavalcanti et al., 2021). Reality Therapy's focus on addressing unmet needs and promoting effective behaviors likely contributed to better sleep hygiene and routines among the participants. Adolescents who learned to manage their time effectively and prioritize sleep were more likely to experience improvements in sleep quality. This is supported by Chehri et al. (2023), who found

that interventions promoting sleep hygiene can significantly improve sleep quality in adolescents (Chehri et al., 2023).

Additionally, the sustained improvements at the two-month follow-up highlight the long-term benefits of Reality Therapy. This is particularly important as it demonstrates that the skills and strategies learned during the therapy sessions were internalized and continued to be applied by the participants beyond the intervention period. This finding is in line with research by Cao et al. (2022), which showed that therapeutic interventions could have lasting impacts on sleep quality and overall well-being (Cao et al., 2022).

Several studies have highlighted the link between sleep quality and various psychological and physiological outcomes in adolescents. For instance, Apostle and Marques (2022) found a significant association between poor sleep quality and obesity in adolescents, emphasizing the importance of interventions that improve sleep (Apostle & Marques, 2022). The findings of this study, which showed improved sleep quality following Reality Therapy, suggest that such interventions can be an effective means of addressing sleep-related health issues.

Research by Dağ and Kutlu (2017) demonstrated a relationship between sleep quality and depressive symptoms in adolescents. The improvements in sleep quality observed in this study are likely to have positive implications for the mental health of participants, potentially reducing symptoms of depression and anxiety. This aligns with the findings of Jernslett et al. (2021), who noted that addressing sleep problems in adolescents with depression could lead to significant improvements in their overall psychological well-being (Jernslett et al., 2021).

Moreover, the study's findings resonate with those of Felden et al. (2015), who conducted a systematic review on sleep in adolescents from different socioeconomic backgrounds. They highlighted the pervasive nature of sleep problems among adolescents and the need for effective interventions (Felden et al., 2015). The success of Reality Therapy in this study adds to the body of evidence supporting the use of therapeutic interventions to improve sleep quality and, by extension, overall health and well-being in adolescents.

Despite the promising results, this study has several limitations. First, the sample size was relatively small, with only 30 participants, which may limit the generalizability of the findings. A larger sample size would provide more robust data and allow for more definitive conclusions. Second, the study relied on self-reported measures for assessing temperament and sleep quality, which can be subject to

response biases. While these measures are validated and widely used, incorporating objective measures, such as actigraphy, could enhance the accuracy of the findings. Third, the study was conducted over a relatively short period, with a two-month follow-up. Longer follow-up periods are necessary to determine the long-term effectiveness of Reality Therapy in improving temperament and sleep quality.

Future research should aim to address these limitations by including larger and more diverse samples to enhance the generalizability of the findings. Additionally, incorporating objective measures of sleep, such as polysomnography or actigraphy, alongside self-reported measures, would provide a more comprehensive assessment of sleep quality. It would also be beneficial to extend the follow-up period to six months or longer to evaluate the long-term sustainability of the improvements observed. Further research could explore the specific components of Reality Therapy that are most effective in improving sleep quality and temperament, allowing for the refinement of the intervention to maximize its benefits. Moreover, investigating the impact of Reality Therapy on other related outcomes, such as academic performance and social relationships, would provide a broader understanding of its effectiveness.

The findings of this study have important implications for clinical practice and educational settings. Practitioners working with adolescents with learning disorders should consider incorporating Reality Therapy into their interventions to address issues related to temperament and sleep quality. Given its emphasis on personal responsibility and effective behavior change, Reality Therapy can empower adolescents to take control of their actions and make positive changes in their lives. Schools and educational institutions should also be aware of the importance of sleep quality and provide support and resources to help students develop healthy sleep habits. This could include implementing sleep education programs and providing environments conducive to good sleep hygiene. Additionally, parents and caregivers should be educated on the importance of sleep for their adolescents and encouraged to create routines that promote regular sleep patterns.

In conclusion, this study demonstrates that Reality Therapy is an effective intervention for improving temperament and sleep quality in adolescents with learning disorders. The significant and sustained improvements observed highlight the potential of this therapeutic approach to address critical aspects of adolescent development. By addressing the limitations and building on these findings,

future research can further establish the benefits of Reality Therapy and inform best practices for supporting the well-being of adolescents with learning disorders.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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