TEACHER EMPATHY AND STUDENT WELL-BEING IN INDONESIAN ISLAMIC BOARDING SCHOOLS: THE INTERPLAY OF PEER ATTACHMENT AND LEARNING WORKLOAD

A Thesis

Submitted to the Master's Study Program of Education at the Faculty of Education in partial fulfillment of the requirements for the degree of

Master of Arts (M.A.)

by:

Ulfia Muruu'ah

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UNIVERSITAS ISLAM INTERNASIONAL INDONESIA

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ABSTRACT

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Student well-being is increasingly recognized as a multidimensional construct in educational psychology. This is particularly relevant within academically demanding and socially regulated environments such as Indonesian Islamic boarding schools. This study examines how teacher empathy contributes to student well-being through a dual-pathway mediation model involving peer attachment and learning workload. It also considers demographic moderators to explore variations across student groups. Data were collected from 896 students in 11 top-ranked state-run Islamic boarding schools (madrasahs) across Indonesia using an online questionnaire with a cross-sectional design. Rasch analysis was employed to validate the instrument for measuring the four main variables. This analysis model was also utilized to measure descriptive statistics. Besides, SPSS PROCESS Macro (Models 4 and 59) was used to test parallel and moderated mediation models. The findings indicate a statistically significant association between teacher empathy and student well-being, both directly and indirectly. Peer attachment and learning workload each emerged as significant mediators. It indicates that teacher empathy simultaneously strengthens peer relationships and alleviates academic strains. Gender and class moderated these pathways. Female students benefited more socially, while male students reported reduced academic pressure. These distinct mechanisms underscore the contextual importance of emotional support in promoting well-being within residential educational settings. Theoretically, this study extends the application of the PERMA model to collectivist and faith-based educational systems. Practically, it emphasizes the teacher's empathy as a critical pedagogical and emotional resource for enhancing student resilience and holistic development. Policy and teacher training implications are also discussed to integrate empathy-based strategies in high-achieving Islamic boarding schools.

Keywords: *boarding school, Indonesian education, learning workload, peer attachment, PERMA model, student well-being, and teacher empathy.*

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Above all, to the version of myself who once doubted she would ever finish, you are wrong, and that is okay. You needed to break so you could begin again, stronger, and wiser. Perseverance, you learned, is not the absence of fear or failure, but the willingness to carry them and keep moving forward. Progress, you discovered, is often invisible until you look back, and that growth demands patience as much as courage. Every step, no matter how small, was shaping who you were meant to become. This is not merely a thesis; it is the record of a becoming. *"I thought I was buried in darkness, but I was being planted. This is what growth feels like, quiet, painful, and full of grace."*

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LIST OF ABBREVIATIONS

SWB	:	*Student Well-Being*
TE	:	*Teacher Empathy*
PA	:	*Peer Attachment*
LW	:	*Learning Workload*
KSKK	:	*Kurikulum Sarana kelembagaan dan Kesiswaan*
MoRA	:	*Ministry of Religious Affairs*

CHAPTER I
INTRODUCTION

This chapter outlines the rationale and background of the study, focusing on the complex interplay between teachers' empathy and students' well-being within senior secondary Islamic boarding schools. It highlights the significance of examining whether peer attachment and learning workloads serve as mediators in this relationship. The chapter also outlines the research questions that highlight the objectives that guide the investigation. By analyzing these interconnected variables, the study aims to make both theoretical and practical contributions to the literature on student well-being, particularly in residential education settings. Ultimately, the research aims to support positive educational experiences that foster resilience and holistic success among students.

1.1 Background

Student well-being is a crucial aspect of educational systems that views students as holistic learners (Butler & Kern, 2016; OECD, 2017). In a school setting, student well-being is an important emotional and psychological variable for academic performance and life satisfaction (Chue et al., 2024). Emotional well-being is defined as the capacity to regulate emotions and cope with stress has been closely connected to academic attainment and school engagement (Mirza et al., 2021). Better emotional well-being enhances academic performance and motivation in learning engagement (Seligman, 2018; Smith, 2019).

Building on these perspectives, as referred to by the World Health Organization (WHO) (2021), approximately 20% of adolescents suffer from a mental disorder, which leads to illness and learning disability. This trend is particularly concerning among Generation Z, which is school-aged adolescents nowadays, where mental illness and self-harm have become alarmingly prevalent (Hermansyah, 2024). Adolescents, particularly those in secondary and higher education, have a very vulnerable psychological condition (Cheng & Lin, 2023). This is the stage of a transition to adulthood, facing greater responsibilities, especially in academics and social interactions (Azzahrah et al., 2024). They also encounter challenges in managing interpersonal conflicts and regulating emotions effectively (Jiménez-Rodríguez et al., 2022). Therefore, a stable well-being is needed to maintain their positive condition (Kern & Wehmeyer, 2021). It underscores the necessity for schools to prioritize mental health as integral to student well-being and the school system.

These global concerns are also mirrored in the Indonesian statistics. The national data indicate that 1.4% young aged suffer from depression, and the highest prevalence is 2% happened to adolescents aged 15-24 (Health Survey Indonesia, 2023), and suicide ranks as the third leading cause of death among youth aged 15 to 29 (Khalish, 2024). Untreated childhood trauma is associated with enduring physical and mental health condition in adulthood (Klinger-König et al., 2024). Furthermore, the

Central Statistics Agency (also known as BPS in Indonesian acronym) report in 2018 stated that the prevalence of emotional and mental disorders in adolescents includes hyperactivity, emotional behavior, social phobia, post-traumatic stress disorder (PTSD), and attention-deficit or hyperactivity disorder (ADHD) (Dondo et al., 2023). These patterns suggest that the burden of adolescent mental health problems can extend beyond clinical symptoms to affect daily functioning, including school engagement (Markiewicz & Kaczmarek, 2024). Consequently, teenage students experiencing conditions such as burnout or anxiety may become reluctant to attend school (Clark et al., 2025) (Finning & Dubicka, 2022).

Moreover, according to data from the Ministry of Home Affairs (also known as Kemendagri), Indonesia's population as of December 31, 2022, reached 277.75 million people and was dominated by adolescents. Most of the population in the age range of 10-14 is 24.5 million people, while the population in the age range of 15-19 is 21.7 million people. The total number of adolescents aged 10-19 reaches 46.2 million. So, with the survey percentage above, the number of adolescents classified as People with Mental Disorders (called with ODGJ in the Indonesian language) is 2.54 million people, and 16.1 million adolescents are classified as People with Psychological Problems (called with OMDK in the Indonesian language) (Khalish, 2024). Consequently, as reported by Rona (2022), a Koran Jakarta Journalist, many school-aged adolescents commit suicide, and schools must be sensitized to prevent similar incidents.

However, mental health problems in Indonesia are ironically constrained by stigma, discrimination, and facilities. The Indonesia National Adolescent Mental Health Survey (I-NAHMHS) (2022) mentions that only 2.6% of Indonesian adolescent students with unsecured well-being access help or counseling services. Basrowi, the head of collaboration research among the Health Collaborative Center (HCC), Indonesia Health Focus (FKI), and State Own Company (BUMN) foundation, found that 35% of Jakarta students stigmatize counseling rooms just for the problematic students, and 37 percent of students claimed that they did not need to go to the counseling room for counseling (Rahmawati & Effendi, 2024). These surveys describe the students' insecure feelings and trust in teachers. As a result, teachers are less counted as the choice of a place to vent and share emotional thoughts experienced by adolescent students. This reality stands in contrast to international recommendations emphasizing the school's responsibility in addressing students' psychological needs.

Within this broader psychosocial and institutional challenge, the context of Indonesian Islamic secondary boarding schools deserves special attention. It facilitates students' acceptance of multiculturalism, socialization, and academic performance, while also influencing personality, social, and emotional distress, and physical development (Zhong et al., 2024). The curriculum integrates religious study, general scientific knowledge, and character education (Rahtikawatie et al., 2021). While this structure is designed to nurture holistic learners, this integrated approach often intensifies students' learning responsibilities (Batubara et al., 2021; Chang et al., 2023). Consequently, the dual emphasis on academic excellence and religious discipline may contribute to students' psychological challenges

and undermine their well-being (Na'imah et al., 2025) and interfere with students' psychological development (Sprajcer et al., 2021).

In addition, this residential study can be both a source of support and stressor which may foster anxiousness rather than engagement, leaving little room for emotional intelligence and social skill development (Aulia & Desiningrum, 2024). As a result, student well-being in boarding school settings becomes more complex due to academic pressure, restricted family interaction, and heavy reliance on teachers and peers for social support. Therefore, these conditions underscore the urgent need for relational interventions that can buffer the cumulative impact of academic and social stressors. Among such relational supports, teacher empathy stands out as a pivotal factor that not only addresses emotional needs but also fosters a sense of connection in the absence of familial presence (Cai et al., 2023).

Empathy is not merely the capacity to understand students' emotions; it is a relational practice that requires responsive and compassionate actions to build warm, humane, and supportive interactions (Wang, 2023). In an academic environment, especially within boarding schools, teacher empathy becomes essential for shaping students' emotional experiences and stabilizing their psychological well-being (Ampofo et al., 2025). Accordingly, research has consistently highlighted the multidimensional nature of teacher empathy in promoting student well-being (Aldrup et al., 2022; Franzese, 2017; Koenig et al., 2020; Manke et al., 2025; McManis-Ricker, 2022; Meyers et al., 2019; Pfister et al., 2024; Rizkyanti et al., 2021; Rosepti, 2023; Stojiljković et al., 2012).

Teacher empathy is a teacher's ability to understand students' personal and social situations, recognize their emotional states, and respond with compassion while keeping students motivated to teach (Meyers et al., 2019). With this relational skill, teachers help students feel understood and valued, which builds a positive self-image and a stronger sense of belonging (Ge et al., 2021). These empathetic relationships can also lessen feelings of alienation and encourage students to seek support, thereby reducing their emotional load (Brackett et al., 2019). So, it stimulates students to build trust that prompts them to communicate openly and express their emotions healthily (Koenig et al., 2019).

Beyond individual care, teacher empathy also plays a systemic role in fostering an inclusive school climate (Manke et al., 2025). It decreases biases and prejudices, particularly against students from minority groups, by promoting attuned and equitable responses to diverse student needs (Batson et al., 1997b; O'Brien, 2003; Stephan & Finlay, 1999). Empathetic teachers tend to identify early signs of student distress, actively listen, and address students' emotional needs proactively (Ammank, 2024). In doing so, they create a nurturing environment centered not only on academic growth but also on emotional regulation, self-control, and resilience (Hargreaves, 2001). The feelings of teachers serve to be a buffer factor that facilitates providing environments that are needed by students to gain their optimal well-being.

Practical relationships of teacher empathy are also evident in behavioral domains. For instance, empathetic engagement has been shown to reduce negative behaviors such as bullying and cyberbullying while simultaneously improving academic performance (O'Brien et al., 2024). Through

positive teacher-student relationships, empathy fosters peer support systems and establishes social norms that discourage aggression (Wan et al., 2023). Moreover, the role of cognitive empathy has been explored in mitigating socially disruptive behaviors such as 'phubbing', the tendency to ignore others in social awareness and interpersonal responsibility (Rizkyanti et al., 2021). It can be inferred that teacher empathy cultivates a sense of being heard, seen, and valued, which enhances students' motivation, confidence, and emotional security. It increases their motivation and confidence which are essential for their academic and personal growth.

To further understand the broader impact of teacher empathy beyond individual emotional support, it is essential to explore how it predicts students' relational and learning experiences. Teacher empathy extends beyond individual support; it cultivates a relational climate that shapes how students engage socially and cope academically (Manke et al., 2025; Martinsone & Žydžiūnaite, 2023). In emotionally demanding boarding school settings, empathetic teachers help students to feel safe, valued, and understood (Cai et al., 2023). It encourages the development of secure peer bonds and strengthens students' capacity to navigate academic pressures (Wan et al., 2023). These relational dynamics are especially important when teachers also serve as surrogate parental figures. Building on this foundation, this study examines how teacher empathy may not only enhance students' well-being directly but also operate indirectly through two critical pathways: peer attachment and learning workload. Peer attachment reflects the social-emotional security fostered by empathetic environments (Mitic et al., 2021), while perceived learning workload captures students' cognitive appraisal of academic demands shaped by teacher sensitivity (Therisa Beena & Sony, 2022). Investigating these mechanisms provides a more nuanced understanding of how teacher empathy functions within the complex relational and academic structures of Indonesian Islamic boarding schools.

Among these two mechanisms, peer attachment plays a foundational role in shaping students' emotional resilience and social adjustment within boarding school environments. In the absence of immediate family, adolescents in boarding school settings rely heavily on their peers for emotional expression, companionship, and a sense of belonging (Mudzkiyyah et al., 2022). These attachments are essential for fostering a sense of belonging, safety, and emotional resilience. Research shows that supportive peer relationships are positively associated with adolescent well-being, especially within boarding school settings (Gorrese, 2016; Li et al., 2023; Mudzkiyyah et al., 2022; Wilkinson, 2010). Moreover, peer has stronger association with emotional well-being rather than parental support in such environment. Open and trusting peer communication also helps students manage academic pressures and contributes to their emotional regulation and adaptive soping strategies (Mitic et al., 2021). Within this school context, peer attachment serves not only as a buffer against stress but also as a relational anchor that support students' self-concept and integration within the boarding school ecosystem. Therefore, peer attachment set as a mediating mechanism in this study by investigating the indirect relationship between teacher empathy and student well-being.

While peer attachment offers critical emotional support, students' academic well-being is also shaped by their perception of learning workload. It encompasses both the quantity and cognitive demands of academic and non-academic tasks embedded in students' daily routines. When these demands exceed students' coping capacities, they may experience diminished motivation, heightened anxiety, and reduced psychological well-being. Empirical studies across diverse educational settings have consistently identified excessive workload as a potential stressor contributing to burnout, emotional exhaustion, and self-dissatisfaction, which leads to a mental health crisis among students (Abdullah & Md Hassan, 2024; Atiomo, 2020; Azizova et al., 2025; Cheng & Lin, 2023; Jiang et al., 2022; Karma et al., 2021, 2021; Liu, 2021; Telaumbanua et al., 2024; Therisa Beena & Sony, 2022).

The negative implications of learning overload are not merely theoretical. National and international statistics point to a growing mental health crisis among school-aged adolescents. A study conducted in the US and UK found that 83% of students reported high levels of learning stress (Braveman, 2023). Mental health issues between the late 19^{th}- 20^{th} centuries, 2018-2020, have increased twice compared to 1993-1999 in the US (Udupa et al., 2023). The reputable Indonesian media further reveals a national crisis in the past five years through the news headlines: "Three students were suicide in a week – why are teenagers vulnerable to ending their lives? (BBC News Indonesia, 2024). Also, there were 985 suicide cases among Indonesian adolescents, and mental health is the main cause (Alexander, 2023). A student in Jember almost commits suicide due to overthinking (Rosa, 2022). The pandemic threatens children's mental health (Pancawati, 2021). A high school student in Kediri was severely depressed, allegedly because of a teacher's reprimand about assignments (Dwi, 2020). These cases underscore the fragility of Indonesian school-aged mental health and the urgency to systemically address these issues.

Within the Indonesian Islamic secondary boarding schools context, teacher empathy becomes central in shaping students' learning and emotional adjustment. Through the sensitivity and emotional attunement, it creates a more supportive learning environment and helps students cognitively reappraise academic demands, perceiving them as manageable rather than overwhelming (Therisa Beena & Sony, 2022; Wang et al., 2022). This supportive relational climate may ease students' perception of academic demands, thereby mitigating stress and promoting well-being. Accordingly, perceived learning workload is conceptualized in this study as a mediating mechanism through which teacher empathy may foster student well-being.

In the correlation of this study, these schools represent environments where academic pressure, structured routines, and communal living coexist. These particular conditions render them highly relevant settings for examining the interplay between teacher empathy (TE), peer attachment (PA, learning workload (LW), and student well-being (SWB). Students in such institutions not only navigate rigorous academic expectations but also rely heavily on peer interactions and teacher support within confined residential spaces. Therefore, this study aims to navigate the mechanism through which teacher empathy contributes to student well-being. Teacher empathy is posited to play a central role, not only

in fostering emotional support, but also in influencing peer dynamics and students' perceptions of academic demands. Peer attachment is examined as a mediator because positive peer relationships are essential for emotional resilience in residential school settings, while learning workload is considered due to its direct prediction on well-being. Additionally, demographic variables such as gender and grade level are tested as moderators to explore whether the strength of these relationships differs across student groups.

1.2 Research Questions

To systematically examine the relationship between teacher empathy and student well-being in Indonesian Islamic secondary boarding schools, this study investigates both direct and indirect relationships. It explores how empathy is related to students' psychological functioning through two potential mediators: peer attachment and learning workload. Additionally, the model evaluates whether these relationships differ across students' demographics, especially gender and grade level. These groups were chosen over other factors like emotional maturity, academic stress, and peer interactions during adolescence, partly because of their balanced distribution in the sample. This ensures the reliability of moderation analysis and enhances the validity of group-based interpretations. Framed within the PERMA model of well-being, the following research questions aim to identify both direct, mediated, and moderated pathways through which teacher empathy promotes student flourishing in academically demanding residential schools.

1. What are the levels of teacher empathy, peer attachment, learning workload, and student well-being among students in Indonesian Islamic secondary boarding schools?
2. Do teacher empathy, peer attachment, and learning workload significantly predict student well-being?
3. Does peer attachment mediate the relationship between teacher empathy and student well-being?
4. Does learning workload mediate the relationship between teacher empathy and student well-being?
5. Do gender, class level moderate the indirect relationships between teacher empathy and students' well-being through peer attachment and learning workload?

1.3 Research Objectives

The research objectives were formulated to systematically align the research design and the questions of this study. Each objective is grounded in the theoretical and empirical foundations that guide this study, the PERMA framework. The objectives of this research are as mentioned as follows:

1. To describe the levels of teacher empathy, peer attachment, learning workload, and student well-being among students in Islamic boarding schools.

2. To examine the relationships between teacher empathy, peer attachment, learning workload, and student well-being.
3. To investigate whether peer attachment mediates the relationship between teacher empathy and student well-being.
4. To investigate whether learning workload mediates the relationship between teacher empathy and student well-being.
5. To explore whether gender and class level moderate the indirect relationships of teacher empathy on student well-being through peer attachment and learning workload.

1.4 Research Hypothesis

In line with the proposed conceptual model and research objectives, a series of hypotheses were developed to be tested through quantitative analysis. These hypotheses aim to capture both direct and indirect associations among the key variables, as well as the potential moderating relationship of student demographic factors within the mediation pathways. This research has four hypotheses: the first hypothesis refers to the second research question, the second hypothesis refers to the third research question, the third hypothesis refers to the fourth research question, and the fourth hypothesis refers to the last research question.

$H2_a$ **:** There is a statistically significant direct relationship between teacher empathy, peer attachment, learning workload, and student well-being.

$H2_0$ **:** There is no statistically significant direct relationship between teacher empathy, peer attachment, learning workload and student well-being.

$H3_a$ **:** There is a significant mediation of the relationship between teacher empathy and student well-being through peer attachment.

$H3_o$ **:** There is no a significant mediation of the relationship between teacher empathy and student well-being through peer attachment.

$H4_a$ **:** There is a significant mediation of the relationship between teacher empathy and student well-being through learning workload.

$H4_o$ **:** There is no a significant mediation of the relationship between teacher empathy and student well- being through learning workload.

$H5_a$ **:** There is a significant moderated mediation of the relationship between teacher empathy and student well-being through peer attachment and learning workload, conditional on gender and class level.

$H5_o$ **:** There is no significant moderated mediation of the relationship between teacher empathy and student well-being through peer attachment and learning workload, conditional on gender and class level.

1.5 Research Significance

This study provides both theoretical and practical contributions to the understanding of student well-being in Indonesian Islamic secondary boarding schools. It examines the role of teacher empathy in student well-being, with peer attachment and learning workload considered as intermediary pathways. The model further incorporates gender and class level as demographic moderators. These findings aim to inform both educational research and professional practices in an emotionally demanding school environment.

1.5.1 Theoretical Significance

The findings of this research contribute to the growing body of literature on socio-emotional processes in religious-based residential education, particularly within Indonesian Islamic secondary boarding schools. By identifying peer attachment and learning workload as mediating pathways, this study highlights specific leverage mechanisms for promoting student well-being in a highly structured and communal school environment. Teachers can apply empathy-based strategies to strengthen peer relationships and reduce perceived learning pressure, two key factors for students' psychological adjustment. Furthermore, the identification of gender and grade level variations provides a foundation for differentiated support systems tailored to students' developmental and cultural context. Situated within the unique setting of Indonesian Islamic secondary schools, the findings enhance theoretical discourse by integrating the PERMA model of well-being, attachment theory, and cognitive load theory in the specific educational culture. Ultimately, it supports the creation of inclusive, student-centered school cultures that nurture both academic and holistic well-being.

1.5.2 Practical Significance

The results offer practical value for educators, administrators, and policymakers in Indonesian Islamic boarding schools. Understanding peer attachment and learning workload as mediating variables enables stakeholders to identify key leverage points for enhancing student well-being. Teachers can apply empathy-based strategies to strengthen peer relations and reduce perceived academic strain. Additionally, the identification of gender and class level differences provides a foundation for developing targeted support programs. These insights may inform professional development, school policy, and curriculum planning. Ultimately, the study contributes to building more inclusive student-centered boarding school environments that promote both academic excellence and mental health.

1.6 Research Scope

This study is confined to examining the relationship between teacher empathy, peer attachment, learning workload, and student well-being among students in Indonesian Islamic boarding schools. The scope is limited to students of selected state-run Islamic secondary boarding schools (Madrasah Aliyah Negeri) that operate in a residential academic environment. The study employs a quantitative cross-sectional approach using validated psychometric instruments, with data analyzed through Rasch modeling and Hayes' PROCESS macro (Models 4 and 59) to test mediation and moderated mediation models. The variables investigated include: (1) teacher empathy as the independent variable, (2) student well-being as the dependent variable, (3) peer attachment and learning workload as parallel mediators, and (4) demographic characteristics (e.g., gender and grade level) as potential moderators. This study focuses on the statistical associations among variables, and the findings of this study are interpreted based on the observed statistical patterns within the context of Indonesian Islamic boarding schools, considering the institutional, social, and cultural characteristics unique to these schools.

CHAPTER II
THEORETICAL FOUNDATION

This chapter provides the theoretical foundations of the study. It comprises four interconnected sections: the literature review, identification of research gaps, theoretical framework, and conceptual framework. Each section explores relevant psychological and educational theories that explain how teacher empathy, peer attachment, and learning workload associate to student well-being in residential school environments. The literature review identifies the existing studies in both conceptual and empirical areas to identify the gaps and novelty. The theoretical framework section also discusses comprehensive definitions and possible directions of investigation for this particular topic, utilizing the psychological and educational frameworks to define the critical constructs of the main constructed variables.

2.1 Literature Review

A complex interplay among academic demands, social connections, and religious development characterizes the educational environment in Indonesian Islamic boarding schools. This literature review explores four main variables: teacher empathy, student well-being, peer attachment, and learning workload. that are essential to understanding student experiences in these schools. Drawing on recent empirical studies, this review charts current knowledge, identifies gaps, and positions the mediating roles of PA and LW in student outcomes.

2.1.1 Concept of Students' Well-Being in Educational Context

Students' well-being in educational environments encompasses a combination of mental, emotional, and physical health (Zhong et al., 2024). It is an essential element for both academic performance and overall life satisfaction (Ruggeri et al., 2020; Douwes et al., 2023). According to Seligman's PERMA model, well-being comprises five interrelated domains: positive emotion, engagement, relationships, meaning, and accomplishment. Each dimension contributed to students' ability to thrive academically and socially (Seligman, 2018). For instance, the presence of meaningful peer relationships and a sense of accomplishment are essential in helping students navigate high-pressure academic settings such as Islamic boarding schools. It means that a strong sense of well-being is significantly correlated by increasing comfort, motivation, and resilience (Benevene et al., 2020; Fezi et al., 2024).

In contrast, a lack of secure well-being can lead students to experience stress, anxiety, and burnout, particularly in settings characterized by high academic pressure and limited emotional support (Suhendra et al., 2020; Thornby et al., 2023). Such conditions are further aggravated in boarding school

context where students are physically separated from familial support systems and must navigate the pressures of achievement in relation isolation. It because a displacement forces students to confront logistical challenges and exacerbates feelings of social isolation and alienation (Smith et al., 2022). These two psychological states have been widely recognized as precursors to more serious mental health problems, including chronic disengagement, diminished academic motivation, and a weakened sense of belonging. In the absence of empathetic roles from teachers' responses and strong peer relationship, students may find it increasingly difficult to cope, highlighting the urgent need for relational and institutional structures that promote emotional safety and academic balance.

Although SWB is a foundational pillar for both academic achievement and personal growth, institutional support for mental health within many madrasas remains underdeveloped (Huda & Slamet, 2024). This gap highlights the concerning lack of access to professional counseling services, as only a small fraction of madrasahs employ trained mental health practitioners or offer systematic emotional guidance programs (Fakhriyani & Sa'idah, 2024). As a result, students struggling with psychological difficulties often rely on informal support systems or personal coping strategies, which may not be equipped to provide sustained support (Handayani et al., 2024). In severe cases, unaddressed mental health issues can lead to academic decline, behavioral disruptions, or withdrawal from the educational environment (Gross et al., 2023).

To address these challenges, Indonesian Islamic boarding schools urgently requires a culturally responsive and holistic approach to student well-being. Such an approach should go beyond academic reform by not only reducing unnecessary workload pressures but also actively promoting peer support networks and cultivating inclusive, empathetic learning environment (Cheng & Lin, 2023; Smith, 2019). Interventions that integrate spiritual values with evidence-based psychological strategies, such as guided reflection, stress management workshops, and peer mentoring, hold significant promise to elevate student well-being from a peripheral concern to a fundamental aspect of educational achievement (McDougal et al., 2024; Gilmore et al., 2025). It can be inferred that is crucial to nurture the emotional, social, and spiritual dimensions of students' lives to develop resilient, compassionate, and purpose-driven individuals who can thrive both within and beyond the madrasah community (Zhong et al., 2024).

Student well-being stands at the forefront of educational discourse because research confirms that emotional and psychological and social wellness factors lead to student development alongside academic success (OECD 2019). Student well-being becomes vital to establish supportive learning environments when schools operate under demanding academic conditions in residential settings such as Islamic boarding schools (Chue, Cheung, & Wang, 2024). Student well-being exists as a complex multi-dimensional structure that combines positive psychological functioning and life satisfaction together with emotional balance and resilience to academic and social challenges (Gilmore, McNeilage, & Ashton-James, 2025). Student well-being comprises subjective (happiness and emotional regulation) and objective (engagement and achievement) indicators which together create a comprehensive

perspective of students beyond cognitive assessments (Baik et al., 2019, as cited in Gilmore et al., 2025). The OECD (2019) defines student well-being as an active state which supports students to achieve their potential while being able to work productively and creatively and develop positive relationships and make community contributions. The definition of well-being includes four dimensions which need development both inside the curriculum and throughout the broader school environment (Woolf & Digby, 2023).

In the context of Indonesian Islamic boarding schools, students navigate a structured environment that emphasizes both academic achievement and religious development. Within such dual demands, the concept of well-being assumes critical importance, not merely as a psychological asset, but as a foundation for sustained motivation, resilience, and moral growth (Mirza et al., 2021). However, the socio-emotional needs of students in these settings often remain under-examined, even though they play a vital role in shaping students' capacity to manage academic pressures and maintain engagement over time (Atiomo, 2020)

2.1.2 Teacher Empathy and Its Role in Education

Teacher empathy is necessary to create a psychologically safe environment for students. By engaging in emotional attunement, careful listening, and compassionate emotional conditioning, they support students' resilience and intrinsic motivation, ultimately furthering academic success (Sun et al., 2023; Ahmad et al., 2024; Aldrup et al., 2017). Moreover, sensing students' body language and responding to their emotional needs is a valuable skill in creating effective, compassionate, and sustainable educational environments, especially in the endemic socio-academic environments of Indonesian Islamic boarding schools (Amanbaikyzy, 2025).

In this Islamic boarding schools setting, students live away from their families and receive highly intensive learning demands. With dual curricula, they navigate the challenges of rigorous national academic standards and comprehensive Islamic studies (Aulia & Desiningrum, 2024). Such integration holds the potential to empower students' holistic development considerably, preparing them not just for academic and professional success but also for ethical leadership and good civic participation (Rahman et al., 2025). However, it leads to being overwhelmed with academic stress, homesickness, and socio-emotional adjustment issues (Zhong et al., 2024).

Thus, teacher support plays a mediating role in the nexus between academic resilience and academic performance, with not only traditional instructional duties but also multifaceted ones (Cai & Meng, 2025). They serve as the children's caregivers, mentors, counselors, and role models whose impact on the students' emotional, social, and psychological development is deep and widespread (Zulfikar, 2023; Ibarra, 2022). In sum that TE significantly resonates with students' emotional, social, and psychological development.

Despite the significant value of empathy, systemic and cultural barriers remain that hamper its full integration into teaching practices. Teachers in Indonesian Islamic boarding schools oftentimes face a heavy workload involving administrative work, monitoring tasks, extracurricular duties, as well as teaching a large class of students while fulfilling tough academic standards (Fitri Oviyanti, 2023; Zoromba et al., 2023). Such a situation may lead to emotional exhaustion, role overload, and a phenomenon of "empathy fatigue," where teachers exposed to incessant emotional demands develop decreased ability for empathic involvement (Aldrup et al., 2022; Sari & Ulpah, 2023). Moreover, cultural socialization may lead to the stigmatization of expressing feelings openly or viewing empathic participation as reflective of professional bias and thus discourage teachers from embracing full empathic practice (Rahmah, 2021).

Accordingly, the current Indonesian educational landscape requires far-reaching reforms that embed empathy as a fundamental component of educational policy and practice (Graziano et al., 2024a; OECD, 2024). On emotional intelligence in educational settings, teacher education program-including pre-service professional development, must prioritize the systemic empathy training (Brackett et al., 2009). So, it will extend beyond classroom teachers to include leadership development programs, ensuring that empathetic values permeate all levels of the educational system and contribute to nurturing empathetic school cultures.

To sustain empathy as a professional quality rather than a temporary emotional reaction, essential structural supports should be in place. These include reasonable workloads for educators, accessible mental health services, peer support structures, and reflective teaching practices (OECD, 2024). Furthermore, the embedding of social-emotional learning (SEL) structures within school curricula offers great promise for the development of a culture where empathy is valued and actively fostered by both students and educators alike and thus reaffirmed as a collective activity rather than a solitary task (UNESCO, 2022; CASEL, 2023). Therefore, developing teacher empathy in the Indonesian educational boarding landscape is essential for fostering a collaborative and nurturing culture in Islamic-based schools.

In conclusion, the effective solution to reform the Indonesian educational system necessitates implementing a comprehensive national transformation alongside systematic pedagogical approaches that foster empathy. This strategy emphasizes the positive school climates that result in students' achievement. The quality of academic instruction at Islamic boarding schools relies on teachers who cultivate empathy, emotional maturity, and moral values. Eventually, the cultivation of empathy fosters the fundamental social justice that improves and promotes global citizenship.

2.1.3 Peer Attachment in Adolescent Development

Peer attachment (PA) is a fundamental aspect of adolescent development, exerting a profound impact on academic motivation, engagement, and psychological adjustment (Mitic et al., 2021). It is

the affective ties, trust, and sense of belonging adolescents develop with their peers that not only organize their social relationships but also play a critical role in fostering academic achievement and emotional resilience (Schoeps et al., 2020). It is not only a necessary part of an adolescent's development, but also one that has a specific meaning at the time of the majority of the teenagers living in an educational environment, such as Islamic boarding schools. Student are always with their fellow students and not with their families which commonly face cultural dislocation and lack of support (Franck et al., 2020). The peer-to-peer connections become quite approaches of the family to live with are no longer temporarily available, thus it adversely and negatively affects their emotion, social behavior, and cognitive adjustment (Chang et al., 2023). So, PA fulfills fundamental emotional needs, offering adolescents an ally, a source of affirmation, and a sense of security, all of which are necessary for negotiating the complicated issues inherent in social and academic life.

The trust and intimacy shared with peers are significantly correlated with an individual's physical and emotional well-being, a reason why they fluctuate over time. For instance, Gómez-López et al. (2020) and Liang et al. (2021) have demonstrated that students with a robust emotional connection to their peers demonstrate empathy, collaboration, and altruism, which are some of the prosaically behaviors. Fostering these behaviors in such a solid social environment as in boarding school is straightforward. Besides, the dimensions of the dormitories and similar factors constitute the variables of the interpersonal barriers evident in the trust-based relationships to be constructed. Liang et al. (2021) also showed that positive friendship can shield adolescents from the psychological challenges encountered in the boarding school, such as homesickness, anxiety, and depression. Similarly, Hanifah (2020) agrees to this notion, apart from the comfort provided by peer members; it is underlined that PA plays as 'stress busters' and is considered in preference instead of their parents.

Furthermore, PA has demonstrated its role as a significant mediating factor in addressing students' adjustment to academic and interpersonal demands (James et al., 2021). The notion of peer attachment in the context of a boarding school is not universally applicable and should be reflected within cultural, religious, and contextual resilience within the organizational context (Ungar, 2008; Chen et al., 2006). However, it should be noted that this study is solely to delineate PA in the Islamic boarding schools framework, so it is infeasible to disentangle pedagogical and religious practices. An illustrative example of Indonesian Islamic boarding schools (pesantren/madrasah) where religious tenets govern peer interaction and individuals perceive participation in the community obligation (Rahtikawatie et al., 2021).

Nonetheless, PA does not preclude the potential risks associated with such religious authority, as neglecting to consider the equilibrium between spiritual and material advancement may lead to disturbances. Conversely, student groups function as catalysts for beneficial development (Mudzkiyyah et al., 2022). They assert that specific student groups have significant power, fostering exclusionary behaviors and engaging in bullying (Hamsah at al., 2024). These may foster an environment of isolation,

thereby undermining students' self-worth and motivation to learn. The necessity for intimacy, constancy, and acceptance parallels the relationships on human developmental traits.

Cooper et al. (2012) further demonstrated that stable relationships with peers enhance individuals' academic self-efficacy. Peer validation enhances students' self-efficacy and improves both their engagement in and the quality of extracurricular activities. The advantageous initiatives include peer-to-peer activities conducted by students, such as emotional support, identification and management of emotions, and group therapy, which have demonstrated efficacy in enhancing learners' interpersonal skills and conflict resolution abilities (Oxford, 2011). It can be inferred that Friendships link students, providing assistance, support, and constructive criticism, so fostering both academic achievement and overall student engagement and success.

Nonetheless, the identical actions should be executed concurrently with adults. The teacher serves as the primary source of emotional support for pupils by exemplifying positive behavior, fostering inclusivity, and employing a nurturing and secure pedagogical style (Johns, 2019). Overall positive PA is a fundamental aspect of self-development during adolescence, particularly within a boarding school environment. It is a significant component influencing the happiness and achievement of adolescents, as indicated by various studies. However, educational institutions possess the authority to dictate the nature and quantity of these interactions due to the prevailing atmosphere and culture within the institutions. Indeed, when schools dedicate themselves to fostering joyful and inclusive peer interactions, they observe significant enhancements in the emotional well-being, social competencies, and overall lives of the youth. Educational institutions that prioritize students' well-being and interpersonal relationships alongside academic achievement are undoubtedly more effective in producing competent, knowledgeable, and nurturing individuals.

2.1.4 Learning Workload in an Academic Setting

The educational workload (LW) significantly impacts SWB, particularly in high-stakes environments such as boarding schools. In education, the notion of LW involves all tasks that have to be accomplished by the student, both academic and non-academic demands. It includes in-class activities involving lectures, discussions, homework, assignments, reading, and examinations (Zhang et al., 2021). The subjective perception and attitudes of students towards homework significantly correlate to their learning experience and mental health stability (Sideridis, 2021). While a raised intellectual workload might be beneficial in some contexts, it can also negatively impact the emotions and psychology of the student.

Studies have demonstrated that students experiencing excessive academic stress are highly vulnerable to mental health issues related to stress, anxiety, and burnout (Jiang et al., 2022; Karma et al., 2021; Atiomo, 2020). A significant symptom of students' stressors changes, especially worsened by the heightened LW, is the disruption of the balance that should be maintained between their

responsibilities and well-being in general (Jiang et al., 2022). Moreover, Thornby et al (2023) characterized burnout as signs of mental exhaustion, dissatisfaction, and diminished long-term work efficiency. The cyclical nature of the issues is evident in the decrease of students' learning performance, which results in overwhelming workloads that cause, necessitate extra effort to rectify the performance deficits (Feizi et al., 2024).

On the other hand, students may encounter situations where stress and mounting LW contribute to each other, negatively impacting their mental well-being and performance (Mirza et al., 2021). A substantial volume of LW does not inherently present a concern, but the negative effects may not be immediately apparent. How work is allocated and presented to students, and the configuration of the work in terms of its physical characteristics and presentation, as well as its execution, play a vital role to play in determining the effectiveness of the education program (Abdullah & Md Hassan, 2024; Großmann & Engel, 2020). A recent study in educational psychology discloses that student experience depends not only on the quantity of tasks but also on their quality and how these are sequenced to be accomplished. A conclusion for a study by Fadilah and Hidayat (2025) highlights the importance of creating a supportive yet challenging environment that fosters to promote the ability to work independently.

The improvement in achievement and academic performance is increasingly recognized as a positive outcome that stems from the provision of opportunities to enable the student to select subjects to study (Waruwu et al., 2024), select project collaborators (Saputri & Maura, 2024), and organize their schedules (Chongchong & Bikar Singh, 2024). When the students engage with a system designed to support their need for autonomy, there tends to be a significant enhancement in their sense of responsibility in the learning process (Alley, 2019). This involvement consequently results in stress reduction and hence generates enhanced interest in learning pursuits. In addition, Cai and Meng (2025) assert that individuals in academic environments demonstrating elevated resilience are more adept at coping with stress, overcoming obstacles, recovering from failures, and accomplishing personal growth amidst life's challenges. In addition, effective instructional strategies should incorporate well-designed schedules that integrate academically rigorous tasks and students' aspirations (He & Zhang, 2019). If the assignments are respected and tailored to personal goals, students can anticipate less anxiety, maintain a positive self-perception, and reduce burnout inclinations. Moreover, an effectively designed workload that engages students and includes diverse, essential activities can enhance the learning process. Despite these benefits, it is surprising that many educational institutions, especially Islamic boarding schools, still neglect student-oriented methodologies in their instructional frameworks (Badrun, 2024).

On the other hand, Sari and Putra (2024) explain that the organizational structures in institutions responsible for academic work tend to lose their importance concerning the organization's protocols or activities. They present detailed information about the efforts made by institutions of education to provide psychological assistance and education in the management of time among the students. They

observed that only 12% of the madrasahs have implemented the time management program along with the mechanism for providing psychological support. The lack of sufficient support and good strategies from the school and teachers generates stress and mental exhaustion generally experienced by the students in the education system.

To effectively reduce stress, provide support, and provide necessary rest to the children, the availability of teachers and support staff in the education system becomes indispensable. With respect to this problem, the role of cultural and global education in the madrasah system has increasingly been realized as a means to strengthen the education system and to harmonize the education system in accordance with the life of the people. The application of mindfulness activities rooted in the core teachings of Islam has been found to reduce the stress of the students and enhance the overall well-being of the student (Ihsan et al., 2025). This is a viable method to cope with the existing conditions. The said programs educate the children on stress management of academia-related work along with enhancing their resilience. A series of Islamic teachings including self-evaluation, mindfulness, and devotion to the maintenance of one's divine health are utilized in order to fulfill the purposes of the program. Workshops to reduce stress, guided reflection exercises, and peer mentoring together form a well-rounded system for handling academic stress that combines Islamic values along with contemporary psycho-educational techniques.

In sum, this system enables the enhancement of overall well-being and resilience in the student population, which allows for a positive attitude towards academic performance and personal development. The madrasahs facilitate the achievement of two important values: first, the madrasahs encourage a balanced approach towards the mental and emotional well-being of the students in conjunction with their academic pursuits; secondly, this balance arises directly as a result of a holistic approach to pedagogy. As a result, the students not only learn effective strategies for the management of academic stress but also value their well-being. They develop a sense of accomplishment and participation that eventually leads to considerable achievement following both their academic and spiritual goals.

2.1.5 Islamic Boarding School Context in the Indonesian System

The academic demands in Indonesian Islamic boarding schools are notably rigorous, primarily because of the distinctive dual curriculum system. The system combines religious studies-embracing Qur'an memorization, Islamic jurisprudence, and other spiritual disciplines, with the secular curriculum, specializing in science, languages, and technology (Alif et al., 2023; Rahtikawati et al., 2021). In this setting, the students are expected to balance between the demands of the two streams, often resulting in intense study timetables.

The students in these Islamic boarding schools spend long hours studying, more than 12 hours a day, with minimal breaks for rest, leisure, or personal activities (Amrullah et al., 2024). This prolonged

commitment goes beyond weekdays, frequently encompassing weekends and holidays, as students must answer to both religious and academic authorities. Furthermore, students in boarding environments have limited autonomy over their daily schedules, as most of their activities are structured by the madrasah. It is the combination of these two factors that gives rise to a highly structured and demanding learning experience. It consistently highlights the negative predictions of demanding academic pressures on students' physical and mental well-being.

Study of Nurhayati et al.'s (2023) followed 500 students at different boarding schools, found that 68% of participants experienced chronic fatigue while 41% showed moderate to severe anxiety symptoms, which were directly connected to academic stress. The findings receive validation through physiological indicators such as higher cortisol levels, which demonstrate the chronic stress impact on the body (Sari & Putra, 2024). The academic environment forces students to focus on task completion instead of meaningful learning, which produces superficial engagement in their studies. Students experience reduced comprehension of academic material, together with increased academic misconduct risks since they often consider dishonest methods to meet deadlines (Wahyudi et al., 2024).

The subjective well-being among Indonesian Islamic boarding school students exists as multiple interconnected elements that result from intellectual requirements and social connections, and religious development priorities. According to Noor Rani et al. (2023) the concept of SWB reaches beyond psychological health issues to include life purpose and spiritual satisfaction, together with social belongingness. The academic demands of madrasahs create a well-known problem of high stress levels alongside anxiety and sleep problems for students (Nurhayati et al., 2023; Sari & Putra, 2024). The emotionally charged environment, which includes extended study periods with limited time and performance expectations, leads students to develop feelings of burnout and mental fatigue.

Furthermore, the specific characteristics of madrasah environments create obstacles that maintain stable subjective well-being among students. The academic environment creates intense competition because of examination grades, together with scholarship requirements and teacher expectations, which lead students to compete with their peers. Such an environment damages friendship bonds and produces negative emotions like jealousy and social exclusion, and sometimes bullying behavior (Andini & Suryadi, 2025). The social dynamics within the boarding school create obstacles that break down social unity while intensifying feelings of loneliness among students who struggle academically or come from different economic backgrounds.

However, students' experiences are also heavily trigerred by their interaction with religious teachings, which provide culturally based coping mechanisms. Concepts such as *sabr* (the capacity to exercise patience in the face of adversity) and *tawakkul* (reliance on divine will) become integrated into their spiritual and academic lives, allowing many students to face challenges while infused with a sense of destiny and empowerment (Hakim & Aziz, 2024). Such values can serve as moderating predictors, enabling students to reinterpret stressors as spiritual challenges instead of insurmountable barriers.

The residential dimension of madrasah life has a dual role in affecting SWB. First, the communal environment creates a profound sense of belonging and psychological safety. The students participate in collective prayer, sit for collective study sessions, and live together in shared dormitory accommodations, thereby developing peer bonds and mutual support. Collective experiences can increase emotional resilience significantly while also reducing feelings of isolation at the same time. Students who were always involved in collective worship and collaborative religious practices displayed higher life satisfaction, enhanced emotional stability, and fewer episodes of loneliness (Yulianti et al., 2023). These communal rituals not only consolidate religious identity but also create emotional reference points when a person is going through stress.

In secondary schools, the Ministry of Religious Affairs (MORA) has established the Directorate of Madrasah Schools and Ditjen Pendidikan Islam (PENDIS) as the main authorities responsible for improving the status and accessibility of Islamic education at the secondary school level. The regulations focus on replacing outdated madrasahs with more advanced institutions, such as Regular Madrasah, Madrasah Aliyah Keagamaan (MAK), Research Madrasah, and Academic Madrasah. The article discusses an Academic Madrasah, a type of Islamic boarding school in Indonesia renowned for high academic standards, which besides religious instruction also offers secular subjects and adheres to Government Regulation No. 42 of 2017. It includes 24 top-tier Islamic boarding madrasahs across Indonesia's islands. This research concentrates on students at these Islamic boarding madrasahs, exploring how they share traditional wisdom and cultural knowledge while participating actively in both academic and non-academic activities. Students from these 24 schools are expected to achieve excellent academic results, demonstrate strong social skills, and participate actively in classrooms, extracurricular activities, organizations, and religious events. Consequently, students may be vulnerable to unstable well-being due to excessive LW. Therefore, this study assesses their current subjective well-being (SWB) and their perspectives on LW, with the moderating roles of TE and PA as interventions to support their mental health stability.

2.2 Research Gap

Student well-being has been widely studied as a multidimensional construct predicted by both academic and relational factors. Among these, teacher empathy, peer attachment, and learning workload have received considerable attention in diverse educational settings (Wan et al., 2023). While widely studied, the intersection of these factors within specific educational ecosystems still invites closer attention. This study offers a distinctive lens by examining these constructs within Indonesian Islamic boarding schools, the institutions known for their dual curriculum system and intensive residential life.

Teacher empathy has been linked to multiple positive student outcomes, including motivation and emotional security. In boarding schools, teachers serve not only as instructors but also as daily life models, disciplinarians, and often surrogate guardians. This multi-faceted role demands a different kind

of empathy, one that bridges academic authority and emotional support. This study prioritizes students' perceptions of teacher empathy, viewing how emotional support functions within hierarchical but communal learning systems. Assessing these dimensions could allow the determination of successful empathetic pedagogical strategies that foster student resilience and motivation.

Peer relationships are essential during adolescence and derive much of their emotional regulation and identity formation from peer groups. When students live and learn together continuously, these relationships intensify and become pivotal to emotional regulation and identity. Rather than treating peer dynamics as background context, this research positions peer attachment as a central relational mechanism in a mediating process. It seeks to explain how peer bonds might channel the interventions of teacher empathy toward greater student flourishing.

Learning workload is often linked to student stress and burnout (Azizova et al., 2025; Smith, 2019). Then, multiple studies have addressed how learning workload predicts student well-being. However, in the Islamic school context, the workload is shaped by both secular and religious instructions. The coexistence of two distinct curricular demands intensifies students' academic experience. This duality, coupled with regimented schedules, adds a specific cognitive load and emotional strain that may differ from conventional school settings. By focusing on this context, the study aims to interpret its cultural and psychological experience.

By drawing from culturally embedded practices within Indonesian Islamic boarding schools, the study contextualizes how institutional culture and relational dynamics shape well-being. It also considers whether gender and grade level associate on how students respond to these relational and academic conditions. These moderators allow for a more nuanced understanding of individual variability.

Considering these gaps, this study contributes to the growing discourse by proposing a moderated mediation model. These approaches reflect the complexity of real student experiences in the context of Indonesian Islamic educational setting. It brings together psychological theory and cultural practice to inform both understanding and intervention within s. Thus, this study outlines how teacher empathy predicts student well-being both directly and indirectly via peer attachment and workload. This approach offers both conceptual clarity and practical value for designing culturally relevant interventions in faith-based educational systems.

2.3 Theoretical Framework

This research is grounded an integrative theoretical framework that draws on the PERMA model of well-being, cognitive load theory, empathy theory, and attachment theory to examine the relationship between LW, TE, and PA towards SWB. It applies Seligman's (2011) PERMA model as a basis for understanding student well-being. The PERMA scheme divides well-being into five stages: Positive Emotion, Engagement, Relationships, Meaning, and Accomplishment. It not only introduces but also

changes and confirms a simple matter. These facets collectively depict the intellectual, emotional, and social aspects of human life, most especially within the academic institution. In Indonesian teaching Islamic boarding schools, learners are usually overwhelmed by the tight pressure arising from three main aspects, i.e., religion, academics, and social life. PERMA model, has been identified as the most suitable comprehensive approach to well-being (Gilmore et al., 2025; Woolf & Digby, 2023).

Each part of PERMA empowers students but in a different way. Positive emotion can be defined as feelings of joy, gratitude, and hope that serve as a sanctuary for stress and burnout, which sometimes are not reduced but rather gone when one is in a good/happy mood (Bergin & Pakenham, 2015). Engagement, addresses the amount of mind and energies students have been putting into the process of learning, the more flow and the more are the students enjoying the learning game (Chue et al., 2024). Relationships are the range of friendliness and trust between learners and educators; relationship maintenance strategies, such as reliance on close friendships, are critical in the absence of the family when students are at a boarding school. Positive religious attitudes, which are characterized by trust and warmth, are helpful in the spiritual life of the students by creating spirituality, supporting the students who are lonely, and inadequate help, and also by regulating emotions.

In spiritual contexts, Meaning is articulated as the phases encountered by students and the acknowledgement of the coherence between their education and overarching life objectives, facilitated by religious organizations (Hidayat et al., 2023). Furthermore, accomplishment must signify the attainment of academic and personal objectives that inherently enhance students' competence and resilience in challenging circumstances (Gilmore et al., 2025).The paper examines the challenges encountered by students via the lens of Cognitive Load Theory (Sweller, 1988), asserting that the limitations of working memory constitute the primary constraint on learning. In Islamic boarding schools, the diverse array of intricate religious and general courses, along with supplementary activities, captivates students in a manner markedly distinct from their previous experiences. They encounter a novel sequence of tasks, thereby facing difficulties in task management and sustaining cognitive efficiency.

This, in turn, leads to sensory overload that might affect the learning process and, in turn, the emotional stage and mental health of the adolescent. It has been discovered that cognitive efforts can be of different levels and that students may have fluctuating mental capacity from time to time during their study periods (Kember et al., 2004). Imbalance resulting from the interaction between the two has several benefits, such as not making those students tired, lacking motivation, or causing the performance to decrease. Therefore, in the context of this work, following the theoretical edge, and more particularly concerning the problem, the intensity of the learning load is considered the key independent variable detrimental to students' well-being because of the mismanagement of cognitive resources.

The approach posits that teacher empathy may serve as a moderator. According to empathy theory, the teacher's empathic condition is recognized in both cognitive and affective dimensions (Davis, 1983). The cognitive dimension of empathy involves the teacher's understanding of a student's mental and

emotional condition, whereas the emotional dimension pertains to the teacher's response to the student's emotions. Empathic educators provide an environment of support and trust, which is crucial for alleviating student anxiety (Wang et al., 2022; Rimm-Kaufman et al., 2015). The Cooper taxonomy (2004) posits that teacher empathy encompasses not only the comprehension and sharing of emotions but also the demonstration of concern and reflective insight. This strategy heightens in-class communication results as well as engagement in learning. In boarding dynamics, educators with empathy have formed the habit of taking care of the children as if they were their own, and that too by wearing parental figures' hats. Teachers play a crucial role by being stable emotional regulators and being the support system for the students. (Pianta, 1999; Wang & Degol, 2016).

The dynamics of relationships at boarding schools are crucial. The Islamic schools' atmosphere is stringent regarding religious and cultural diversity, necessitating the alignment of these norms with knowledge and skills. In addition to teacher assistance, peer attachment is another component examined within this paradigm. According to Attachment Theory (Bowlby, 1969; Armsden & Greenberg, 1987), peer attachment refers to the emotional tie among teenagers, encompassing its strength and quality upon which they establish their relationships. Individuals with strong social connections experience less stress, enhanced emotional coping skills, and heightened academic motivation (Wilkinson, 2004; Gómez-López et al., 2020). In Islamic boarding schools, students are likely to reside communally, thereby fostering robust ties. Students' strong and secure relationships furnish them with the necessary resilience to navigate academic stress and foster a sense of belonging that facilitates social and academic adaptation. Nonetheless, the efficacy of friendship can be related by various elements, including the local context, such as antagonistic dynamics within a small group or limited possibilities for youth, which may arise from such circumstances. Therefore, protecting students from discrimination and providing them with psychologically safe surroundings through mentorship and collaborative projects is crucial (Muchlas & Usman, 2021). This paradigm is predicated on the interplay between student workload, student well-being, instructor empathy, and peer attachment, which culminates in academic and emotional outcomes. Despite the potential adverse correlation of rigorous academic expectations on student well-being, the presence of empathic and supportive teachers and peers significantly enhances protective outcomes.

Interpersonal connections are a big part when it comes to reduce stress, which leads to a significant relationship emotional and substantial to academic performance. Thus, the presented model of education highlights emotional and social health as part of a whole learner who is also intelligent in handling challenges. The main aim of this study is to provide a deep and comprehensive knowledge of students' experiences in Indonesian Islamic boarding schools by relating the philosophy of Cognitive Load, the PERMA well-being model, the philosophy of empathy, and the concept of attachment. The theoretical framework not only does it helps with the analysis, but it also gives suggestions about the possible changes in the educational system that are consistent with students' well-being and academic achievement.

2.4 The Variables Dynamic

In developing a balanced workload, especially within educational institutions, it is also important to consider the emotional and social well-being of the students. For example, schools can create policies that enhance realistic academic expectations and involve parents in the learning process more effectively (Fan & Chen, 2001). The impact of such policies in educational institutions and within family settings will help alleviate some of the negative correlations brought about by excessive workload through a culture of support and open communication. Such an approach comprehensively addresses the complex interplay among workload, social support, and student well-being to ensure that students are better prepared and supported for academic and emotional success. The section of this study is illustrated by the following figure:

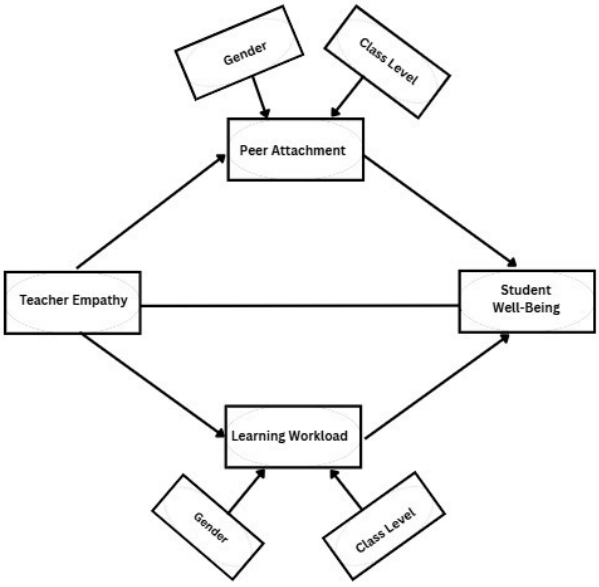

Figure 2.1

The study conceptual framework

Students frequently experience negative relationships on their well-being as a result of the cycle of learning workloads, such as increased stress and disengagement from their studies. Figure 2.1 illustrates that the combination of teacher empathy and effective peer attachment plays an important role in improving student outcomes. Students develop safety and belonging through empathetic teachers who recognize their struggles while providing adaptable approaches. Students benefit from strong peer relationships, which establish supportive groups that help them share their problems while working together to reduce their stress. When these moderated interventions unite, students gain better capacity to handle academic pressures which strengthens their resilience along with their overall wellness.

CHAPTER III
RESEARCH METHODOLOGY

The chapter outlines the research framework along with its methodological structure and participant selection and data gathering process and measurement tools and data interpretation methods, and ethical protocols. It provides a detailed, structured approach that matches the research questions and objectives. This study utilizes a specific research methodology to examine the connections between teacher empathy (TE) and student well-being (SWB) within an Indonesian Islamic boarding school while accounting for learning peer attachment (PA) and workload (LW) as mediators and demographic students as moderators.

3.1 Research Paradigm

This study adopts a positivist research paradigm, which asserts that reality is objective, stable, and can be systematically measured through empirical observation and statistical procedures. Within this tradition, knowledge is constructed from observable, quantifiable phenomena, enabling researchers to detect patterns, test hypotheses, and generate generalizable conclusions through standardized methodologies (Herrera Castrillo, 2024). Although this paradigm resonates with the ontological stance of critical realism, which affirms that reality exists independently of human perception, it simultaneously recognizes the role of the researcher's positionality in shaping interpretation (Monaghan, 2023).

In this study, the positivist paradigm is operationalized through the use of structured self-report instruments to measure the latent psychological constructs: teacher empathy, student well-being, peer attachment, and learning workload. The research process remains detached and systematic, minimizing subjectivity and enhancing replicability. The data are analyzed to examine hypothesized relationships among variables and explore potential mediating and moderating relationships, aligning with positivism's focus on objectivity and causal inferences, while recognizing that causal claims are conditional upon the cross-sectional nature of the design. By adhering to this paradigm, the study seeks to contribute empirical, statistically grounded insights into behavioral and relational dynamics within Indonesian academic boarding school settings.

3.2 Research Design

This study employs a quantitative, non-experimental, cross-sectional research design. A non-experimental design is characterized by the absence of direct manipulation or control over the independent variables, allowing the researcher to observe variables as they naturally occur in real-life contexts (Johnson & Christensen, 2017). This design is particularly appropriate when the objective is

to examine existing relationships between variables without altering the environment or applying interventions. In this study, the variables teacher empathy, peer attachment, learning workload, and student well-being are explored based on participants' self-reported perceptions within the naturally occurring context of academic Islamic boarding schools. Meanwhile, the cross-sectional approach involves collecting data at a single point in time, enabling researchers to capture a snapshot of the associations between variables across a large and diverse sample. This design is especially useful for educational settings where longitudinal tracking is less feasible due to time constraints and academic calendar limitations. By using this approach, the study can identify patterns and correlations among variables across subgroups, such as by gender and grade level, without assuming causality.

To deepen the understanding of how teacher empathy contributes to student well-being, the study incorporates parallel mediation analysis, identifying peer attachment and learning workload as mediating variables. These mediators were chosen based on theoretical considerations: peer attachment reflects students' relational security (Mitic et al., 2021), while learning workload represents cognitive and academic stress (Smith, 2019); both are hypothesized pathways through which teacher empathy exerts its association. Additionally, the study examines whether these indirect pathways differ depending on student demographics, specifically gender and class level, by conducting moderated mediation analysis. The inclusion of these moderators acknowledges that students may process empathy, attachment, and academic stress differently across developmental stages or gendered experiences. This analytical design offers a nuanced, conditional exploration of relational dynamics in student well-being while maintaining the objectivity, replicability, and generalizability emphasized in positivist research.

3.3 Research Participants and Data Collection Method

The population in this research involves 7.980 students from 24 Islamic boarding schools located across Indonesia. The sample size is 1.335 students in 13 madrasahs from five major island regions of Indonesia: Sumatra, Java, Borneo, Celebes, and Papua. This wide geographical distribution enhances the representativeness of the sample, allowing the findings to reflect national-level trends and contextual diversity within the Indonesian Islamic secondary boarding schools environment. The selection of schools is based on the type of schools; these schools are known for their emphasis on academic excellence and character development within the Islamic boarding schools' educational framework, which shows a homogeneous population. In the process, 187 students from 1 school (madrasah) contributed as the pilot first testing respondents, 155 students as the second pilot testing respondents, and 993 students were involved as the primary data, which reveals N=896 students as the final sample size after data cleaning through WinStep software version 3.73. The detailed madrasah location distribution is shown in the following tables:

Table 3.1

Madrasah Distribution as Research School Participants

No.	Location	Province
	Region A	
	Sumatra Island	
1	Aceh Timur	Aceh
2	Jambi	Jambi
3	Siak	Riau
4	Batam	Riau Island
5	Lampung Timur	Lampung
	Region B	
	Java Island	
6	Serpong	Banten
7	Pekalongan	Central Java
	Region C	
	Borneo Island	
8	Sambas	West Kalimantan
9	Tanah Laut	South Kalimantan
10	Paser	East Kalimantan
	Region D	
	Celebes Island	
11	Gowa	South Sulawesi
12	Gorontalo	Gorontalo
	Region E	
	Others Island	
13	Sorong	West Papua

After securing institutional permission and participant consent, this study employed a non-probability sampling technique, in which participants are chosen based on accessibility, institutional permission, and their alignment with the study's criteria (Cohen et al., 2018). This approach was methodologically appropriate given the study's contextual constraints and theoretical aims. Rather than aiming for broad generalizability, the focus was to test relational mechanism among key psychological constructs within the specific educational context of Islamic secondary boarding schools. Non-probability sampling also allowed researcher ethically and efficiently access diverse school sites while respecting institutional boundaries.

The final sample size consisted 896 students, which satisfies methodological standards for both Rasch analysis and multivariate testing. According to Linacre, a minimum of 250 to 500 respondents is sufficient for stable Rasch calibration (Sumintono & Widhiarso, 2015). Meanwhile, Hayes (2022) recommends at least 500 participants for detecting medium effects in moderated and mediation analysis using PROCESS Macro in SPSS. Thus, the sample size was adequate for both psychometric validation and inferential statistical modeling. Data were collected through online surveys distributed by 13 teachers who served as research assistants across the participating schools. To ensure uniformity and adherence to research ethics, all assistants were provided with a standardized data collection protocol through a brief online orientation session. This process helped minimize procedural

variation and maintain consistency across sites. Participation remained voluntary and anonymous, with ID codes assigned to protect confidentiality and ensure compliance with ethical standards. Accordingly, the sample size was statistically robust for the analytical models employed in this study.

3.4 Data Analysis

The data were analyzed using a quantitative approach suited to examine psychometric properties and inferential relationships among variables. As the study employed a Likert-type instrument, all responses were initially ordinal. To enable parametric analyses such as regression and mediation modeling, the ordinal data were first transformed into interval-level measures using the Rasch model, a probabilistic approach under the framework of item response theory (IRT) (Boone et al., 2014). Rasch analysis estimates a respondent's latent trait (e.g., empathy or well-being) by modelling the probability of endorsing an item based on both item difficulty and person ability. This transformation generates logit scores, which meet the assumptions of linearity, additivity, and unidimensionality required for advanced statistical modelling.

A pilot test was conducted before full-scale data collection using Winstep software version 3.73 to assess the psychometric quality of the adapted instrument, measuring all constructed variables. The Rasch analysis evaluated item and person reliability, item fit (infit and outfit MNSQ), separation indices, and unidimensionality. This rigorous validation ensured that all measurement instruments met the criteria for construct validity and measurement precision, aligning with the study's positivist orientation and emphasis on objectivity. Thus, the response theory approach ensured all instruments demonstrated strong validity and reliability before full-scale deployment.

For the main dataset (N= 896), descriptive statistics were used to summarize demographic information and overall score distributions. The study employed PROCESS macro in SPSS to address the study's research questions (Hayes, 2022). Model 4 tested the parallel mediation, examining how attachment peer and learning workload function as mediators in the relationship between teacher empathy and student well-being. In parallel, Model 59 was applied to assess the moderated mediation model, exploring how gender and class level potentially moderate the strength of these indirect relationships. These models allowed for the simultaneous estimation of direct and indirect pathways, providing a comprehensive view of the structural dynamics among variables within the proposed theoretical framework.

3.5 Instrument

To capture the four core construct of this study, all measurements instruments were adapted from validated scales and adjusted to suit the Indonesia Islamic boarding schools context. Each construct was measured using a 4-point Likert scale. Formal permission and acknowledgements were

obtained through direct author correspondence (see Appendices 5, 6, 7, and 8). Permission to adapt and utilize the PERMA Profiler of school well-being and peer attachment was officially granted via email by the original author. For the remaining instruments, teacher empathy and learning workload, multiple attempts were made to contact the authors via professional emails, but no direct replies were received. Since the instruments were publicly published with academic use provisions, and following prevailing scholarly parties, the researcher proceeded with adaptation solely for non-commercial, educational research purposes.

The adaptation process involved forward–backward translation, expert validation in both linguistics and psychology, and cultural adjustment through consultations with prospective participants, particularly within the context of a boarding school. The results supported the use of the first-person pronoun ("I") to enhance clarity and cultural relevance. This linguistic shift improved cognitive processing, response consistency, and scoring alignment in Rasch analysis by maintaining semantic directionality across items. The instrument development consisted of two main stages: pilot testing was first conducted to validate the Likert scale and assess item fit using the Rasch model. The wording of each item was refined based on these analyses prior to the final distribution of the instrument

On the other hand, a rigorous forward and backward translation procedure was conducted by bilingual linguistic experts to ensure semantic accuracy and conceptual equivalence between the original English and the adapted Bahasa Indonesia versions. Beyond linguistic validation, the instruments were also reviewed by psychology experts to assess content alignment with the targeted constructs, and by a small group of student participants to ensure cultural clarity, relevance, and contextual appropriateness. By integrating well-established measurement tools aligned with the constructs of teacher empathy, peer attachment, learning workload, and student well-being, the study maintains strong methodological rigor. These instruments form a critical foundation for the subsequent statistical analyses and are essential in elucidating the complex interplay of social-emotional and academic variables that shape adolescent well-being in residential educational contexts. Thus, further information on the instruments are explained in the following figures:

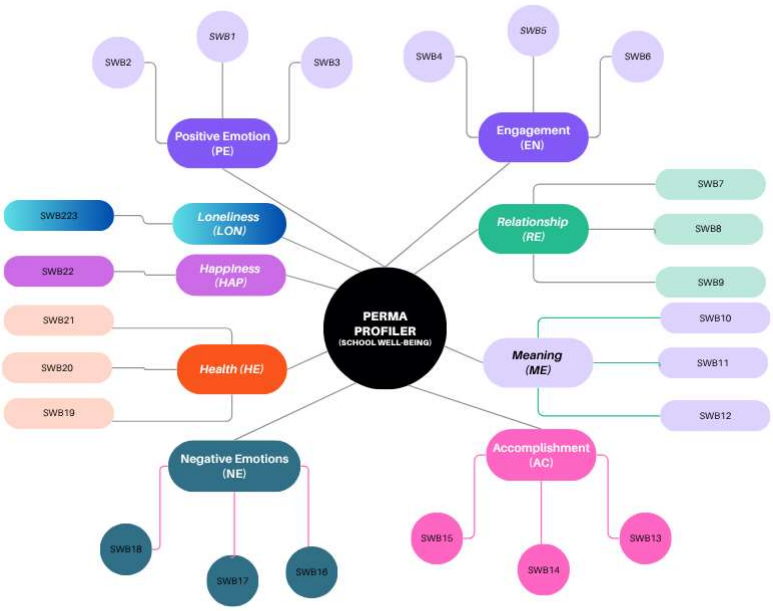

Figure 3.1

Items and Dimensions of SWB Instruments

Figure 3.1 illustrates the structural composition of the student well-being (SWB) instrument, based on the PERMA Profiler framework (Chue et al., 2024). Each item is organized according to its respective dimension, Positive Emotion, Engagement, Relationships, Meaning, and Accomplishment, along with additional constructs such as Negative Emotions, Health, Happiness, and Loneliness. This conceptual visualization enhances the clarity of the theoretical underpinnings that inform the instrument's design and item development. Transitioning from the conceptual structure to empirical validation, Figure 4.1 later presents the Logit Value of Item (LVI) results from Rasch analysis, which positions each SWB item within a psychometric continuum. This distribution reflects the extent to which students in Indonesian Islamic boarding schools cognitively process and endorse each dimension of well-being. When interpreted together, both figures offer an integrated understanding of the instrument's theoretical coherence and measurement precision, reinforcing its credibility for further inferential exploration.

Furthermore, the independent variable distributed instrument was validated by linguistic and psychological experts, and also culturally adapted through some participant candidates within the context of a boarding school. Especially for this particular instrument, the redaction was converted to the point of view of students as the recipients of empathetic teacher statements, focusing on examining each class homeroom. The instruments were thoroughly two stages; the pilot testing was conducted to validate the Likert scale and item fit, which was analyzed by the Rasch model. The redactions of each item were followed by the analysis result before final instrument distribution for real data. The instrument framework of this variable is shown in the following figure:

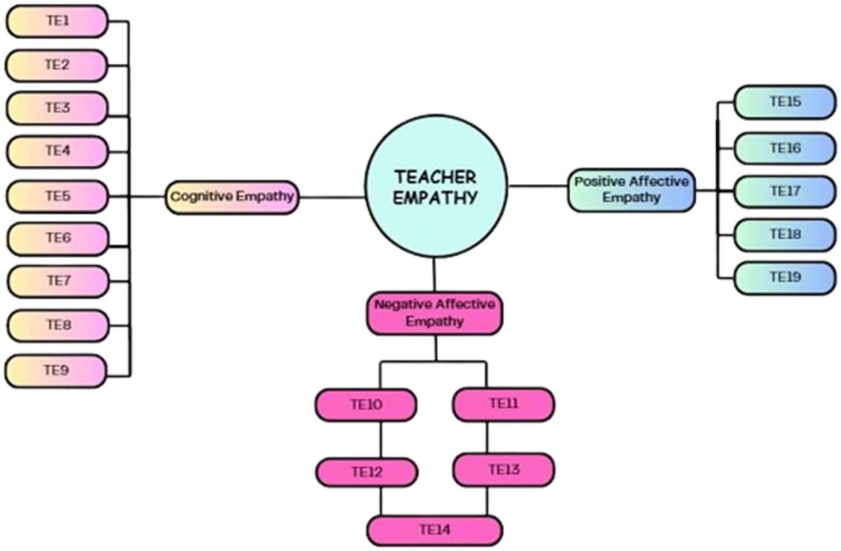

Figure 3.2

Dimension and Items Distribution of Teacher Empathy

The Teacher Empathy instrument employed in this study was adapted from the Empathy Scale for Teachers (EST) developed by Carre et al. (2013), which conceptualizes empathy through three interrelated dimensions: cognitive empathy, negative affective empathy, and positive affective empathy. As illustrated in Figure 3.4, the cognitive empathy dimension (TE1–TE9) reflects students' perceptions of their teachers' ability to recognize, understand, and interpret emotional cues through verbal expressions, facial gestures, and situational awareness. The negative affective empathy dimension (TE10–TE14) captures the extent to which students feel that their teachers emotionally resonate with their negative emotions, such as sadness, frustration, or anxiety, during daily educational interactions. Meanwhile, the positive affective empathy dimension (TE15–TE19) assesses students' perceptions of their teachers' engagement in sharing positive emotions, including happiness, pride, and enthusiasm in response to student accomplishments. This threefold structure was contextualized to the Indonesian academic madrasah setting to ensure cultural relevance and sensitivity while preserving the core construct of teacher empathy as originally formulated.

For the instrument of variable peer attachment, the distributed instrument was validated by linguistic and psychological experts, and also culturally adapted through some participant candidates within the context of a boarding school. Some item were converted version of unfavorable to favorable item for psychometric clarity, dimensionality, and response consistency which all crucial in Rasch analysis. The items were thoroughly two stages; the pilot testing was conducted to validate the Likert scale and item fit, which was analyzed by the Rasch model. The redactions of each item were followed by the analysis result before final instrument distribution for real data. Redaction of items is shown in the following figure:

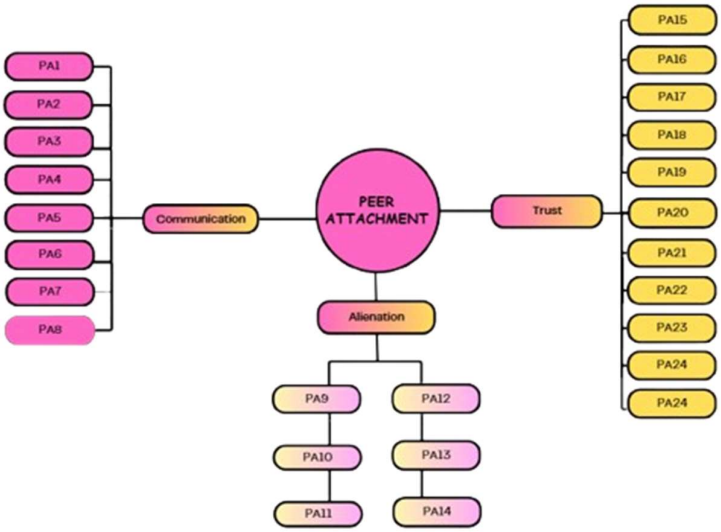

Figure 3.3

Dimension and Items Distribution of Peer Attachment

The Peer Attachment instrument used in this study was adapted from the Inventory of Parent and Peer Attachment (IPPA) developed by Armsden and Greenberg and revised in its 2023 manual. As shown in Figure 3.3, this instrument measures three core dimensions of peer attachment: communication, alienation, and trust. The communication dimension, comprising items PA1 to PA8, reflects the frequency and openness of students' peer interactions, including emotional sharing and responsive dialogue. Alienation, measured by items PA9 to PA14, captures the degree to which students experience disconnection, misunderstanding, or emotional estrangement in their peer relationships. The trust dimension, which includes items PA15 to PA25, gauges students' perceptions of reliability, support, and emotional safety within their peer group. This structural distribution is grounded in attachment theory, which underscores the role of secure peer relationships in promoting adolescent socio-emotional development. The adaptation was modified to suit the cultural and social contexts of Indonesian Islamic boarding schools while maintaining the original theoretical underpinnings of the IPPA instrument.

The other mediator variable were utilized the NASA-TLX scale. This instrument had slight modification and culturally adapted by the authors in the context of online learning during COVID-19. For these items, the respondents were asked questions to capture the perception of workload on four dimensions that in terms of Mental demand (MD), Physical demand (PD), Temporal demand (TD), Effort (EF), Performance (PE) and Frustration (FR). The distributed instrument was validated by linguistic and psychological experts, and also culturally adapted through some participant candidates. It was converted to statement sentences and adapted to the context of a boarding school. The instruments were thoroughly two stages; the pilot testing was conducted to validate the Likert scale and item fit, which was analyzed by the Rasch model. The redactions of each item were followed by the analysis result before final instrument distribution. Redaction of items is shown in the following figure:

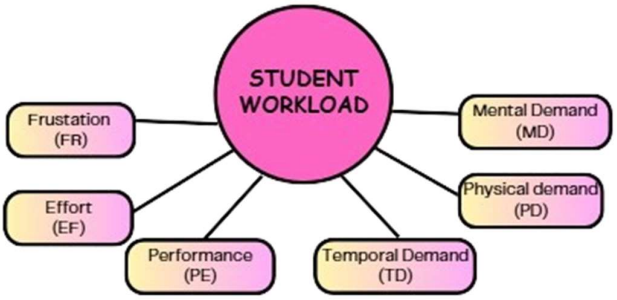

Figure 3.4

Dimension and Item Distribution of Student Workload

The LW scale was adapted from, which originally modified the NASA Task Load Index (NASA-TLX) to assess perceived learning workload among students in an online learning context (Therisa Beena & Sony, 2022). For this study, the items were further contextualized to reflect the face-to-face academic routines of an Indonesian Islamic boarding school. The scale incorporates six multidimensional aspects of workload: mental demand (MD), capturing the cognitive effort required to complete academic tasks; physical demand (PD), reflecting physical fatigue from prolonged school activities; temporal demand, relating to time pressure and scheduling conflict; effort, assessing evaluating emotional strain associated with workload. These dimensions were retained to provide a holistic picture of students' perceived learning burden within the highly structured, performance-oriented environment of Islamic boarding schools. The following figure shows the item distributions.

In summary, the selection and adaptation of the instruments in this study were guided by robust theoretical frameworks and empirical validations to ensure construct validity and contextual relevance. Each scale was meticulously tailored to capture the psychological, interpersonal, and academic experiences of students within Indonesian Islamic boarding schools. By integrating well-established measurement tools aligned with the constructs of teacher empathy, peer attachment, learning workload, and student well-being, the study maintains strong methodological rigor. These instruments form a critical foundation for the subsequent statistical analyses and are essential in elucidating the complex interplay of social-emotional and academic variables that shape adolescent well-being in residential educational contexts.

3.6 Pilot Testing

To ensure the psychometric robustness and contextual relevance of the adapted instruments, a two-phase pilot testing was carried out before the main data collection. Each phase aimed to evaluate the clarity, reliability, and cultural appropriateness of items measuring student well-being (SWB), teacher empathy (TE), peer attachment (PA), and learning workload (LW) in the context of Indonesian

Islamic boarding schools. This process was vital to confirm that the instruments aligned with the study's paradigm. It helped ensure the accuracy, objectivity, and model fit between items and respondents.

The first phase involved 187 students from a selected school (madrasah) in Sumatra. It served as a baseline assessment of the instrument. Its primary goal was to assess the initial consistency, rating scale functioning, dimensionality through principal component analysis of residuals, and item fit statistics to identify items that displayed misfit of semantic ambiguity. The second pilot involved 155 students from different geographic regions. It aimed to verify improvements of item revisions and to identify any remaining measurement concerns. This more diverse sample also allowed the study to test the instruments across varying cultural and linguistic contexts. This sequential approach ensured the instruments were not only statistically sound but also culturally appropriate and contextually aligned with the characteristics of Indonesian Islamic secondary boarding schools.

Both pilot phases were employed utilizing the Rasch model with Winsteps software version 3.73. The analysis focused on summary statistics, rating scale diagnostics, unidimensionality, item fit, person fit, and DIF detection. According to Rasch standards, item reliability ≥ 0.80 and person reliability ≥ 0.70 are acceptable benchmarks for educational measurement instruments (Boone et al., 2014). Fit statistics were interpreted as productive when infit or outfit mean square (MNSQ) values ranged between 0.5 and 1.5, and unidimensionality was confirmed when the first contrast eigenvalue in residuals was ideally below 2.0. The findings from both phases informed linguistic refinements and supported the use of the instruments in the main study. The following sections present pilot testing results in detail for each instrument.

3.6.1 Instrument Validation and Refinement of SWB

Table 3.2 presents a comparative overview of the psychometric refinement of the student well-being (SWB) instrument across two pilot phases. In Pilot 1, internal consistency reached $\alpha = .82$ with high item reliability (.98), and acceptable person reliability (.78). However, four items (17, 18, 23, and 16) exhibited outfit means square (MNSQ) values exceeding the recommended range of 0.5–1.5, indicating potential misfit. These values reflect item-level fit, where higher MNSQ indicates unexpected response patterns possibly due to semantic ambiguity or contextual interpretation issues.

Additionally, the eigenvalue of 5.6 in the first contrast of principal component analysis (PCA) of Rasch residuals indicated the presence of secondary dimensions within the instrument. While values above 2.0 suggest that some item clusters may reflect content beyond the primary construct being measured, especially in a multidimensional construct such as student well-being. In response, a series of targeted item revisions were made to improve semantic clarity, alignment with the theoretical PERMA framework, and structural coherence. In pilot 2, the eigenvalue for the first contrast dropped to 4.8, signaling a meaningful reduction in residual variance explained by secondary components. Although the internal consistency ($\alpha = .74$) and person reliability (.69) were slightly lower than in the first pilot, the instrument demonstrated more coherent measurement behavior, including improved fit

statistics and reduced item misfit. Therefore, it supported enhanced unidimensionality and stronger alignment with Rasch model expectations. A summary of key Rasch-based psychometric indicators across both pilot phases is presented in Table 3.2.

Table 3.2

Comparative Summary of Rasch-based Psychometric Indicators across Two Pilot Studies for SWB

Test	Respondents	Cornbach Alpha	Person Reliability	Item Reliability	Eigenvalue Contrast 1	Outfit MNSQ	Misfit Items
Pilot 1	187	0.82	0.78	0.98	5.6	2.66, 2.47, 2.47, 2.34	17, 18, 23, 16.
Pilot 2	155	0.74	0.69	0.98	4.8	1.69, 1.67, 1.58, 1.55	-

To complement these reliability and fit indicators, the functioning of the 4-point Likert scale was evaluated through Andrich threshold analysis. It assessed the ordering and separation of response categories. As visualized in Figure 3.5 and Figure 3.6, the category probability curves from both pilots display ordered and sequential thresholds, confirming that response categories were meaningfully interpreted by students among the four response options. This ordered structure suggest that each category carries distinct interpretive value in representing varying degrees of student well-being. Notably, the threshold progression in Pilot 2 reveals smoother transitions and more balanced distances between categories compared to pilot 1. It indicated an improvement in response consistency and scale sensitivity after item adjustments. Such refinement enhances the interpretability and psychometric robustness of the instrument, ensuring that revised items capture a more nuanced continuum of the latent trait. These findings collectively affirm the strengthened measurement precision of the student well-being scale and support its readiness for broader deployment in the main study phase. The following figures further illustrate the refinement on category functioning through visual comparisons of threshold distributions across the two pilot phases.

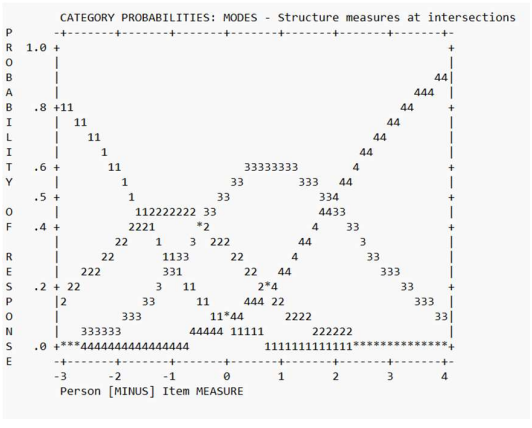

Figure 3.5
Andrich Threshold Progression in 4-Point Likert SWB Scale of First Piloting

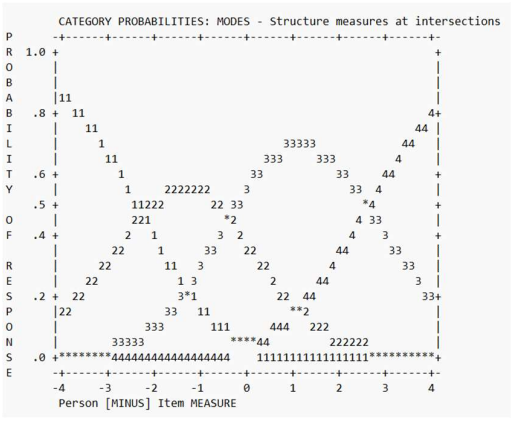

Figure 3.6
Andrich Threshold Progression in 4-Point Likert SWB Scale of Second Piloting

Following the threshold visualization in Figures 3.5 and 3.6, a further investigation was conducted to ensure the fit of each item. This item-level investigation aimed to ensure that all items aligned with the unidimensionality assumption and Rasch model expectations. The analysis employed Infit and Outfit mean Square (MNSQ) statistics along with standardized Z-scores (ZSTD) to identify any items exhibiting misfit tendencies that could undermine measurement validity (See appendix 1).

As summarized in Table 3.3, the first pilot yielded four misfitting items: SWB16, SWB17, SWB18, and SWB23. Each exceeded the misfit threshold criteria of either Outfit MNSQ >1.5 or ZSTD >±2.0, suggesting erratic or unexpected response patterns. Accordingly, these items underwent content revision, such as rewording for clarity and removing ambiguity based on expert feedback and pilot participant input. In the second pilot, the same four items were reassessed for their psychometric performance (see Table 3.4, lower panel). The results showed substantial improvement. Although some items still approached the upper bounds of acceptable MNSQ and ZSTD values (e.g., SWB23 with Outfit MNSQ = 1.68), none of them exceeded the defined thresholds. Therefore, all previously misfitting items were deemed to have adequate fit post-revision. It indicated that the item adjustments were successful in aligning respondent patterns with model expectations.

These findings confirm that iterative piloting and item refinement contributed to improved instrument calibration. It supported the robustness of the revised student well-being scale within the Rasch measurement framework. To substantiate this progression, a focused item-level analysis was conducted to track changes in item misfit across both pilot phases. Tables 3.3 and 3.4 summarize the comparative item fit statistics for initially misfitting items and how their performance improved following item revisions.

Table 3.3

Summary of Misfit Items SWB Pilot 1

Item	Measure	Infit MNSQ	Outfit MNSQ	Outfit ZSTD	Interpretation
SWB17	1.49	1.98	2.66	9.9	Misfit; revised
SWB18	1.40	1.93	2.47	9.9	Misfit; revised
SWB23	1.85	1.84	2.47	9.9	Misfit; revised
SWB16	.78	2.07	2.34	9.9	Misfit; revised

Table 3.4

Summary of fit Items SWB Pilot 2

Item	Measure	Infit MNSQ	Outfit MNSQ	Outfit ZSTD	Interpretation
SWB17	1.41	1.35	1.42.	3.6	Fit
SWB18	1.48	1.50	1.58	4.8	Fit
SWB23	2.50	1.70	1.68	5.8	Fit
SWB16	.73	1.63	1.67	5.0	Fit

After item refinement, Wright Maps were employed to evaluate the alignment between revised item difficulty and student ability, visualized by plotting both on a shared latent logit scale. In the initial piloting, item fit analysis revealed several items that deviated from Rasch model expectations, prompting necessary revisions. These modifications aimed to enhance measurement precision and ensure the instrument adequately captured the latent construct of student well-being. Wright Maps offer a graphical representation of targeting quality, allowing researchers to assess whether the difficulty level of items appropriately covers the full range of person abilities. Ideally, items should be distributed evenly across the continuum to avoid measurement gaps, ceiling effects (items too easy), or floor effects (items too difficult). In the second pilot phase, the map showed an improved alignment between item locations and student abilities, with a more balanced spread and reduced clustering. This indicates better targeting and enhanced psychometric functioning of the revised scale. Such improvement reinforces the scale's readiness for main data collection and supports its validity in capturing diverse levels of student well-being. Figures 3.7 and 3.8 illustrate this alignment through the Wright Maps generated for both pilot phases.

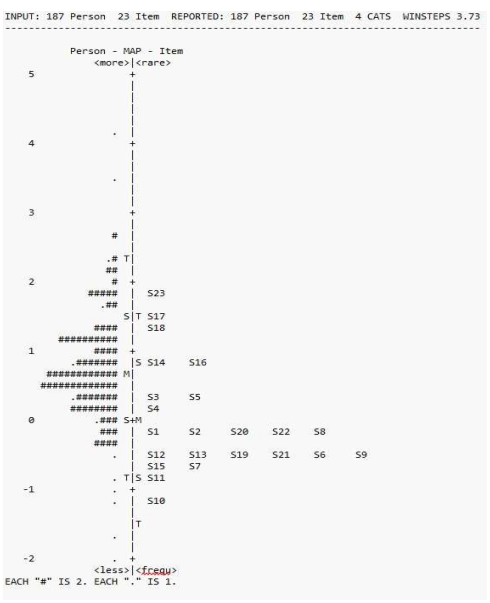

Figure 3.7
Wright Map of SWB Scale of First Piloting

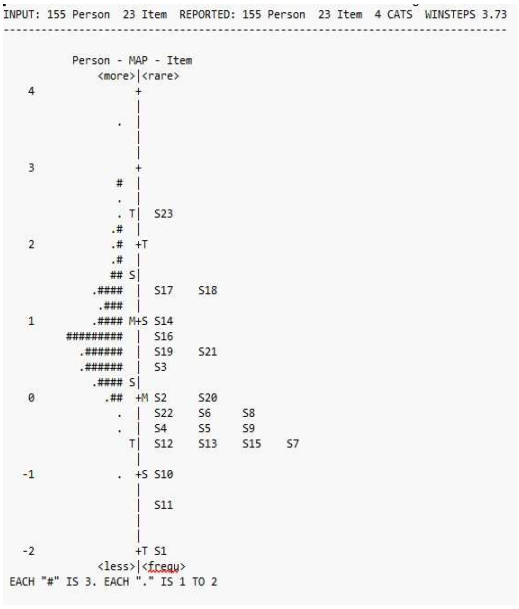

Figure 3.8
Wright Map of SWB Scale of Second Piloting

The dimensionality of the Student Well-Being (SWB) scale was evaluated through Principal Component Analysis (PCA) of standardized residuals. It determines whether the instrument adhered to the unidimensionality assumption of the Rasch model. Figures 3.9 and 3.10 display the scree plots from

both piloting phases, showing the variance attributed to unexplained components after the Rasch dimension was accounted for. In the first piloting, the eigenvalue of the first contrast reached 5.6, substantially surpassing the threshold of 2.0, thereby indicating potential multidimensionality and the presence of additional latent structures unrelated to the core construct. This level of residual variance suggested that several items may have tapped into constructs beyond student well-being, prompting targeted revisions to improve construct alignment.

Following refinement, the eigenvalue of the first contrast in the second piloting decreased to 4.8. This reflects a partial reduction in multidimensionality and signals improved coherence in item functioning. Although the eigenvalue remained above the common threshold, fewer dominant contrasts appeared. The residual variance was also more evenly spread across weaker components. This pattern suggests a reduced presence of competing latent traits. The data align with improved item fit, clearer threshold ordering, and better item targeting. These indicators point to stronger conformity to Rasch model assumptions. The revised SWB instrument now shows greater construct clarity and psychometric stability. It provides sufficient unidimensionality to support valid measurement in the main study. The standardized residual variance results are presented in Figures 3.9 and 3.10 below.

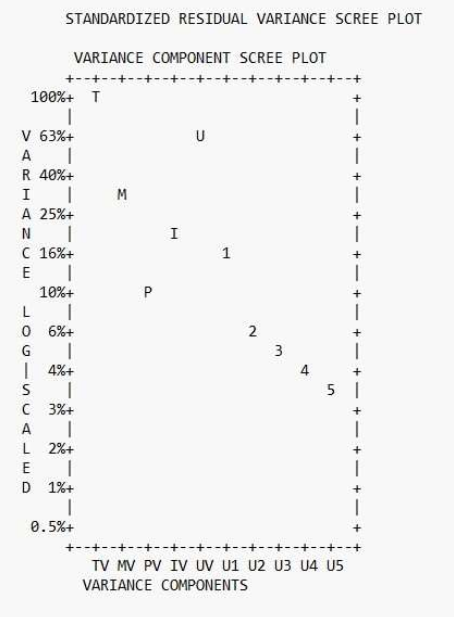

Figure 3.9
Standardized Residual SWB Scale of First Piloting

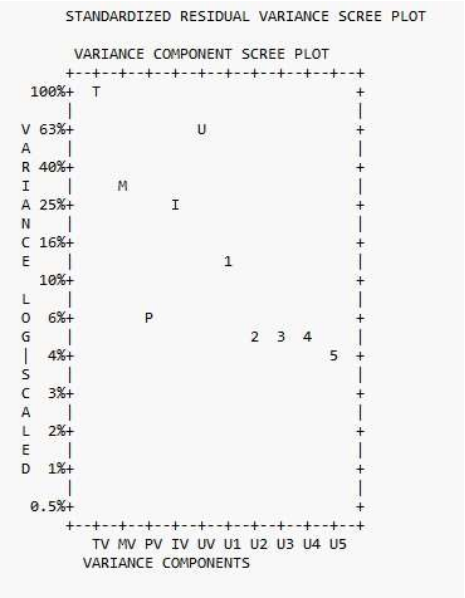

Figure 3.10
Standardized Residual SWB Scale of Second Piloting

The Student Well-Being (SWB) instrument underwent a rigorous two-phase validation process. It demonstrated solid reliability, acceptable item fit, clear threshold ordering, and balanced item-person targeting. Psychometric performance improved notably in the second piloting. Residual

multidimensionality was reduced, and item alignment was strengthened. These results confirm that the SWB scale is suitably calibrated for use in the main study. With this foundation established, the next section turns to the validation of the Teacher Empathy (TE) instrument, which serves as the study's primary predictor.

3.6.2 Instrument Validation and Refinement of TE

The Teacher Empathy (TE) instrument, adapted from Wang et al (2022a), was culturally refined to reflect students' perceptions of their homeroom teachers' empathetic behaviors in Indonesian academic boarding schools. Linguistic, psychological, and contextual validations were conducted prior to two-stage Rasch-based pilot testing. Minor redactions between pilots improved semantic clarity and contextual fit, ensuring stronger alignment with the target school environment.

As shown in Table 3.5, both pilot tests demonstrated strong psychometric properties of the Teacher Empathy (TE) instrument. Internal consistency was consistently high (Cronbach's Alpha = .88), and item reliability reached .98 in both phases, indicating stable calibration across samples. Person reliability improved slightly from .81 to .84 after minor refinements, suggesting increased differentiation among student responses. Dimensional coherence also improved, with the eigenvalue of the first contrast in the residuals dropping from 3.7 to 3.5, signaling enhanced unidimensionality. However, three items (TE10, TE11, and TE13) displayed Outfit MNSQ values exceeding the recommended threshold of 1.5, indicating slight response irregularities. These items were retained due to their strong theoretical alignment with affective empathy and contextual relevance within the relational climate of Islamic boarding schools. In non-causal, correlational studies such as this, minor misfit does not automatically warrant exclusion, provided that these items contribute constructively to construct representation without substantially distorting overall scale functioning. Their inclusion strengthens the scale's representational breadth and maintains alignment with students' lived emotional interactions. The psychometric summary of the TE instrument is presented in Table 3.5.

Table 3.5

Comparative Summary of Rasch-based Psychometric Indicators across Two Pilot Studies for TE

Test	Respondent	Cornbach Alpha	Person Reliability	Item Reliability	Eigenvalue Contrast 1	Outfit MNSQ	Misfit Items
Pilot 1	187	.88	.83	.98	3.7	3.19, 2.08	TE11, TE10
Pilot 2	155	.88	.84	.98	3.5	1.83, 1.78, 1.68	TE11, TE10, TE13

To evaluate response category functioning in the Teacher Empathy (TE) scale, Andrich threshold analysis was conducted across both piloting phases. In Figure 3.11, the threshold distribution from the first piloting shows evidence of disordered progression, particularly between categories 2 and 3, where the intersection points are insufficiently spaced and fail to follow the expected ascending order. This irregularity suggests that students encountered difficulty in consistently differentiating between intermediate response options, potentially due to vague or overlapping semantic cues. Such disordered thresholds may compromise the interpretive integrity of the scale and weaken the measurement of gradational empathy levels. In response to this issue, item redactions were carefully revised by simplifying wording and clarifying contrasts between adjacent categories to better reflect students' experiential understanding of empathetic teacher behavior. As illustrated in Figure 3.12, the second piloting shows clear improvement in threshold order and spacing, with intersection points more evenly distributed along the logit continuum. This progression confirms that the revised items facilitated more consistent response behavior, enabling the scale to more accurately reflect increasing levels of perceived teacher empathy. The refined threshold structure reinforces the construct validity of the scale and justifies the continued use of the 4-point scale format in the main study. The Andrich threshold analysis of the TE instrument is presented in Figures 3.11 and 3.12 as follows:

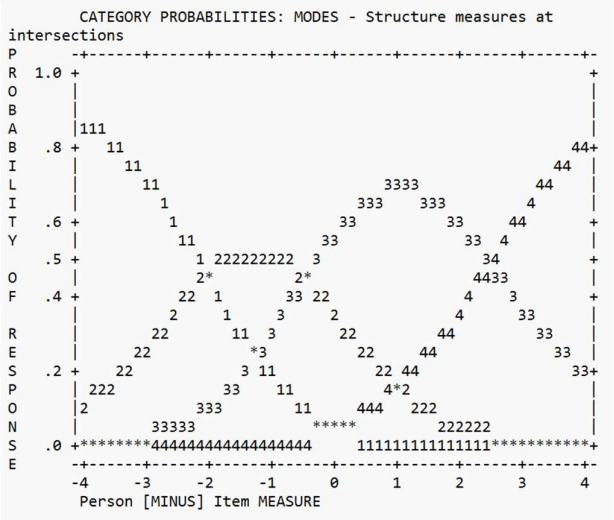

Figure 3.11
Andrich Threshold Progression in a 4-Point Likert TE Scale of First Piloting

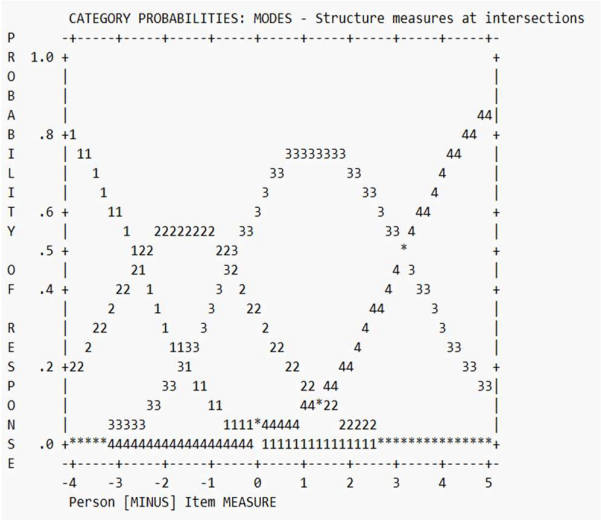

Figure 3.12
Andrich Threshold Progression in a 4-Point Likert TE Scale of Second Piloting

The item fit analysis conducted across both piloting phases identified recurring misfit in a few Teacher Empathy (TE) items. During the first pilot, TE10 and TE11 showed notable misfit, with Outfit MNSQ values exceeding 2.0 and ZSTD scores above 8.0, suggesting significant deviation from model expectations. Following refinement, the second pilot showed reduced misfit levels, although TE10,

TE11, and TE13 still recorded Outfit MNSQ values above the ideal threshold of 1.5. Nevertheless, the decline in ZSTD values indicates improved alignment with the Rasch model and better item functioning. These items were retained not because they met all technical cutoffs, but because they represent essential aspects of *negative affective empathy*, a core dimension of the construct (Morales-Rodríguez et al., 2021). In the context of boarding schools, these items reflect students' lived emotional experiences with their homeroom teachers, particularly in challenging situations. Within non-causal, correlational research frameworks, minor item misfit is not unusual and does not automatically necessitate deletion (Köhler & Hartig, 2017). As long as the items contribute meaningfully to construct representation and do not distort overall scale performance, their inclusion remains theoretically and methodologically justified (Yin & Reynolds, 2023). This approach aligns with recommendations for preserving construct coverage in complex educational settings. A detailed breakdown of misfitting items from each piloting phase is provided in Tables 3.6 and 3.7.

Table 3.6

Summary of Misfit Items TE Pilot 1

Item	Measure	Infit MNSQ	Outfit MNSQ	Outfit ZSTD	Interpretation
TE11	.93	2.09	3.19	9.9	Misfit
TE10	1.11	1.90	2.08	8.2	Misfit

Table 3.7

Summary of fit Items TE Pilot 2

Item	Measure	Infit MNSQ	Outfit MNSQ	Outfit ZSTD	Interpretation
TE11	.44	1.75	1.83	5.6	Misfit
TE10	.96	1.65	1.78	5.6	Misfit
TE13	.28	1.60	1.68	4.7	Misfit

Following the analysis of item fit and threshold ordering, Wright Maps were examined to evaluate the alignment between item difficulty and respondent ability across the two piloting phases of the Teacher Empathy (TE) instrument. In Figure 3.13, the first pilot study shows a significant clustering of person abilities above item difficulties, indicating a potential ceiling result. This suggests that many students found the items relatively easy to agree with, resulting in limited differentiation among higher-ability respondents. In contrast, Figure 3.14 demonstrates a more proportionate spread between person and item distributions in the second piloting. Items were better distributed across the latent trait continuum, with fewer extreme gaps and improved targeting. This shift reflects enhanced item calibration and greater measurement precision following refinement. These developments support the

scale's improved capacity to represent varying perceptions of teacher empathy among students. The visual distribution is presented in the Wright Maps of Figures 3.13 and 3.14 below.

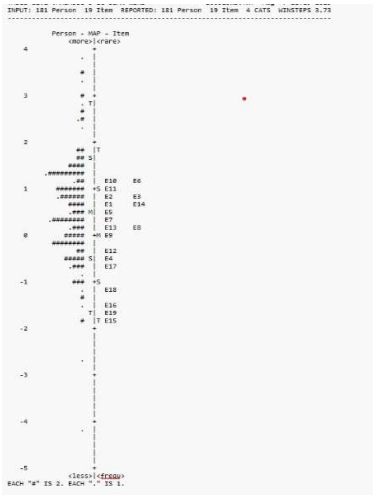

Figure 3.13
Wright Map of TE Scale of First Piloting

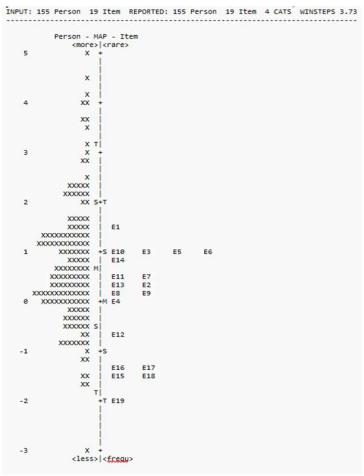

Figure 3.14
Wright Map of TE Scale of Second Piloting

To assess unidimensionality, the Teacher Empathy (TE) instrument was subjected to Principal Component Analysis (PCA) of standardized residuals. This method isolates the variance unexplained by the Rasch dimension and distributes it across orthogonal contrasts. In the first piloting, the first contrast produced an eigenvalue of 3.7, exceeding the acceptable Rasch threshold of 2.0. This value implies potential multidimensionality, possibly driven by item clustering around affective versus cognitive aspects of empathy. A residual eigenvalue above 3.0 may suggest a meaningful secondary trait; however, interpretability also depends on the strength of subsequent contrasts and variance dispersion. Revisions were then applied to several items to improve semantic consistency and reduce construct overlap. In the second piloting, the first contrast dropped to 3.5, with weaker subsequent contrasts and more even variance spread. This reduction indicates improved local independence and structural coherence, though full unidimensionality remains marginal. These residual patterns, while still requiring cautious interpretation, do not preclude the use of the TE scale in correlational studies. The variance structures from both pilotings are displayed in Figures 3.15 and 3.16.

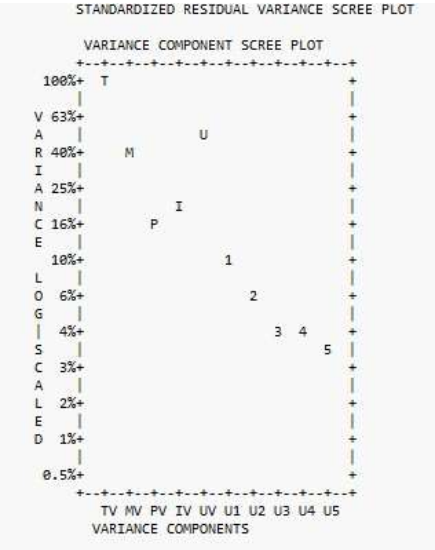

Figure 3.15
Standardized Residual TE Scale of First Piloting

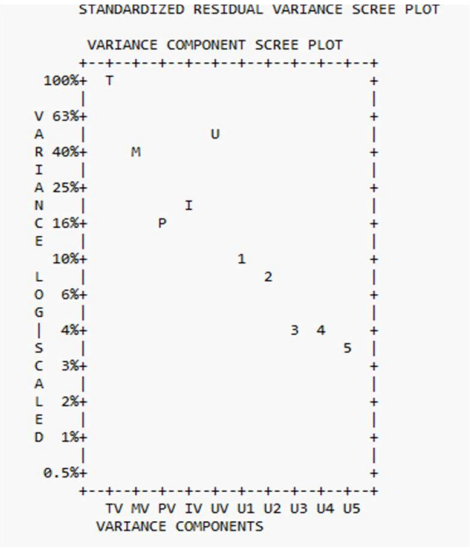

Figure 3.16
Standardized Residual TE Scale of Second Piloting

The two-phase piloting process established the Teacher Empathy (TE) instrument as psychometrically sound and contextually relevant for use in Indonesian academic Islamic boarding schools. Across both pilots, the scale showed consistent internal reliability, acceptable dimensional structure, and improved response category functioning. Although several items displayed statistical misfit, they were retained due to their theoretical importance in representing the affective dimensions of teacher empathy and their cultural salience in school-based interactions. Rasch scholars recommend that misfit should not automatically lead to item exclusion if the item contributes meaningfully to construct representation (Bond & Fox, 2015). The decision to retain these items was further supported by refinement efforts, which improved semantic clarity and alignment with the boarding school context. Together, these results affirm that the TE instrument captures the intended construct with sufficient psychometric precision and conceptual fidelity, making it suitable for application in the main study.

3.6.3 Instrument Validation and Refinement of PA

To ensure the psychometric robustness of the Peer Attachment (PA) instrument within the Indonesian Islamic boarding school context, two stages of pilot testing were conducted. Table 3.8 presents a comparative summary of Rasch-based indicators from both pilots, highlighting key reliability indices, dimensionality metrics, and item-level diagnostics. As shown, the internal consistency of the scale, measured by Cronbach's Alpha, improved from .72 in Pilot 1 to .87 in Pilot 2, indicating strengthened inter-item coherence following linguistic and contextual refinements. Person reliability

also increased from .65 to .78, demonstrating improved differentiation among respondents' levels of peer attachment. While item reliability remained consistently high (.98 in Pilot 1 and .94 in Pilot 2), the eigenvalue of the first contrast in Principal Component Analysis (PCA) declined from 7.6 to 2.83, reflecting better alignment with the assumption of unidimensionality in the Rasch model.

Regarding item fit, the pattern of misfit shifted across pilots. In the first trial, item PA24 exhibited an outfit MNSQ of 1.54. In the second pilot, items PA12 and PA5 recorded outfit MNSQ values of 2.83 and 1.79, respectively, which slightly exceeded the expected range and warranted closer interpretive consideration. However, consistent with Rasch measurement practice, these indicators were interpreted in conjunction with theoretical relevance and cultural-linguistic context rather than used as sole criteria for item elimination. These findings guided minor revisions aimed at enhancing clarity and construct alignment while preserving the integrity of the original framework. Table 3.8 summarizes the results of this two-phase validation process.

Table 3.8

Comparative Summary of Rasch-based Psychometric Indicators across Two Pilot Studies for PA

Test	Respondents	Cornbach Alpha	Person Reliability	Item Reliability	Eigenvalue Contrast 1	Outfit MNSQ	Misfit Items
Pilot 1	186	.72	.65	.98	7.6	1.54	PA24
Pilot 2	155	.87	.78	.94		2.83, 1.79	PA12, PA5

The Peer Attachment (PA) instrument's response scale was evaluated using category probability curves. In Figure 3.9 (Pilot 1), the thresholds appeared ordered but with overlap between categories 2 and 3. This indicates weak differentiation between "agree" and "strongly agree." Some peaks were too close, suggesting response ambiguity in mid-scale categories. After refining item wordings for clarity, the second pilot (Figure 3.10) showed improved threshold spacing. The curves were smoother, with clearer separation between response levels. This reflects a better response interpretation, especially for trust and alienation items. The refined scale thus offered stronger measurement precision and greater semantic clarity for the main study. The two-stage refinement process confirmed that the PA instrument met Rasch model expectations for category functioning. Improvements in threshold spacing and response curve patterns indicated stronger semantic clarity and interpretive precision. Without removing any items, the revised instrument successfully captured the intended dimensions of peer attachment in the Islamic boarding schools context, making it suitable for use in the main study. The Andrich threshold analysis of the PA instrument is presented in Figures 3.17 and 3.18

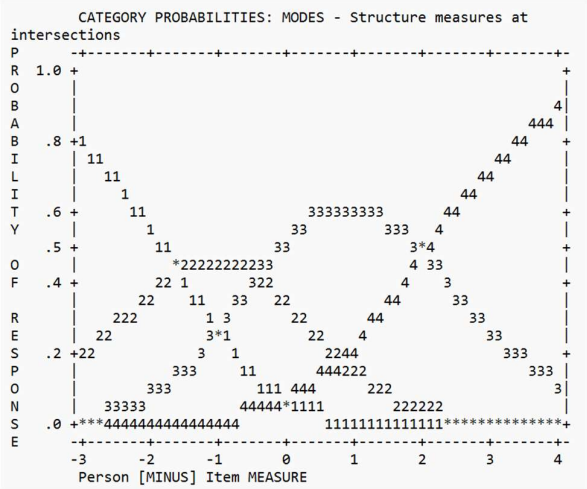

Figure 3.17

Andrich Threshold Progression in 4-Point Likert PA Scale of First Piloting

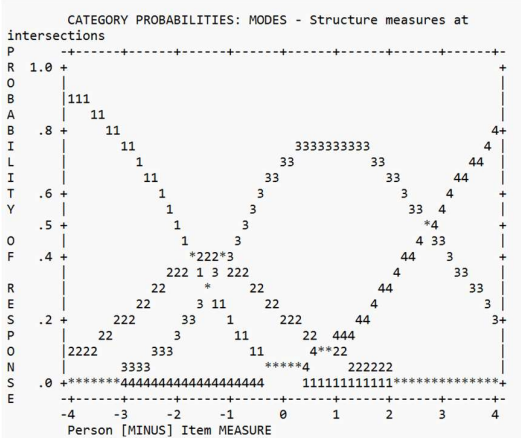

Figure 3.18

Andrich Threshold Progression in a 4-Point Likert PA Scale of Second Piloting

Beyond overall reliability, item-level evaluation is essential to ensure that each indicator meaningfully contributes to the construct being measured and aligns with the expectations of the Rasch model. The item-level diagnostics across both pilots offer meaningful insight into the psychometric behavior of PA items within the Rasch model framework. In Pilot 1 (Table 3.9), item PA24 displayed an outfit MNSQ of 1.54 and a ZSTD of 5.3, which exceeded acceptable thresholds, indicating potential misfit. This suggests that student responses to PA24 were unexpectedly variable, possibly due to linguistic ambiguity or contextual misalignment in the original phrasing (Sumintono & Widhiarso, 2020). Following revision, the same item in Pilot 2 demonstrated an overfit pattern (Outfit MNSQ = 0.57; ZSTD = –3.5), reflecting highly consistent responses across participants (see Table 3.10). While overfit suggests reduced contribution to measurement precision, it does not violate Rasch model assumptions and may still serve a structural function when theoretically grounded (Andrich, 2020; Linacre, 2021). Given that PA24 pertains to culturally sensitive peer bonding behavior, its consistent responses may reflect normative alignment among students in structured residential school settings, rather than redundancy (Hasanah et al., 2023).

In contrast, item PA12 in Pilot 2 displayed a clear misfit, with both infit and outfit MNSQ values (2.37 and 2.83) and a ZSTD of 9.9 significantly surpassing the recommended range. This indicates that the item functioned unpredictably across ability levels and likely introduced construct-irrelevant variance (Boone, 2021). Rather than immediate exclusion, such items require careful review to determine whether misfit arises from content complexity, sociocultural misinterpretation, or unfamiliar vocabulary among respondents (Areepattamannil & Caleon, 2021).

Rasch theorists caution against eliminating items solely based on statistical misfit without considering theoretical and contextual relevance (Linacre, 2021). Therefore, interpretive decisions in this study were guided not only by fit statistics but also by conceptual coherence and empirical context. The following tables (Table 3.9 and Table 3.10) summarize the item fit analysis for PA across the two pilot studies, highlighting key response patterns and informing subsequent refinement decisions.

Table 3.9

Summary of Misfit Items PA Pilot 1

Item	Measure	Infit MNSQ	Outfit MNSQ	Outfit ZSTD	Interpretation
PA24	1.81	1.36	1.54	5.3	Misfit

Table 3.10

Summary of fit Items PA Pilot 2

Item	Measure	Infit MNSQ	Outfit MNSQ	Outfit ZSTD	Interpretation
PA24	-.43	.59	.57	-3.5	Overfit
PA12	.98	2.37	2.83	9.9	Misfit

In addition to item fit statistics, visual inspection through Wright Maps provides insight into the distribution and targeting of items relative to respondent ability. This is especially valuable in boarding school contexts, where peer attachment levels may be correlated by homogenous living environments and collectivist norms. By mapping person abilities and item difficulties on the same logit scale, the Wright Map helps evaluate whether the instrument adequately captures the full spectrum of the construct for the intended population (Boone, 2021; Linacre, 2021). As shown in Figures 3.19 and 3.20, the Wright Maps from the first and second pilot testing illustrate the alignment between student response patterns and item hierarchy. These figures also highlight item targeting accuracy and the presence of gaps or redundancy, which inform subsequent refinement and serve as a foundation for rating scale calibration discussed in the following section.

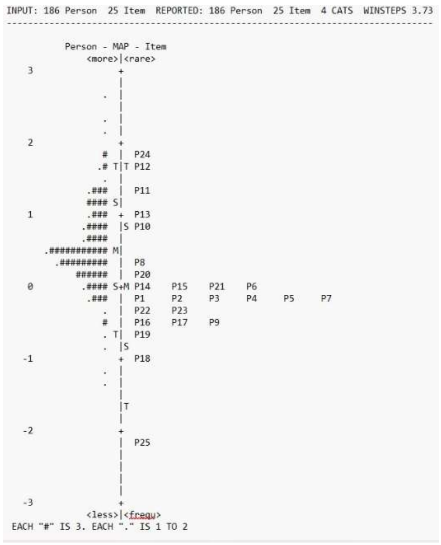

Figure 3.19
Wright Map of PA Scale of First Piloting

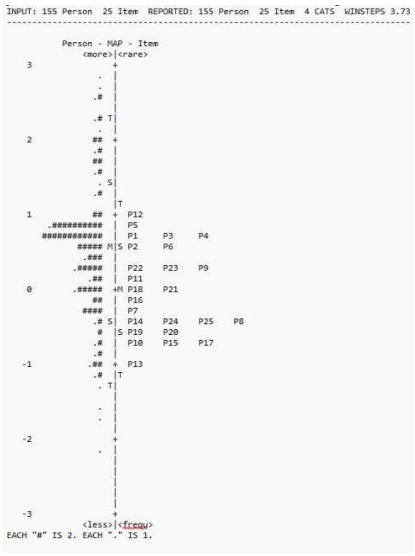

Figure 3.20
Wright Map of PA Scale of Second Piloting

While the Wright Map offers valuable insight into the distribution and targeting of items relative to student ability, it does not by itself confirm whether the scale operates under a unidimensional structure. In Rasch modeling, unidimensionality refers to the assumption that all items measure a single latent trait, in this case, peer attachment. To investigate this assumption, Principal Component Analysis (PCA) of standardized residuals was employed as a secondary diagnostic tool.

Standardized residuals represent the portion of item responses unexplained by the Rasch model, and PCA of these residuals helps identify whether meaningful patterns exist beyond the primary measurement dimension. If the unexplained variance clusters into additional dimensions, reflected in eigenvalues of contrast components exceeding 2.0, it may indicate multidimensionality or item construct contamination (Boone, 2021; Linacre, 2021). This step is particularly relevant in culturally dense environments like Islamic boarding schools, where peer-related behaviors may be interpreted through layered social expectations. Figures 3.21 and 3.22 display the scree plots of the standardized residual variance for the first and second piloting, respectively. The eigenvalue distribution across contrast components reveals whether any residual dimension meaningfully challenges the unidimensional structure. These visualizations serve as a basis for assessing dimensional coherence and inform the subsequent decision-making regarding item retention and scale validity.

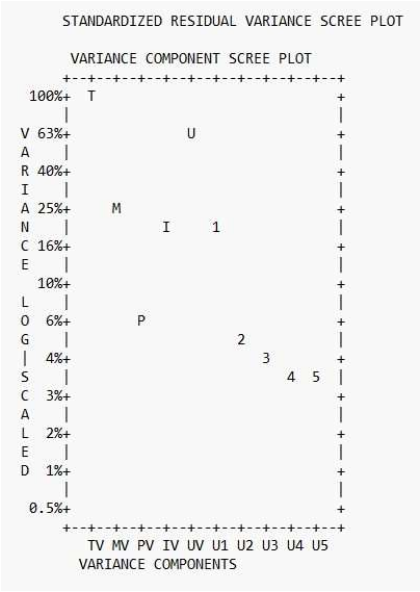

Figure 3.21
Standardized Residual PA Scale of First Piloting

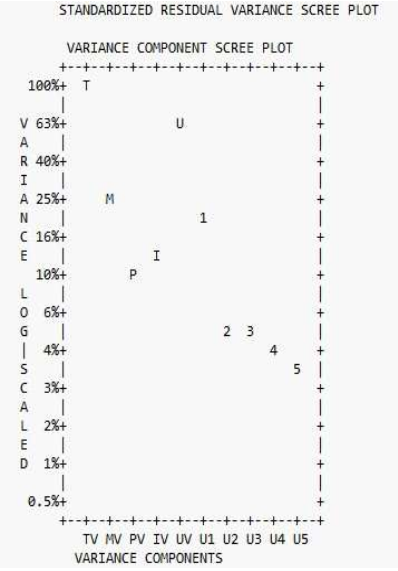

Figure 3.22
Standardized Residual PA Scale of Second Piloting

In summary, the two-phase validation process established that the Peer Attachment (PA) instrument met acceptable psychometric standards within the Indonesian boarding school context. Key improvements were observed in internal consistency, person reliability, and item targeting. Furthermore, item misfit and overfit were carefully interpreted concerning their theoretical relevance and cultural appropriateness, rather than judged solely by statistical thresholds. The Wright Maps illustrated adequate alignment between item difficulty and student ability, while residual variance analysis confirmed the scale's unidimensionality. Based on these results, the refined PA instrument is considered suitable for full-scale application. In continuation, the next section presents the validation process of the Learning Workload (LW) instrument.

3.6.4 Instrument Validation and Refinement of LW

The validation of the Learning Workload (LW) instrument followed a similar two-phase procedure as applied to the previous construct. Considering the sensitive nature of academic pressure in residential school environments, particular attention was given to how students cognitively interpreted the scale's items, especially those that addressed task intensity, perceived overload, and pacing. As Rasch modeling emphasizes both statistical fit and conceptual alignment, the analysis was designed to assess not only internal consistency and reliability but also the structural integrity and response pattern behavior of each item.

Table 3.11 presents the comparative summary of Rasch-based psychometric indicators for the Learning Workload (LW) instrument across two piloting phases. In the first pilot (N = 188), the scale yielded a Cronbach's Alpha of .71 and a person reliability of .66, indicating acceptable internal consistency and moderate ability to differentiate between students with varying perceptions of workload. However, in the second pilot (N = 155), both indices slightly declined to .62 and .59, respectively. While these figures fall below the conventional threshold of .70, such reductions are not uncommon in scales measuring subjective cognitive constructs in homogeneous populations, especially within structured boarding school systems, where academic schedules and routines are uniformly regulated (Sumintono & Widhiarso, 2020; Areepattamannil & Caleon, 2021).

In contrast, item reliability improved substantially from .70 to .98, reflecting enhanced consistency in item functioning across respondents. This suggests that after minor adjustments, the revised items were more effective in capturing variability within the construct domain. The eigenvalue of contrast 1 also showed improvement, decreasing from 1.7 to 1.5, well within the acceptable range for unidimensionality in Rasch analysis (Linacre, 2021; Boone, 2021). These results indicate that the scale retained its structural coherence after revision. Regarding item fit, two items exceeded the recommended outfit MNSQ threshold of 1.5 in each pilot. LW4 was identified as a misfitting item in Pilot 1 (Outfit MNSQ = 1.53), while LW1 showed borderline misfit in Pilot 2 (Outfit MNSQ = 1.55). Although both items were flagged for review, the extent of misfit remained within tolerable bounds, particularly when considering that neither item displayed excessive distortion (i.e., MNSQ > 2.0) or conceptual irrelevance. In line with Rasch principles, these items were retained for further interpretation and field testing, as misfit statistics alone are insufficient grounds for elimination (Bond & Fox, 2015; Sumintono & Azwar, 2022).

Taken as a whole, the indicators in Table 3.11 support the ongoing refinement of the LW instrument while maintaining its theoretical and contextual alignment with the academic realities of Islamic boarding schools. Subsequent analyses, such as item mapping and dimensionality checks, further clarify the instrument's measurement properties.The comparative summary of Rasch-based indicators across both pilot phases is presented in Table 3.11.

Table 3.11

Comparative Summary of Rasch-based Psychometric Indicators across Two Pilot Studies for LW

Test	Respondents	Cornbach Alpha	Person Reliability	Item Reliability	Eigenvalue Contrast 1	Outfit MNSQ	Misfit Items
Pilot 1	188	.71	.66	.70	1.7	1.53	LW4
Pilot 2	155	.62	.59	.98	1.5	1.55	LW1

To complement item-level analysis, category functioning was evaluated to examine how students interpreted the 4-point Likert scale in the LW instrument. Rasch analysis emphasizes that response categories should be meaningfully distinct and thresholds should progress in order along the

latent trait (Andrich, 2020; Boone, 2021). This is especially important in boarding school contexts, where perceptions of workload may blend cognitive, temporal, and emotional dimensions.

Figures 3.23 and 3.24 display the Andrich threshold progressions for both pilot phases. In the first pilot (Figure 3.23), the category curves showed notable overlaps, especially between categories 2 and 3, suggesting difficulty in differentiating moderate and high workload levels. Such patterns may reflect either ambiguous item wording or students' hesitation in distinguishing between nuanced levels of academic burden. After linguistic refinement and cognitive alignment, the second pilot (Figure 3.24) exhibited substantial improvement. The category curves became more distinct, with clearer separation points and more ordered thresholds. This progression indicates that respondents were better able to interpret and differentiate their perceptions of workload. The transition zones between categories narrowed, and the peak probability of each category shifted into its intended range, confirming improved scale functionality (Linacre, 2021). These enhancements in category structure were achieved without altering the core construct of learning workload, affirming that the refinements strengthened rather than distorted the instrument's theoretical base. With improved interpretability, threshold ordering, and response differentiation, the LW scale now demonstrates readiness for deployment in the main study. The threshold category curves from both pilot phases are presented in Figures 3.23 and 3.24.

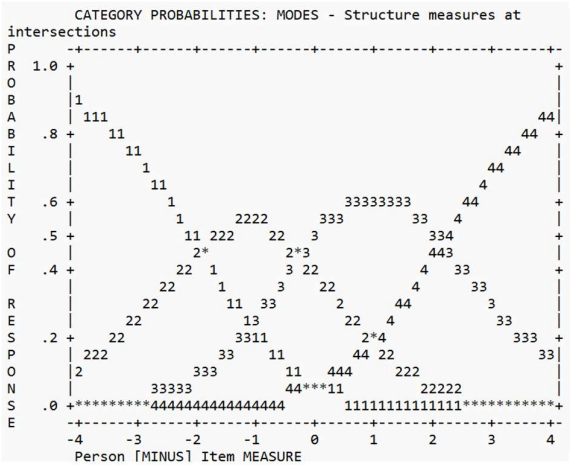

Figure 3.23

Andrich Threshold Progression in 4-Point Likert LW Scale of First Piloting

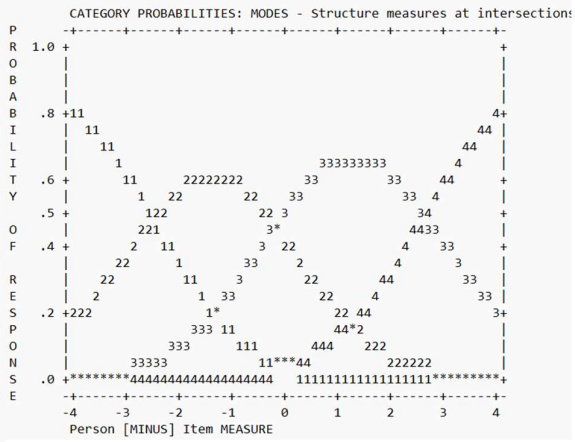

Figure 3.24

Andrich Threshold Progression in a 4-Point Likert LW Scale of Second Piloting

Following the evaluation of rating scale functioning, further analysis focused on item-level fit statistics to identify specific items that may function inconsistently within the Rasch model. Infit and outfit MNSQ values, along with ZSTD, were examined to determine whether any items demonstrated

irregular response patterns or failed to align with the expected measurement structure. While minor deviations are common in scales assessing subjective constructs such as workload perception, consistent misfit may indicate semantic ambiguity or cognitive dissonance in how students interpret certain items (Linacre, 2021; Sumintono & Azwar, 2022).

In the first pilot, item LW4 exhibited clear misfit with both infit and outfit MNSQ values exceeding 1.5 and a ZSTD of 4.2. These indicators suggest erratic response patterns that may reflect unclear phrasing or variability in how students perceived the intensity of workload described. In contrast, LW1 showed acceptable fit in the first pilot, with MNSQ values within acceptable bounds and a ZSTD of 1.6, indicating alignment with the Rasch model's expectations. However, in the second pilot, this pattern reversed. LW4 showed marked improvement following revision, with infit and outfit MNSQ values near 1.00 and a ZSTD of 1.1, indicating that the item was well-targeted and clearly interpreted by respondents. Meanwhile, LW1 exhibited a mild misfit in the second pilot, with an outfit MNSQ of 1.55 and a ZSTD of 4.0. Although this value is slightly above the conventional cutoff, it does not reach a level that mandates immediate deletion, particularly given the item's theoretical relevance to the workload construct (Sumintono & Azwar, 2022). Instead, it may warrant minor rewording or further field testing. A detailed summary of these item-level diagnostics is presented in Tables 3.12 and 3.13.

Table 3.12

Summary of Misfit Items LW Pilot 1

Item	Measure	Infit MNSQ	Outfit MNSQ	Outfit ZSTD	Interpretation
LW4	-1.04	1.53	1.52	4.2	MISFIT
LW1	-2.55	1.25	1.29	1.6	FIT

Table 3.13

Summary of fit Items LW Pilot 2

Item	Measure	Infit MNSQ	Outfit MNSQ	Outfit ZSTD	Interpretation
LW4	-.79	1.00	1.12	1.1	FIT
LW1	-1.66	1.39	1.55	4.0	MISFit

Completing the item-level fit analysis, Wright Maps were examined to evaluate the alignment between item difficulty and student ability levels in the Learning Workload (LW) scale. This visual diagnostic is crucial for assessing whether the instrument adequately captures the range of perceived workload among respondents, particularly in highly structured environments such as academic Islamic boarding schools. Rasch theory recommends that item difficulty estimates should ideally span the full

continuum of person abilities to ensure meaningful measurement across levels of the latent trait (Linacre, 2021; Boone, 2021).

As shown in Figure 3.25, the first pilot revealed a moderate clustering of items within the 0 to +2 logit range, particularly LW2 and LW3, indicating that most items targeted students reporting moderate to high levels of workload. However, several students with lower ability estimates (i.e., perceiving lower workload) were not matched by sufficiently easy items. This slight ceiling bias suggests that the scale in its initial form may have underrepresented the experiences of students who navigate academic tasks with less perceived strain. In the second pilot (Figure 3.26), item targeting improved as the distribution of items extended more evenly across the person's ability continuum. Items LW1 and LW4 shifted downward, better capturing students with lower perceived workload levels, while LW2 and LW6 remained effective for measuring higher perceived intensities. The spread of items relative to the person distribution became more balanced, reducing gaps and potential measurement redundancy. These visual improvements support the scale's enhanced targeting capacity following item refinement, confirming that the instrument is better positioned to measure varying perceptions of academic workload among students in a boarding school context

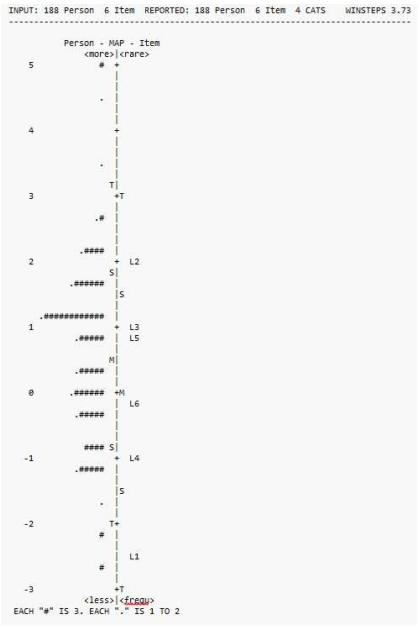

Figure 3.25
Wright Map of LW Scale of First Piloting

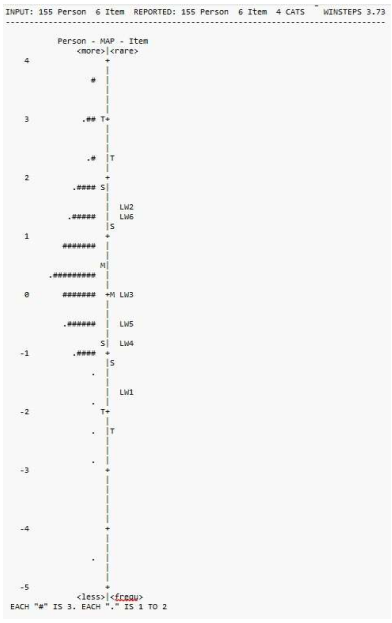

Figure 3.26
Wright Map of LW Scale of Second Piloting

To confirm the structural coherence of the Learning Workload (LW) scale, Principal Component Analysis (PCA) of standardized residuals was conducted. This analysis evaluates whether

residual variance, after the Rasch dimension is accounted for, clusters into meaningful secondary dimensions that might threaten unidimensionality. According to Rasch theory, a unidimensional scale should display an eigenvalue of the first contrast below 2.0 and no dominant unexplained component in the residual structure (Linacre, 2021; Boone, 2021). As shown in Figure 3.27, the first pilot indicated a first contrast eigenvalue of 1.7, suggesting that no major secondary trait emerged from the residuals. While minor peaks were observed, their relative strength remained within acceptable bounds. Following item refinement, the second pilot (Figure 3.28) produced a cleaner residual structure, with the first contrast slightly reduced to 1.5 and subsequent components diminishing in explanatory power. This confirms that the revised LW scale retained a unidimensional structure, with minimal noise or multidimensional interference. The improved residual variance pattern further strengthens the construct validity of the LW instrument, providing a sound basis for its application in the main study. The following Figures 3.23 and 3.24 present the standardized residual variance scree plot of both pilot phases.

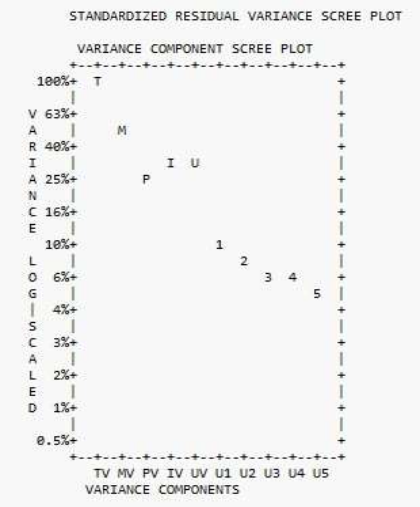

Figure 3.27
Standardized Residual LW Scale of First Piloting

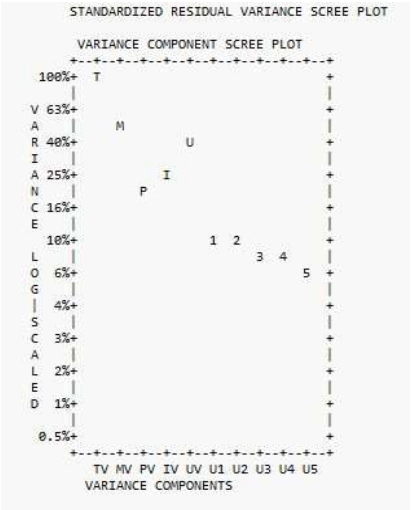

Figure 3.28
Standardized Residual LW Scale of Second Piloting

In conclusion, the two-stage validation process confirmed that the Learning Workload (LW) instrument possesses acceptable psychometric properties for use in the context of Indonesian academic boarding schools. Although minor misfit was observed in one item, the overall model fit, rating scale functioning, and person–item targeting improved notably after refinement. The category probability curves demonstrated more ordered thresholds, while the Wright Map and residual variance analysis supported the instrument's structural validity and unidimensionality. These findings indicate that the LW scale is both conceptually grounded and empirically robust, ready for implementation in the full-scale study alongside the other validated measures.

3.7 Ethical Considerations

This study strictly adhered to research ethics protocols to safeguard participants' rights, dignity, and well-being throughout the research process. Before data collection, informed consent was obtained from both students and institutional representatives, following clear communication regarding the study's purpose, procedures, potential risks, and voluntary nature. To protect participant identity while allowing organized data management across 13 schools, a standardized anonymous ID code system was implemented. Students were instructed to generate their ID using the initials of their name, regional code, school number, and grade level. This approach ensured confidentiality while enabling linkage of demographic data for analysis. All data were kept secure and used solely for academic purposes, with participants retaining the right to withdraw at any time without penalty. In consideration of the Islamic boarding schools context, all procedures were reviewed for cultural and religious sensitivity. Ethical approval was secured from the university's institutional review board before field deployment. The instruction for creating the participant ID code is shown in Table 3.2 below.

Table 3.14

Participant ID Code Instruction

ID Code: Please fill in the first initial of your first and second name next to the address code and grade you supervise (grade 10/11/12). (E.g. UMA910, my initial name is UM, my region is A, my school location is 9, and my supervised students are grade 10).

CHAPTER IV
FINDING AND DISCUSSION

This chapter presents the research findings and provides a comprehensive discussion to address the five formulated research questions. The analysis draws upon both descriptive and inferential statistics, incorporating Rasch modeling and Hayes' PROCESS Macro to explore the relationships among the variables: teacher empathy (TE), student well-being (SWB), peer attachment (PA), and learning workloads (LW). The presentation of the chapter is divided into two main sections. The first section focuses on empirical results, and the second interpretative discussions grounded in psychological theories and empirical literature. It aims to contextualize the findings within the broader framework of positive education based on PERMA Profiler theory. It begins by outlining the demographic characteristics of the student participants from the Islamic boarding schools across Indonesia.

4.1 Findings

This section provides the quantitative results of the study based on data collected from 993 students in 11 Islamic boarding schools across Indonesia. It begins with demographic information, followed by Rasch-based item and person measurement for each variable, descriptive statistics, item difficulty levels, and demographic breakdowns of students' perceptions. The latter part of the section elaborates on the results of parallel mediation and gender-based moderation analysis. These analyses offer a comprehensive foundation for the interpretive discussion.

4.1.1 Distribution of Research participants Demography

A total of 993 students initially participated in this study, drawn from 11 academic boarding madrasahs across Indonesia. Following the Rasch-based data cleaning procedure, specifically through the examination of person measurement and person fits statistics. It demonstrated misfit to the model as indicated by an Outfit Mean Square (MNSQ) value greater than 2.0, which suggests erratic or invalid response patterns (Boone et al., 2014). Only student responses that met acceptable fit criteria were retained for analysis, resulting in a final analytic sample of 896 students (N = 896). Describing the demographic characteristics of these participants provides an essential foundation for interpreting the patterns and relationships explored in subsequent analyses. Table 4.1 presents the

participants' demographic distribution across gender, age, grade level, students' involvement in organizations and extracurricular activities, students' origin, and school distribution.

Table 4.1

Participant Gender-Based Demographic Distribution

Characteristic	***Description***	***Frequency (N=896)***	***Percentage (%)***
Gender	Male	389	43.4
	Female	507	56.6

Table 4.1 displays the demographic distribution based on the gender of 896 participants who met the criteria after data cleaning. A total of 507 students (56.6%) were female, while 389 students (43.4% were male. This distribution indicates that female participants slightly outnumbered their male counterparts in the overall sample. The gender composition is reported here solely for descriptive purposes and will later be analyzed concerning the key variables through moderation analysis in a separate section.

Table 4.2

Participant Age-Based Demographic Distribution

Characteristic	***Description***	***Frequency (N=896)***	***Percentage (%)***
Age	<15	3	0.3
	15	134	15
	16	407	45.4
	17	250	27.9
	>17	108	12.1

As shown in Table 4.2, the largest proportion of the age distribution was 16 years old (45.4%), followed by those aged 17 (27.9%) and 15 (15%). A smaller group of students was older than 17 (12.1%), while only 0.3% were younger than 15. This distribution aligns with the typical age ranges of students enrolled in grades 10 and 11 in Indonesia, where students usually enter secondary school at ages 15 or 16. The prevalence of mid-adolescent participants reflects the target population of the research. According to Erikson's theory of psychological development, adolescents at this stage are navigating the crisis of identity versus role confusion. They begin to form a clearer sense of self regarding social roles, relationships, and future goals (Upreti, 2017). Thus, this ensures the findings are

representative of students in a critical developmental phase, where academic demands, peer interactions, and emotional well-being are particularly prominent.

Table 4.3

Participant Class-Based Demographic Distribution

Characteristic	***Description***	***Frequency (N=896)***	***Percentage (%)***
Class	10	469	52.3
	11	302	33.7
	12	125	14.0

Data in Table 4.3 provides the distribution of participants based on their academic grade level. A majority of respondents (52.3%) were from the tenth grade, followed by 33.7% from the eleventh grade, and only 14% from the twelfth grade. This reflects the enrollment structure of the Islamic boarding schools, where classes 10 and 11 comprise the largest percentage of actively engaged students during the data collection period. The smaller proportion of class twelve was due to their strict academic concentration in approaching the university test and graduation. Despite their smaller representation, they bring a valuable perspective as they are generally in a transitional phase toward post-secondary education. This group also tends to exhibit more mature coping mechanisms and strategies in responding to academic demands and social dynamics. It may stimulate their perception of well-being and learning experiences differently compared to younger cohorts.

Table 4.4

Participant Demographic Distribution Based on the Number of Participating Organizations

Characteristic	***Description***	***Frequency (N=896)***	***Percentage (%)***
The organization	1	654	73.0
participated in	2	180	20.1
	3	40	4.5
	>3	22	2.5

A dominant portion of the participants is 73% N=654, reported involvement in a single student organization. Only 180 students (20.1%) joined two organizations, while 40 students (4.5%) and 22 students (2.5%) participated in three or more, respectively. This

skew toward minimal organizational participation may reflect institutional routines or student prioritization of academic tasks, especially within the demanding environment of Islamic boarding schools. The relatively small group with higher engagement suggests variation in how students balance academic and non-academic responsibilities. These differences may also imply distinct levels of peer interaction, leadership exposure, or time management skills, which could indirectly predict their well-being and academic coping strategies.

Table 4.5

Participant Demographic Distribution Based on the Number of Participating Extracurricular Activities

Characteristic	***Description***	***Frequency (N=896)***	***Percentage (%)***
The extracurricular activities students participated in	1	340	37.9
	2	369	41.2
	3	121	13.5
	>3	66	7.4

Participation in extracurricular activities appeared more evenly distributed than organizational involvement. Table 4.5 shows a total of 369 students (41.2%) engaged in two activities, slightly exceeding those who participated in only one (N=340; 37.9%). Meanwhile, 121 students (13. 5%) were involved in three activities, and a smaller group of 66 students (7.4%) reported participating in more than three. This pattern suggests that a significant number of students are actively diversifying their non-academic engagements. Such involvement may serve as a buffer against academic pressure by offering social support and skill-building opportunities, potentially influencing their overall well-being and school engagement.

Table 4.6

Participant Demographic Distribution Based on the Origin Distance from the Madrasah

Characteristic	***Description***	***Frequency (N=896)***	***Percentage (%)***
Original	SLM	270	30.1
	DD	431	48.1
	DP	194	21.7
	DC	1	0.1

Note: *SLM indicates the same location as madrasah, DD indicates a different district with madrasah, DP is a different province with madrasah, and DC is a different country with madrasah.*

The participants in this study came from different geographical backgrounds relative to their madrasah location, as shown in Table 4.6. Nearly half of the students, with N=431 (48.1%), came from a different district (DD), while 30.1% (N=270) were from the same location (SLM). A significant portion, 21.7% (N=194), were from different provinces (DP), and only one student (0.1%) represented a different country (DC). The low number of international participants may reflect language barriers in the research instrument, which was administered in Bahasa Indonesia. These findings are not surprising, as the academic madrasah operates under both national and international standards, attracting applicants from various regions. During the admission process, students can choose two preferred madrasah locations across Indonesia, contributing to the broad geographic diversity in the sample. This diversity enhances the educational environment but may also trigger students' cultural adaptation and sense of belonging.

Table 4.7
Participant Demographic Data Based on School Distribution

Characteristic	***Description***	***Frequency (N=896)***	***Percentage (%)***
School	A	52	5.8
	B	17	1.9
	C	150	16.7
	D	145	16.2
	E	40	4.5
	F	32	3.6
	G	29	3.2
	H	217	24.2
	I	134	15.0
	J	53	5.9
	K	27	3.0

Note: *Region Sumatra is schools A, B, C, and D; Region Java is schools E and F; Region Kalimantan is schools G, H, and I; Region Sulawesi is schools J and K.*

Table 4.7 informs the distribution of student participants across the 11 madrasahs, highlighting notable variation in school representation. School H contributed the highest number of respondents (24.2%; N=217), followed by school C (16.7%; N=150) and school D (16.2%; N=145). It indicates high engagement or larger student populations. In contrast, school B has the lowest participation (1.9%; N=17), likely due to limited access to digital devices during data collections. Some madrasahs also reported reduced involvement because students were occupied with summative examinations and preparation for

academic evaluations. Mid-range representation was observed in schools such as A, I, and J, each contributing around 5-15% of the total respondents.

Regionally, schools from Sumatra (A, B, C, D) and Kalimantan (G, H, I) made strong contributions, while Java (E and F) and Sulawesi (J and K) schools were more modest in sample size. This indicates that despite logistical challenges, there was nationwide participation across key islands in Indonesia. The broad geographic spread of schools reinforces the diversity of contextual factors influencing students' academic and psychosocial experiences. It also illustrates the inclusive reach of the national madrasah system, where all schools operate under a unified academic standard. These regional and institutional differences will be considered in interpreting the variables of empathy, workload, peer connection, and well-being in later analyses.

After providing a comprehensive overview of the students' demographic profile, the analysis now moves on to assess the psychometric quality of the instruments used. This section focuses on person and item measurement outcomes, which are essential for ensuring that all constructs were evaluated reliably. Using the Rasch model, the results give detailed insights into the overall data fit, person reliability, and the suitability of the items across all four measured variables.

4.1.2 Summary Person and Item Measurement

The person and item measurement summary provides key evidence of instrument validity and reliability throughout this study. The fit of the measurement model for participant responses, along with item construct measurement, was analyzed using Rasch analysis. The analysis assessed outfit and infit statistics, person and item separation indices, and reliability scores for each construct. Person measurement indicators evaluate response consistency related to the latent trait. The hierarchical structure and clarity of each item can be determined through item statistics. Four scales (TE, PA, LW, and SWB) were examined in this process. The results show that these scales are psychometrically sound and appropriate for further analysis involving structural relationships and model testing. The measurement data are presented in the following table:

Table 4.8

Summary of Person Measurement

Variables	N	Mean of Logit	Std. Deviation	Reliability	Alpha Cronbach	Std. Error
Student Well-Being	896	1.05	0.70	0.68	0.73	0.02
Teacher Empathy	896	0.85	1.17	0.84	0.87	0.4
Peer Attachment	896	1.30	1.55	0.91	0.94	0.05
Learning Workload	896	0.78	1.25	0.59	0.61	0.04

Table 4.8 provides a summary of person measurement statistics for the four central variables in this study: SWB, TE, PA, and LW. These variables were measured using Likert-type scales, which are ordinal raw scores and transformed into interval measures (logits) by using Winstep version 3.73 to enhance comparability and precision. The number of respondents was consistent across variables (N=896). This transformation advances the interpretability of the data and allows for valid parametric analysis, as it accounts for item difficulty and person ability simultaneously. As a result, the findings are not only statistically robust but also psychometrically meaningful within the context of student experiences in Islamic boarding schools.

Among the variables, SWB yielded a mean score of 1.05 and the lowest standard deviation (0.70), with reliability (0.68) and Cronbach's alpha (0.73) indicating stable measurement quality. These findings support the consistency of the adapted PERMA-Profiler by Chue et al. (2024). It was evidenced by acceptable reliability indices (Rasch person reliability = 0.68; $\alpha = 0.73$), low standard error (0.02), and strong central tendency. The relatively narrow score dispersion suggests semantic clarity and contextual appropriateness. These all indicate that students in Islamic boarding schools responded to the items with shared understanding. This affirms that the adapted scale functions reliably even within a culturally and religiously specific educational environment.

Variable TE has the mean slightly lower (M= 0.85; SD = 1.17), with reliability coefficients of 0.84 and 0.87. It suggests solid internal consistency in measuring students' perceptions of teachers' emotional attunement. The variation observed may stem from differing teacher interaction styles across both classroom and boarding environments. Besides, it is also from contextual factors such as subject matter, mentoring responsibility, activities, dormitory supervision roles, or the nature of co-curricular and organization engagement that may also stimulate how students perceive teacher empathy.

On the other hand, PA emerged as the highest-scoring variable (M = 1.30), accompanied by the widest variability (SD = 1.55). With a person reliability of 0.91 and Cronbach's alpha of 0.94. These dimensions showed exceptional psychometric strength, reflecting their central role in residential schooling, where peer bonds substitute familial proximity. In contrast, LW recorded the lowest mean (M = 0.78), but showed notable variability (SD = 1.25) with lower reliability values (0.59; α = 0.61). This suggests that students experienced the workload differently, possibly correlated by individual time management, curriculum intensity, or institutional support. The slightly lower reliability aligns with the conceptual difficulty of uniformly measuring perceived cognitive demand across multi-subject academic settings.

This particular validation of Rasch-based in the culture of the Indonesian educational context is similar to the adaptation of the hexagonal e-learning assessment model (HELAM) scale for teacher training by Handayani et al. (2023). It showed comparable person reliability and item reliability, which supports Rasch's capacity to calibrate instruments in structures, culturally specific settings. The present study similarly converted ordinal Likert responses into interval-level logits with satisfactory fit, reinforcing its measurement validity. While most variables met reliability standards. The LW scale significantly and negatively predicts student well-being. The relatively lower alpha and person reliability suggest that further refinement of this scale is needed to better capture the nuance of academic demands in boarding school settings. It is possibly due to self-report bias, and the unique boarding context may also limit generalizability. Nonetheless, these results provide a statistically robust and theoretically grounded foundation for advancing to inferential analysis, including mediation and moderation testing, with confidence in the instrument's internal structure and construct representation.

Following the person-level analysis, the step involves evaluating item-level psychometric properties for each measured construct. Table 4.9 summarizes the Rasch-based item measurement statistics. It offers insights into item reliability, dimensionality, and measurement precision. This assessment ensures that the instrument items align well with their intended construct and perform consistently across the sample

Table 4.9

Summary of Item Measurement

Variables	N	Mean of Logit	Std. Deviation	Item dimensions		Reliability	Std. Error
				Raw Variance Explained By The Measure	Unexplained Variance 1st Contrast		
Student Well-Being	896	0.00	1.15	39.3%	10.5%	1.00	0.24
Teacher Empathy	896	0.00	1.18	46.2%	9.5%	1.00	0.28
Peer Attachment	896	0.00	0.70	43.8%	6.1%	0.99	0.14
Learning Workload	896	0.00	1.24	52.8%	11.5%	1.00	0.56

The summary of item measurement statistics in Table 4.9 offers detailed information on the psychometric performance of individual items across the four measured constructs. It shifts focus to item-level statistics derived from the analysis, emphasizing how well the items represent their intended latent traits. Each variable yielded a centered mean of 0.00, aligning with the Rasch convention, where item difficulty is logit-calibrated around the mean.

The standard deviations vary across constructs, ranging from 0.70 (PA) to 1.24 (LW), suggesting varying item dispersions. LW items demonstrated the widest spread (SD = 1.24). It indicates broader difficulty distribution across students in perceiving task demands. Meanwhile, PA items showed tighter clustering, consistent with relatively homogeneous perceptions of peer support in the sample. For TE, the raw variance explained by the measure reaches 46.2%, with an unexplained variance in the first contrast of only 9.5%. This confirms the unidimensional nature of the construct and its robust internal structure. The item's reliability of 1.00 and a standard error of 0.28 further validate the stability and precision of the scale. These findings indicate the items successfully capture a coherent empathy construct as perceived by students in both academic and residential settings.

Comparatively, SWB items explain 39.3% of the variance with a slightly higher unexplained component (10.5%). Meanwhile, PA demonstrates excellent dimensional clarity with 43.8% explained and the lowest unexplained variance (6.1%). Furthermore, the LW scale shows the highest raw variance explained (52.8%) but also the greatest unexplained variance (11.5% and standard error (0.56). it possibly due to the multidimensional nature of workload perceptions across disciplines and schedules. Overall, item reliabilities across all variables range from 0.99 to 1.00, reinforcing the consistency

of item hierarchies. These result affirms the appropriateness of the Rasch model for evaluating culturally contextualized psychological constructs within Indonesian Islamic boarding schools.

Building upon the person and item measurement summary, the next findings involve examining how individual items performed across the four variables. The measures display the Rasch item calibration result, indicating each item's relative difficulty within the latent construct. This calibration helps identify which items were most and least endorsed by students. It offers insight into the depth and clarity of each construct in the Islamic boarding schools context.

4.1.3 Logit Level Item of Instruments of SWB, TE, PA, and LW

This section outlines the logit value of items (LVI) of the four instruments, highlighting their relative difficulty as perceived by students, by classifying items into four categories: very difficult, difficult, easy, and very easy. The analysis captures nuanced patterns of student responses. This provides deeper insight into how each function within the construct of SWB, TE, PA, and LW. The logit scale enables item classification into four levels of perceived difficulty: very difficult, difficult, easy, and very easy. These levels are determined based on student responses and reflect how demanding or accessible each item appears within the latent construct it measures. To better understand, this study showed Figure 4.1(Wright Map) provides insight into the alignment between item difficulty and person ability, and 4.2 (LVI classification) highlights the distribution and spread of item difficulty levels across the construct.

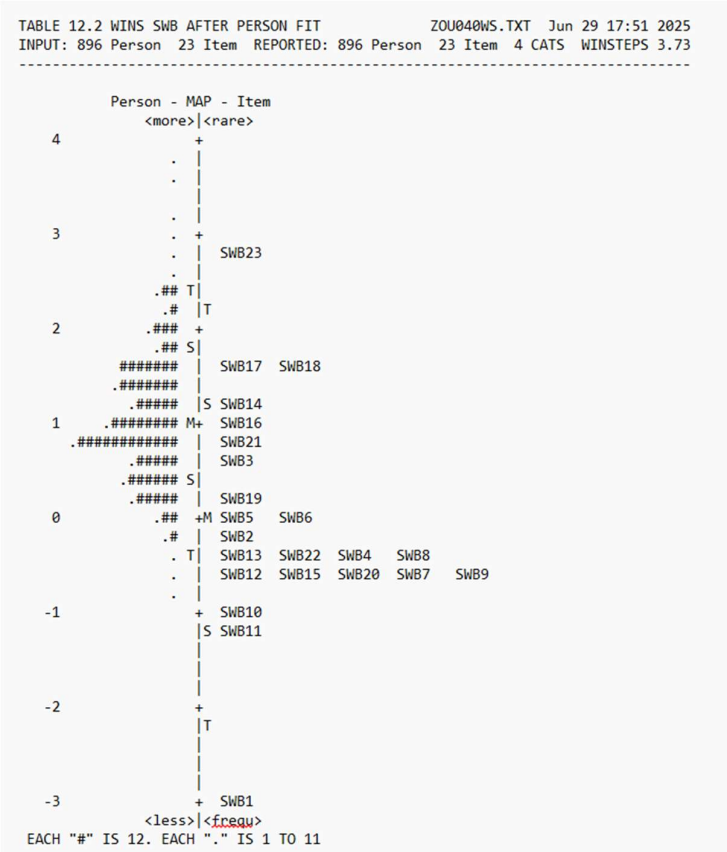

Figure 4.1

Wright Map of SWB Instrument

Figure 4.1 presents the Wright Map of the SWB instrument, which offers a simultaneous depiction of person abilities (on the left) and item difficulties (on the right) along a shared logit scale. This dual-axis visualization is essential in Rasch analysis as it allows for the evaluation of instrument targeting, the extent to which item difficulty levels appropriately span the range of respondents' abilities. An ideally targeted instrument should have items distributed across the same continuum as the participants' latent traits.

In this case, the Wright Map shows that the majority of SWB items are clustered between 0 and +1 logits, aligning well with the central distribution of student abilities. This indicates that the instrument is generally well-calibrated to capture the average student's level of well-being. However, a few items lie at the extremes of the scale, which provides further insight into instrument coverage. Specifically, Item SWB23 appears above +3 logits, making it the most difficult item, endorsed primarily by students with a high latent trait level of well-being. Conversely, Item SWB01 is located near 3 logits, suggesting it is the easiest item to agree with and thus endorsed even by students with lower levels of the trait.

The presence of both extreme and central items reflects a desirable spread in item difficulty, enhancing the instrument's ability to discriminate among students with varying levels of well-being. However, the sparse representation at the higher logit levels also suggests a potential gap in capturing nuanced experiences of students with exceptionally high well-being. This information is elaborated further in Figure 4.2, which depicts the classification of SWB items based on their LVI.

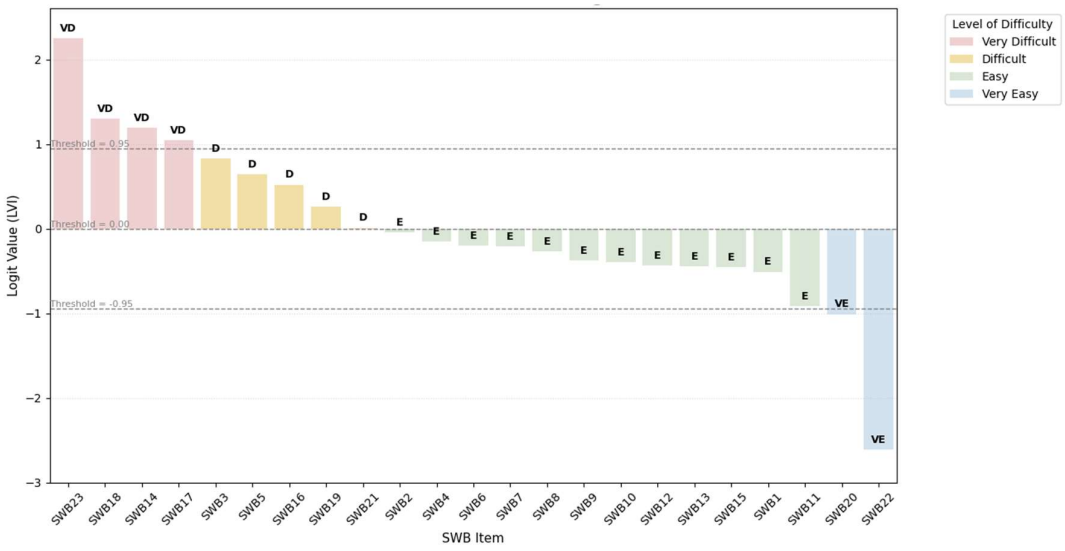

Figure 4.2

Classification of SWB Items Based on Logit Value (LVI)

Figure 4.1 presents the distribution of student well-being (SWB) items based on their logit value index (LVI), which was calibrated through Rasch analysis. The items are grouped into four difficulty levels: Very Difficult, Difficult, Easy, and Very Easy. These categories were determined by thresholds set at LVI > +1.15, +1.15 to 0.00, 0.00 to –1.15, and below -1.15, respectively. This classification provides a clear psychometric profile of how easily students in Islamic boarding schools endorse each item.

The items which are classified as Very Difficult consist of SWB18 and SWB14 and SWB17 (Negative Emotion) and SWB23 (Loneliness). The agreement with these items needs students to possess very high latent well-being levels which shows that most students do not frequently recognize these emotional struggles. The position of these items indicates students tend to avoid admitting or showing their negative emotional feelings to others.

Students in Islamic boarding schools might avoid showing their feelings because they believe they should stay composed or they lack proper ways to show their vulnerability. Items in the Difficult category include SWB3 (Positive Emotion), SWB16 (Accomplishment), SWB19 and SWB21 (Health) which appeared in the analysis. These items are moderately endorsed and may reflect areas where students show mixed confidence or well-being. These items fall between Very Difficult items and easier items since they represent experiences that remain less common such as maintaining energy levels and achieving goals. The difficulty level of these items represents a subtle balance between basic well-being and aspirational functioning.

The majority of items fall within the Easy category, including SWB2 (Positive Emotion), SWB4–6 (Engagement), SWB7–9 (Relationships), SWB10 and SWB12 (Meaning), SWB13 and SWB15 (Accomplishment), and SWB20 (Health). These items reflect dimensions that are more readily experienced by students. Their ease of endorsement suggests that social connectedness, involvement in school activities, and daily vitality are relatively common features of life in Islamic boarding schools settings. These constructs may also be more actively supported by school routines, peer structures, or institutional cultures.

Two items, SWB1 (Positive Emotion) and SWB11 (Meaning), were classified as Very Easy. These items were endorsed by nearly all students, pointing to their universality. While their inclusion helps capture foundational experiences of well-being, they may have limited capacity to differentiate students with higher or more nuanced well-being profiles. Nonetheless, these items contribute to ensuring inclusivity and accessibility across a wide range of respondents. Overall, the pattern of item calibration demonstrates a balanced instrument that spans a full spectrum of student experiences. The clustering of Negative Emotion and Loneliness items at the higher difficulty levels reveals potential barriers in emotional expression. Conversely, the ease of endorsing items related to engagement and relationships may reflect the socially immersive and structured nature of boarding schools. This alignment between item difficulty and student context reinforces the instrument's contextual validity for measuring well-being in Indonesian academic madrasahs.

Furthermore, the present item calibration of Teacher Empathy from the point of view of Islamic boarding schools students in Indonesia, based on Rasch LVI Analysis and student Perspective. The scale used in this study was derived from the validated instrument developed by Wang et al. (2022), introducing a three-dimensional structure tailored for education: Cognitive Empathy (CE), Positive Affective Empathy (PAE), and Negative Affective Empathy (NAE). All interpretations stem from student perspectives and were

analyzed using Rasch-calibrated Logit Value Items (LVI). Rasch analysis transforms ordinal data into interval measures, placing item difficulty and person ability on the same continuum (Bond & Fox, 2015; Yan, 2023). This method offers a rigorous classification based on the extent to which students perceive teacher empathy, guided by thresholds: Very Easy (LVI < -1.18), Easy (-1.18 ≤ LVI < 0), Difficult (0 ≤ LVI ≤ 1.18), and Very Difficult (LVI > 1.18). Following the analysis of the SWB instrument, Figure 4.3 presents the Wright Map for the Teacher Empathy (TE) scale.

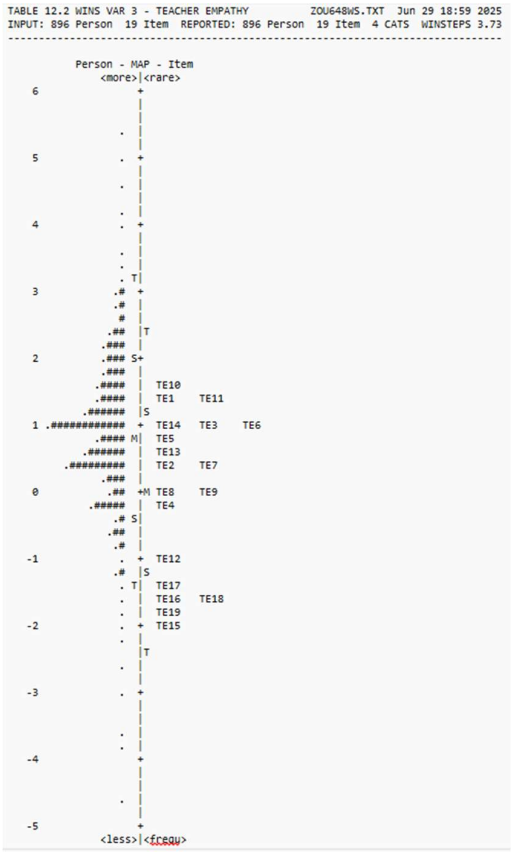

Figure 4.3

Wright Map of TE Instrument

Similar to the previous construct, this map plots student abilities on the left and item difficulties on the right, enabling assessment of instrument targeting. The TE Wright Map reveals that most items are positioned between 0 and +1 logits, indicating that they are well aligned with the average range of student perceptions regarding teacher empathy.

This clustering suggests that the majority of items are appropriately calibrated to capture moderate levels of perceived empathy, neither too easy nor too difficult for the typical respondent. Notably, the map also includes items located at the extreme ends of the logit scale, which enhances the instrument's discriminative capacity. Item TE1, situated above +1 logit, represents the most difficult item, meaning only students who perceive exceptionally high levels of teacher empathy tend to endorse it. Conversely, Item TE19, located below 2 logits, emerges as the easiest item to agree with, indicating it reflects a universally observed empathetic behavior among teachers. The presence of both central and extreme items suggests that the TE instrument possesses a sufficiently broad measurement range to distinguish between low, moderate, and high levels of perceived teacher empathy among Indonesian boarding school students. To complete the information, Figure 4.4 visualizes the classification of TE items based on their LVI.

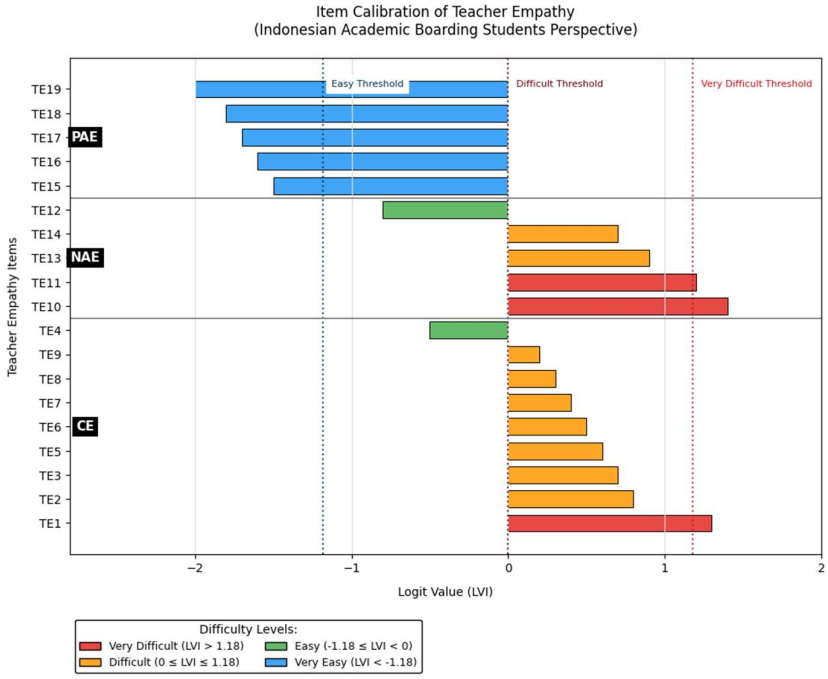

Figure 4.4

Classification of TE Items Based on Logit Value (LVI)

Three items: TE10 (1.58), TE1 (1.48), and TE11 (1.41), were classified as very difficult, suggesting that students perceived these empathic behaviors as the least accessible or least frequently observed. These items reflect emotionally intense engagements, such as

confronting a student's emotional state directly or displaying concern amid behavioral disruptions. Such expressions, particularly from negative affective empathy (NAE) and cognitive empathy (CE) domains, may signal a pedagogical willingness to deeply acknowledge student affect, yet they remain rare. As discussed by Aldrup et al. (2022), the practice of deep empathy is emotionally taxing and often constrained by systemic demands. This finding resonates with observations from Indonesian madrasah culture, where emotional regulation and modest expression are institutionally embedded. Notably, the Rasch-calculated distance exceeding 1.4 logits from the mean (0.00) statistically positions these items as the most challenging for students to observe in teachers.

Nine items: TE3 (1.02), TE6 (0.94), TE5 (0.90), TE2 (0.79), TE13 (0.60), TE14 (0.43), TE8 (0.43), TE7 (0.07), and TE9 (0.03), fall into the difficult category. These items cover aspects of cognitive empathy (CE) and negative affective empathy (NAE), such as the ability to recognize emotional signals, give reflective responses, and validate students' frustrations without making them worse. These skills are closely linked to teachers' emotional intelligence and the overall classroom environment, which can be stimulated by situational stressors. Additionally, Hascher and Hadjar (2021) noted that empathic behaviors, although valued, are often deprioritized in high-pressure school settings. This group, with scores ranging from 0.03 to 1.02 logits, represents an important middle layer of teacher empathy, where expectations are high but implementation is inconsistently perceived by students.

Two items, TE12 (-0.27) and TE4 (-0.97), were identified as easy. These behaviors, such as consistently listening to students or providing non-judgmental responses, appear widely endorsed and represent daily relational competencies. In culturally sensitive settings, emotional responsiveness that feels genuine yet remains measured is essential. Empirical evidence from Rizkyanti et al. (2025) further highlights that boarding students' respond positively to teachers who provide a calm presence rather than overt emotional displays. Statistically, the placement of these items just below the Rasch mean reinforces their perception as approachable and frequently practiced.

Similarly, five items, TE16 (-1.36), TE18 (-1.51), TE17 (-1.69), TE19 (-1.87), and TE15 (-2.01), are classified as very easy, indicating even broader endorsement among students. collectively, all teacher empathy (TE) items capture the affective warmth perceived by students, expressed through teachers' friendly demeanor, encouragement, and emotional affirmation (Silke et al., 2024). The Rasch hierarchy observed in Islamic boarding schools suggest that positive affective empathy (PAE) behaviors are widely

enacted, while cognitively and emotionally demanding forms of empathy, such as cognitive empathy (CE) and negative affective empathy (NAE), occur less frequently.

This overall pattern is consistent with the instrument's empirical validation, which confirms that affective gestures maintain consistnet recognition across cultural context (Wang et al., 2022a). This multidimensional structure aligns with findings from both international and Indonesian studies on teacher empathy (Aldrup et al., 2022; Cai et al., 2023; Rizkyanti et al., 2025). The 3.59 logit gap between TE10 and TE15 provides robust statistical evidence for the scale's capacity to discriminate varying levels of teacher empathy.

The analysis next turns to the Peer Attachment (PA) instrument, with its Wright Map presented in Figure 4.5. In Rasch analysis, the Wright Map serves as a diagnostic tool to evaluate how well the instrument targets the intended population (Boone et al., 2014). It does so by simultaneously plotting person abilities (on the left) and item difficulties (on the right) along a common logit scale, enabling a visual inspection of how well the test items span the range of students' latent trait levels, in this case, their perceived sense of peer attachment.

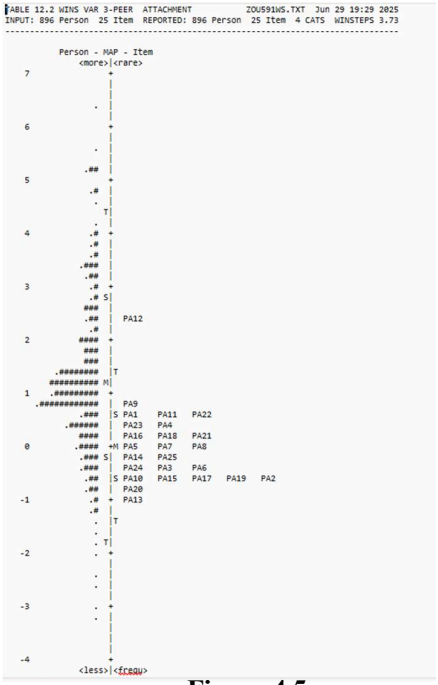

Figure 4.5

Wright Map of PA Instrument

The Wright Map of the PA instrument indicates that most items are concentrated between 1 and +1 logits, which aligns well with the central distribution of student ability estimates. This suggests that the PA scale is well-calibrated to measure typical levels of peer bonding among students in Indonesian Islamic boarding schools. The balanced overlap between item difficulty and person ability reflects good instrument targeting, ensuring that the scale can capture meaningful variability in peer attachment experiences without ceiling or floor effects.

A closer inspection of the item hierarchy highlights notable extremes. Item PA12, located above +2 logits, emerges as the most difficult, suggesting that only students with exceptionally strong peer bonds are likely to endorse it. This item appears to capture deeper or more enduring dimensions of emotional intimacy and peer trust. It shows the qualities that may be less common in competitive, academically demanding contexts such as Islamic boarding schools, where peer interactions can be shaped by performance pressures or social comparison. At the other spectrum, Item PA13 is positioned below with -1.5 logits, indicating it is very easy to endorse. It may represent more basic or surface-level elements of peer attachment, such as casual friendliness or mutual acknowledgement. Including items of this nature is essential for representing the lower end of the trait continuum, ensuring that students with weaker peer connections are adequately captured within the measurement model.

Furthermore, the distribution of item difficulty along the logit scale indicates that the peer attachement (PA) instrument captures a nuanced continuum of student relationships, extending beyond basic friendship to encompass deeper emotional bonds. It reflects varying degrees of connection, ranging from superficial, surface-level interactions to strong and secure attachments, thereby offering a multi-layered perspective on peer dynamics. This complexity is particularly relevant in Indonesian Islamic secondary boarding school context, where peers often function as surrogate family members and play a central role in students' emotional well-being and academic resilience. By differentiating these relational layers, the instrument enables a more precise identification of students who may appear socially engaged yet remain emotionally unsupported within their peer networks. Figure 4.6 illustrates the classification of peer attachment (PA) items based on their Logit valie Items (LVI), completing the information presented in the Wright Map.

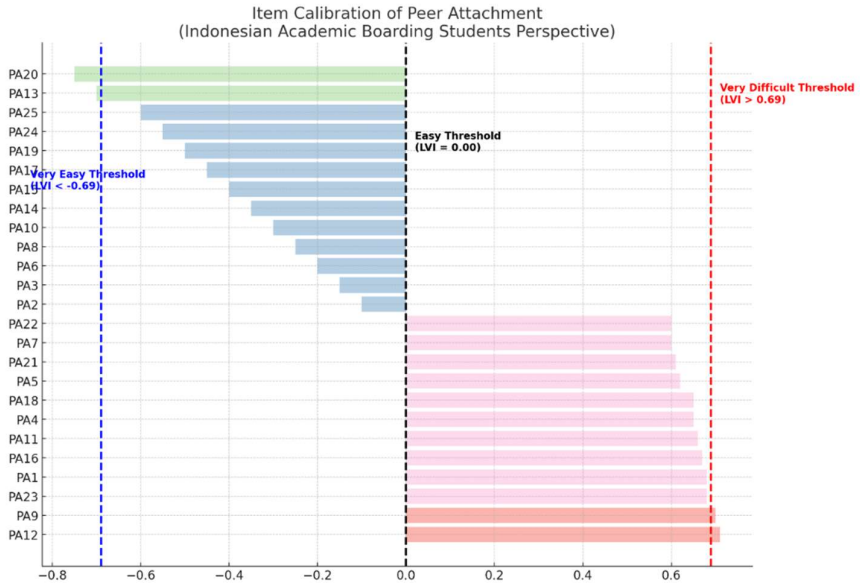

Figure 4.6

Classification of PA Items Based on Logit Value (LVI)

Figure 4.6 presents the item-level calibration of the Peer Attachment instrument based on Logit Value Index (LVI), as estimated by Rasch analysis**.** The classification is organized across four categories of difficulty: Very Difficult (LVI > 0.70), Difficult (0.70 ≥ LVI ≥ 0.00), Easy (0.00 ≥ LVI ≥ -0.70), and Very Easy (LVI ≤ -0.70). This visual representation enables a nuanced examination of how students perceive each item within the scale.

Among all 25 items**,** PA12 (Trust) recorded the highest logit value (≈ 0.65), nearing the *Very Difficult* threshold. This placement suggests that few students strongly agreed with this item, indicating a relatively lower perception of interpersonal trust within their peer environment. Other items approaching this high level of difficulty include PA9 (Trust), PA23 (Trust), and PA1 (Communication), all of which are situated within the Difficult zone. These findings highlight that items related to interpersonal openness and deep reliance on peers may be more psychologically demanding to affirm among students in Islamic boarding schools settings.

In contrast, the easiest item was PA20 (Trust)**,** falling below the Very Easy threshold (LVI ≤ -0.70). This item was endorsed by the majority of students, implying that certain aspects of trust, possibly in routine or situational contexts, are well established among peers. Other items classified as Easy include PA13 (Alienation), PA25 (Trust), and PA24 (Trust), revealing these aspects are more normalized in the social environment of the Islamic schools. Meanwhile, a considerable cluster of items, such as PA2, PA3, PA6, PA10,

and PA14, occupied the Easy to Moderately Difficult spectrum. These items likely reflect social practices that are contextually familiar but still require some degree of emotional or behavioral investment from students. The distribution of item difficulty across categories demonstrates that the scale effectively measures a wide spectrum of peer attachment experience. It ranges from routine interactions to more aspirational connections.

This calibration reflects a well-balanced psychometric structure, highlighting attachment patterns that are both attainable and ideal for students in Indonesian Islamic secondary boarding schools. These results at the item level affirm the scale's structural capacity to distinguish varying degrees of peer attachment perception. Thereby, they enhance insights into the social-emotional environment of the boarding school context. Building on the interpersonal dynamics measured through the Peer Attachment instrument, the Learning Workload (LW) scale shifts focus to the internal academic pressures that students navigate daily. As mediating variables, both constructs serve distinct but complementary roles in explaining how teacher empathy predicts student well-being. Peer attachment reflects the emotional support and sense of belonging that buffer psychological distress, while learning workload captures the cognitive strain that can either be mitigated or intensified depending on the classroom climate. When teachers demonstrate empathy, they may indirectly promote student well-being by fostering stronger peer bonds and reducing the perceived burden of academic tasks, highlighting both social and cognitive routes through which well-being can be enhanced. The wright map of LW instrument is illustrated in Figure 4. 7.

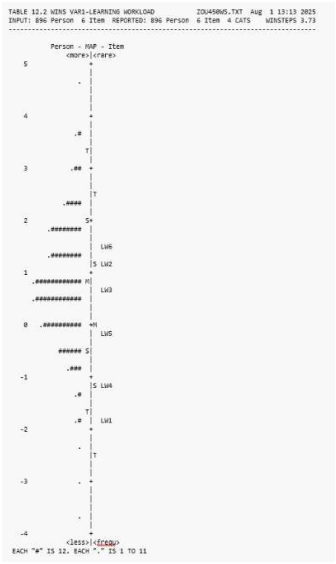

Figure 4.7

Wright Map of the LW Instrument

As shown in Figure 4.7, the Wright Map illustrates the alignment between students' perceived ability to cope with academic demands and the relative difficulty of each workload item. Most items are distributed between +1 and +2 logits, indicating that students generally perceive their workload as moderately to highly demanding, though not overwhelmingly so. This pattern suggests a context in which academic expectations are consistently high, yet still within the coping range for many students. Item LW6, positioned above +2 logits, emerges as the most difficult, likely tapping into intense or cognitively taxing demands, such as simultaneous assignments, cumulative assessments, or limited recovery time between tasks. These conditions may be particularly salient in boarding school environments where schedules are highly structured and time for self-regulation is constrained. In contrast, Item LW1, located near –2 logits, is the easiest to endorse and may reflect more routine academic responsibilities that students have grown accustomed to, such as daily homework or regular class reviews.

The scale overall demonstrates acceptable targeting, although a slight skew toward the higher end of the person distribution suggests that many students experience workload as persistently demanding, yet still manageable. Within this context, the LW instrument serves not only as a psychometric measure of cognitive burden, but also as a theoretical bridge, explaining how teacher empathy and peer dynamics relate to well-being through students' subjective interpretations of academic pressure. As a mediating variable, it captures the internalized tension between institutional demands and individual coping capacity, offering crucial insight into how structural school experiences are psychologically processed by learners. Furthermore, the classification of the LW instrument is displayed in the following Figure 4.8.

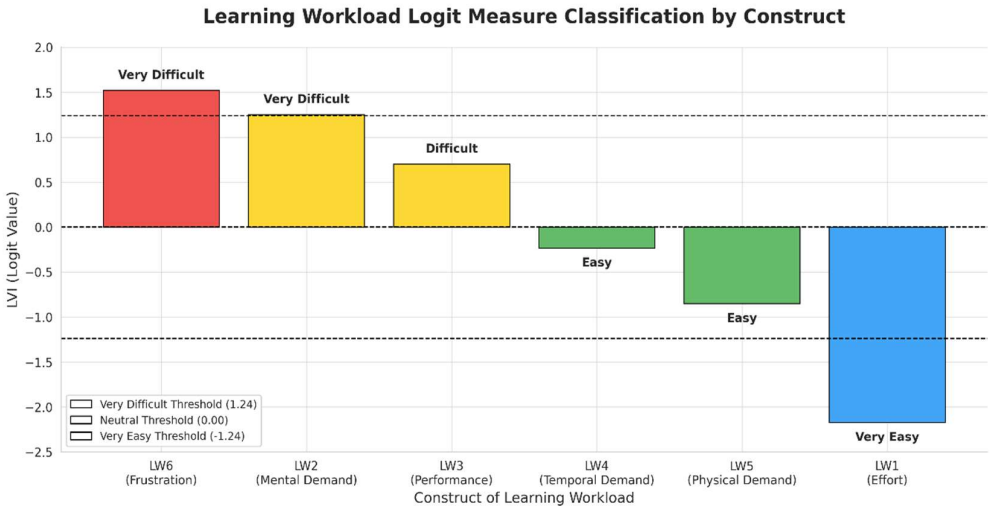

Figure 4.8

Classification of LW Items Based on Logit Value (LVI)

Note: *Level difficulty thresholds; very difficult LVI > 1.24, difficult 1.24 ≥ LVI≥ 0.00, Easy (0.00 ≥ LVI ≥ -1.24), Very Easy (LVI ≤ -1.24).*

Figure 6 provides the item calibration for the LW scale, which comprises six items assessed through Rasch analysis. Each item was classified into four levels of difficulty based on its logit values: very difficult (LVI > 1.24, difficult 1.24 ≥ LVI≥ 0.00, easy (0.00 ≥ LVI ≥ -1.24), and very easy (LVI ≤ -1.24). LW6 (frustration) was categorized as very difficult, indicating that only students with a high latent perception of workload agreed with this item. Frustration, though not commonly endorsed, emerged as the most taxing component of learning life for some students. Its position captures a threshold of emotional strain that only a subject of students may experience. LW2 (mental demand) and LW3 (performance demand) were placed in the difficult range, showing that student generally perceive high cognitive and outcome-related pressure in their learning routine. However, these demands appear tolerable for most, suggesting a normalized view of mental challenge in Islamic boarding school settings.

Furthermore, LW4 (temporal demand) and LW5 (physical demand) were rated as easy, implying that students have largely adapted to the structured schedules and physical demands of the residential learning environment. Despite being present, these demands seem manageable, likely due to sustained habituation. Interestingly, LW1 (effort) was placed in the very easy category, with the lowest logit score of all items. This indicates that

students generally regard effort as an inherent and anticipated aspect of their educational experience. They perceive it not as a burden but as a regular part of their learning process.

Overall, this calibration reflects a layered perception of learning workload. Mental and emotional demands are perceived as more challenging, whereas temporal, physical, and effort-based dimensions are viewed as manageable or inherent. These results highlight students' differentiated responses to learning pressures and provide a psychometrically valid portrait of workload experiences in Indonesian Islamic secondary boarding schools. The next section examines how these patterns vary across demographic subgroups using person measurement data.

4.1.4 Learning Workload Person Measurement Demography Data

Rasch-based classification standards categorize students' perceived learning workload through person logit values (LVP). It revealed a mean of 0.78 and a standard deviation of 1.25; four calibrated levels are defined: very high (LVP > 2.03), high (0.78 to 2.03), moderate (-0.47 to 0.78), and low (LVP ≤ –0.47). This categorization offers a structured lens for interpreting variations in students' academic demand experiences across intensity levels.

Table 4. 10

Threshold of LVP LW

Category	Threshold	LVP Values	Total Item
Very High	LVP > 2.03	4.72, 3.73, 3.00, 2.39	4
High	2.03 ≥ LVP ≥ 0.78	1.84, 1.35, 0.88	3
Moderate	0.78 ≥ LVP ≥ -0.47	0.43, -0.02, -0.46	3
Low	LVP ≤ -0.47	-0.91, -1.36, -1.84, -2.96, -3.68	5

Table 4.10 shows LVP scores in the very high range (2.39 to 4.72), representing students under intense academic pressure, likely due to accumulated assignments and limited academic relief. This group is at potential risk for overload and prolonged stress. Those in the high category (0.88 to 1.84) encounter considerable yet typical demands, reflecting a rigorous learning environment that still aligns with academic norms. The moderate range (-0.46 5o 0.43) encompasses students who view their workload as balanced,

indicating consistent academic involvement without excessive strain. Conversely, a low LVP score (-0.91 to -3.68) reflects perceptions of minimal burden, which may provide immediate ease but risk long-term disengagement of insufficient academic challenge. These variations highlight the need for learning workload planning that remains responsive to students' diverse capacities. Rasch-based classification offers a systematic approach to detecting whether learning demands foster optimal engagement or drift toward extremes.

Overall, the spread of LVP scores reveals substantial differences in students' perceptions of learning workload. These values underscore the importance of designing workload policies that are fair and aligned with students' capacities, avoiding extremes of excessive strain or insufficient challenge. Rasch-based categorizations offer a precise framework for guiding teachers and administrators in making data-informed adjustments that sustain academic rigor, engagement, and student well-being.

Table 4.11

Person measurements, Demographic Data of Learning Workload

Demography	**Very High (LVP > 2.03)**	**High (2.03 ≥ LVP ≥ 0.78)**	**Moderate (0.78 ≥ LVP ≥ -0.47)**	**Low (LVP ≤ -0.47)**
Gender				
Female	83	219	172	32
Male	35	123	172	57
Age				
<15 years old	-	1	2	-
15 years old	20	57	47	10
16 years old	53	150	160	43
17 years old	36	101	93	20
>17 years old	9	33	42	16
Class				
10	58	184	180	46
11	52	121	111	18
12	8	37	53	25
Organization Participated in				
1	83	258	249	61
2	26	60	74	20
3	4	21	12	3
>3	5	3	9	5
Extracurricular Participated in				
1	45	138	130	10
2	46	137	146	25
3	17	42	47	40
>3	10	25	21	14
Origin (Distance from School)				
Same Location (SL)	38	95	108	29

Demography	Very High (LVP > 2.03)	High (2.03 ≥ LVP ≥ 0.78)	Moderate (0.78 ≥ LVP ≥ -0.47)	Low (LVP ≤ -0.47)
Different District (DD)	58	177	158	37
Different Province (DP)	22	69	78	23
Different Country (DC)	-	1	-	-
School/Madrasah				
School A	2	19	19	12
School B	3	10	3	1
School C	17	53	64	16
School D	25	57	59	4
School E	6	13	14	7
School F	5	11	8	8
School G	2	11	14	2
School H	34	86	75	22
School I	16	61	50	7
School J	7	20	20	5
School K	1	1	18	5

Table 4.11 displays the distribution of student learning workload based on demographical background. It was classified by Logit Value of Person (LVP) with four classifications: very high (LVP > 2.03), high (2.03 ≥ LVP ≥ 0.78), moderate (0.78 ≥ LVP ≥ -0.47) and low (LVP < -0.47). The data shows that most students are concentrated in the high and moderate learning workload level. It suggests an overall academic climate that is demanding but within a tolerable stage. Interestingly, the extremes very high and very low appear less often, pointing to the possibility of a shared rhythm of learning workload expectations across student body. While the distribution is not entirely even, it does reflect a fairly consistent learning experience among studens. However, a closer view at demographical subgroups reveals nuanced patterns woth nothing.

Gender-wise, female students are more represented in the high (219) and moderate (172) workload groups, while male students dominate the low category (57). This may imply a gendered response to academic demands or different standards of self-imposed pressure. Such disparities could also be shaped by broader sociocultural norms that associate diligence, compliance, and learning perseverance more strongly with female students. Meanwhile, male students might be more inclined to resist or underreport learning pressure. In the Islamic boarding secondary school context, these disparities could be reinforced by institutional routines, teacher expectations, or peer culture, which all trigger how students allocate effort and cope with learning workload demands.

On the other hand, an age-based breakdown shows that students aged 16 and 17 are most frequently positioned in the high and moderate workload categories. This pattern is expected as students at this stage face the most demanding learning content, cumulative assessments, and extracurricular requirements that converge toward the end of upper-secondary schooling. In contrast, students above 17 years old show a modest shift toward lower workload levels. This may be due to graduation-related flexibility or a restructuring of academic responsibilities that lightens their load. In certain context, reduced learning workload in the final year reflects a strategic shift toward skill-based learning, such as research projects, community engagement, or leadership training. These activities are designed to consolidate students' capacities and readiness for life beyond secondary education, while alleviating the intensity of daily academic demands.

In terms of class, grade 11 students carry the heaviest perceived workload, with 232 students in the high category alone. This is consistent with their curriculum structure, which tends to be the most rigorous in senior high. Grade 10 students also register strongly in both high and very high categories, likely due to their transition into the academic system and the initial adjustment to new learning cultures. Meanwhile, grade 12 students tend to experience lighter or moderate workloads, which may stem from relaxed post-assessment requirements or fewer scheduled classes. This pattern illustrates how the timing of the curriculum and the expectations attached to each year level influence students' perceptions of academic demands.

Organizational involvement also reveals insightful trends. Students engaged in only one school organization dominate the very high (83) and high (258) workload categories, suggesting that even limited non-academic obligations may coincide with heavier academic demands. However, students involved in more than three organizations are more commonly found in moderate or low workload groups. This may indicate a higher level of autonomy, strategic time allocation, or even institutional leniency given their organizational roles. It challenges the assumption that more involvement automatically leads to more pressure.

The pattern is similarly reflected in extracurricular participation. Students who join one or two extracurricular activities mostly fall in the high and moderate workload levels, which appear balanced. In contrast, those involved in more than three tend to shift toward the moderate and low categories. This could point to an adaptive rhythm where extracurricular-heavy students manage their workload more skillfully. Or it could reflect an institutional culture that prioritizes well-rounded development over excessive academic loading.

The geographical distance between students' homes and their boarding schools appears to determine how they perceive and manage their learning workload. Those originating from the same city or district as the school (SL) are more often represented in the moderate and low categories. It suggests that familiarity with the local environment and easier access to family visits may alleviate learning strains. In contrast, students from other districts (DD) and other provinces (DP) are more concentrated in the high and very high categories. For these students, the relocation process not only demands academic adaptation but also requires significant emotional and social adjustment to a new cultural and physical setting. With immediate family support physically distant, learning demands may feel more intense and emotionally taxing.

When viewed across schools or madrasahs, the data show interesting disparities. School H contributes the highest number of students in both high and moderate categories (86 and 75, respectively), indicating a robust academic expectation. Meanwhile, schools E and F stand out with more students in the very high workload group, suggesting a more intense curriculum or stricter academic standards. Some smaller schools, like C and J show relatively minimal numbers in all categories, which might reflect limited enrollment or less intensive instructional demands.

Across the distinct Islamic boarding schools, notable variance can be orserved. School H reports the largest number of students in the high workload category with 86 students. It also has the highest count in the moderate learning workload group with 75 students. These results reflect strong academic expectations in school H. Meanwhile, schools E and F report more students in the very high learning workload group. This pattern points to a more rigorous curriculum or stricter academic requirements in these schools. Smaller participants such as chool C and J display relatively low counts across all categories. This outcome may indicate limited student enrollment or less demanding instructional practices.

In sum, the demographic analysis demonstrates substantial variation in students' experiences of learning workload. These variations are associated by both personal attributes and institutional environments. Gender, age, class level, organizational participation, extracurricular involvement, demographical origin, and school profile each function as determining factors in shaping perceptions of learning demands. Overall, the majority of students report workloads within the moderate to high range. However, specific subgroups require closer consideration, particularly students who have relocated from distant regions or those undergoing transitional academic stages. The findings affirm that learning workload cannot be adequately captured through only quantitative indicators.

Rather, it constitutes a lived reality formed by structural, social, and emotional conditions. Such conditions necessitate both empathetic educational responses and planning strategies grounded in empirical evidence.

4.1.5 Student Well-being Person Measurement Demography Data

The classification of student well-being in this section shows how students perceive their psychological and emotional functioning in the Indonesian Islamic secondary boarding school context. The categories range from the highest to the lowest levels of well-being. This approach treats student well-being as a measurable and dynamic construct shaped by individual and environmental factors. The distribution of students across these categories helps identify overall trends and detect groups that may need targeted support. Using person-centered Rasch analysis, educators and policymakers can better understand the variation in student flourishing, resilience, and emotional adjustment. Table 4.12 presents the categories, corresponding person logit values, and frequencies.

Table 4.12

LVP Threshold of SWB

Category	Threshold	LVP Values	Frequency
Very high	LVP > 1.75	3.82, 3.17, 2.98, 2.81, 2.65, 2.5, 2.35, 2.21, 2.07, 1.93	10
High	1.75 ≥ LVP ≥1.05	1.8, 1.67, 1.55, 1.43, 1.3, 1.18, 1.07	7
Moderate	1.05 ≥ LVP ≥ 0.35	0.95, 0.83, 0.72, 0.61, 0.5, 0.39	6
Low	LVP ≤ 0.35	0.28, 0.17, 0.06, -0.05, -0.15, -0.26, -0.47, -0.57, -0.67, -0.78, -0.88	11

Table 4.12 presents the classification of student well-being based on person logit values (LVP), calculated using a mean of 0.86 and a standard deviation of 0.64. The data are grouped into four levels: Very High for LVP values above 1.50, High from 0.86 to 1.50, Moderate from 0.22 to 0.86, and Low for values at or below 0.22. Twelve LVP values fall in the very high category, ranging from 1.53 to 3.35. These indicate strong emotional well-being and a deep sense of engagement. The high group includes five values between 0.99 and 1.42, suggesting consistently positive states of adjustment. Seven values are found in

the moderate category, from 0.31 to 0.89. These reflect a more neutral sense of well-being that remains stable. In comparison, the low category holds the largest number of values, with fourteen ranging from 0.22 to negative 1.37, reflecting emotional vulnerability and a possible need for greater support. In sum, this distribution captures the diverse psychological experiences among students and highlights the importance of addressing well-being through responsive and inclusive school practices. To provide further insight into how student well-being varies across demographic groups, the following table summarizes the distribution of person logit measures by gender and age category. Table 4.13 presents the number of students within each well-being level, very high, high, moderate, and low, based on their logit value progression (LVP).

Table 4.13

Student Well-Being Person Measurements, Demography Data

Demography	**Very High (LVP > 1.75)**	**High (1.75 ≥ LVP ≥1.05)**	**Moderate (1.05 ≥ LVP ≥ 0.35)**	**Low (LVP ≤ 0.35)**
Gender				
Female	56	186	68	311
Male	52	127	43	251
Age				
<15 years old	-	-	-	3
15 years old	9	40	17	86
16 years old	48	143	54	260
17 years old	31	88	28	158
>17 years old	20	42	12	55
Class				
10	43	154	110	112
11	35	108	237	65
12	30	51	42	21
Organization Participated in				
1	77	100	86	407
2	21	35	18	113
3	6	7	6	25
>3	4	2	1	17
Extracurricular Participated in				
1	35	55	43	218
2	43	51	38	241
3	20	18	21	74
>3	10	20	9	29
Origin (Distance from School)				
Same Location (SL)	31	50	34	159
Different District (DD)	50	66	30	276

Demography	Very High (LVP > 1.75)	High (1.75 ≥ LVP ≥1.05)	Moderate (1.05 ≥ LVP ≥ 0.35)	Low (LVP ≤ 0.35)
Different Province (DP)	27	28	30	126
Different Country (DC)	-	-	-	1
School/Madrasah				
School A	12	8	12	22
School B	1	1	-	16
School C	16	30	19	83
School D	4	13	10	116
School E	7	4	4	32
School F	8	2	6	24
School G	2	8	4	16
School H	22	38	21	133
School I	7	21	22	81
School J	5	10	6	32
School K	5	9	7	7

Table 4.13 displays the demographic distribution of student well-being levels in Indonesian Islamic boarding schools. The classification is based on Rasch person measure scores, ranging from Very High for LVP above 1.50, High for scores between 1.50 and 0.86, Moderate for scores between 0.86 and 0.22, and Low for scores below 0.22. These categories reveal more than just statistical placement. They offer insight into how emotional well-being operates within the highly structured and immersive ecosystem of full-time boarding education.

Gender plays a notable role in shaping the variation of student well-being. Female students appear more frequently across all categories, particularly in the Very High and High levels. Interestingly, they also dominate the Moderate and Low categories, suggesting a wider emotional range. This is consistent with research highlighting that adolescent girls tend to experience and express emotions more intensely than boys (Allen et al., 2022). Their presence in both extremes may indicate stronger relational sensitivity that supports well-being in some cases, but also heightens vulnerability in others.

Age-based analysis reveals that most students are 16 years old, with a concentration largely in the Moderate category. This finding aligns with developmental theories that identify this age as a critical period of emotional and cognitive transition (Steinberg, 2019). Meanwhile, students aged 17 and older are more prominent in the High and Very High categories. This age group may benefit from deeper institutional familiarity, growing autonomy, and more developed emotional regulation. Emotional competence often strengthens with age and exposure to structured academic systems.

Grade level appears to follow a similar trajectory of adjustment and growth. Grade 10 students dominate numerically but are largely found in the Moderate band. Grade 11 students are more evenly distributed, showing signs of transitional adaptation. Interestingly, Grade 12 students, though fewer in number, show the highest concentration in the Very High and High categories. This supports the notion that time spent within the same boarding context contributes positively to emotional maturity and well-being (Eccles & Roeser, 2023).

Organizational involvement shows a meaningful association with well-being classification. Students participating in only one organization form the largest group overall, particularly in Moderate and High levels. However, those engaged in three organizations record a more noticeable presence in the Very High category. This pattern suggests that structured involvement enhances a sense of purpose and connection, especially when balanced appropriately (King and Froiland, 2020). The benefit plateaus or even declines for students involved in more than three organizations. The trend continues in extracurricular activities. Students involved in two or three activities show a higher presence in the High and Moderate categories. Some also appear in the Very High category, reinforcing that moderate engagement supports psychological well-being (Fredricks & Eccles, 2019). Yet when students exceed three extracurriculars, their visibility in the top levels declines. This indicates a tipping point, where over-involvement may begin to erode rather than enhance emotional stability.

Although all students live on campus, regional background still plays a role in their adaptation. Students from different districts or provinces are largely clustered in the Moderate and High categories. Their ability to integrate into the Islamic boarding schools environment suggests the school climate provides sufficient psychological safety. Those from nearby regions display a more even spread, possibly due to cultural familiarity. As Lester et al. (2021) argue, institutional support can buffer early stress and foster a shared sense of belonging regardless of origin. Moreover, school affiliation shows the clearest contrast in well-being levels. At school, I consistently lead with the highest number of students in the Very High and High categories. Schools D and C follow with comparable performance. In contrast, schools like B, E, and K have smaller representation in the upper levels. These differences imply that leadership, teacher relationships, and peer culture significantly predict students' psychological well-being (Jennings & Greenberg, 2019). The same boarding structure does not guarantee the same emotional outcomes.

Altogether, the demographic patterns in Table 4.16 suggest that student well-being in Islamic boarding schools is not determined by one factor alone. It is shaped by age, grade

level, social involvement, and institutional culture. Students with moderate yet meaningful engagement, greater maturity, and exposure to supportive school climates are more likely to flourish. These findings affirm the principles of self-determination theory, where autonomy, competence, and relatedness must be present for well-being to thrive (Ryan & Deci, 2017). Emotional health in Islamic boarding schools depends not only on personal traits but on the environment that surrounds them each day.

4.1.6 Teacher Empathy Person Measurement Demography Data

To further examine students' perceptions of teacher empathy, person logit measures from the Rasch analysis were grouped into four interpretive categories: low, moderate, high, and very high. These categories represent the progression of students' experiences in relation to their teachers' empathetic behaviors, ranging from low levels of perceived understanding and support to consistently high emotional attunement. This classification offers a clearer view of how empathy is distributed across the sample, allowing for a more nuanced interpretation of student-teacher relational dynamics. As presented in Table 4.14, each category includes the logit value progression (LVP) ranges along with the corresponding number of students in each level.

Table 4.14
TE LVP Threshold & Measures Category

Category	LVP Measures	Frequency
Very high	5.42, 4.92, 4.54, 4.21, 3.93, 3.66, 3.41, 3.18, 2.95, 2.74, 2.53	11
High	2.32, 2.12, 1.93, 1.74, 1.56, 1.39, 1.22	7
Moderate	1.06, 0.90, 0.75, 0.60, 0.45, 0.31, 0.17, 0.03, −0.10, −0.24	10
Low	−0.37, −0.50, −0.63, −0.76, −0.89, −1.03, −1.16, −1.29, −1.43, −1.56, −1.70, −1.84, −1.99, −2.29, −2.62, −2.98, −3.63, −3.89, −4.56	19

Table 4.14 presents the classification of student well-being levels derived from Rasch person measure scores (Logit Value of Person or LVP). The classification follows Rasch measurement principles, where the average person ability (M = 0.85) is used as the central reference. A standard distance of ±1.17 logits from the mean is applied to generate four interpretive categories: Very High for LVP greater than 2.02, High for LVP between 2.02 and 0.85, Moderate for LVP between 0.85 and –0.32, and Low for LVP less than or equal to –0.32. This approach reflects the person strata interpretation model suggested in Rasch analysis, which allows for meaningful group-level inferences based on logit positioning (Sumintono & Widhiarso, 2015).

The classification results show that 11 students are grouped in the Very High category, with LVP values ranging from 5.42 to 2.53. Seven students fall within the High category, scoring between 2.32 and 1.22. The Moderate category includes 10 students whose LVP values span from 1.06 to –0.24. Meanwhile, the largest group is found in the Low category, consisting of 19 students with scores between –0.37 and –4.56. In conclusion, Table 4.17 demonstrates that student well-being levels are not evenly distributed, with a greater concentration in the Low category. The application of Rasch thresholds confirms that while a small proportion of students' exhibit exceptionally high well-being. To further illustrate how students' perceptions of teacher empathy vary across demographic groups, particularly gender, the following table presents the distribution of person logit measures within each empathy category. Table 4.15 summarizes the number of male and female students classified into very high, high, moderate, and low levels of perceived teacher empathy based on their respective LVP ranges.

Table 4.15

Teacher Empathy Person Measurements Demography Data

Demography	**Very High (LVP > 1.50)**	**High (0.86 ≥ LVP ≥1.50)**	**Moderate (0.86 ≥ LVP ≥ 0.22)**	**Low (LVP ≤ 0.22)**
Gender				
Female	37	161	241	66
Male	26	115	205	45
Age				
<15 years old	-	1	2	-
15 years old	10	38	59	20
16 years old	25	122	227	16
17 years old	18	84	119	17
>17 years old	10	31	39	18
Class				
10	30	140	242	52
11	16	94	166	32
12	17	42	37	27

Demography	Very High (LVP > 1.50)	High (0.86 ≥ LVP ≥1.50)	Moderate (0.86 ≥ LVP ≥ 0.22)	Low (LVP ≤ 0.22)
Number of Participated Organizations				
1	48	216	299	97
2	11	56	96	11
3	2	2	33	2
>3	2	2	18	1
Number of Participated Extracurricular				
1	18	128	158	40
2	31	104	193	28
3	7	34	66	16
>3	7	10	29	27
Origin (Distance from School)				
Same Location (SL)	22	119	100	32
Different District (DD)	29	81	271	21
Different Province (DP)	12	76	74	58
Different Country (DC)	-	-	1	-
School/Madrasah				
School A	8	-	-	-
School B	-	6	-	-
School C	15	150	-	-
School D	5	120	25	-
School E	1	-	40	-
School F	1	-	32	-
School G	1	-	29	-
School H	14	-	217	-
School I	10	-	103	31
School J	4	-	-	53
School K	4	-	-	27

Table 4.15 provides a comprehensive demographic breakdown of students' perceived teacher empathy levels across four logit-based categories: very high, high, moderate, and low. The distribution is organized according to key background variables, including gender, age, class level, number of participating organizations and extracurricular activities, distance of origin from school, and individual school affiliation. From the data, female students are more represented in the very high and high empathy categories, while male students tend to be more concentrated in the moderate and low levels. Age-wise, students aged 16 and 17 constitute the largest portion of those perceiving teacher empathy at a high or moderate level. Participation in school organizations and extracurricular activities appears to correlate with higher perceived empathy; students engaged in more

than one activity are disproportionately represented in the upper empathy categories. Class level distribution shows that Grade 10 and 11 students dominate the moderate and high levels, while Grade 12 students are more scattered across all categories, possibly reflecting increased academic pressure. Additionally, students who live closer to school (same origin) tend to score higher on teacher empathy compared to those who come from different districts or provinces. A cross-school comparison further reveals institutional variation, with Schools D, G, and H showing higher concentrations of students in the high and very high categories.

In summary, the demographic analysis of teacher empathy perception highlights the interaction between individual, academic, and contextual factors. These findings reinforce the importance of responsive teaching practices that consider not only instructional delivery but also student background and involvement in school life. This section underscores how teacher empathy is experienced differently across diverse student groups, suggesting areas for targeted support and inclusive pedagogical development.

4.1.7 Peer Attachment Person Measurement Demography Data

To complement the item-level analysis of the Peer Attachment (PA) instrument, this section presents the distribution of person logit measures, which reflect students' levels of perceived peer attachment as estimated through the Rasch model. These person measures are grouped into four meaningful categories, low, moderate, high, and very high, based on their logit value progression (LVP). This classification provides a clearer picture of how students vary in their relational experiences within the academic boarding school context. As shown in Table 4.16, each category encompasses a specific logit range along with the corresponding frequency of students who fall within that band. This analysis enables further interpretation of peer attachment not only as a latent construct but also as a demographic indicator of socio-emotional variability across the sample.

Table 4.16

PA LVP Threshold & Measures Category

Category	LVP Measures	Frequency
Very high	6.48, 5.69, 5.20, 4.83, 4.53, 4.28, 4.05, 3.85, 3.66, 3.48	10
High	3.32, 3.15, 3.00, 2.84, 2.69, 2.54, 2.39, 2.24, 2.09, 1.94	10
Moderate	1.78, 1.63, 1.48, 1.32, 1.17, 1.01, 0.86, 0.72, 0.58, 0.44, 0.31, 0.18, 0.06, −0.06, −0.17	15
Low	−0.28, −0.39, −0.49, −0.59, −0.68, −0.77, −0.87,−0.95, −1.04, −1.13, −1.21, −1.30, −1.38, −1.55, −1.63,−1.72, −1.80, −2.06, −2.43, −2.53, −2.64, −2.99, −3.27	22

Table 4.16 displays the classification of peer attachment (PA) based on person logit values (LVP), using a mean of 1.30 and a standard deviation of 1.55. The classification yields four categories: Very High for LVP values above 2.85, High from 1.30 to 2.85, Moderate from –0.25 to 1.30, and Low for values at or below –0.25. This Rasch-based approach allows for a precise measurement of students' perceived emotional connection and trust in their peer relationships.

Ten LVP values fall into the very high category, ranging from 3.32 to 6.48. These values indicate deep peer attachment, marked by a strong sense of mutual care, security, and shared emotional support. Students within this group likely benefit from peer environments that foster open communication and belonging. Such attachments play a crucial role in adolescent development, as supported by Bowlby's theory and later research emphasizing the protective relationship of peer closeness on mental health.

The high category also contains ten LVP values, spanning from 1.94 to 3.32. These reflect stable peer bonds, suggesting that students feel connected and supported, though perhaps not as intensely as those in the very high group. Relationships in this category are likely dependable and emotionally available. These students may demonstrate greater resilience, particularly in navigating academic or social challenges.

Fifteen values are found in the moderate category, between 0.18 and 1.78. This range suggests a more neutral or inconsistent perception of peer attachment. Students here may experience positive relationships, but with varying levels of emotional safety or trust. While not at risk, they may require stronger peer engagement to maintain well-being and motivation in school settings.

The low category presents the largest number, with 22 values ranging from –0.28 to –3.27. These scores reflect weakened peer attachment, possibly shaped by feelings of exclusion, distrust, or lack of emotional closeness. Research has consistently linked low peer attachment with increased vulnerability to loneliness, anxiety, and disengagement (La Greca & Harrison, 2005; Allen et al., 2018). For these students, peer interactions may not serve as a reliable emotional buffer within the school context.

In sum, the distribution of peer attachment shows a wide disparity in students' experiences of connection. While some flourish within strong peer networks, others remain emotionally distant and unsupported. These findings highlight the importance of fostering peer-sensitive interventions that strengthen trust, empathy, and inclusion in everyday student interactions. To further illustrate how peer attachment levels vary across student demographics, the following table presents the distribution of person logit measures by gender, age, class level, organizational and extracurricular involvement, origin, and school affiliation. Table 4.17 summarizes the composition of students within each peer attachment category, very high, high, moderate, and low, providing a more contextualized understanding of relational dynamics in the boarding school environment.

Table 4.17

Peer Attachment Person Measurements, Demography Data

Demography	**Very High** (LVP > **2.85)**	**High (2.85 ≥ LVP ≥ 1.30)**	**Moderate (1.30 ≥ LVP ≥ −0.25)**	**Low (LVP ≤ −0.25)**
Gender				
Female	65	77	310	55
Male	34	62	228	65
Age				
<15 years old	-	-	1	2
15 years old	12	12	89	21
16 years old	41	65	239	62
17 years old	35	40	148	27
>17 years old	11	22	61	8
Class				
10	38	62	291	78
11	43	48	172	39
12	18	29	75	3
Number of Participating Organizations				
1	5	101	23	92
2	71	29	113	21
3	17	7	390	4
>3	6	2	12	3

Demography	Very High (LVP > 2.85)	High (2.85 ≥ LVP ≥ 1.30)	Moderate (1.30 ≥ LVP ≥ −0.25)	Low (LVP ≤ −0.25)
Number of Participated in Extracurricular				
1	41	47	199	53
2	39	62	220	48
3	14	14	79	14
>3	5	16	40	5
Origin (Distance from School)				
Same Location (SL)	35	37	160	38
Different District (DD)	35	77	259	60
Different Province (DP)	29	25	119	21
Different Country (DC)	-	-	-	8S
School/Madrasah				
School A	2	16	31	2
School B	-	1	10	6
School C	18	21	94	17
School D	26	17	83	19
School E	3	5	27	5
School F	4	3	20	5
School G	2	7	13	7
School H	28	38	121	30
School I	8	16	87	23
School J	2	11	34	6
School K	5	4	18	-

Table 4.18 shows how students perceive their peer attachment based on person logit values (LVP), classified using a mean of 1.30 and a standard deviation of 1.55. It divides students into four groups: very high (above 2.85), high (1.30 to 2.85), and moderate (–0.25 to 1.30), and low (at or below –0.25). Rather than labeling students as simply connected or isolated, this framework positions them along a calibrated continuum, revealing how deeply they feel accepted, trusted, and emotionally secure in their peer relationships.

Female students tend to report higher levels of peer attachment, with more in the very high category (65) compared to males (34). Although both genders mostly fall within the moderate group, male students show slightly more in the low category. This subtle gap may reflect gender differences in how emotional closeness is expressed or sought during adolescence. Girls, as supported by Rose and Rudolph (2006), often form more intimate dyadic friendships, while boys may engage in broader but less emotionally vulnerable peer interactions.

When examined by age, students aged 16 are the most dominant in both high and moderate categories. At this stage, peer connection becomes central to identity development, and students begin to rely more on friendships for emotional regulation and affirmation (Laursen & Collins, 2009). Meanwhile, students over 17 show a slight decline in the very high category, possibly due to shifting priorities toward exams or plans. Those under 15 are few and appear more in the low group, indicating that strong peer attachment may not yet have fully formed.

Class level mirrors these trends. Grade 10 students are concentrated in the moderate and low groups, perhaps reflecting early transition into senior high and ongoing adjustment to new peer networks. By grade 11, more students shift into the high and very high categories, possibly because friendships have deepened and stabilized. Grade 12 students show an even spread, which might represent both maturity and the emotional distancing that often comes with nearing the end of school life. Interestingly, very few of them report low peer attachment, suggesting emotional security in their final year.

Participation in organizations reveals another pattern. Students active in two organizations dominate the very high category, while those involved in only one report the highest numbers in the low group. It seems that limited involvement may mean fewer chances to bond meaningfully with peers outside class. On the other hand, students with three organizations are mostly in the moderate zone; perhaps they interact widely, but not always deeply. As Wentzel et al. (2020) highlight, social quantity does not always guarantee social quality.

The same pattern holds for extracurriculars. Those with one or two activities show stronger peer bonds, while more than three tend to correlate with moderate or low scores. Possibly, students involved in too many activities are spread too thin to invest emotionally. Or perhaps, the social dynamics in those groups are more functional than personal. Attachment, after all, is not about visibility, but about emotional presence.

Geographic origin adds nuance. Students from different districts dominate the high and moderate groups, showing that Islamic boarding schools may foster meaningful peer ties across regions. But those from the same location tend to fall more into the moderate zone, possibly because familiarity does not always equate to emotional depth. Students from other provinces are more evenly spread, while all international students fall into the low group. Although their number is small, this still signals a red flag; cross-cultural gaps may silently hinder emotional connection (Cheng & Mallinckrodt, 2018). School-based trends are equally telling. Madrasah H consistently leads in very high and high attachment, followed by Madrasah C and D. These schools may intentionally cultivate peer-centered

climates through routines, rituals, or embedded values. In contrast, smaller or less active schools show higher low-category counts. Institutional culture matters; a school's climate either nurtures trust or withholds it (Cefai et al., 2022).

In summary, most students fall within moderate and high peer attachment levels. However, a substantial number remain in the low group, often quietly. And this matters. Peer attachment is more than just friendship; it is a protective shield against anxiety, loneliness, and academic disengagement (Allen et al., 2018; Mikami et al., 2010). If schools seek to raise achievement, they must first nurture connection. Because no curriculum works well when students feel emotionally alone.

4.1.8 Correlation between Key Variables

This section presents the preliminary correlation analysis to explore the bivariate relationships among the key variables. The analysis focuses on how teacher empathy (TE), peer attachment (PA), and learning workload (LW) are associated with student well-being (SWB). As shown in Figure 4.9, all three variables demonstrate statistically significant correlations with SWB, indicating meaningful theoretical and empirical linkages.

Table 4.18

Correlation Result between Variables on Student Well-Being

Variables	1	2	3	4
SWB	-	0.446**	0.390**	-182**
TE	0.446**	-	-	-
PA	0.390**	-	-	-
LW	-182**	-	-	-

To provide a preliminary understanding of the linear relationships among key variables, Pearson product–moment correlation coefficients were computed between teacher empathy (TE), peer attachment (PA), learning workload (LW), and student well-being (SWB). As summarized in Table 4.18, teacher empathy was positively and significantly correlated with student well-being ($r = .446$, $p < .01$), as was peer attachment ($r = .390$, $p < .01$). Conversely, learning workload demonstrated a negative correlation with student well-being ($r = –.182$, $p < .01$). These coefficients indicate that higher levels of empathy perceived from teachers and stronger peer connections are associated with

enhanced student well-being, while greater perceived academic burden relates to lower well-being levels.

The decision to employ Pearson correlation at this stage serves two purposes: (1) it offers a concise statistical overview of direct linear associations between variables before testing directional models, and (2) it provides empirical evidence to support Hypothesis 2 (H2), which proposes that teacher empathy, peer attachment, and learning workload each correlate significantly with student well-being. Although this analysis does not establish causality, it affirms the foundational relational assumptions required for subsequent mediation modeling.

4.1.9 Parallel Mediation of TE on SWB through PA and LW

To investigate the general associations between TE and SWB, a parallel mediation analysis was conducted through two distinct mediators: PA and LW. This analysis utilized SPSS PROCESS Model 4 parallel mediation analysis. This model was tested on the full sample size of students (N=896). The stage aimed to explore whether students who perceived their teacher as empathetic also reported higher levels of well-being, and whether this association was channelled through their peer relationship and learning demands. Figure 4.9 summarizes the results of the model estimated across the total sample size.

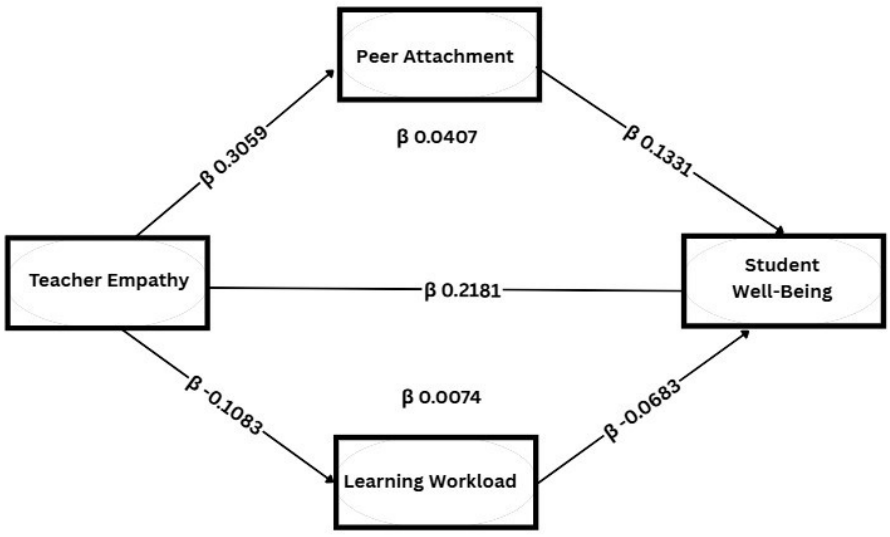

Figure 4.9
Parallel Mediation of TE on SWB through PA and LW

The findings presented in Figure 4.9 show the results of a parallel mediation model analysis. The direct relationship between TE and SWB revealed a strong and statistically significant coefficient (Estimate $\beta = 0.2181$, SE = .0173, CI [.1843, .2520], $p < .001$). This result underscores the critical role of teacher emotional attunement in fostering students' psychological functioning. When students perceive their teacher as empathetic, they are more likely to experience emotional safety and support. It can directly contribute to enhancing subjective well-being (Y. Gao et al., 2023). From the lens of positive education, such empathy serves not merely as an effective response but also as a pedagogical tool that nurtures student flourishing within a demanding learning context (Franzese, n.d.). It describes TE attunement function as a pedagogical catalyst that promotes students' psychological well-being and flourishing in challenging educational settings. (Zhang, 2022)

Beyond the direct mediation, TE also demonstrated an indirect pathway to SWB through PA, with a coefficient $\beta = 0.0407$ (SE = .0091, 95% CI [.0244, .0599]). This pathway highlights the ecological role of teacher behavior in shaping peer dynamics. When teachers exhibit empathetic behavior, it may foster a classroom ethos of care and mutual perfect, facilitating stronger peer bonds among students (Wang et al., 2022b). These interpersonal bonds serve as buffers against psychological distress, strengthening students' capacity for emotional regulation and social support (McManis-Ricker, 2022). The findings lend support to the idea that teacher empathy indirectly supports well-being by enhancing the social dimension of the school environment.

A second direct pathway was observed through LW. TE was negatively associated with LW ($\beta = -0.1083$, SE = .0355, $p = .0024$), LW was inversely related to SWB ($\beta = -0.0683$, SE = .0158, $p < .001$). This analysis resulted in a direct value of $\beta = 0.0074$ (SE = .0034, 95% CI [.0015, .0148]). This suggests that empathetic teachers may help alleviate students' academic burden, not necessarily by reducing tasks but by offering emotional reassurance and adaptive learning scaffolds. Students who experience a manageable workload are more likely to maintain a positive academic identity and emotional balance (Creed et al., 2023). Although the coefficient is modest, it reflects a psychologically meaningful dynamic in which perceived workload becomes more tolerable when mediated by empathetic attachment.

Furthermore, the total indirect relationship of TE with SWB, through the joint contributions of PA and LW, was $\beta = 0.0481$ (SE = .0098, 95% CI [.0301, .0684]). While the individual indirect pathways vary in strength, their cumulative function underscores that teacher empathy contributes to well-being through both relational and cognitive-

emotional mechanisms. The overall model accounted for 30.05% of the variance in SWB, F (3.892) = 127.75, p< .001, indicating robust explanatory power. These findings affirm that TE operates within a constellation of interrelated psychological and contextual factors that shape students' routine cognitive and emotional experience. (Chue et al., 2024; Seligman, 2018).

In sum, these insights reflect the integral role of TE in shaping both emotional and academic experiences among students. However, the dynamics of this mediation process may not be uniform across all student populations. To deepen the understanding of these psychological mechanisms, the following section compares how the mediation pathways manifest differently between female and male students.

4.1.10 The Moderated Parallel Mediation Model of Gender and Class Level-Based

To further explore potential demographic variation, the parallel mediation model was analysed separately for female (N=507) and male (N=389) students. Gender was selected as the primary grouping variable because it represented the most proportionally balanced demographic category in the datasets, allowing for a more stable and interpretable comparison. Besides, males and females often differ in how they experience and process relational support and academic stress, making gender a meaningful lens for understanding differential pathways (Asensio-Martínez et al., 2023). This particular-based analysis offers a nuanced understanding of how TE relates to SWB through interpersonal through PA and intrapersonal through LW by perceiving LW. Table 4.20 presents the comparison, revealing both shared and distinct mediation patterns across gender groups.

Table 4.20

Gender-Based Comparison of the Mediation of TE on SWB

Mediation Pathway	Female Students	Male Students	Interpretation
Direct (TE → SWB)	$\beta = 0.2499, p < .001$	$\beta = 0.1690, p < .001$	Stronger among female students
Indirect (PA) (TE → PA → SWB)	$\beta = 0.0198, p < .05$	$\beta = 0.0804, p < .001$	Stronger among male students

Mediation Pathway	Female Students	Male Students	Interpretation
Indirect (LW) (TE → LW → SWB)	β = 0.0084, $p < .05$	β = 0.0043, $p = .49$	Only significant among female students
Total Indirect Pathway	β = 0.0282, $p < .05$	β = 0.0847, $p < .001$	Larger total mediation among male students

Table 4.20 presents a gender-based analysis of the parallel mediation model based on SPSS PROCESS Model 4 multigroup of parallel mediation analysis. It reveals distinct relational pathways through which TE contributes to SWB. Among female students, the direct mediation of TE on SWB was stronger (β = 0.2499, $p < .001$) compared to male students (β = 0.1690, $p < .001$), indicating a stronger immediate emotional responsiveness. It means that females may be more emotionally attuned to empathic support, especially in contexts where teacher care extends beyond classroom interaction. In contrast, the indirect mediation via PA was more pronounced among male students (β = 0.0804, $p < .001$) than females (β = 0.0198, $p < .05$), highlighting the greater importance of social connectedness for males' well-being. Interestingly, the indirect path through LW was statistically significant only for females (β = 0.0084, $p < .05$), but not for males (β = 0.0043, $p = .49$). It suggests that TE may help reduce perceived academic strain for females, who frequently report higher internalized pressure. The total indirect mediation was greater among males (β = 0.0847, $p < .001$) compared to the female group (β = 0.0282, $p < .05$), pointing to gender-based variation in how TE is internalized through relational and academic domains. Together, these findings highlight the multidimensional role of empathy as a psychological resource, operating through both social bonds and workload perceptions in gender sensitive ways.

Furthermore, the comparison of the parallel mediation model across different class levels (Grades 10, 11, and 12) to explore potential variations in the strength of the direct and indirect relationships of teacher empathy on student well-being. The model examines peer attachment and learning workload as parallel mediators. By disaggregating the relationships by class level, this analysis provides insights into how students at different stages of academic and developmental maturity respond to empathetic teaching concerning their psychological well-being.

Table 4.21

Class-Level Comparison of the Mediation of TE on SWB

Class Level	Direct	Indirect PA	Indirect LW	Total value
Grade 10	0.1898	0.0407	0.0003	0.2308
Grade 11	0.2405	0.0262	0.0181	0.2848
Grade 12	0.2532	0.0522	-0.0053	0.3001

The moderated mediation analysis (Model 59) revealed distinctive patterns across grade levels regarding the relationship between teacher empathy (TE) and student well-being (SWB), mediated by peer attachment (PA) and learning workload (LW). For Grade 10 students, TE exhibited a moderate direct relationship on SWB ($\beta = 0.1898$, $p < .001$), while PA partially mediated this relationship ($\beta = 0.0407$, 95% CI [0.0175, 0.0670]). The indirect relationship through LW was negligible and non-significant ($\beta = 0.0003$, 95% CI [-0.0057, 0.0068]), suggesting that learning workload did not play a substantial mediating role at this level. Among Grade 11 students, the direct relationship of TE strengthened significantly ($\beta = 0.2405$, $p < .001$), and both PA ($\beta = 0.0262$) and LW ($\beta = 0.0181$) functioned as positive mediators, though the mediation through PA was marginal (*95% CI* included zero). The significant LW mediation pathway indicated that TE helped reduce learning burdens, thereby enhancing well-being in this group.

For Grade 12 students, TE demonstrated the strongest total correlation ($\beta = 0.2532$, $p < .001$). The mediation through PA was the most substantial ($\beta = 0.0522$, 95% CI [0.0089, 0.1201]), while the pathway through LW turned negative and non-significant ($\beta = -0.0053$, 95% CI [-0.0384, 0.0148]), implying a potential inverse correlation to academic workload on student well-being in higher grades. Overall, these findings underscore the dynamic role of class level in moderating the direct and indirect pathways between teacher empathy and student well-being. Peer attachment consistently served as a significant mediator across grades, while the relationship of learning workload varied, positive in Grade 11, negligible in Grade 10, and potentially adverse in Grade 12.

To provide a visual synthesis of the patterns identified across gender and class levels, Figure 4.10 provides a visual of the associations between teacher empathy and student well-being across gender and class levels. It illustrates how these relationships are shaped by the inclusion of peer attachment and learning workload as parallel pathways.

The figure also highlights that gender and class level interact differently within each pathway, indicating nuanced patterns across student subgroups.

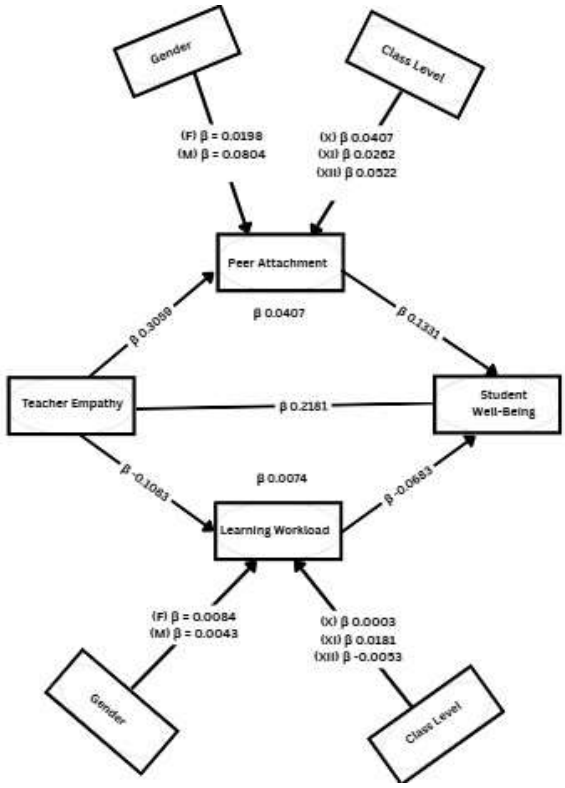

Figure 4.10

The Moderated Mediation Model among Variables

The model indicates that teacher empathy maintains a consistent and significant association with student well-being across demographic subgroups. When students perceive their teachers as understanding and emotionally responsive, they tend to report better psychological functioning regardless of gender or grade level. The direct pathways from teacher empathy to student well-being show a higher coefficient than the indirect pathways. However, both indirect pathways are statistically significant, indicating that the relationship between teache empathy and student well-being is also expressed through peer attachment and learning workload. Peer attachment stands out as a stable mediator, reinforcing the notion that supportive peer relationships are a dependable source of emotional adjustment and social belonging in Islamic boarding school contexts. The mediating role of learning workload is more variable, stronger in grade 11, weaker in grade

10, and absent in grade 12. It suggests the perceptions of learning demands vary with developmental stage and grade transitions. These results show that while the direct pathway is more prominent, relational and academic experiences provide additional routes through which teacher empathy is connected to student well-being. From a theoretical perspective, these findings align with the PERMA framework by illustrating how positive relationships and a balanced sense of accomplishment jointly contribute to flourishing in high-demand educational environments.

4.2 Discussion

This section presents the major findings of the study in the context of existing theories and prior empirical research. The discussion is structured according to each research question and key construct, highlighting their statistical patterns and theoretical implications. The first subsection focuses on the levels of teacher empathy, peer attachment, learning workload, and student well-being as experienced by students in Islamic boarding schools.

4.2.1 Levels of Teacher Empathy, Peer Attachment, Learning Workload, and Student Well-Being among Students in Islamic Boarding Schools

Descriptive analysis of Rasch person measurement shows different levels in all four variables: student well-being, teacher empathy, peer attachment, and learning workload. There was a relatively positive pattern of student well-being, with most of the students in the moderate to high levels of well-being. This implies that the majority of the students subjected to Islamic boarding schools experience a stable sense of emotional functioning and purpose. The findings align with the PERMA framework (Seligman, 2018). It conceptualizes well-being not as the absence of distress, but as the presence of positive emotions, engagement, relationships, meaning, and accomplishment (Butler & Kern, 2016).

The Rasch person measurement analysis showed that students generally reported average to above-average levels, despite marked variations in their perceived learning workload. These patterns suggest that many students in these boarding schools settings maintain a steadt sense of emotional functioning and purpose even amid challenging academic environments. Such multidimensional of PERMA framework perspective underscores the importance of fostering balanced academic and psychosocial support systems to enhance students' holistic development in high pressure educational system environment.

The results align with previous studies suggesting that academic demands can contribute to emotional fatigue and reduced life satisfaction among students (Fangyan Chen et al., 2025). They further corroborate recent evidence showing that students can maintain stable well-being in high-pressure environments when supported by strong social and institutional networks (Franck et al., 2020). Relative to non-boarding schools, well-being among boarding students appeared more stable, likely reflecting the influence of structured daily routines and shared communal norms (Badrun, 2024; Central Queensland University et al., 2021). Within the socio-cultural setting of Islamic schools, student well-being is shaped not only by academic performance but also by spiritual practice, ethical guidance, and collective harmony, which are central to Islamic educational values (Huda & Slamet, 2024; Rahtikawatie et al., 2021). This integration of relational and moral dimensions highlights the critical role of teacher empathy in sustaining well-being, emphasizing the need to explore how empathy is perceived and enacted in the boarding school context (Rizkyanti et al., 2025)

The distribution of teacher empathy shows a positive trend because many students experience moderate to high levels of perceived empathy from their teachers. The Indonesian Islamic secondary boarding schools system values teacher-student relationships through their dual roles of educational instruction and emotional and moral guidance. The Rasch person measurement results indicated that affective empathy items, describing warmth, encouragement, and care, were strongly endorsed. In contrast, cognitively demanding empathy items, which required complex problem analysis or targeted interventions, were more difficult for students to rate. The findings reveal that students experience relational support more easily than they do emotionally intense or problem-centered interventions

These findings resonated with the research by Wan et al. (2023), who show that emotionally attuned teachers create psychological safety for students, yet the level of empathy students experience depends on teacher workload and class size, and cultural expectations. The association between teacher empathy and student outcomes. While empathy theoretically supports quality teacher–student interactions, most empirical studies rely on self-reported measures rather than objective assessments, highlighting a gap in current research (Aldrup et al., 2022). It also aligns with the study by Zhang (2022), who found that EFL learners found that teacher empathy positively influenced students' engagement, confidence, motivation**,** and stress reduction, highlighting tangible benefits of empathetic teaching practices. Similarly, research on inclusive education in Italy revealed that higher teacher empathy was associated with greater perceived self-efficacy in inclusive

teaching, particularly when teachers also possessed high emotional self-efficacy, underscoring that empathy must be supported by emotional regulation skills (Graziano et al., 2024a). Collectively, these studies affirm the multifaceted role of empathy in fostering both academic and emotional outcomes, providing an empirical foundation for interpreting its significance in the boarding school context.

In this school's context, teachers play many roles to reinforce the cultural emphasis on affective warmth as a valued form of empathy. Teachers with emotionally attuned tend to be capable of creating psychological safety and relational resilience, although perceptions may vary depending on school constraints such as workload, class size, and communal expectations. In madrasahs, affective empathy aligns with shared values that prioritize harmony, moral guidance, and mutual respect between teachers and students. Nevertheless, focusing primarily on warmth may constrain opportunities for more in-depth, problem-focused conversations that tackle complex academic or personal issues. These interactions not only associate the quality and utilize peer attachments as an additional source of socio-emotional support in the boarding school setting.

Peer attachment emerged as the highest-scoring variable, with many students reporting strong emotional bonds with their peers. This reflects the centrality of peer relationships in residential school life, where shared experiences often substitute for familial presence. The Rasch-based distribution across the trust, communication, and alienation dimensions indicated that while some trust-related items were moderately difficult to endorse, most students reported open peer communication and low levels of alienation.

These findings are consistent with Bowlby's attachement theory, which posits that adolescent wellbeing is shaped significantly by the quality of close relationships (Li et al., 2025). Secure and strong peer attachments offer adolescents emotional reassurance, a sense of belonging, and interpersonal stability necessary for navigating development challenges. In boarding school settings, students live physically apart from their families. Under such conditions, peer relationships become the primary relational anchor. They take on many functions that are typically fulfilled by parents of siblings. Evidence from collectivist educational contexts shows a similar protective role by strengthening emotional resilience and sustaining motivation for learning engagement (Schoeps et al., 2020). Peer groups also act as cooperative networks. They offer practical assistance, such as the exchange of learning materials, and provide emotional reassurance during stressful periods. This study further shows that gendered patterns predict the way peer attachment develops. Male students often establish closeness through collaborative learning tasks, problem-solving,

and leadership activities that reinforce social standing. Conversely, female students rely more on emotional disclosure, empathetic listening, and mutual support to build relational intimacy and trust (Graziano et al., 2024a). Thus, these cultural dynamics highlight that peer attachment serves as a critical resource. It supports both emotional well-being and academic achievement in the boarding school environment.

In the socio-cultural framework of Islamic boarding schools, positive peer attachment serves as both a psychological buffer against academic stress and a motivator for social and academic participation. Peer groups often function as an informal support system. It offers companionship and facilitates collective coping strategies during periods of intense study or high-stakes examinations. Shared routines, such as group study, religious activities, organizations, and communal living, strengthen these bonds, fostering a culture of mutual assistance, accountability, and resilience. These relational synamics within peer groups complement teacher-student interactions, forming the interpersonal foundation of student well-being in the boarding school environment. However, while strong peer attachment may help students navigate learning challenges, the intensity and structure of learning workloads in these boarding schools.

According to the Rasch person measurement analysis, significant variation in students' perceived learning workload, with responses clustering into two main perceptions: manageable or overwhelming. The classification indicated that most students fell into the high and very high workload categories. It was reflecting the coexistence of rigorous academic demands with the structures of daily routine, religious activities, and extracurricular activities characteristic of this school's context. This pattern suggests that many students with academic responsibilities extend beyond standard classroom requirements into a fully scheduled residential environment, leaving limited discretionary time.

These results align with prior research showing that prolonged high academic pressure is connected to emotional exhaustion, lower motivation, and reduced overall life satisfaction (Chongchong & Bikar Singh, 2024; F. Handayani et al., 2024). Studies in Indonesian boarding schools also found that heavy learning workloads may cause burnout, but social support from teachers and peers can lessen this effect (Mudzkiyyah et al., 2022; Silke et al., 2024). Some students in these settings still maintain high well-being despite intense workloads. This suggests that factors such as emotional support, effective time management, and cultural values that view hard work as personal growth help build resilience. The findings highlight the importance of looking at both the amount of learning workload and the quality of support surrounding students. Studies also show that having

control over workload and engaging in meaningful learning can reduce the negative relationships of learning pressures (Jiang et al., 2022).

Finally, school-level programs, such as peer mentoring or teacher-led study groups, can turn heavy workloads from a source of stress into opportunities for collaborative achievement. Even a modest change in students' perceptions of learning workload can cumulatively enhance their engagement, motivation, and ability to cope with stressors. The role of teacher empathy becomes critical in buffering the psychological strain associated with these demands while students face the rigorous workload. Students who experience emotional support, understanding, and encouragement from teachers are more likely to reframe challenging academic tasks as opportunities for personal growth rather than sources of distress. This cognitive reappraisal process aligns with academic resilience theory, which highlights how interpersonal warmth fosters adaptive coping mechanism in response to cognitive challenges (T. Handayani et al., 2023).

In sum, although the mediating relationship of learning workload is less pronounced than peer attachment, it remains a crucial component in understanding student well-being. Teacher empathy plays an important indirect role by influencing how students perceive and amanag their academic demands. The results underscore the essential of implementing emotionally responsive teaching approaches, especially in academically rigorous and residential school environments where workload pressures are persistent and multifaceted.

4.2.2 The Predictive relationships of Teacher Empathy, Peer Attachment, and Learning Workload toward Student Well-Being

The correlation analysis demonstrated significant relationships among all primary variables. This results confirms the interrelated nature of teacher empathy, peer attachment, learning workload, and student well-being. As predicted by frameworks in positive education, student well-being showed positive correlations with teacher empathy and peer attachment, and a negative correlation with learning workload. The overall pattern indicates that student well-being is shaped by the joint association of emotional support, relational connectedness, and the academic demands present in their learning environment (Chue et al., 2024; Seligman, 2018).

The analysis identified the strongest positive correlation between teacher empathy and student well-being ($r = 0.446$, $p < 0.01$). This result indicates that students who perceive their teachers as empathetic are more likely to report higher levels of subjective well-being.

Teacher empathy involves emotional sensitivity, responsiveness, and genuine care. These elements foster psychological safety and help students manage learning stress with greater resilience. The finding emphasizes that supportive teacher-student relationships serve as affective scaffolds that sustain motivation and encourage adaptive coping (Jennings & Greenberg, 2009; Silke et al., 2024). Moreover, teacher empathy predicts academic engagement and emotional regulation, especially in demanding learning environments (Spilt & Koomen, 2022). In Islamic boarding schools, where academic, extracurricular, and personal domains overlap in daily life, the continuous presence of empathetic teacher behaviors amplifies their impact on belonging and emotional security.

Beyond its direct emotional relationship, teacher empathy in Islamic boarding schools operates within a socio-sultural framework that positions teachers as both teachers and moral-spiritual guides. This dual role highlights the essential of warmth and guidance, consistent with cultural expectations of respect, trust, and collective harmony. Such relationships provide not only comfort but also behavioral models. They encourage students to practice empathy with their peers and to engage in reciprocal support. As trust in teachers grows, students are more inclined to adopt these prosocial behaviors within peer groups. This process strengthens peer attachment and adds another relational resource that enhances overall well-being.

A positive correlation was observed between peer attachment and student well-being ($r + 0.390$, $p < 0.01$), indicating that students with strong emotional connections to their peers tend to report higher well-being. This association reflects the role of peer relationships as a source of both emotional reassurance and academic encouragement in the boarding school context (Mudzkiyyah et al., 2022). This attachment alongside academic self-efficacy, accounts for more than 52% of the variances in school well-being among Islamic boarding schools students. These results underscore the central role of peer attachment in fostering psychological resilience and sustaining student engagement.

This result is consistent with Bowlby's attachment theory and its adolescent-focused extensions. The framework emphasizes that secure peer relationships are fundamental for emotional regulation, identity development, and academic motivation (Schoeps et al., 2020). In the context of residential schools, peer support also plays a central role in reducing stress and maintaining engagement in demanding academic environments (Oktia, 2022; Zhong et al., 2024). These dynamics are especially evident in Islamic boarding schools. In such contexts, peers frequently serve as surrogate family members, providing companionship and practical assistance in managing daily responsibilities. Upper secondary students embedded in dysfunctional peer networks were more susceptible

to disengagement and academic burnout, highlighting the importance of supportive peer connection (Tikkanen et al., 2024). Similarly, residential schools without strong peer support tend to experience declines in students' affective and attitudinal development (Zhong et al., 2024). These findings suggest that robust peer attachment functions as a protective factor against risks inherent in boarding environments. Evidence from both theory and study indicates that peer attachment is a critical determinant of adolescent well-being. Its protective correlation is particularly vital in residential and high-demand academic contexts such as Islamic boarding schools. This perspective provides a foundation for examining how structural academic factors, especially learning workload, interact with these relational supports.

In the cultural context of Islamic boarding schools, peers serve not merely as classmates but as familial figures providing emotional support, companionship, and mutual accountability. These bonds reinforce communal values, promote collective resilience, and underpin adaptive coping, especially during academic challenges. This sense of mutual reliance strengthens emotional stability and enhances students' ability to manage stress. However, while peer attachment buffers against academic stress, the demanding workload characteristic of boarding school life remains a distinct and significant factor affecting student well-being.

Furthermore, learning workload demonstrated a negative correlation with student well-being ($r = -0.182$, $p < 0.01$). This finding indicates that heavier academic demands are connected with the lower levels of reported well-being. Although the effect size is smaller than those observed for relational factors such as peer attachment and teacher eampathy, the result remains statistically significant. The evidence highlights the influence of cognitive load and perceived task pressure in undermining students' emotional health. It also suggests that, beyond the availability of social support, the volume and intensity of academic work can independently reduce students' sense of well-being.

This pattern is identified excessive academic demands as a significant driver of burnout and reduced life satisfaction in competitive learning environment (Karma et al., 2021). Sustaines exposure to high cognitive and emotional demands may dpelete coping resources, resulting in adverse psychological outcome (Azizova et al., 2025). Prolonged academic pressure also elevates stress levels and diminishes motivation, further compromising emotional well-being (T. Handayani et al., 2023). Heavy learning workload frequently trigger academic fatigue and psychological distress, reflecting the demanding conditions faced by students in such context (Karma et al., 2021). However, study also indicates that strong social support from teachers and peers can buffer these negative

correlations (Martinsone & Žydžiūnaite, 2023). Therefore, relational networks function as protective mechanisms that help moderate the relationship of rigorous academic requirements (Cheng & Lin, 2023). As a whole, these studies illustrate a complex interaction between workload and well-being, where the negative consequences of academic pressure can be softened by emotional and social resource. Strengthening support systems thus emerges as a crucial intervention for fostering student resilience in demanding educational environments.

In Indonesian Islamic boarding schools, heavy academic workload is often perceived not just as pressure but as part of a formative journey that builds resilience and discipline (Santoso et al., 2023). This cultural mindset frames challenges as shared experiences, strengthening students' collective identity and encouraging mutual support (Wijaya & Prasetyo, 2024). Empathetic teachers and close peer bonds play a crucial role in helping students reinterpret workload as manageable and meaningful rather than overwhelming (Hidayati et al., 2024). Consequently, future studies should explore how these boarding school cultural practices interact with workload to support student well-being and adaptive coping (Rahmawati & Sari, 2023).

In summary, the study demonstrates the interrelated relationships of teacher empathy, peer attachment, and learning workload on student well-being in Indonesian Islamic boarding schools. Teacher empathy and peer attachment operate as a central relational resource that strengthen emotional resilience and cultivate a sense of belonging, these supportive connections make a significant contribution to psychological health and help students cope more effectively woth stress. Conversely, learning workload shows a negative association with well-being, reflecting the strain of cognitive and emotional demands. At the same time, within the cultural context of boarding schools, workload may also be viewed as a developmental challenge that fosters discipline and personal growth. Overall, the findings emphasize the need to address both relational and academic deimensions in order to provide comprehensive support for student well-being.

4.2.3 The Mediating Role of Peer Attachment in the Relationship between Teacher Empathy and Student Well-Being

The mediation analysis confirmed that peer attachment significantly mediates the relationship between teacher empathy (TE) and student well-being (SWB), with a positive indirect relationship ($\beta = 0.0407$, SE = 0.0091, 95% CI [.0244, .0599]). This result emphasizes that empathetic teachers do not merely affect students directly but also shape

the broader interpersonal environment in which peer relationships develop. In Islamic boarding school contexts, where students live and learn together intensively, these peer dynamics are central to daily emotional regulation and overall well-being. When teachers demonstrate emotional attunement through calm presence, validating responses, or genuine care, they model relational scripts that students internalize. These patterns are then replicated in peer networks, leading to stronger attachment marked by trust, mutual support, and reduced alienation.

The process aligns with Bronfenbrenner's ecological systems theory, which highlights how proximal adult relationships, such as those between teachers and students, influence the structure and quality of peer microsystems over time (Bronfenbrenner & Morris, 2006). This theory has been widely used to explain how supportive adults indirectly shape adolescent social environments and developmental outcomes (Collins & Laursen, 2022). In Indonesian Islamic boarding schools, this influence is particularly strong because relational warmth includes not only pedagogical support but also spiritual guidance and cultural values (Santoso et al., 2023). Rizkyanti et al. (2025) similarly found that teacher empathy in Islamic-based education acts as an emotional norm that students internalize and replicate in their peer interactions. Rather than overt emotional expression, empathy is often conveyed subtly through quiet presence and consistent moral behavior. This subtle transmission fosters emotional safety and strengthens collective belonging among students.

In contrast to Western educational systems, where empathy is often displayed in explicit forms, expressions of empathy in these Islamic boarding school settings tend to be more subtle and affective. They are communicated through calm presence, consistent moral conduct, and non-verbal affirmation (Rizkyanti et al., 2025). Such practices gradually shape the peer climate. They create emotional safety and strengthen a sense of collective belonging. This atmosphere, in turn, contributes to the enhancement of student well-being. Comparable patterns have been identified in other collectivist settings, such as in Japanese and Korean schools, where indirect communication styles and implicit emotional support play key roles in sustaining group harmony and psychological health among students (Kim & Park, 2021; Lee et al., 2022). Thus, the cultural context shapes not only how empathy is expressed but also how it influences peer relationships and well-being, highlighting the importance of culturally sensitive approaches to social-emotional learning.

In sum, the mediating pathway aligns with social-emotional learning studies because it shows how bonding functions peer as a psychological shield that protects students against academic stress and emotional withdrawal (Taylor et al., 2017). The TE to SWB indirect relationship through PA indicates that teacher empathy strengthens both

students' emotional abilities and their ability to draw support from their peers. The mechanism becomes more effective because boarding school students experience heightened importance of friendships since their families are absent. Peer attachment creates a vital social network that converts teacher empathy into lasting emotional support for students. The concept of well-being encompasses both individual psychological states and social relationship outcomes. Teacher empathy development among educators leads to enhanced peer connections, which subsequently support student success in Islamic boarding schools.

4.2.4 The Mediating Role of Learning Workload in the Relationship between Teacher Empathy and Student Well-Being

The analysis also identified learning workload (LW) as a statistically significant mediator in the relationship between teacher empathy (TE) and student well-being (SWB), albeit with a smaller value size ($\beta = 0.0074$, SE = 0.0034, 95% CI [.0015, .0148]). While the magnitude of this pathway was modest compared to peer attachment, its significance underscores the relevance of academic pressure as an emotional construct that is correlated with interpersonal factors, particularly teacher behavior. These statistical analyses showed the empathetic teachers appear to reduce the perceived burden of academic demands, not necessarily by changing the volume of tasks, but by altering how those tasks are experienced. Through scaffolding, motivational support, and emotionally responsive teaching, empathetic educators can help students reframe their workload as manageable and meaningful. This finding supports the perspective that students' perceptions of academic strain are not purely cognitive, but also shaped by affective and relational experiences (Creed et al., 2023).

The finding adds a culturally specific nuance to our understanding of workload perception. In the context of Indonesian Islamic boarding schools, where discipline and religious commitment are emphasized, students may internalize effort as a moral obligation. Yet without empathetic reinforcement from teachers, this obligation can become overwhelming (Rizkyanti et al., 2025). Students in Islamic-based environments are particularly responsive to emotional regulation cues from adult figures; when these cues are absent, workload may feel burdensome, even when objectively reasonable. This aligns with the argument that negative emotions, such as anxiety or lack of perceived support, can increase extraneous cognitive load, impairing learning efficiency and academic attainment (Atiomo, 2020). Perceived stress in college students has been found to be strongly

associated with poorer physical and mental health outcomes, regardless of objective workload, suggesting that perception and emotional state mediate the impact of workload (Koch, 2018).

Moreover, studies in Indonesian universities similarly report that high academic loads frequently trigger anxiety, sleep disturbances, and mental fatigue, even in students accustomed to rigorous study schedules (Telaumbanua et al., 2024). Research in other contexts confirms that subjective perceptions of workload, rather than objective measures, often predict stress levels and well-being outcomes, with supportive teacher, student relationships acting as a protective factor (Azizova et al., 2025). Additionally, mechanisms such as reduced self-regulation, lower positive affect, and increased rumination mediate the link between academic stress and decreased subjective well-being (Zhang, 2022). Overall, these studies suggest that while cultural framing of effort as moral duty may buffer some stress, without parallel emotional support, it risks replicating the same stress-related declines in well-being documented in diverse educational settings.

In the cultural context of Islamic boarding schools, the indirect mediating effect of learning workload (LW) on the relationship between teacher empathy (TE) and student well-being (SWB) is weaker compared to the pathway through peer attachment (PA). This indicates that relational factors, particularly peer bonding, play a more substantial role in supporting student well-being than the cognitive-affective appraisal of academic demands. Nevertheless, the presence of the LW pathway confirms that teacher empathy influences student well-being through multiple channels, both emotional and academic. Addressing both the emotional and cognitive aspects of student experience is essential to fostering resilience and sustained engagement. Ultimately, supportive teacher-student relationships can transform academic challenges into opportunities for growth and well-being.

4.2.5 The Moderating Role of Gender in the relationship of Teacher Empathy on Peer Attachment and Learning Workload

The moderation analysis demonstrated that the role of gender plays a nuanced and significant factor that associates the relationship beatween teacher empathy and predicts students' social and academic experiences of students is subtle and meaningful. Although the trends observed are quite similar in the two genders, the magnitude and intensity of the correlations visibly vary between male and female students. Such a difference means that students of both genders can perceive and react to educator empathy in rather distinct emotional and cognitive terms. These responses are probably intervented by gendered

norms of how to express emotions and be sensitive. Female students are typically more receptive to the signals of relationships, and male reactions are typically more inhibited or behaviorally expressed. In addition, academic and cognitive stress framing may differ between the genders. It determined the resources students use to perceive and respond to learning workload stressors with the addition of empathetic teacher support.

Among female students, the relationship between teacher empathy and peer attachment is more robust. It shows that the behaviors of empathetic teachers are more effective at enhancing a stronger attachment of peers in this population (Graziano et al., 2024a). The developmental study consistently confirms that adolescent females are more susceptible to interpersonal communication intimacy and are more sensitive to interpersonal signs by an authority figure (Costello et al., 2024). They will replicate this behavior in their relationships with peers when teachers foster such settings and environments that are emotionally supportive, thereby leading to climates based on trust, openness, and care (Meyers et al., 2019). Within the collectivist cultural settings, they are interconnected to developed well-being and greater social resilience (J.-L. Gao et al., 2021).

On the other hand, empathic teacher behaviors also positively predict among male students. However, the reacher empathy and peer attachment relationships are not as conspicuous and are more behavioral. Such a difference is consistent with evidence that males at collectivist or religious schools tend to demonstrate loyalty and related feelings in terms of behavior rather than revealing emotions (Masanet-Ripoll et al., 2024). The described tendencies have been identified in other collectivist cultures, where males are more likely to build peer bonds due to participating in shared activities and unsaid support instead of communicating verbally or expressing emotions (Kim & Park, 2021; Matsumoto et al., 2023). These gender differences are indicative of the significance of culturally appropriate methods to evaluate emotional and social attachment within an educational setting. (Graziano et al., 2024b).

The moderation of gender also appears clearly in the relationship between teacher empathy (TE) and learning workload (LW). Among female students, the inverse relationship is stronger, indicating that empathetic teacher behaviors, such as clear instructions, emotional support, and patient feedback, help female students manage academic stress better and perceive their workload as less burdensome (Smith & Nguyen, 2021; Hasanah et al., 2023). This suggests that female students' perceptions of workload are more responsive to the emotional quality of teacher-student interactions, consistent with findings that females engage more in affective appraisal of academic demands (Kwon & Lee, 2022). Conversely, male students tend to appraise workload based more on concrete

factors like task difficulty and time limits, with teacher empathy playing a less prominent role in shaping these perceptions (Kim & Park, 2020; Ahmad & Fatimah, 2024). This aligns with previous research indicating that male students rely more on external, structural cues when coping with academic pressure (Lopez et al., 2022).

This pattern indicates the fact that empathy in teachers is connected with the experiences of students in their gender-specific emotional and cognitive levels. The view of female students on learning workload is directly related to emotional support and relations in trust, whereas male students focus on more substantial, organizational dimensions of assessing learning workload (Chen et al., 2023). Gender separate residential and social spaces in this Islamic boarding school context contribute to such dissimilarities of feelings, expression, and the evaluation of workload (Rizkyanti et al., 2025). These social norms define distinct expectations that cause male and female students to have diverse perceptions and reactions towards the needs of learning and the behavior of the teachers.

An appreciation of these gender differences is needed in order to design pedagogical intervention strategies. Creating a gender-sensitive perspective of empathy in teaching can promote equal development of emotions and achievement in various groups of students. The practices of empathy and compassion should be adapted according to the specifics of the coping style and needs of both male and female students in the Islamic boarding school. So, the communication between teachers and students would serve as a meaningful experience (Martinsone & Žydžiūnaite, 2023; Maryati, 2023). Finally, cultural and gender responsiveness is the most appropriate way of reducing academic pressure and enhancing student well-being within chlallenging boarding school settings.

4.2.6 The Moderating Role of Class Level in the Relationship of Teacher Empathy toward Peer Attachment and Learning Workload

The present study confirms that teacher empathy (TE) plays a significant role in fostering student well-being (SWB) in Indonesian Islamic secondary boarding schools. This relationship occurs not only directly but also indirectly through peer attachment (PA) and learning workload (LW), with class level serving as a significant moderator for several of these paths. The results reaffirm the core tenets of the PERMA model (Seligman, 2018), particularly in how relationships and engagement shape the broader experience of student flourishing. However, the magnitude and nature of these relationships shift across grade levels, offering important developmental insights.

Among grade 10 students, TE exerted a moderate direct impact on SWB. PA functioned as a partial mediator, while LW showed a negligible relationship in this subgroup. This pattern suggests that for students in earlier adolescence, emotional resonance with teachers enhances well-being primarily by improving peer relational quality. Zeng et al. (2021) found similar patterns, where younger students relied heavily on emotional scaffolding from adults to navigate social belonging, especially in tightly structured environments like Islamic boarding schools. In grade 11, TE had a stronger direct relationship on SWB. Both PA and LW also mediated the pathway positively. This stage may reflect a transitional point where students are more developmentally equipped to translate teacher empathy into both social and academic regulation. The finding aligns with Chiu et al. (2022), who emphasize that mid-adolescents increasingly seek autonomy but remain sensitive to relational cues that can stimulate workload tolerance. It suggests that empathetic responses from teachers in this stage may empower students to form healthier peer bonds while also buffering academic stressors. The model revealed that grade 12 students experienced the strongest total predictions. TE showed a robust relationship on both PA and SWB, while LW had a suppressing relationship. These seniors, likely facing the highest academic pressure, are more reactive to both positive and negative school-based stimuli. Wang and Chen (2020) highlight that in high-performing contexts, cognitive and emotional demands often peak, and unless adequately managed, workload can reduce well-being despite high relational support. The moderation pattern indicates that empathy's protective value must be complemented with systemic workload adjustments for this age group.

The differential patterns observed across class levels reflect the developmental principles underlying the PERMA framework, which emphasizes that components such as positive emotion, engagement, and meaning interact with age-related psychological needs (Chaves et al., 2023). Teacher empathy (TE) supports these components but is filtered through the evolving social and cognitive demands unique to each stage of adolescence. For younger students, stronger mediation by peer attachment (PA) suggests that relational bonds play a central role in their well-being, as social belonging and emotional security are critical developmental tasks at this stage (Schoeps et al., 2020). On the other hand, the growing sihnificance of learning workload in the higher grades students suggest that due to the maturity of students, the cognitive challenges and academic stress are becoming dominant factors that touch their well-being. This transition highlight the essential of teachers readjusting themselves in terms of providing support to align the developmental

processes of students in this particular school context where holistic growth and intensive academic poses a distinctive challenge.

These empirical findings are significant in the context of adapting the empathetic teaching practices within the context. They should consider empathy not only as a fixed personal characteristic but also as an adaptive dynamic pedagogical ability following different types of learners and developmental contexts (Zhang, 2022). This adaptive approach is especially important in the school of a religious-based educational system, where the moral education, cognitive development, and socialization are interwined. Teachers are also invited to regulate their emotions and workload pressures based on the psychological and social needs of each level. By tailoring empathy-driven interventions, positive education programs have the potential to become more sensitive, efficient, and able to promote sustainable well-being enhancement.

CHAPTER V
CONCLUSION & RECOMMENDATION

The present final chapter provides a representative conclusion to the study, bringing in the conceptual basis of the study along with the empirical findings and situational contribution. This study is concerned with the intersection of psychological well-being, teacher-student relations, and learning accomplishment. It focused on the relationship between teacher empathy and student well-being, with the mediating position of the interplay between peer attachment and learning workload in the context of Indonesian academic Islamic secondary boarding schools. The theoretical constructs and an adequately designed methodological framework from the constructed contextual instruments validation and statistical modeling. It also referred to the relationships among student demographic background, especially gender and class level.

This chapter reinterpreted the findings to seek broader meaning and practical implications. The interrelationships among the variables reveal how students' lives in residential academic environments are both supported and burdened. The findings demonstrate that there is a necessity for emotionally active and academically stable educational conditions. It concluded with educational practice and educational policy implications and proposed directions of future study in areas of psychosocial development within culturally and structurally distinct contexts of school settings.

5.1 Summary of Findings

The findings revealed that students had moderate rates of teacher empathy, attachment to peers, and well-being. Conversely, learning workload was viewed in regards to being relatively high and demanding. Rasch person measures distributions indicated that the majority of students were at average levels. However, the substantial differences found among individuals and demographic categories were meaningful. It reflects the heterogeneous topography of emotional and academic experiences in boarding schools as this study baseline pattern.

Statistical analysis confirmed a positive and signicant correlation between teacher empathy and student well-being. Students who perceived their teachers are emotionally attuned and responsive had a greater psychological well-being. This relationship remained robust even when controlling for the mediating relationships of peer attachment and learning workload; this correlation proved to be significant. It highlights the independent

contribution of teacher empathy to promoting the decent psychological adjustment and flourishing among students. The element of emotionally safe learning environmens was attached to empathetic teaching. It includes the traits of attavtiveness, responsiveness, and consistent supportive presence.

The mediation analysis results both peer attachment and learning workload served as pathways through which teacher empathy significantly had relationaship on student well-being. Peer attachment emerged as the stronger and more consistent mediator. Empathetic teachers appeared to create relational conditions that promote deeper peer connectedness, thus promoting the well-being of students. On the other hand, learning workload played as a more nuanced pathway. It was statistically significant, but it had lower relationships. It indicated that the perceptions of learning burden do not convey the entire relationship of teacher empathy.

There was additional complexity as a result of demographic analysis: gender and class level moderated the pathways of mediation unevenly. Peer attachment was also a consistent mediator across the groups; however, the pathway to learning workload was different. It was stronger in female students, suggesting a heightened sensitivity to academic pressure. In terms of class level, it found a stronger relationship in class 11, a negligible one in class 10, and the opposite in class 12. These differences are representative of the fact on the ground that associations among learning workload and well-being do not appear to be consistent. However, it was shaped by developmental and contextual factors.

Collectively, these findings give a subtle impression of the interaction between teacher empathy, peer attachment, and learning intention of workload in its role in predicting psychological well-being in this school context. These factors do not work in isolation, but are part of an interrelated system in the life of boarding school students. The given section forms the basis of the general conclusions and implications of the study, which are covered in the next section.

5.2 Conclusion

This study presents a detailed investigation of the psychological situation among the students in Islamic secondary boarding schools in Indonesia. As the results of the Rasch analysis, most students had average levels of well-being in spite of high learning demands. These findings reflect the type of stressors in religious-academic learning settings and warn of possible student workload management. These outcomes confirm the dual burden hypothesis that outlines the ways of creating high risks of stress and exhaustion due to the intensity of the curricula within this religious-boarding institutions.

In parallel, the generally moderate-to-high levels of teacher empathy and peer attachment suggest that interpersonal support mechanisms are present, though not yet fully optimized. These relational aspects represent protective factors that can cushion the psychological impact of academic demands. Their presence, though uneven, signifies the latent potential of madrasah environments to cultivate resilience through communal relationships and empathic engagement. These findings also validate the core dimensions of the PERMA model, especially positive emotion, relationships, and accomplishment, as reliable constructs for assessing student well-being in Islamic academic contexts.

The integration of Rasch and forthcoming regression analyses is expected to enrich the understanding of how well-being is shaped not only by internal psychological resources but also by external systemic and relational factors. Ultimately, the study highlights the imperative for educational ecosystems to adopt more holistic approaches that bridge the emotional, cognitive, and social dimensions of student development. Such a view moves beyond deficit-focused paradigms and instead promotes a strengths-based perspective anchored in positive education.

5.3 Limitations and Future Research Directions

While this study offers valuable contributions to the discourse on student well-being, several limitations should be acknowledged. The primary limitation lies in the reliance on self-report instruments, which inherently carry risks of social desirability bias and subjectivity. Respondents may have overestimated or underestimated their perceptions of well-being, empathy, and peer relationships, potentially skewing the measurement results. Furthermore, the cross-sectional design restricts the ability to observe temporal dynamics, making it impossible to determine causal relationships or the directionality of relationships among the studied variables.

Another constraint is the cultural and institutional specificity of the sample. Since all participants were drawn from Indonesian Islamic boarding schools, generalizability to other educational systems, either secular or non-boarding, remains limited. The findings, while rich in contextual depth, must therefore be interpreted with cultural sensitivity and geographic caution.

Future research would benefit from adopting longitudinal or mixed-method designs that capture changes over time and offer triangulated perspectives. For example, panel studies can help trace the long-term relationship of workload fluctuations on well-being, while qualitative narratives can illuminate students' lived experiences beyond numerical

representations. Including teacher respondents and direct classroom observations could also deepen the analysis of empathy practices and their alignment with perceived student needs. Moreover, exploring variables such as school climate, spiritual engagement, or family attachment may offer additional explanatory power and holistic insight into well-being trajectories.

5.4 Implications

The study's conclusions create substantial theoretical and practical consequences for educational policy development. Research evidence supports the PERMA model as valid for educational environments beyond Western contexts and demonstrates its extended application to academic stress and social support dynamics in Islamic educational institutions. The study advances educational psychology by identifying empathy and peer attachment as factors that help students' process external pressures. The research highlights how learning environments combine affective support with cognitive load management.

Practically, the study demonstrates that school administrators and educational professionals, such as teachers and counselors, should be able to build emotional security in the classroom and boarding environment. Teachers need systematic professional training focused on learning empathetic communication skills, along with the methods to recognize the symptoms of student misery and develop relational teaching and learning management strategies. It is preferable to consider system-wide well-being, which can benefit the peer support mechanism. It also incorporates mentoring programs, group reflective sessions, and emotional literacy programs.

At the policy level, the findings prompt a critical rethinking of the curriculum design and evaluation criteria within these religious boarding-based schools. It is hoped that institutions should compromise to balance learning rigor with student well-being indicators. It is because there is no way psychological stability can be maintained without delivering results. Integrating well-being indicators a part of national education assessment and teacher appraisal systems may foster a culture where success ceases to be measured only by grades but by the flourishing of the learners. These policy interventions need infrastructure and funding to sustain long-term implementation and evaluation.

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APPENDICES

Appendix 1. Item Fit of the Instrument of SWB for Pilot Test

Item Fit Pilot Test 1

INPUT: 187 Person 23 Item REPORTED: 187 Person 23 Item 4 CATS WINSTEPS 3.73

Person: REAL SEP.: 1.86 REL.: .78 ... Item: REAL SEP.: 6.47 REL.: .98

Item STATISTICS: MISFIT ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PT-MEASURE CORR.	PT-MEASURE EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	Item
17	404	187	1.49	.10	1.98	8.8	2.66	9.9	A-.22	.48	48.7	45.8	S17
18	413	187	1.40	.10	1.93	8.4	2.47	9.9	B-.17	.48	44.9	45.9	S18
23	367	187	1.85	.10	1.84	7.7	2.47	9.9	C-.23	.48	46.0	46.3	S23
16	477	187	.78	.10	2.07	8.7	2.34	9.9	D-.07	.47	34.2	48.9	S16
20	557	187	-.10	.11	1.06	.6	1.08	.8	E .53	.45	54.0	56.9	S20
14	478	187	.77	.10	.97	-.2	1.02	.2	F .39	.47	53.5	49.4	S14
9	583	187	-.42	.11	.96	-.4	.97	-.2	G .43	.44	64.2	58.0	S9
3	527	187	.25	.11	.90	-.9	.90	-1.0	H .66	.46	57.2	54.5	S3
6	592	187	-.54	.12	.86	-1.3	.88	-1.2	I .45	.43	64.7	58.2	S6
21	591	187	-.52	.12	.87	-1.3	.86	-1.3	J .57	.43	64.7	58.2	S21
10	637	187	-1.19	.13	.84	-1.6	.78	-2.2	K .59	.39	70.6	57.9	S10
5	514	187	.39	.10	.79	-2.2	.79	-2.1	L .71	.47	61.0	53.6	S5
19	594	187	-.56	.12	.79	-2.1	.78	-2.2	k .62	.43	65.8	58.1	S19
4	532	187	.19	.11	.78	-2.2	.77	-2.4	j .66	.46	65.2	55.1	S4
7	597	187	-.61	.12	.77	-2.3	.77	-2.3	i .55	.43	65.8	58.1	S7
22	557	187	-.10	.11	.73	-2.8	.72	-2.9	h .67	.45	65.8	56.9	S22
2	564	187	-.18	.11	.70	-3.1	.70	-3.1	g .67	.45	64.2	57.3	S2
13	586	187	-.46	.11	.70	-3.1	.68	-3.4	f .70	.43	66.3	58.0	S13
1	567	187	-.22	.11	.70	-3.1	.69	-3.3	e .66	.44	67.4	57.3	S1
11	612	187	-.81	.12	.61	-4.3	.57	-4.8	d .71	.42	74.3	57.4	S11
12	588	187	-.48	.11	.60	-4.3	.60	-4.3	c .71	.43	72.7	58.2	S12
8	565	187	-.19	.11	.56	-4.9	.56	-4.9	b .65	.45	72.2	57.3	S8
15	607	187	-.74	.12	.56	-5.0	.54	-5.2	a .65	.42	74.3	57.8	S15
MEAN	543.9	187.0	.00	.11	.98	-.5	1.07	-.3			61.6	55.0	
S.D.	69.9	.0	.77	.01	.46	4.3	.66	4.9			10.2	4.3	

Item Fit Pilot test 2

INPUT: 155 Person 23 Item REPORTED: 155 Person 23 Item 4 CATS WINSTEPS 3.73

Person: REAL SEP.: 1.49 REL.: .69 ... Item: REAL SEP.: 6.64 REL.: .98

Item STATISTICS: MISFIT ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PT-MEASURE CORR.	PT-MEASURE EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	Item
23	294	155	2.50	.12	1.70	5.9	1.69	5.8	A-.06	.43	44.5	52.3	S23
16	410	155	.73	.13	1.63	4.8	1.67	5.0	B-.05	.40	43.2	56.6	S16
1	550	155	-2.07	.16	1.60	5.5	1.55	4.5	C .33	.32	71.6	61.4	S1
18	362	155	1.48	.12	1.50	4.3	1.58	4.8	D-.04	.42	53.5	54.0	S18
17	367	155	1.41	.12	1.35	3.1	1.42	3.6	E-.01	.41	47.7	54.2	S17
9	476	155	-.47	.14	1.25	2.0	1.26	2.0	F .45	.38	56.8	65.0	S9
6	465	155	-.25	.14	1.22	1.8	1.23	1.8	G .43	.38	60.0	64.6	S6
21	413	155	.68	.13	1.13	1.1	1.18	1.6	H .40	.40	53.5	57.2	S21
19	422	155	.53	.13	1.12	1.0	1.16	1.3	I .36	.39	52.9	58.7	S19
20	450	155	.03	.14	.92	-.6	.93	-.5	J .49	.38	64.5	63.2	S20
7	479	155	-.53	.14	.90	-.8	.88	-1.1	K .59	.37	67.1	64.9	S7
14	391	155	1.03	.13	.84	-1.5	.86	-1.3	L .46	.40	58.1	54.3	S14
22	461	155	-.18	.14	.85	-1.2	.85	-1.3	k .62	.38	65.8	64.4	S22
3	428	155	.42	.13	.80	-1.8	.82	-1.6	j .46	.39	62.6	59.9	S3
13	482	155	-.59	.14	.81	-1.6	.81	-1.7	i .58	.37	67.7	64.8	S13
12	486	155	-.67	.14	.79	-1.9	.78	-2.0	h .55	.37	70.3	64.6	S12
5	469	155	-.33	.14	.71	-2.6	.72	-2.6	g .57	.38	67.7	64.8	S5
11	518	155	-1.34	.15	.71	-3.1	.72	-3.0	f .54	.35	78.7	61.8	S11
2	454	155	-.04	.14	.70	-2.8	.70	-2.7	e .52	.38	72.9	63.8	S2
8	466	155	-.27	.14	.68	-2.9	.70	-2.8	d .53	.38	69.7	64.7	S8
4	476	155	-.47	.14	.59	-4.0	.59	-4.0	c .55	.38	75.5	65.0	S4
15	479	155	-.53	.14	.59	-4.0	.59	-4.0	b .44	.37	76.8	64.9	S15
10	506	155	-1.08	.15	.58	-4.4	.58	-4.5	a .62	.36	75.5	62.8	S10
MEAN	448.0	155.0	.00	.14	1.00	-.2	1.01	-.1			63.3	61.2	
S.D.	55.4	.0	.98	.01	.35	3.1	.36	3.1			10.2	4.3	

Appendix 2. Item Fit of the Instrument of Teacher Empathy for Pilot Test

Item Fit Pilot Test 1

INPUT: 181 Person 19 Item REPORTED: 181 Person 19 Item 4 CATS WINSTEPS 3.73

Person: REAL SEP.: 2.25 REL.: .83 ... Item: REAL SEP.: 7.25 REL.: .98

Item STATISTICS: MISFIT ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PT-MEASURE CORR.	PT-MEASURE EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	Item
11	436	181	.93	.11	2.09	8.6	3.19	9.9	A .04	.57	38.7	54.1	E11
10	422	181	1.11	.11	1.90	7.5	2.08	8.2	B .10	.57	44.2	53.0	E10
6	414	181	1.21	.11	1.07	.8	1.11	1.1	C .57	.57	47.5	52.2	E6
1	452	181	.72	.11	1.02	.3	1.09	.9	D .63	.57	62.4	55.5	E1
13	491	181	.19	.12	1.03	.3	1.02	.2	E .48	.56	60.8	58.6	E13
2	439	181	.89	.11	.93	-.7	1.00	.1	F .59	.57	58.6	54.8	E2
12	532	181	-.41	.12	.99	-.1	.96	-.3	G .61	.55	68.5	61.9	E12
17	545	181	-.62	.13	.93	-.6	.92	-.7	H .59	.54	67.4	62.5	E17
4	536	181	-.48	.13	.92	-.7	.90	-.9	I .62	.55	61.3	62.4	E4
3	448	181	.78	.11	.88	-1.3	.91	-.9	J .67	.57	58.0	55.4	E3
8	498	181	.09	.12	.86	-1.3	.87	-1.2	i .70	.56	69.1	59.4	E8
5	465	181	.55	.12	.83	-1.7	.84	-1.5	h .71	.56	65.2	56.1	E5
16	593	181	-1.44	.13	.79	-2.1	.84	-1.5	g .56	.52	76.2	62.6	E16
15	612	181	-1.79	.14	.80	-2.1	.83	-1.6	f .56	.51	76.8	62.8	E15
14	455	181	.68	.11	.79	-2.2	.82	-1.8	e .57	.56	61.9	55.6	E14
9	501	181	.05	.12	.77	-2.3	.79	-2.1	d .72	.56	69.1	59.5	E9
7	480	181	.35	.12	.69	-3.3	.70	-3.1	c .73	.56	66.9	57.6	E7
19	604	181	-1.64	.14	.68	-3.4	.65	-3.7	b .55	.51	79.6	62.4	E19
18	578	181	-1.17	.13	.63	-3.9	.61	-4.2	a .66	.53	72.4	62.5	E18
MEAN	500.1	181.0	.00	.12	.98	-.4	1.06	-.2			63.4	58.4	
S.D.	61.8	.0	.93	.01	.37	3.2	.58	3.5			10.5	3.6	

Item Fit Pilot test 2

INPUT: 155 Person 19 Item REPORTED: 155 Person 19 Item 4 CATS WINSTEPS 3.73

Person: REAL SEP.: 2.47 REL.: .86 ... Item: REAL SEP.: 6.59 REL.: .98

Item STATISTICS: MISFIT ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PT-MEASURE CORR.	PT-MEASURE EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	Item
11	417	155	.44	.14	1.75	5.3	1.83	5.6	A .26	.56	49.4	62.1	E11
10	390	155	.96	.14	1.65	5.0	1.78	5.6	B .36	.58	48.7	59.2	E10
13	425	155	.28	.14	1.60	4.3	1.68	4.7	C .33	.56	59.1	63.6	E13
12	466	155	-.64	.16	1.22	1.7	1.13	1.0	D .53	.54	74.7	69.2	E12
14	394	155	.88	.14	1.09	.8	1.16	1.3	E .43	.57	61.7	59.3	E14
15	500	155	-1.49	.16	1.01	.1	.97	-.2	F .47	.51	79.2	69.4	E15
4	438	155	.00	.15	1.01	.1	.97	-.2	G .64	.55	67.5	65.7	E4
16	496	155	-1.39	.16	.94	-.4	.87	-1.0	H .59	.52	77.9	69.7	E16
1	358	155	1.53	.13	.85	-1.4	.93	-.7	I .61	.59	67.5	57.0	E1
8	434	155	.09	.15	.91	-.8	.89	-.9	J .68	.55	70.8	64.9	E8
9	429	155	.20	.14	.87	-1.1	.86	-1.1	i .69	.56	70.8	64.3	E9
3	390	155	.96	.14	.80	-1.9	.86	-1.3	h .64	.58	66.2	59.2	E3
5	387	155	1.01	.14	.76	-2.4	.83	-1.5	g .65	.58	72.1	58.7	E5
19	519	155	-1.99	.16	.78	-2.1	.72	-2.4	f .58	.49	76.6	67.9	E19
2	419	155	.40	.14	.73	-2.5	.72	-2.5	e .64	.56	74.0	62.3	E2
17	494	155	-1.34	.16	.72	-2.5	.64	-3.2	d .59	.52	79.9	69.7	E17
6	389	155	.98	.14	.69	-3.2	.71	-2.9	c .71	.58	68.8	59.2	E6
18	499	155	-1.47	.16	.70	-2.8	.63	-3.3	b .58	.52	79.9	69.5	E18
7	410	155	.58	.14	.69	-3.0	.69	-2.9	a .65	.57	73.4	60.9	E7
MEAN	434.4	155.0	.00	.15	.99	-.4	.99	-.3			69.4	63.8	
S.D.	46.4	.0	1.03	.01	.33	2.6	.36	2.8			9.0	4.3	

Appendix 3. Item Fit of the Instrument of Peer Attachment for Pilot Test

Item Fit Pilot Test 1

INPUT: 186 Person 25 Item REPORTED: 186 Person 25 Item 4 CATS WINSTEPS 3.73

Person: REAL SEP.: 1.36 REL.: .65 ... Item: REAL SEP.: 6.97 REL.: .98

Item STATISTICS: MEASURE ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PT-MEASURE CORR.	PT-MEASURE EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	Item
24	355	186	1.81	.10	1.36	3.8	1.54	5.3	-.06	.38	47.3	45.9	P24
12	368	186	1.67	.10	1.08	1.0	1.23	2.5	-.05	.39	61.3	46.1	P12
11	398	186	1.37	.10	1.79	7.4	1.90	8.2	-.02	.39	39.8	46.9	P11
13	435	186	1.01	.10	1.45	4.4	1.55	5.2	-.15	.39	46.8	47.2	P13
10	447	186	.89	.10	1.54	5.1	1.62	5.7	-.05	.38	46.2	47.2	P10
8	502	186	.31	.10	1.52	4.4	1.57	4.8	.11	.37	34.9	53.9	P8
20	520	186	.11	.11	.75	-2.6	.76	-2.5	.67	.37	61.8	56.0	P20
6	523	186	.08	.11	.84	-1.5	.86	-1.4	.54	.37	60.8	56.3	P6
14	524	186	.07	.11	1.83	6.4	1.83	6.4	.03	.37	38.7	56.5	P14
15	533	186	-.04	.11	.77	-2.3	.77	-2.3	.56	.36	61.8	57.3	P15
21	535	186	-.06	.11	.70	-3.2	.72	-2.9	.60	.36	65.6	57.4	P21
1	544	186	-.17	.11	1.04	.4	1.04	.4	.51	.36	55.4	58.1	P1
2	546	186	-.19	.11	.84	-1.5	.87	-1.2	.42	.36	62.4	58.2	P2
3	546	186	-.19	.11	.83	-1.7	.87	-1.2	.56	.36	63.4	58.2	P3
7	546	186	-.19	.11	.74	-2.7	.75	-2.5	.57	.36	62.4	58.2	P7
5	548	186	-.22	.11	.79	-2.0	.82	-1.8	.47	.36	67.2	58.3	P5
4	550	186	-.24	.11	.86	-1.3	.86	-1.4	.58	.36	59.1	58.4	P4
22	552	186	-.27	.11	.70	-3.0	.72	-2.9	.56	.36	67.7	58.4	P22
23	562	186	-.39	.11	.61	-4.2	.61	-4.3	.61	.35	72.0	58.7	P23
17	567	186	-.46	.11	.62	-4.0	.61	-4.3	.69	.35	67.2	58.7	P17
16	571	186	-.51	.11	.69	-3.2	.67	-3.5	.66	.35	66.7	58.6	P16
9	573	186	-.53	.11	1.03	.3	1.04	.4	.39	.35	61.3	58.5	P9
19	589	186	-.75	.12	.66	-3.7	.63	-4.2	.61	.34	72.0	57.9	P19
18	607	186	-1.00	.12	.73	-2.9	.70	-3.3	.49	.33	71.5	57.3	P18
25	672	186	-2.10	.14	.92	-.7	.89	-1.0	.27	.28	67.2	64.5	P25
MEAN	524.5	186.0	.00	.11	.99	-.3	1.02	-.1			59.2	55.7	
S.D.	71.6	.0	.83	.01	.36	3.4	.40	3.7			10.5	4.8	

Item Fit Pilot test 2

INPUT: 155 Person 25 Item REPORTED: 155 Person 25 Item 4 CATS WINSTEPS 3.73

Person: REAL SEP.: 1.88 REL.: .78 ... Item: REAL SEP.: 3.82 REL.: .94

Item STATISTICS: MEASURE ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PT-MEASURE CORR.	PT-MEASURE EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	Item
12	382	155	.98	.12	2.37	9.3	2.83	9.9	-.22	.52	34.2	54.4	P12
5	389	155	.88	.12	1.46	3.7	1.79	5.3	.10	.52	60.6	55.9	P5
1	397	155	.76	.12	1.05	.5	1.25	1.9	.29	.51	71.6	58.5	P1
4	401	155	.70	.12	1.23	1.9	1.53	3.6	.13	.51	69.0	58.9	P4
3	404	155	.66	.12	1.33	2.5	1.61	4.0	.13	.51	66.5	59.8	P3
2	405	155	.64	.13	1.46	3.4	1.78	4.9	.06	.51	63.2	59.9	P2
6	408	155	.59	.13	1.52	3.8	1.91	5.6	.00	.50	67.1	60.0	P6
23	423	155	.35	.13	.95	-.4	1.00	.1	.67	.49	61.3	64.0	P23
9	424	155	.33	.13	1.03	.3	1.07	.5	.53	.49	61.3	64.1	P9
22	426	155	.29	.13	.86	-1.1	.88	-.9	.75	.49	62.6	64.8	P22
11	433	155	.17	.14	.89	-.8	.92	-.5	.64	.48	61.9	66.0	P11
21	439	155	.06	.14	.68	-2.6	.65	-2.7	.69	.48	71.6	67.0	P21
18	445	155	-.06	.14	.80	-1.5	.78	-1.6	.67	.47	67.7	67.7	P18
16	450	155	-.16	.14	.61	-3.2	.58	-3.4	.82	.47	73.5	68.0	P16
7	458	155	-.32	.14	.88	-.9	.86	-1.0	.70	.46	67.1	68.7	P7
14	461	155	-.38	.15	.72	-2.2	.71	-2.2	.68	.46	74.2	69.0	P14
24	463	155	-.43	.15	.59	-3.4	.57	-3.5	.69	.46	78.7	69.0	P24
8	464	155	-.45	.15	.75	-1.9	.76	-1.8	.60	.46	74.2	69.4	P8
25	465	155	-.47	.15	.73	-2.1	.72	-2.1	.65	.45	72.3	69.4	P25
19	468	155	-.54	.15	.74	-2.0	.68	-2.5	.70	.45	75.5	69.7	P19
20	472	155	-.62	.15	.71	-2.3	.61	-3.1	.73	.45	72.9	69.9	P20
10	473	155	-.65	.15	.89	-.8	.89	-.8	.51	.45	71.0	69.9	P10
15	473	155	-.65	.15	.96	-.2	.96	-.2	.67	.45	69.0	69.9	P15
17	475	155	-.69	.15	.87	-1.0	.81	-1.4	.62	.45	68.4	70.0	P17
13	489	155	-1.02	.15	.81	-1.5	.81	-1.5	.62	.44	74.2	69.1	P13
MEAN	439.5	155.0	.00	.14	1.00	-.1	1.08	.3			67.6	65.3	
S.D.	30.9	.0	.57	.01	.38	2.8	.53	3.4			8.4	4.9	

Appendix 4. Item Fit of the Instrument of Learning Workload for Pilot Test

Item Fit Pilot Test 1

INPUT: 188 Person 6 Item REPORTED: 188 Person 6 Item 4 CATS WINSTEPS 3.73

Person: REAL SEP.: 1.54 REL.: .70 ... Item: REAL SEP.: 11.15 REL.: .99

Item STATISTICS: MEASURE ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PT-MEASURE CORR.	PT-MEASURE EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	Item
2	367	188	1.95	.12	.89	-1.1	.85	-1.4	.70	.67	62.2	56.4	L2
3	443	188	.98	.11	.63	-4.3	.64	-4.1	.77	.67	68.6	53.4	L3
5	459	188	.78	.11	.73	-3.0	.73	-2.9	.75	.66	63.8	54.7	L5
6	531	188	-.13	.11	.98	-.2	.98	-.2	.71	.63	51.4	55.5	L6
4	597	188	-1.04	.12	1.53	4.5	1.52	4.2	.43	.59	43.2	57.0	L4
1	680	188	-2.55	.15	1.25	2.0	1.29	1.6	.28	.50	60.5	71.8	L1
MEAN	512.8	188.0	.00	.12	1.00	-.4	1.00	-.5			58.3	58.1	
S.D.	103.6	.0	1.47	.01	.31	3.0	.31	2.8			8.5	6.2	

Item Fit Pilot test 2

INPUT: 155 Person 6 Item REPORTED: 155 Person 6 Item 4 CATS WINSTEPS 3.73

Person: REAL SEP.: 1.20 REL.: .59 ... Item: REAL SEP.: 7.97 REL.: .98

Item STATISTICS: MEASURE ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PT-MEASURE CORR.	PT-MEASURE EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	Item
2	333	155	1.50	.13	.80	-1.9	1.01	.2	.66	.59	61.3	57.4	LW2
6	340	155	1.38	.13	.96	-.3	.98	-.2	.64	.59	62.6	57.8	LW6
3	419	155	.02	.13	.85	-1.4	.84	-1.5	.65	.59	61.3	58.9	LW3
5	444	155	-.44	.14	.90	-.9	.89	-.9	.70	.59	60.6	60.1	LW5
4	463	155	-.79	.14	1.00	.0	1.12	1.1	.56	.58	65.2	61.2	LW4
1	506	155	-1.66	.15	1.39	3.1	1.55	4.0	.25	.56	57.4	63.8	LW1
MEAN	417.5	155.0	.00	.14	.98	-.2	1.06	.4			61.4	59.9	
S.D.	62.9	.0	1.13	.01	.19	1.6	.23	1.8			2.3	2.2	

Appendix 5. Instrument of Student Well-being

5.1 Permission for instrument usage

Universitas Islam Internasional Indonesia

Ulfia Muruu'ah <ulfia.muruuah@uiii.ac.id>

Instrument usage permit
3 pesan

Ulfia Muruu'ah <ulfia.muruuah@uiii.ac.id> 6 Februari 2025 pukul 13.43
Kepada: kahloong.chue@nie.edu.sg

Dear Dr Loong,

I hope you're doing well. I am Ulfia, a student of Universitas Islam International Indonesia (UIII). With this email, I would like to ask for your and your team's permission to use the result of the modified instrument of the PERMA profiler to assess student well-being for my thesis's purpose.

Currently, I am working on my thesis utilizing PERMA theory and having the same concern for students' well-being as one of my variables. As I learned from your and your team's published work regarding this subject entitled "Modifying the PERMA profiler to assess student well-being", it met my needs in completing my work. Therefore, I hope for ethical consent to use your work. Your permit will be very beneficial for my research completion.

I am looking forward to hearing from you and very appreciate your permission.

Sincerely yours,
Ulfia

Chue Kah Loong (Dr) <kahloong.chue@nie.edu.sg> 6 Februari 2025 pukul 13.44
Kepada: Ulfia Muruu'ah <ulfia.muruuah@uiii.ac.id>

Hi Ulfia, sure you have my permission to use the instrument. Good luck on your research!

Regards

Kah Loong

From: Ulfia Muruu'ah <ulfia.muruuah@uiii.ac.id>
Sent: Thursday, February 6, 2025 2:43 PM
To: Chue Kah Loong (Dr) <kahloong.chue@nie.edu.sg>
Subject: Instrument usage permit

[Alert: Non-NIE/NTU Email] Be cautious before clicking any link or attachment.

[Kutipan teks disembunyikan]

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Towards a sustainable earth: Print only when necessary. Thank you.

Ulfia Muruu'ah <ulfia.muruuah@uiii.ac.id> 6 Februari 2025 pukul 13.53

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8/1/25, 6:13 AM Email Indonesian International Islamic University - Instrument usage permit

Kepada: "Chue Kah Loong (Dr)" <kahloong.chue@nie.edu.sg>

Dear Dr. Kah Loong,

Thank you for your kind permission to use the instrument. I truly appreciate your support and generosity.

Sincerely yours,
Ulfia

[Kutipan teks disembunyikan]

5.2 Item instrument SWB adapted from the school well-being PERMA Profiler by Chue et al. (2024)

The adaptation process involved forward–backward translation, expert validation in both linguistics and psychology, and cultural adjustment through consultations with prospective participants, particularly within the context of a boarding school. The results supported the use of the first-person pronoun ("I") to enhance clarity and cultural relevance. This linguistic shift improved cognitive processing, response consistency, and scoring alignment in Rasch analysis by maintaining semantic directionality across items. The instrument development consisted of two main stages: pilot testing was first conducted to validate the Likert scale and assess item fit using the Rasch model. The wording of each item was refined based on these analyses prior to the final distribution of the instrument. Redaction of items is shown in the following table:

Dimension	No.	Original Items	Translated and Adapted Instrument
PE = positive emotions Mengukur sejauh mana siswa mengalami perasaan positif seperti kegembiraan, kepuasan, dan optimisme selama berada di lingkungan sekolah.	1	At school, how often do you feel joyful?	Saya merasa gembira ketika berhasil memahami materi di sekolah berasrama.
	2	At school, how often do you feel positive?	Saya merasakan semangat belajar ketika di sekolah berasrama.
	3	At school, to what extent do you feel satisfied?	Saya merasa puas dengan metode pembelajaran di sekolah.
EN = engagement Menilai tingkat keterlibatan afektif dan kognitif siswa dalam aktivitas sekolah, termasuk sejauh mana mereka menikmati dan terlibat secara mendalam dalam pembelajaran dan kegiatan sekolah lainnya.	4	To what extent do you enjoy your activities in school?	Saya menikmati kegiatan di sekolah berasrama.
	5	To what extent do you feel excited and interested in your activities in school?	Saya merasa bersemangat dan tertarik dengan aktivitas di sekolah berasrama.
	6	At school, how often do you become absorbed in what you are doing?	Saya sering terlibat dalam kegiatan sekolah.
RS = positive relationships Menilai kualitas hubungan sosial siswa di sekolah, termasuk sejauh mana mereka merasa didukung, dihargai, dan puas dengan hubungan interpersonal mereka.	7	At school, to what extent do you receive help and support from others when you need it?	Di sekolah, saya sering menerima bantuan dan dukungan dari orang lain ketika saya membutuhkannya.
	8	At school, to what extent do you feel appreciated?	Saya merasa dihargai di sekolah berasrama.
	9	At school, how satisfied are you with your personal relationships?	Saya merasa puas dengan hubungan pertemanan dan interaksi social saya di sekolah berasrama.
M**E = sense of meaning** Menilai sejauh mana siswa merasa bahwa kehidupan	10	To what extent is your school life purposeful?	Saya memiliki tujuan dalam kehidupan sekolah berasrama.

Dimension	No.	Original Items	Translated and Adapted Instrument
sekolah mereka memiliki tujuan dan nilai, serta aktivitas sekolah memberikan makna bagi mereka.	11	In general, to what extent do you feel that what you do in school is valuable and worthwhile?	Secara umum, saya merasa bahwa apa yang saya lakukan di sekolah berasrama berharga dan bermanfaat.
	12	To what extent is your school life meaningful?	Saya merasa bermakna dikehidupansekolah berasrama.
AC = sense of accomplishment. Menilai persepsi siswa terhadap keberhasilan mereka dalam mencapai tujuan, menangani tanggung jawab sekolah, dan membuat kemajuan dalam pembelajaran.	13	How much of the time do you feel you are making progress towards accomplishing your goals in school?	Saya merasa membuat kemajuan dalam pencapaian tujuan belajar saya di sekolah berasrama.
	14	How often do you achieve the important goals in school that you have set for yourself?	Saya sering meraih prestasi dalam program penting sekolah yang ditetapkan untuk saya.
	15	How often are you able to handle your responsibilities at school?	Saya mampu bertanggung jawab dengan kewajiban sekolah.
NE = negative emotion Mengidentifikasi frekuensi emosi negatif yang dialami siswa di sekolah, seperti kecemasan, kemarahan, dan kesedihan, yang dapat menghambat kesejahteraan mereka..	16	At school, how often do you feel anxious?	Saya sering merasa cemas ketika belajar di sekolah berasrama.
	17	At school, how often do you feel angry?	Saya sering merasa marah dengan pembelajaran dan aktifitas di sekolah berasrama.
	18	At school, how often do you feel sad?	Saya sering merasa sedih dengan pembelajaran dan aktifitas di sekolah berasrama.
HE = health Menilai persepsi siswa terhadap kondisi kesehatan fisik mereka secara umum, kepuasan terhadap kesehatan tersebut, dan perbandingan dengan teman sebaya.	19	In general, how would you say your physical health is?	Saya jarang mengalami gangguan kesehatan yang menghambat kegiatan sekolah.
	20	How satisfied are you with your current physical health?	Saya merasa tubuh saya cukup sehat untuk mengikuti seluruh kegiatan sekolah berasrama.
	21	Compared to others of your same age and sex, how is your physical health?	Saya menilai kondisi fisik saya lebih baik dibandingkan teman sebaya saya di sekolah.
HAP = happiness Mengukur tingkat kebahagiaan umum siswa di lingkungan sekolah, sebagai indikator subjektif kesejahteraan	22	Taking all things together, how happy would you say you are at school?	Secara umum, saya merasa bahagia di sekolah berasrama.
LON = loneliness	23	How lonely do you feel at school?	Saya merasa kesepian di sekolah.

Dimension	No.	Original Items	Translated and Adapted Instrument
Menilai sejauh mana siswa merasa kesepian saat berada di sekolah, yang dapat menjadi indikator penting kesejahteraan sosial dan emosional mereka.			

5.3 Reliability and Validity of the SWB instrument

TABLE 3.1 WINS SWB AFTER PERSON FIT ZOU040WS.TXT Jun 29 17:51 2025
INPUT: 896 Person 23 Item REPORTED: 896 Person 23 Item 4 CATS WINSTEPS 3.73

SUMMARY OF 896 MEASURED Person

	TOTAL SCORE	COUNT	MEASURE	MODEL ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	67.6	23.0	1.05	.35	1.03	-.1	1.00	-.2
S.D.	5.8	.0	.70	.02	.52	1.8	.49	1.7
MAX.	86.0	23.0	3.82	.50	2.60	4.0	2.48	3.8
MIN.	50.0	23.0	-.88	.32	.13	-4.9	.13	-4.9

REAL RMSE .38 TRUE SD .58 SEPARATION 1.52 Person RELIABILITY .70
MODEL RMSE .35 TRUE SD .61 SEPARATION 1.75 Person RELIABILITY .75
S.E. OF Person MEAN = .02

Person RAW SCORE-TO-MEASURE CORRELATION = 1.00
CRONBACH ALPHA (KR-20) Person RAW SCORE "TEST" RELIABILITY = .73

SUMMARY OF 23 MEASURED Item

	TOTAL SCORE	COUNT	MEASURE	MODEL ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	2634.9	896.0	.00	.06	.99	-1.1	1.00	-1.1
S.D.	384.0	.0	1.15	.01	.34	6.6	.36	6.7
MAX.	3404.0	896.0	2.85	.08	1.79	9.9	1.85	9.9
MIN.	1579.0	896.0	-2.91	.05	.62	-9.3	.62	-9.3

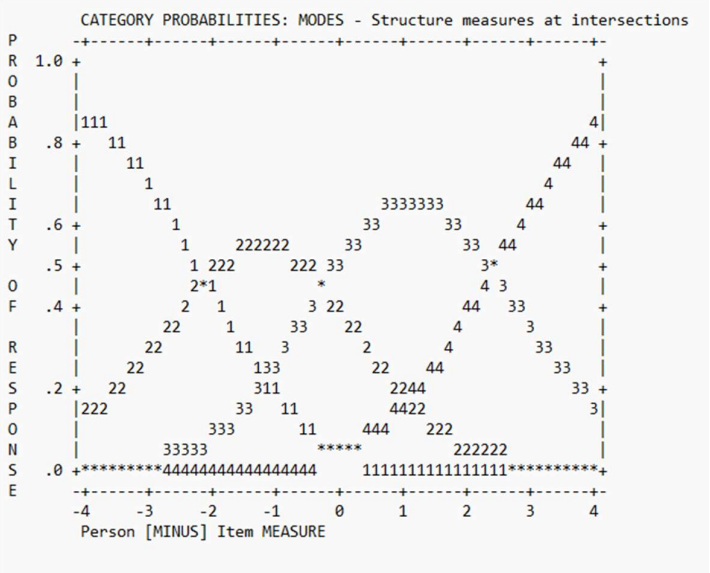
REAL RMSE .06 TRUE SD 1.15 SEPARATION 19.28 Item RELIABILITY 1.00
MODEL RMSE .06 TRUE SD 1.15 SEPARATION 20.35 Item RELIABILITY 1.00
S.E. OF Item MEAN = .24

UMEAN=.0000 USCALE=1.0000
Item RAW SCORE-TO-MEASURE CORRELATION = -.99
20608 DATA POINTS. LOG-LIKELIHOOD CHI-SQUARE: 36806.46 with 19688 d.f. p=.0000
Global Root-Mean-Square Residual (excluding extreme scores): .6100

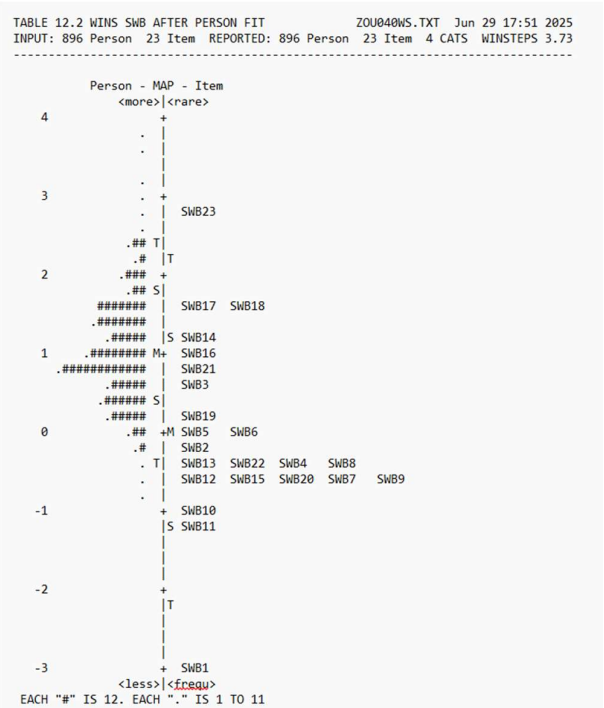
5.4 Rasch Model Threshold of the SWB instrument

SUMMARY OF CATEGORY STRUCTURE. Model="R"

CATEGORY LABEL	SCORE	OBSERVED COUNT	%	OBSVD AVRGE	SAMPLE EXPECT	INFIT MNSQ	OUTFIT MNSQ	ANDRICH THRESHOLD	CATEGORY MEASURE	
1	1	886	4	-.78	-1.14	1.27	1.29	NONE	(-3.32)	1
2	2	4309	21	-.01	.07	.92	.90	-2.12	-1.22	2
3	3	10553	51	1.09	1.12	.99	.96	-.28	1.10	3
4	4	4860	24	2.25	2.18	1.01	.99	2.40	(3.54)	4



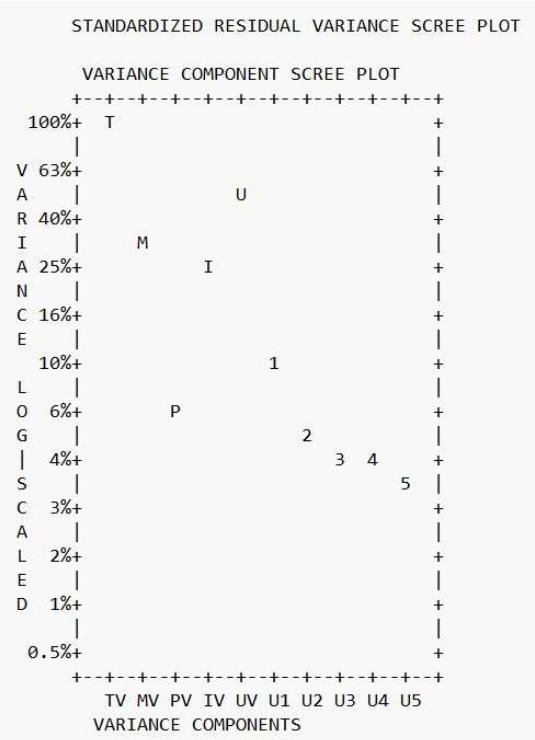
5.5 Wright Map of the SWB instrument



5.6 Item fit analysis of the SWB instrument

```
TABLE 10.1 WINS SWB AFTER PERSON FIT            ZOU040WS.TXT  Jun 29 17:51 2025
INPUT: 896 Person  23 Item  REPORTED: 896 Person  23 Item  4 CATS  WINSTEPS 3.73
-------------------------------------------------------------------------------
Person: REAL SEP.: 1.52  REL.: .70 ... Item: REAL SEP.: 19.28  REL.: 1.00

        Item STATISTICS:  MISFIT ORDER

-------------------------------------------------------------------------------
|ENTRY   TOTAL  TOTAL          MODEL|   INFIT  |  OUTFIT  |PT-MEASURE |EXACT MATCH|      |
|NUMBER  SCORE  COUNT  MEASURE  S.E. |MNSQ  ZSTD|MNSQ  ZSTD|CORR.  EXP.| OBS%  EXP%| Item |
|------------------------------------+----------+----------+-----------+-----------+------|
|    23   1579    896    2.85    .05|1.79   9.9|1.85   9.9|A-.12   .41| 41.3  52.3| SWB23|
|    16   2276    896    1.07    .05|1.60   9.9|1.63   9.9|B-.04   .41| 39.5  53.7| SWB16|
|    17   2106    896    1.51    .05|1.52   9.9|1.56   9.9|C-.07   .42| 43.5  52.8| SWB17|
|    18   2040    896    1.67    .05|1.46   9.4|1.49   9.9|D-.04   .42| 47.1  53.0| SWB18|
|    19   2569    896     .28    .05|1.43   8.0|1.44   8.2|E .33   .39| 50.0  59.6| SWB19|
|    21   2390    896     .77    .05|1.18   3.6|1.19   3.9|F .38   .40| 51.7  55.4| SWB21|
|     6   2682    896    -.05    .05|1.09   1.9|1.08   1.7|G .51   .38| 56.3  61.1| SWB6 |
|     9   2873    896    -.65    .06|1.05   1.1|1.04    .9|H .48   .37| 60.9  60.6| SWB9 |
|    20   2830    896    -.51    .06|1.00    .0| .98   -.3|I .46   .37| 61.7  61.1| SWB20|
|     1   3404    896   -2.91    .08| .96   -.7| .95   -.6|J .27   .24| 81.0  80.4| SWB1 |
|    10   2993    896   -1.05    .06| .95  -1.2| .93  -1.7|K .48   .35| 62.6  59.3| SWB10|
|    14   2208    896    1.25    .05| .89  -2.5| .90  -2.2|L .48   .41| 56.6  53.1| SWB14|
|     3   2462    896     .58    .05| .86  -3.0| .87  -2.9|k .48   .40| 63.7  57.3| SWB3 |
|     7   2863    896    -.62    .06| .86  -3.2| .86  -3.1|j .44   .37| 65.7  60.6| SWB7 |
|    13   2825    896    -.49    .06| .84  -3.5| .84  -3.6|i .57   .37| 64.2  61.1| SWB13|
|     5   2689    896    -.07    .05| .71  -6.6| .72  -6.6|h .59   .38| 66.7  61.2| SWB5 |
|     4   2785    896    -.37    .06| .71  -6.9| .70  -7.0|g .55   .38| 70.8  61.4| SWB4 |
|    12   2879    896    -.67    .06| .68  -7.7| .68  -7.9|f .64   .37| 70.4  60.5| SWB12|
|    22   2769    896    -.32    .06| .68  -7.6| .67  -7.8|e .62   .38| 69.6  61.3| SWB22|
|    11   3034    896   -1.20    .06| .66  -9.1| .65  -9.2|d .60   .35| 74.1  59.1| SWB11|
|     8   2783    896    -.36    .06| .64  -8.7| .64  -8.7|c .54   .38| 73.5  61.4| SWB8 |
|    15   2837    896    -.53    .06| .62  -9.3| .63  -9.3|b .44   .37| 76.2  61.0| SWB15|
|     2   2727    896    -.19    .06| .62  -9.2| .62  -9.3|a .62   .38| 69.9  61.3| SWB2 |
|------------------------------------+----------+----------+-----------+-----------+------|
| MEAN  2634.9  896.0     .00    .06| .99  -1.1|1.00  -1.1|           | 61.6  59.5|      |
| S.D.   384.0    .0    1.15    .01| .34   6.6| .36   6.7|           | 11.4   5.5|      |
-------------------------------------------------------------------------------
```

5.7 Standardized Residual of the SWB instrument



Appendix 6. Instrument of Teacher Empathy

6.1 Permission for instrument usage

Universitas Islam Internasional Indonesia

Ulfia Muruu'ah <ulfia.muruuah@uiii.ac.id>

Instrument usage permit
3 pesan

Ulfia Muruu'ah <ulfia.muruuah@uiii.ac.id> 6 Februari 2025 pukul 16.09
Kepada: 373482323@qq.com

Dear Prof. Zhang,

I hope you're doing well. I am Ulfia, a student of Universitas Islam International Indonesia (UIII). With this email, I would like to ask for your and your team's permission to use the developed empathy scale for teachers (EST) for my thesis's instrument purpose.

Currently, I am working on my thesis concerning teacher empathy as one of my variables. As I learned from your and your team's published work regarding this subject entitled "Development and validation of the empathy scale for teachers (EST)", it met my needs in completing my work. Therefore, I hope for ethical consent to use your work. Your permit will be very beneficial for my research completion.

I am looking forward to hearing from you and very appreciate your permission.

Sincerely yours,
Ulfia

Ulfia Muruu'ah <ulfia.muruuah@uiii.ac.id> 11 Februari 2025 pukul 16.22
Kepada: 373482323@qq.com

Dear Prof. Zhang,

I want to follow up on my previous email. I look forward to hearing from you regarding the permission to use the instrument. I highly appreciate your consideration.

Sincerely,
Ulfia
[Kutipan teks disembunyikan]

Ulfia Muruu'ah <ulfia.muruuah@uiii.ac.id> 12 Maret 2025 pukul 16.27
Kepada: 373482323@qq.com

Dear Prof. Zhang,

I hope you are in good health. I am still looking into your consideration about the instrument usage. I am concerned about your permission for my work. Thank you

Sincerely yours,
Ulfia
[Kutipan teks disembunyikan]

6.2 Item instrument of TE adapted from the empathy scale for teachers (EST) by Wang et al. (2022)

The distributed instrument was validated by linguistic and psychological experts, and also culturally adapted through some participant candidates within the context of a boarding school. Especially for this particular instrument, the redaction was converted to the point of view of students as the recipients of empathetic teacher statements, focusing on examining each class homeroom. The instruments were thoroughly two stages; the pilot testing was conducted to validate the Likert scale and item fit, which was analyzed by the Rasch model. The redactions of each item were followed by the analysis result before final instrument distribution for real data. Redaction of items is shown in the following table:

Dimension	No.	Original Items (teacher's pov)	Translated and Adapted Instrument (students' pov)
Cognitive Empathy (CE) Mengukur sejauh mana siswa merasakan peran guru untuk mengenali, memahami, dan menginterpretasi keadaan emosional siswa secara akurat dari ekspresi wajah, bahasa tubuh, atau situasi yang dialami siswa.	1	I can quickly tell whether my pupils are happy or not.	Guru mengetahui perubahan suasana hati saya meskipun saya tidak mengungkapkannya secara langsung.
	2	When pupils make a mistake, I usually try to imagine myself in their shoes for a while.	Saat saya melakukan kesalahan, guru mencoba memahami alasan di balik tindakan saya untuk sementara waktu untuk sementara waktu.
	3	Before criticizing pupils, I try to imagine how I would feel if I were in their place.	Sebelum mengkritik saya, saya merasakan bahawasanya guru mencoba membayangkan bagaimana perasaannya jika berada di posisi saya.
Cognitive Empathy (CE) Mengukur sejauh mana siswa merasakan peran guru untuk mengenali, memahami, dan menginterpretasi keadaan emosional siswa secara akurat dari ekspresi wajah, bahasa tubuh, atau situasi yang dialami siswa.	4	I can tell when a pupil is nervous, even if he or she tries to hide it.	Saya merasa bahwa guru dapat mengetahui ketika saya merasa gugup, meskipun saya berusaha menyembunyikannya.
	5	I usually pay close attention to the emotional states of pupils in class	Saya merasa bahwa guru biasanya memperhatikan kondisi emosional saya di kelas.
	6	Pupils always say I am good at understanding their feelings.	Saya merasa guru mampu memahami perasaan saya.
	7	I can infer my pupils' emotional states from their language.	Guru dapat memahami kondisi emosi saya dan teman-teman dari bahasa kita.
	8	I usually understand my pupils' feelings when they are in low spirits.	Guru memahami perasaan saya ketika sedang tidak bersemangat.
	9	I can know how my pupils feel by paying attention to their facial expressions or body language.	Guru dapat mengetahui perasaan saya dan teman-teman dengan memperhatikan ekspresi wajah atau bahasa tubuh kita.

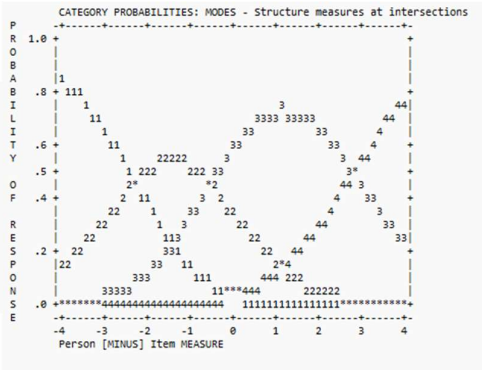
Dimension	No.	Original Items (teacher's pov)	Translated and Adapted Instrument (students' pov)
Negative Affective Empathy (NAE) Mengukur sejauh mana siswa merasakan peran guru dalam keikutsertaan merasa dan berbagi emosi negatif siswa, seperti kesedihan, kecemasan, atau kekecewaan, yang muncul dalam interaksi pendidikan sehari-hari.	10	Pupils' bad moods affect me a lot.	Suasana hati saya yang buruk sangat mempengaruhi emosi guru saya.
	11	I sometimes get caught in the negative emotions of my pupils	Saya merasa terkadang guru terbawa dalam emosi negatif saya dan teman-teman.
	12	I feel sad when something bad happens to my pupils.	Guru merasa sedih ketika sesuatu yang buruk terjadi pada saya dan murid-murid lainnya.
	13	When the pupils are sad due to failing an exam, I am also very depressed.	Ketika saya dan teman-teman merasa sedih karena gagal dalam ujian, saya mendapati guru juga merasa sangat tertekan.
	14	I am inclined to feel anxious when my pupils feel anxious.	Guru cenderung merasa cemas ketika saya dan teman-teman merasa cemas.
Positive Affective Empathy (PAE) Mengukur sejauh mana siswa merasakan peran guru dalam keikutsertaan merasa dan berbagi emosi positif seperti kebahagiaan, antusiasme, atau kebanggaan atas pencapaian mereka di sekolah.	15	I'm also very excited when I see pupils receive prizes on the podium.	Guru sangat senang ketika melihat saya atau teman-teman menerima hadiah di podium.
	16	Seeing the pupils happy makes me very happy.	Guru turut antusias ketika melihat saya dan atau murid lainnya bahagia.
	17	When a pupil is happy for being praised, I can experience his or her inner joy.	Guru ikut tersenyum atau memberi respon positif ketika saya merasa senang karena mendapat pujian.
	18	When the pupils smile, I am happy too.	Guru menunjukkan ekspresi bahagia ketika saya dan teman-teman terlihat senang.
	19	I experience the excitement and pride of pupils when they get good grades.	Guru merasakan kegembiraan dan kebanggaan saya ketika saya atu murid lainnya mendapatkan nilai yang bagus.

6.3 Reliability and Validity of the TE Instrument

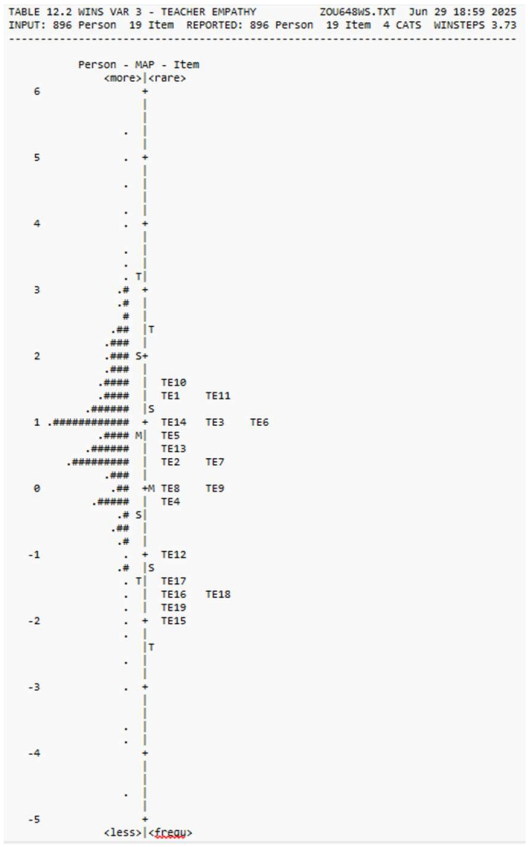
```
TABLE 3.1 WINS VAR 3 - TEACHER EMPATHY           ZOU039WS.TXT  Jun 18 18:07 2025
INPUT: 896 Person  19 Item  REPORTED: 896 Person  19 Item  4 CATS  WINSTEPS 3.73
-------------------------------------------------------------------------------

     SUMMARY OF 896 MEASURED Person
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE   ERROR      MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      54.1      19.0         .85     .40      1.04    -.2   1.03    -.3 |
| S.D.       7.3         .0        1.17     .04       .75    2.0    .84    1.9 |
| MAX.      74.0      19.0        5.42     .77      5.20    6.7   9.90    8.4 |
| MIN.      22.0      19.0       -4.56     .36       .12   -4.9    .12   -4.7 |
|-----------------------------------------------------------------------------|
| REAL RMSE    .47 TRUE SD    1.07  SEPARATION  2.30  Person RELIABILITY  .84 |
|MODEL RMSE    .40 TRUE SD    1.10  SEPARATION  2.71  Person RELIABILITY  .88 |
| S.E. OF Person MEAN = .04                                                   |
-------------------------------------------------------------------------------
Person RAW SCORE-TO-MEASURE CORRELATION = .99
CRONBACH ALPHA (KR-20) Person RAW SCORE "TEST" RELIABILITY = .87

     SUMMARY OF 19 MEASURED Item
-------------------------------------------------------------------------------
|          TOTAL                          MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE   ERROR      MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN    2551.1     896.0         .00     .06       .98   -1.9   1.05   -1.6 |
| S.D.     337.0         .0        1.18     .00       .38    5.1    .56    5.0 |
| MAX.    3096.0     896.0        1.58     .07      2.17    9.9   2.68    9.9 |
| MIN.    2060.0     896.0       -2.01     .05       .68   -8.1    .68   -7.5 |
|-----------------------------------------------------------------------------|
| REAL RMSE    .06 TRUE SD    1.18  SEPARATION 19.13  Item   RELIABILITY 1.00 |
|MODEL RMSE    .06 TRUE SD    1.18  SEPARATION 20.06  Item   RELIABILITY 1.00 |
| S.E. OF Item MEAN = .28                                                     |
-------------------------------------------------------------------------------
UMEAN=.0000 USCALE=1.0000
Item RAW SCORE-TO-MEASURE CORRELATION = -1.00
17024 DATA POINTS. LOG-LIKELIHOOD CHI-SQUARE: 28570.30 with 16108 d.f. p=.0000
Global Root-Mean-Square Residual (excluding extreme scores): .5796
```

6.4 Rasch Model Threshold of the TE instrument

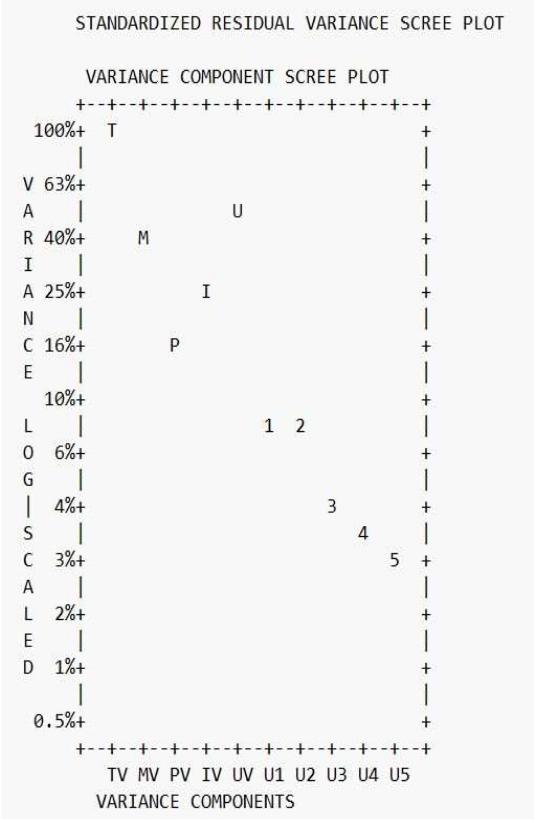
```
TABLE 3.2 WINS VAR 3 - TEACHER EMPATHY           ZOU648WS.TXT  Jun 29 18:59 2025
INPUT: 896 Person  19 Item  REPORTED: 896 Person  19 Item  4 CATS  WINSTEPS 3.73
-------------------------------------------------------------------------------


SUMMARY OF CATEGORY STRUCTURE.  Model="R"
-------------------------------------------------------------
|CATEGORY   OBSERVED|OBSVD SAMPLE|INFIT OUTFIT|| ANDRICH |CATEGORY|
|LABEL SCORE COUNT %|AVRGE EXPECT|  MNSQ  MNSQ||THRESHOLD| MEASURE|
|-------------------+------------+------------++---------+--------|
|  1   1     989   6| -1.38 -1.63|  1.22  1.34||  NONE   |( -3.49)| 1
|  2   2    3845  23|  -.40  -.32|   .88   .87||  -2.27   |  -1.42 | 2
|  3   3    8969  53|   .97   .99|   .94   .94||   -.54   |   1.17 | 3
|  4   4    3221  19|  2.69  2.62|  1.05  1.16||   2.82   |(  3.94)| 4
-------------------------------------------------------------
```



6.5 Wright Map of the TE instrument Instrument



6.6 Item dimensionality of the TE



6.7 Item fit analysis of the TE instrument

TABLE 10.1 WINS VAR 3 - TEACHER EMPATHY ZOU648WS.TXT Jun 29 18:59 2025
INPUT: 896 Person 19 Item REPORTED: 896 Person 19 Item 4 CATS WINSTEPS 3.73

Person: REAL SEP.: 2.30 REL.: .84 ... Item: REAL SEP.: 19.13 REL.: 1.00

Item STATISTICS: MISFIT ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PT-MEASURE CORR.	PT-MEASURE EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	Item
10	2060	896	1.58	.05	1.82	9.9	2.68	9.9	A .13	.57	43.3	54.9	TE10
11	2122	896	1.41	.05	2.17	9.9	2.55	9.9	B .01	.57	42.0	55.4	TE11
13	2396	896	.60	.06	1.28	5.3	1.34	6.1	C .39	.56	54.9	61.3	TE13
4	2654	896	-.27	.06	1.01	.2	1.03	.7	D .59	.55	67.3	65.8	TE4
14	2257	896	1.02	.05	.93	-1.4	1.00	.1	E .48	.57	60.5	57.9	TE14
3	2297	896	.90	.05	.94	-1.3	.95	-1.0	F .65	.57	62.1	59.0	TE3
12	2842	896	-.97	.06	.95	-1.1	.93	-1.5	G .56	.54	70.0	65.2	TE12
2	2449	896	.43	.06	.94	-1.2	.92	-1.7	H .64	.56	66.2	62.5	TE2
1	2097	896	1.48	.05	.91	-2.0	.93	-1.5	I .63	.57	58.1	55.5	TE1
15	3096	896	-2.01	.07	.89	-2.6	.84	-3.3	J .57	.50	70.0	64.4	TE15
8	2570	896	.03	.06	.86	-2.9	.85	-3.1	i .66	.56	70.2	65.0	TE8
19	3065	896	-1.87	.07	.85	-3.7	.81	-4.0	h .61	.51	71.3	64.3	TE19
5	2335	896	.79	.06	.78	-5.0	.80	-4.2	g .68	.57	65.6	59.3	TE5
16	3021	896	-1.69	.06	.70	-7.6	.76	-5.3	f .66	.51	77.5	63.8	TE16
6	2283	896	.94	.05	.74	-6.2	.76	-5.4	e .71	.57	67.1	58.1	TE6
7	2449	896	.43	.06	.75	-5.5	.75	-5.4	d .71	.56	70.6	62.5	TE7
9	2558	896	.07	.06	.73	-5.8	.72	-6.0	c .69	.56	71.9	64.8	TE9
17	2941	896	-1.36	.06	.70	-7.2	.69	-7.3	b .67	.53	75.1	64.4	TE17
18	2978	896	-1.51	.06	.68	-8.1	.68	-7.5	a .65	.52	76.0	64.0	TE18
MEAN	2551.1	896.0	.00	.06	.98	-1.9	1.05	-1.6			65.2	61.5	
S.D.	337.0	.0	1.18	.00	.38	5.1	.56	5.0			9.6	3.6	

Appendix 7. Instrument of Peer Attachment

7.1 Permission for instrument usage

Ulfia Muruu'ah <ulfia.muruuah@uiii.ac.id>

Permission to use the instrument and Request for Indonesian Translation of IPPA

3 pesan

Ulfia Muruu'ah <ulfia.muruuah@uiii.ac.id> 3 Februari 2025 pukul 13.51
Kepada: g.armsden@gmail.com
Cc: mxg47@psu.edu

Dear Prof. Greenberg and Prof. Armsden

I am conducting academic research involving adolescence students in Indonesia and would like to request permission to use the instrument and request official Indonesian translation of the IPPA (Inventory of Parent and Peer Attachment), particularly the Peer Attachment section. I will acknowledge the use of this translated version in my manuscript. I really appreciate your consideration.

Sincerely,
Ulfia

G. Armsden <g.armsden@gmail.com> 5 Maret 2025 pukul 07.19
Kepada: Ulfia Muruu'ah <ulfia.muruuah@uiii.ac.id>
Cc: mxg47@psu.edu

Dear Ulfia,

Thank you for your email. We no longer require permission to use the IPPA. You may download an Indonesian translation from our website: https://www.armsden.com/download.php

Best wishes for a successful project,

Gay Armsden
[Kutipan teks disembunyikan]

Ulfia Muruu'ah <ulfia.muruuah@uiii.ac.id> 6 Maret 2025 pukul 08.32
Kepada: "G. Armsden" <g.armsden@gmail.com>

Dear Prof. Armsden

Thank you very much for your kind response and for clarifying the permission. I appreciate the opportunity to download and use the Indonesian translation from your website. I will make sure to acknowledge it properly in my research

Best regards,
Ulfia

[Kutipan teks disembunyikan]

7.2 **Item instrument of PA is adapted from the inventory of parent and peer attachment (IPPA) by Armsden & Greenberg (2023)**

The distributed instrument was validated by linguistic and psychological experts, and also culturally adapted through some participant candidates within the context of a boarding school. The instruments were thoroughly two stages; the pilot testing was conducted to validate the Likert scale and item fit, which was analyzed by the Rasch model. The redactions of each item were followed by the analysis result before final instrument distribution for real data. Redaction of items is shown in the following table:

Dimension	No.	Original Items	Translated and Adapted Instrument
Communication (CM) Mengukur sejauh mana siswa merasa dapat berbicara terbuka dan mengungkapkan perasaan atau masalah mereka kepada teman sebaya di sekolah.	1	I like to get my friend's point of view on things I'm concerned about	Teman saya memahami kekhawatiran saya dan melihatnya dari sudut pandang saya.
	2	My friends can tell when I'm upset about something	Teman-teman saya dapat menyadari perubahan suasan hati saya, terutama saat saya merasa kesal.
	3	When we discuss things, my friends care about my point of view.	Teman saya menghargai dan mempertimbangkan pendapat saya saat berdiskusi.
	4	My friends encourage me to talk about my difficulties	Teman saya mendorong saya untuk berbicara tentang masalah yang saya alami.
	5	My friends help me to understand myself better.	Teman-teman saya membantu saya untuk lebih mengenal diri sendiri.
	6	My friends care about how I am feeling.	Teman-teman menunjukkan perhatian ketika saya sedang merasa sedih atau khawatir.
	7	I can tell my friends about my problems and troubles.	Saya bisa bercerita kepada teman-teman saya mengenai masalah dan kesulitan saya.
	8	If my friends know something is bothering me, they ask me about it.	Jika teman-teman saya tahu ada sesuatu yang mengganggu saya, mereka bertanya tentang hal itu.
Alienation (AL) Mengidentifikasi tingkat keterasingan, perasaan ditolak, atau tidak dimengerti oleh lingkungan sosial di sekolah oleh teman sebaya.	9	Talking over my problems with friends makes me feel ashamed or foolish.	Saya merasa nyaman dan tidak malu menceritakan masalah saya kepada teman. *
	10	I feel the need to be in touch with my friends more often.	Saya merasa perlu untuk lebih banyak bertemu atau ngobrol dengan teman teman.

Dimension	No.	Original Items	Translated and Adapted Instrument
	11	My friends don't understand what I'm going through these days.	Teman-teman saya memahami apa yang saya alami belakangan ini. *
	12	I feel alone or apart when I am with my friends.	Saya merasa diterima dan terhubung ketika berkumpul bersama teman-teman. *
	13	I feel angry with my friends	Saya merasa tenang dan nyaman ketika bermain bersama teman teman. *
	14	I get upset a lot more than my friends know about.	Teman saya dapat mengetahui saat saya sedang merasa kesal.*
Trust (TR) Menilai sejauh mana siswa merasa percaya dan yakin bahwa teman sebaya memahami, mendukung, dan menghargai perasaan serta pendapat mereka.	15	I wish I had different friends.	Saya merasa senang dengan hubungan saya bersama teman-teman saat ini.*
	16	My friends understand me.	Teman-teman saya memahami saya.
	17	My friends accept me as I am.	Teman-teman saya menerima saya apa adanya.
	18	My friends listen to what I have to say.	Teman-teman memberikan perhatian penuh saat saya berbicara.
	19	I feel my friends are good friends.	Saya merasa teman-teman saya adalah teman yang baik.
	20	My friends are fairly easy to talk to.	Teman-teman saya cukup mudah diajak berbicara.
	21	When I am angry about something, my friends try to be understanding	Ketika saya marah, teman-teman saya mencoba untuk memahami perasaan saya.
	22	I can count on my friends when I need to get something off my chest.	Saya merasa aman mempercayakan cerita dan perasaan saya kepada teman-teman.
	23	I trust my friends	Saya percaya pada teman-teman saya.
	24	My friends respect my feelings.	Teman-teman saya menghormati perasaan saya.
	25	It seems as if my friends are irritated with me for no reason.	Saya merasa teman-teman menerima saya apa adanya.*

*Note: icon * is converted version of unfavorable to favorable item for psychometric clarity, dimensionality, and response consistency which all crucial in Rasch analysis.*

7.3 Reliability and Validity of the PA Instrument

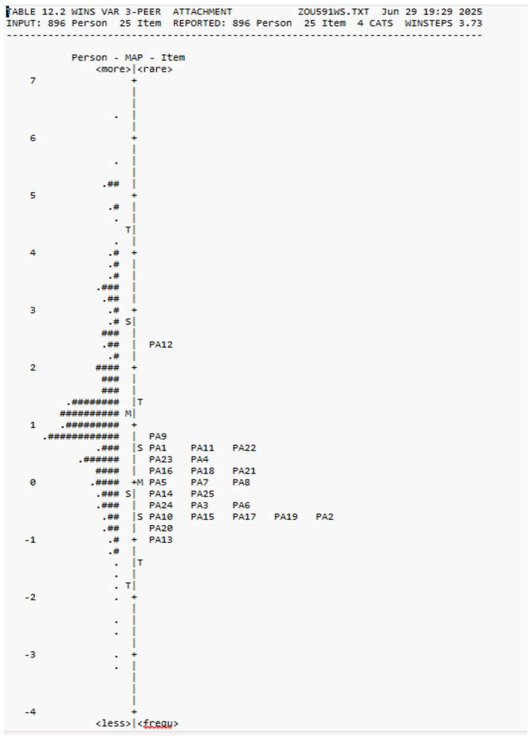
```
TABLE 3.1 WINS VAR 4-PEER  ATTACHMENT           ZOU938WS.TXT  Jun 18 16:02 2025
INPUT: 896 Person  25 Item  REPORTED: 896 Person  25 Item  4 CATS  WINSTEPS 3.73
-------------------------------------------------------------------------------

     SUMMARY OF 896 MEASURED Person

-------------------------------------------------------------------------------
|          TOTAL                        MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE   ERROR      MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      74.9      25.0        1.30     .39      1.04    -.2   1.04    -.2 |
| S.D.      10.7        .0        1.55     .07       .77    2.4    .98    2.5 |
| MAX.      99.0      25.0        6.48    1.05      5.65    9.9   9.90    9.9 |
| MIN.      33.0      25.0       -3.27     .29       .05   -5.0    .05   -4.9 |
|-----------------------------------------------------------------------------|
| REAL RMSE    .46 TRUE SD    1.49  SEPARATION  3.23  Person RELIABILITY  .91 |
|MODEL RMSE    .40 TRUE SD    1.50  SEPARATION  3.79  Person RELIABILITY  .93 |
| S.E. OF Person MEAN = .05                                                   |
-------------------------------------------------------------------------------
Person RAW SCORE-TO-MEASURE CORRELATION = .98
CRONBACH ALPHA (KR-20) Person RAW SCORE "TEST" RELIABILITY = .94

     SUMMARY OF 25 MEASURED Item

-------------------------------------------------------------------------------
|          TOTAL                        MODEL         INFIT        OUTFIT    |
|          SCORE     COUNT     MEASURE   ERROR      MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN    2685.9     896.0         .00     .06       .98   -2.0   1.05   -2.4 |
| S.D.     198.4       .0         .70     .00       .53    4.5    .99    4.4 |
| MAX.    2915.0     896.0        2.45     .07      3.38    9.9   5.77    9.9 |
| MIN.    1911.0     896.0        -.94     .05       .51   -9.9    .48   -9.9 |
|-----------------------------------------------------------------------------|
| REAL RMSE    .07 TRUE SD     .69  SEPARATION 10.41  Item   RELIABILITY  .99 |
|MODEL RMSE    .06 TRUE SD     .69  SEPARATION 10.93  Item   RELIABILITY  .99 |
| S.E. OF Item MEAN = .14                                                     |
-------------------------------------------------------------------------------
UMEAN=.0000 USCALE=1.0000
Item RAW SCORE-TO-MEASURE CORRELATION = -.99
22400 DATA POINTS. LOG-LIKELIHOOD CHI-SQUARE: 33589.19 with 21478 d.f. p=.0000
Global Root-Mean-Square Residual (excluding extreme scores): .5384
```

7.4 Rasch Model Threshold of the PA instrument

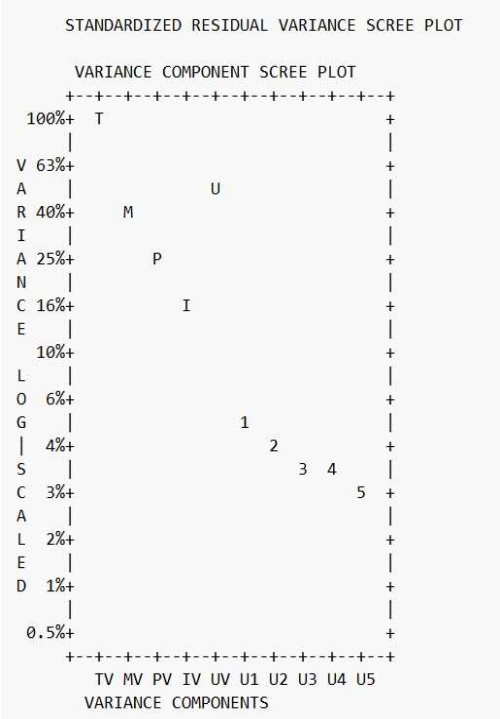
```
TABLE 3.2 WINS VAR 3-PEER  ATTACHMENT           ZOU591WS.TXT  Jun 29 19:29 2025
INPUT: 896 Person  25 Item  REPORTED: 896 Person  25 Item  4 CATS  WINSTEPS 3.73
-------------------------------------------------------------------------------


SUMMARY OF CATEGORY STRUCTURE.  Model="R"
-------------------------------------------------------------------
|CATEGORY   OBSERVED|OBSVD SAMPLE|INFIT OUTFIT|| ANDRICH |CATEGORY|
|LABEL SCORE COUNT %|AVRGE EXPECT|  MNSQ  MNSQ||THRESHOLD| MEASURE|
|-------------------+------------+------------++---------+--------|
|  1   1     829   4|  -.94 -1.50|  1.39  1.57||  NONE   |( -3.41)| 1
|  2   2    3315  15|  -.22  -.08|   .89   .87||   -2.15 |  -1.52 | 2
|  3   3   13336  60|  1.11  1.15|   .90   .87||    -.86 |   1.11 | 3
|  4   4    4920  22|  3.19  3.09|  1.04  1.12||    3.01 |(  4.12)| 4
-------------------------------------------------------------------
```

```
        CATEGORY PROBABILITIES: MODES - Structure measures at intersections
P     -+-----+-----+-----+-----+-----+-----+-----+-----+-----+-
R  1.0 +                                                     +
O      |                                                     |
B      |                                                    4|
A      |11                                                44 |
B   .8 +  11                                              44  +
I      |    1                    333333333               44   |
L      |     11                 33         33         4       |
I      |       1              3             3      4          |
T   .6 +        1            33              3    44         +
Y      |         1          3                  33 4           |
    .5 +          1   222   3                    *            +
O      |           *22   22*                    4 3           |
F   .4 +         22 1     3 2                  4   33         +
       |        2    1   3   22               44      3        |
R      |      22      1 3      22            4         3       |
E      |    22          *         2          4          33     |
S   .2 +  22          33 11        22      44              33   +
P      |22           3     1         22  44                 33 |
O      |           33       11          4**2                  3|
N      |     33333            11**4444    222222              |
S   .0 +*****444444444444444444  1111111111111****************+
E     -+-----+-----+-----+-----+-----+-----+-----+-----+-----+-
      -4    -3    -2    -1     0     1     2     3     4     5
       Person [MINUS] Item MEASURE
```

7.5 Wright Map of the PA Instrument Instrument



7.6 Item Dimensionality of the PA



7.7 Item fit analysis of the PA instrument

TABLE 10.1 WINS VAR 3-PEER ATTACHMENT ZOU591WS.TXT Jun 29 19:29 2025
INPUT: 896 Person 25 Item REPORTED: 896 Person 25 Item 4 CATS WINSTEPS 3.73

Person: REAL SEP.: 3.23 REL.: .91 ... Item: REAL SEP.: 10.41 REL.: .99

Item STATISTICS: MISFIT ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PT-MEASURE CORR.	PT-MEASURE EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	Item
12	1911	896	2.45	.05	3.38	9.9	5.77	9.9	A -.33	.67	38.5	55.2	PA12
10	2848	896	-.63	.07	1.46	7.4	1.50	7.1	B .45	.60	65.0	71.2	PA10
9	2504	896	.72	.06	1.12	2.3	1.14	2.6	C .67	.63	59.4	64.0	PA9
7	2680	896	.07	.06	1.14	2.4	1.06	1.0	D .70	.62	68.0	68.8	PA7
4	2609	896	.35	.06	1.10	1.9	1.12	2.0	E .62	.62	68.0	67.0	PA4
2	2826	896	-.54	.07	1.07	1.3	1.01	.2	F .63	.60	69.8	71.1	PA2
14	2757	896	-.24	.06	1.02	.3	.95	-.8	G .65	.61	72.7	70.3	PA14
6	2812	896	-.48	.07	.99	-.2	.91	-1.5	H .68	.60	72.9	71.0	PA6
15	2827	896	-.54	.07	.96	-.7	.88	-2.1	I .68	.60	73.7	71.1	PA15
22	2512	896	.69	.06	.93	-1.3	.94	-1.1	J .70	.63	71.0	64.1	PA22
8	2708	896	-.04	.06	.91	-1.7	.85	-2.7	K .66	.62	72.0	69.3	PA8
5	2687	896	.05	.06	.84	-3.1	.79	-3.8	L .72	.62	73.2	68.9	PA5
25	2766	896	-.28	.07	.83	-3.1	.79	-3.8	M .65	.61	76.8	70.4	PA25
1	2560	896	.53	.06	.83	-3.4	.82	-3.6	l .69	.63	72.2	65.9	PA1
13	2915	896	-.94	.07	.81	-3.8	.79	-3.7	k .61	.59	78.1	71.1	PA13
21	2662	896	.14	.06	.79	-4.1	.76	-4.5	j .65	.62	73.3	68.3	PA21
23	2612	896	.34	.06	.79	-4.2	.79	-4.1	i .69	.62	71.3	67.1	PA23
11	2518	896	.67	.06	.78	-4.6	.79	-4.3	h .72	.63	70.4	64.8	PA11
3	2782	896	-.35	.07	.78	-4.3	.72	-5.1	g .65	.61	77.7	70.7	PA3
17	2840	896	-.60	.07	.77	-4.5	.76	-4.3	f .67	.60	78.2	71.2	PA17
18	2623	896	.29	.06	.73	-5.5	.70	-6.0	e .71	.62	74.0	67.5	PA18
16	2659	896	.16	.06	.72	-5.8	.69	-6.2	d .75	.62	75.1	68.3	PA16
20	2893	896	-.84	.07	.68	-6.8	.63	-6.8	c .67	.59	80.8	71.2	PA20
19	2857	896	-.67	.07	.60	-8.7	.55	-8.7	b .70	.60	83.1	71.1	PA19
24	2779	896	-.33	.07	.51	-9.9	.48	-9.9	a .73	.61	84.4	70.7	PA24
MEAN	2685.9	896.0	.00	.06	.98	-2.0	1.05	-2.4			72.0	68.4	
S.D.	198.4	.0	.70	.00	.53	4.5	.99	4.4			8.7	3.6	

Appendix 8. Instrument of Learning Workload

8.1 The permission for instrument usage

Universitas Islam Internasional Indonesia

Ulfia Muruu'ah <ulfia.muruuah@uiii.ac.id>

Instrument usage permit

3 pesan

Ulfia Muruu'ah <ulfia.muruuah@uiii.ac.id> 15 Maret 2025 pukul 11.09
Kepada: msony@nust.na

Dear Prof. Sony,

I hope you are doing well. I am Ulfia, a graduate student of Universitas Islam International Indonesia (UIII). I have read your and your team's article *"Student workload assessment for online learning: An empirical analysis during Covid-19"* and found the instrument you used highly relevant to my current thesis on student well-being in Indonesian boarding schools.

With this message, I kindly request your permission to adapt and use the learning workload instrument for academic purposes. Proper citation will be provided in all publications and reports. Thank you for your consideration.

Sincerely yours,
Ulfia

Ulfia Muruu'ah <ulfia.muruuah@uiii.ac.id> 26 Maret 2025 pukul 13.24
Kepada: msony@nust.na

Dear Prof. Sony,

I hope this message finds you well. I am writing to kindly follow up on my previous email regarding a request to adapt and use the learning workload instrument from your publication *"Student workload assessment for online learning: An empirical analysis during Covid-19."*

As this instrument is highly relevant to my thesis research on student well-being in Indonesian boarding schools, your permission would be greatly appreciated. I would be happy to proceed following any terms or conditions you may require.

Thank you once again for your time and kind consideration.

Sincerely,
Ulfia

[Kutipan teks disembunyikan]

Ulfia Muruu'ah <ulfia.muruuah@uiii.ac.id> 20 April 2025 pukul 10.17
Kepada: msony@nust.na

Dear Prof. Sony,

I hope you are in good health. I am writing to follow up once more regarding my request to adapt and use the learning workload instrument featured in your publication *"Student workload assessment for online learning: An empirical analysis during Covid-19"*).

As I have not yet received a response, and understanding that your work has been openly published and widely cited, I intend to proceed with the use of the instrument for academic and non-commercial purposes in my thesis research. Full credit will, of course, be given to your work in all citations and reporting.

If there are any specific terms or concerns I should be aware of, please do not hesitate to let me know. Thank you for your understanding and your contribution to the field.

Sincerely yours,
Ulfia

[Kutipan teks disembunyikan]

8.2 The instrument of TE was adapted from the student workload assessment by Beena & Sony (2022)

The NASA-TLX scale was used in this study by slight modification and culturally adapted by the authors in the context of online learning during COVID-19. The respondents were asked questions to capture the perception of workload on four dimensions that in terms of Mental demand (MD), Physical demand (PD), Temporal demand (TD), Effort (EF), Performance (PE) and Frustration (FR). The distributed instrument was validated by linguistic and psychological experts, and also culturally adapted through some participant candidates. It was converted to statement sentences and adapted to the context of a boarding school. The instruments were thoroughly two stages; the pilot testing was conducted to validate the Likert scale and item fit, which was analyzed by the Rasch model. The redactions of each item were followed by the analysis result before final instrument distribution. Redaction of items is shown in the following table:

Dimension	No.	Original Items	Translated and Adapted Instrument
Effort (EF) Mengukur kemampuan siswa dalam memenuhi beban belajar di sekolah berasrama.	1	How hard did you have to work to accomplish your level of performance in your online learning during Covid-19?	Saya berusaha keras agar dapat mencapai hasil belajar yang diharapkan oleh sekolah berasrama.
Mental Demand (MD) Mengacu pada keadaan mental siswa dalam pemenuhan performa belajar.	2	How mentally demanding was the online learning during Covid-19??	Belajar di sekolah berasrama membuat saya merasa sangat terbebani secara mental.
Performance (PE) Evaluasi hasil performa belajar di sekolah berasrama.	3	How unsuccessful were you in accomplishing what you were asked to do in you online learning during Covid-19?	Saya sering merasa kesulitan untuk menyelesaikan tugas belajar di sekolah berasrama.
Temporal Demand (TD) Melihat kemampuan siswa dalam mengatur strategi belajar.	4	How hurried or rushed was the pace of online learning during Covid-19?	Saya merasa waktu belajar di sekolah berasrama terlalu padat dan cepat berlalu.
Physical Demand (PD) Ketahanan fisik siswa dalam memnuhi beban belajar.	5	How physically demanding was the online learning during Covid-19?	Kegiatan belajar di sekolah berasrama membuat saya sering merasa lelah secara fisik.
Frustration (FR) Konsep untuk mengukur tingkat frustasi atau putus asa yang mencerminkan tingkat kesejahteraan siswa dengan beban belajar dan dikaitkan dengan performa belajar.	6	How insecure, discouraged, irritated, stressed, and annoyed were you after the online learning during Covid-19?	Saya sering merasa tidak aman/minder, putus asa, frustasi, dan kesal setelah mengikuti pembelejaran akademik/non-akademik di sekolah berasrama.

8.3 Reliability and Validity of the LW Instrument

TABLE 3.1 WINS VAR 1 PERSON FIT ZOU404WS.TXT Jun 18 15:22 2025
INPUT: 896 Person 6 Item REPORTED: 896 Person 6 Item 4 CATS WINSTEPS 3.73

SUMMARY OF 896 MEASURED Person

	TOTAL SCORE	COUNT	MEASURE	MODEL ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	16.7	6.0	.78	.70	.99	-.1	1.04	-.1
S.D.	2.5	.0	1.25	.06	.76	1.2	.96	1.3
MAX.	23.0	6.0	4.72	1.13	6.04	4.5	9.90	5.7
MIN.	8.0	6.0	-3.68	.67	.12	-2.6	.11	-2.6

REAL RMSE .79 TRUE SD .96 SEPARATION 1.21 Person RELIABILITY .59
MODEL RMSE .70 TRUE SD 1.03 SEPARATION 1.46 Person RELIABILITY .68
S.E. OF Person MEAN = .04

Person RAW SCORE-TO-MEASURE CORRELATION = 1.00
CRONBACH ALPHA (KR-20) Person RAW SCORE "TEST" RELIABILITY = .61

SUMMARY OF 6 MEASURED Item

	TOTAL SCORE	COUNT	MEASURE	MODEL ERROR	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	2489.5	896.0	.00	.06	1.00	-.5	1.04	-.3
S.D.	388.8	.0	1.24	.00	.25	5.2	.35	5.2
MAX.	3065.0	896.0	1.43	.06	1.50	9.5	1.78	9.9
MIN.	2033.0	896.0	-1.90	.05	.75	-6.0	.76	-5.7

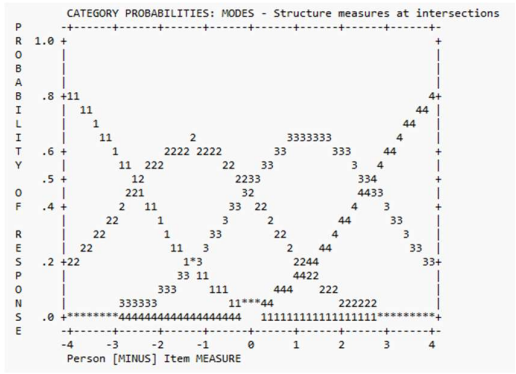
REAL RMSE .06 TRUE SD 1.24 SEPARATION 20.51 Item RELIABILITY 1.00
MODEL RMSE .06 TRUE SD 1.24 SEPARATION 21.72 Item RELIABILITY 1.00
S.E. OF Item MEAN = .56

UMEAN=.0000 USCALE=1.0000
Item RAW SCORE-TO-MEASURE CORRELATION = -1.00
5376 DATA POINTS. LOG-LIKELIHOOD CHI-SQUARE: 9302.51 with 4473 d.f. p=.0000
Global Root-Mean-Square Residual (excluding extreme scores): .5813

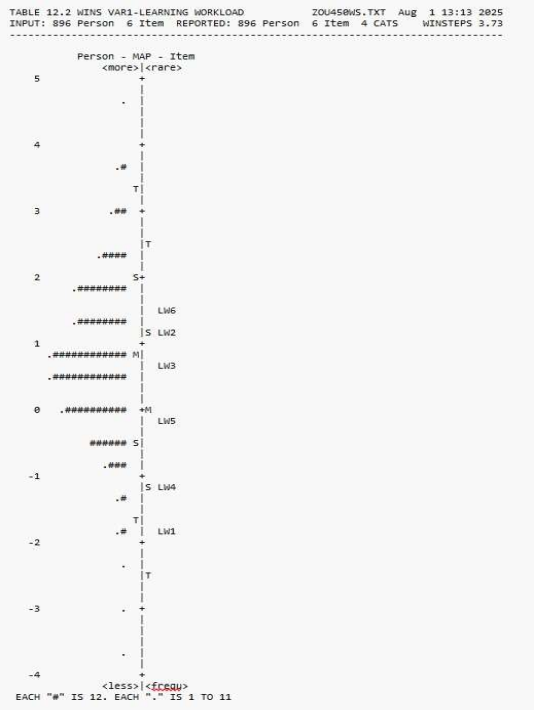
8.4 Rasch Model Threshold of the LW instrument

SUMMARY OF CATEGORY STRUCTURE. Model="R"

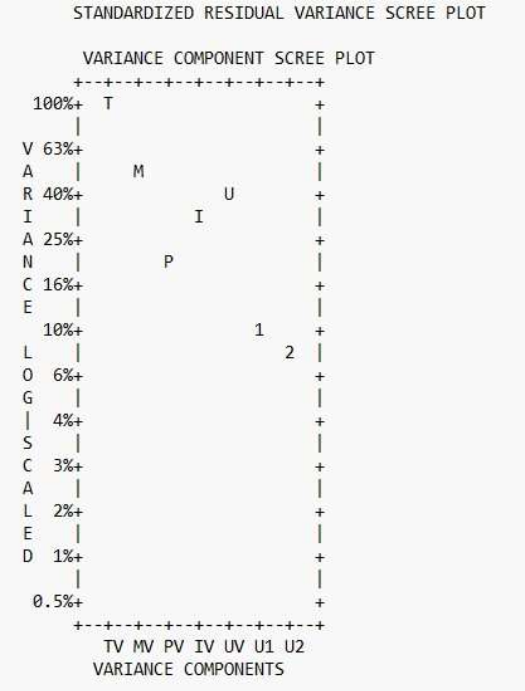
CATEGORY LABEL	SCORE	OBSERVED COUNT	%	OBSVD AVRGE	SAMPLE EXPECT	INFIT MNSQ	OUTFIT MNSQ	ANDRICH THRESHOLD	CATEGORY MEASURE	
1	1	350	7	-1.57	-1.59	1.06	1.12	NONE	(-3.68)	1
2	2	1601	30	-.51	-.41	.86	.93	-2.52	-1.32	2
3	3	2315	43	1.17	1.04	.88	1.04	-.08	1.28	3
4	4	1110	21	2.59	2.72	1.13	1.11	2.61	(3.75)	4



8.5 Wright Map of the LW instrument Instrument



8.6 Item Dimensionality of PA



8.7 Item fit analysis of the LW instrument

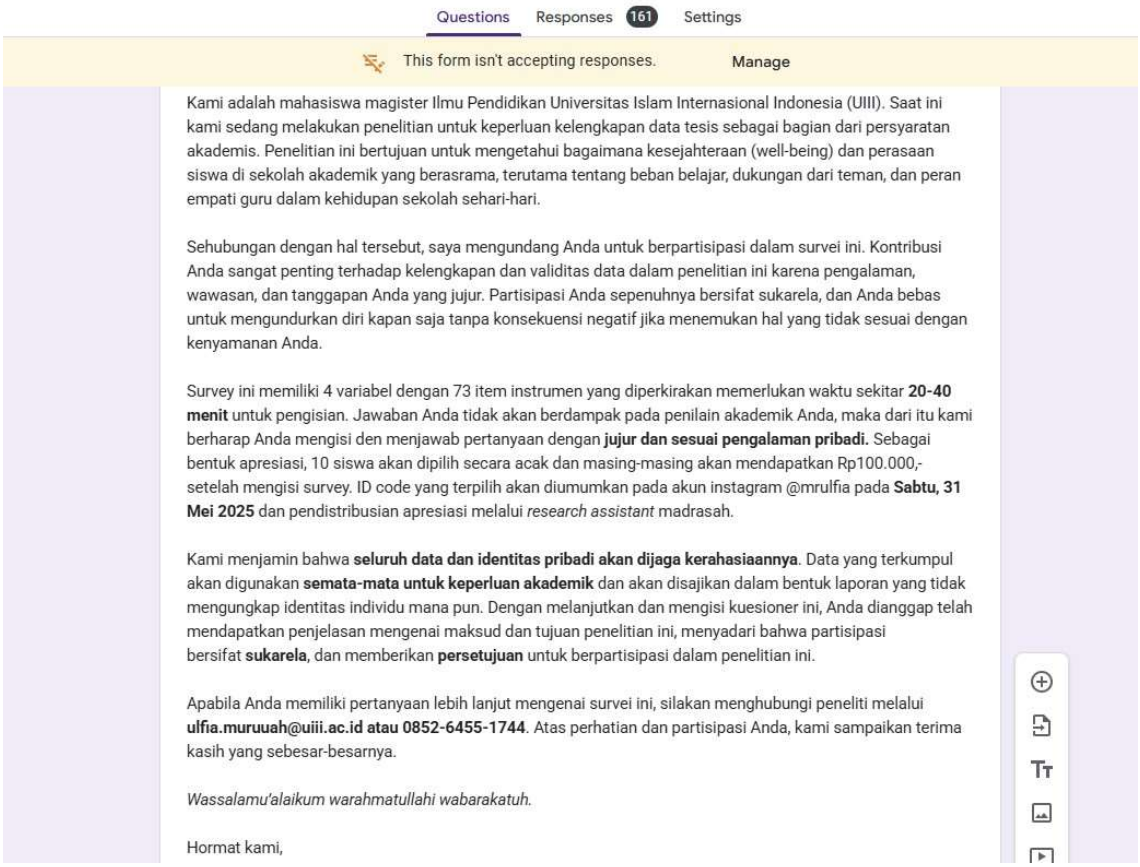
TABLE 10.1 WINS VAR1-LEARNING WORKLOAD ZOU450WS.TXT Aug 1 13:13 2025
INPUT: 896 Person 6 Item REPORTED: 896 Person 6 Item 4 CATS WINSTEPS 3.73

Person: REAL SEP.: 1.21 REL.: .59 ... Item: REAL SEP.: 20.51 REL.: 1.00

Item STATISTICS: MISFIT ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PT-MEASURE CORR.	PT-MEASURE EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	Item
1	3065	896	-1.90	.06	1.50	9.5	1.78	9.9	A .23	.53	53.8	64.6	LW1
6	2033	896	1.43	.05	1.13	2.7	1.13	2.7	B .64	.60	54.5	58.1	LW6
4	2887	896	-1.24	.06	.90	-2.2	.88	-2.4	C .62	.56	67.2	62.3	LW4
3	2273	896	.71	.05	.86	-3.2	.87	-3.0	c .63	.60	61.9	57.9	LW3
5	2582	896	-.23	.06	.84	-3.7	.85	-3.5	b .65	.59	65.1	59.6	LW5
2	2097	896	1.24	.05	.75	-6.0	.76	-5.7	a .68	.60	66.4	58.1	LW2
MEAN	2489.5	896.0	.00	.06	1.00	-.5	1.04	-.3			61.5	60.1	
S.D.	388.8	.0	1.24	.00	.25	5.2	.35	5.2			5.4	2.5	

Appendix 10. Participants Consent Form



Questions Responses 161 Settings

This form isn't accepting responses. Manage

Kami adalah mahasiswa magister Ilmu Pendidikan Universitas Islam Internasional Indonesia (UIII). Saat ini kami sedang melakukan penelitian untuk keperluan kelengkapan data tesis sebagai bagian dari persyaratan akademis. Penelitian ini bertujuan untuk mengetahui bagaimana kesejahteraan (well-being) dan perasaan siswa di sekolah akademik yang berasrama, terutama tentang beban belajar, dukungan dari teman, dan peran empati guru dalam kehidupan sekolah sehari-hari.

Sehubungan dengan hal tersebut, saya mengundang Anda untuk berpartisipasi dalam survei ini. Kontribusi Anda sangat penting terhadap kelengkapan dan validitas data dalam penelitian ini karena pengalaman, wawasan, dan tanggapan Anda yang jujur. Partisipasi Anda sepenuhnya bersifat sukarela, dan Anda bebas untuk mengundurkan diri kapan saja tanpa konsekuensi negatif jika menemukan hal yang tidak sesuai dengan kenyamanan Anda.

Survey ini memiliki 4 variabel dengan 73 item instrumen yang diperkirakan memerlukan waktu sekitar **20-40 menit** untuk pengisian. Jawaban Anda tidak akan berdampak pada penilain akademik Anda, maka dari itu kami berharap Anda mengisi den menjawab pertanyaan dengan **jujur dan sesuai pengalaman pribadi.** Sebagai bentuk apresiasi, 10 siswa akan dipilih secara acak dan masing-masing akan mendapatkan Rp100.000,- setelah mengisi survey. ID code yang terpilih akan diumumkan pada akun instagram @mrulfia pada **Sabtu, 31 Mei 2025** dan pendistribusian apresiasi melalui *research assistant* madrasah.

Kami menjamin bahwa **seluruh data dan identitas pribadi akan dijaga kerahasiaannya**. Data yang terkumpul akan digunakan **semata-mata untuk keperluan akademik** dan akan disajikan dalam bentuk laporan yang tidak mengungkap identitas individu mana pun. Dengan melanjutkan dan mengisi kuesioner ini, Anda dianggap telah mendapatkan penjelasan mengenai maksud dan tujuan penelitian ini, menyadari bahwa partisipasi bersifat **sukarela**, dan memberikan **persetujuan** untuk berpartisipasi dalam penelitian ini.

Apabila Anda memiliki pertanyaan lebih lanjut mengenai survei ini, silakan menghubungi peneliti melalui **ulfia.muruuah@uiii.ac.id atau 0852-6455-1744**. Atas perhatian dan partisipasi Anda, kami sampaikan terima kasih yang sebesar-besarnya.

Wassalamu'alaikum warahmatullahi wabarakatuh.

Hormat kami,

Appendix 11. Faculty Research Permit

Universitas
Islam Internasional
Indonesia

Kementerian Agama Republik Indonesia
Universitas Islam Internasional Indonesia
Jalan Raya Bogor KM. 33.5
Cisalak, Sukmajaya, Depok, Jawa Barat 16416
secretariat@uiii.ac.id
www.uiii.ac.id

Nomor : 182/Dek.FIP/UIII/UM.02/5/2025
Lampiran : -
Hal : Permohonan Izin Penelitian

Depok, 8 Mei 2025

Kepada Yth.
Ibu/Bapak Kepala Madrasah,

Assalamu'alaikum Wr. Wb.,

Dengan ini kami menyatakan bahwa mahasiswa di bawah ini:

Nama	: Ulfia Muruu'ah
NIM	: 04212310015
Fakultas	: Fakultas Ilmu Pendidikan
Program Studi	: Magister Ilmu Pendidikan

sedang melakukan penelitian tesis berjudul "*The Interplay of Learning Workloads and Student Well-Being in Indonesian Boarding Madrasah: The Moderating Influence of Teacher Empathy and Peer Attachment*" dengan lokasi penelitian di MAN Insan Cendekia se-Indonesia. Oleh karena itu kami memohon bantuan Ibu/Bapak untuk memberikan izin kepada mahasiswa tersebut untuk melaksanakan penelitian sesuai jadwal terlampir:

Tanggal	Agenda
9-14 Mei 2025	*Piloting & Analysis*
15 Mei 2025	*Research asisstants meeting*
15-22 Mei 2025	*Data collection*
23-26 Mei 2025	*Outliers analysis*
27-31 Mei 2025	*Data verification*

Kami juga memohon kesediaan Ibu/Bapak Kepala Madrasah untuk memilih satu guru menjadi *research assistant* yang akan diberikan honorarium, dan mengikuti rapat secara daring yang dilaksanakan pada tanggal **14 Mei 2025** pukul 13.00 WIB/14.00 WITA/15.00 WIT melalui Zoom Meeting pada link berikut:

Link Zoom	: https://bit.ly/risetswbmanic
Meeting ID	: 880 9955 4418
Passcode	: manic

Data penelitian hanya akan digunakan untuk tujuan akademis dan tidak akan digunakan untuk tujuan lain. Demikian kami sampaikan, atas perhatian dan kerja sama Ibu/Bapak kami ucapkan terima kasih.

Wassalamu'alaikum Wr. Wb.,

Hormat kami,
Dekan Fakultas Ilmu Pendidikan

Universitas Islam Internasional Indonesia | Faculty of Education

Prof. Nina Nurmila, PhD

Appendix 12. MoRA Research Permit & Recommendation

KEMENTERIAN AGAMA REPUBLIK INDONESIA
DIREKTORAT JENDERAL PENDIDIKAN ISLAM
Jalan Lapangan Banteng Barat No. 3-4 Jakarta Pusat 10710
Website: Pendis.kemenag.go.id

Nomor : SP-25/Dt.I.I/TL.00/03/2025 20 Maret 2025
Sifat : Biasa
Lampiran : -
Hal : Surat Pengantar Izin Penelitian dan Pengumpulan Data

Yth.
Dekan Fakultas Ilmu Pendidikan
Universitas Islam International Indonesia
Di Tempat

Menindaklanjuti surat dari Program Pasca Sarjana Universitas islam Internasional Indonesia, Nomor 109/Dek.FIP/UIII/UM.02/3/2025, Perihal Surat Permohonan Rekomendasi untuk penelitian dan pengumpulan data tesis yang berjudul *The Interplay of Learning Workloads and Student Well-Being in Indonesian Boarding Madrasah: The Moderating Influence of Teacher Empathy and Peer Attachment* di 24 MAN Insan Cendekia di Indonesia selama kurang lebih 1 (satu) bulan. Adapun mahasiswa yang akan melakukan penelitian dan pengambilan data:

Nama : Ulfa Muruu'ah
NIM : 04212310015
Fakultas : Fakultas Ilmu Pendidikan
Program Studi : Magister Ilmu Pendidikan

Kami mengizinkan penelitian Saudara dan berharap penelitian yang dilakukan dapat berjalan dengan lancar serta memberikan kontribusi yang positif bagi perkembangan ilmu pengetahuan, khususnya dalam bidang yang berkaitan dengan tugas dan fungsi Kementerian Agama RI. Adapun beberapa ketentuan yang perlu diperhatikan selama pelaksanaan penelitian, antara lain:
1. Penelitian harus mengikuti prosedur dan aturan yang berlaku di Kementerian Agama RI.
2. Tidak mengganggu aktifitas operasional atau kegiatan yang sedang berlangsung di lingkungan penelitian.
3. Menjaga kerahasiaan data serta informasi yang diperoleh selama penelitian sesuai dengan etika akademik dan ketentuan yang berlaku.

Demikian kami sampaikan, kami mendukung dan mengapresiasi upaya Saudara dalam melakukan penelitian dan berharap agar penelitian ini berjalan dengan baik. Atas perhatiannya, kami ucapkan terima kasih.

Direktur Kurikulum Sarana
Kelembagaan Kesiswaan Madrasah

Nyayu Khodijah

Tembusan:
1. Kakanwil Kementerian Agama di Indonesia
2. Kepala Kantor Kementerian Agama di Indonesia

Dokumen ini telah ditandatangani secara elektronik menggunakan sertifikat elektronik yang diterbitkan oleh Balai Besar Sertifikasi Elektronik (BSrE), Badan Siber dan Sandi Negara