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Measuring Homework Disaffection and Worry in Secondary School Students: Development of Homework Disaffection and Worry Scale

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ABSTRACT

Disaffection and worry during the homework process negatively affect students' motivation and performance. The goal of this study is to develop a valid and reliable measurement tool that can identify students' negative emotional and cognitive reactions to homework. For this purpose, the Homework Disaffection and Worry scale (HDWS) was developed and administered to 821 eighth-grade students attending public schools in Istanbul. Confirmatory factor analysis revealed that the scale has a two-dimensional structure: disaffection and worry. The reliability coefficients of the sub-dimensions were adequate, and the scale variables showed significant relationships with expectancy, value, effort, and achievement. These results suggest that the HDWS is a valid and reliable tool for measuring students' negative emotional and cognitive reactions to homework.

Keywords:
Homework, disaffection, worry, scale development, middle school students

1. Introduction

Homework is an educational activity that occurs outside of the teacher's direct supervision. Its success largely depends on the student's motivation and self-regulation skills (Cooper et al., 2009). After a busy school day, students usually want to relax or engage in activities that interest them. Completing homework is usually the last thing they want to do (Bempechat et al., 2011; Xu & Yuan, 2003). Therefore, completing homework requires strong intrinsic and extrinsic motivators (Hong, 2001; Katz et al., 2011; Trautwein et al., 2006; Xu, 2017, 2023). Intrinsic motivation is supported by factors such as the student's interest in the homework and sense of curiosity and desire to learn, while extrinsic motivation is strengthened by factors such as parental or teacher pressure, fear of getting a low grade, or the expectation of reward (Guay, 2022; Rodríguez et al., 2020).

Most research on homework focuses on positive aspects of students' homework behavior, such as the extent to which and how they complete their assignments (Avcı et al., 2025b; Xu et al., 2025). Conversely, the negative emotions students experience while doing homework, whether due to unwillingness or obligation, have received limited attention in the literature (Goetz et al., 2012; Trautwein et al., 2009; Zhou et al., 2020). To understand homework behavior multidimensionally, it is necessary to examine not only the desire to do homework, but also the avoidance or reluctance (disaffection) to do homework.

In an academic context, disaffection is the opposite of engagement, which is defined as the willingness to do homework. Disaffection refers to a situation in which a student is disinterested, unwilling, or experiencing

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negative emotions and is therefore not participating in the learning process (Skinner et al., 2009). Often, students' academic disaffection is explained only by low levels of engagement. However, research shows that these two concepts are not opposites or graded forms of each other. Each concept represents a separate psychological process (Ritoša, 2022). Therefore, disaffection should be considered an independent construct. To better understand this construct, standardized assessment tools that can validly and reliably measure the level of disaffection must be developed.

Students may experience negative emotions during and after completing homework, which may affect their effort and completion behavior (Goetz et al., 2012). This suggests that the relationship between negative emotions, homework reluctance, and low academic achievement needs to be examined more closely. In recent years, negative emotions related to homework have attracted attention and become an important area of investigation (Avcı et al., 2024, 2025a; Xu, 2024b). In this context, some researchers have focused on anxiety (Pekrun, 2024; Pekrun et al., 2023). Anxiety is a multidimensional construct consisting of three components: cognitive (worry), emotional (emotionality), and physiological (physiological arousal) (American Psychiatric Association [APA], 2013; Eysenck et al., 2007; Pekrun, 2006; Pekrun & Stephens, 2012). However, Pekrun (2024) and Pekrun et al. (2023) generally treat anxiety as a unidimensional construct in their homework-related studies (Avcı et al., 2025a). Nevertheless, individuals may experience intense cognitive worry without the emotional or physiological components (Nasiri et al., 2020; Ruscio & Borkovec, 2004). Therefore, evaluating the worry component as an independent construct will contribute to a more detailed understanding of the role of emotions in the homework process. To address gaps in the literature and improve homework research, this study aims to develop a valid and reliable instrument to measure students' levels of disaffection and worry during the homework process. Such a tool would enable a multidimensional evaluation of students' emotional and cognitive responses to homework.

2. Literature

2.1.Disaffection

Disaffection occurs when a student develops negative feelings toward the learning process, resulting in reluctant or reactive behaviors. It refers to a student's active emotional reactions resulting in non-participation in academic activities. Disaffected students typically experience negative emotions, such as boredom, anxiety, or anger, during the learning process (Skinner et al., 2009). In this respect, disaffection differs from disengagement, a term used in the literature to describe behavioral withdrawal from academic activities (Chipchase et al., 2017; Perkmann et al., 2021). In other words, disaffection is not merely the absence of engagement. Engagement and disaffection are independent, yet opposite, processes (Skinner et al., 2009).

Students may experience disaffection for different reasons. When teachers and parents do not meet the three basic psychological needs (autonomy, competence, and relatedness) defined in Self-Determination Theory, students may develop negative feelings toward academic activities. When these needs are not met, students may feel apathetic, anxious, angry, or bored. Over time, these negative feelings may lead to passivity or withdrawal. Additionally, teachers' overly controlling or oppressive attitudes are considered an important factor in increasing students' level of disaffection (Skinner et al., 2008a; Skinner et al., 2009). In this context, insufficient support or attention from parents and teachers also reinforces students' tendencies toward disaffection and withdrawal (Zhou et al., 2020).

According to the research findings, disaffection is a multidimensional phenomenon that causes students to disengage from the learning process, both emotionally and behaviorally. Skinner et al. (2008a, 2008b, 2009) and Zhou et al. (2020) discovered that disaffection results in negative consequences, including low academic achievement, poor communication with teachers, withdrawal from school, distractibility, a lack of enjoyment in learning, and avoidance of new learning opportunities. These findings suggest that low self-efficacy and academic achievement are in a reciprocal cycle that feeds and is affected by disaffection. Mystkowska-Wiertelak (2022) found that disaffection is closely related to low efficacy perceptions, negative emotions (e.g., anxiety, boredom, and frustration), distraction, superficial engagement, controlling teacher behaviors, and low autonomy perceptions. Similarly, Henry and Thorsen (2020) found that students' disaffection was linked to activities in which they could not express themselves, that were foreign to their identities, and that involved imposed roles. Taboada, Barber, and colleagues (2017) showed that disaffection is related to low perceptions of autonomy, competence, and teacher support. High emotional engagement, on the other hand, reduces

disaffection. Taken together, these findings suggest that disaffection emerges when students' needs for autonomy, competence, relatedness, and emotional support are unmet and interacts with academic failure and low self-efficacy.

2.2.Worry and Anxiety

Anxiety is a multidimensional construct consisting of cognitive, emotional, and physiological components. Worry represents the cognitive aspect, while the emotional component includes feelings such as tension and fear. The physiological component includes physical reactions such as heart palpitations and muscle tension (APA, 2013; Pekrun, 2006; Pekrun & Stephens, 2012). According to Pekrun's classification of academic emotions, anxiety belongs to the category of negative emotions. This emotion causes students to exhibit high levels of emotional and physiological responses during the learning process, typically in response to academic activities or their outcomes. Students tend to experience anxiety when they perceive success or failure as very important or when they feel they lack the control necessary to avoid failure (Goetz et al., 2010; Pekrun, 2006; Pekrun et al., 2010, 2011, 2023).

Worry refers to a student's concern and negative expectations about an academic activity or performance situation. In other words, worry involves constant thoughts about the possibility of failure, the fear of evaluation, and negative outcomes. Repetitive negative thoughts such as "What if I fail?" or "What if I get a low grade?" are the basis of worry (Davey & Wells, 2006).

A large body of literature exists on anxiety experienced in academic environments, particularly during testing. Meta-analyses have revealed a negative correlation between anxiety and academic performance (Seipp, 1991; Teimouri et al., 2019; von der Embse et al., 2018). Subsequent studies on homework have revealed that anxiety impacts homework motivation and success, as well as being influenced by parental and teacher attitudes and behaviors (Avcı et al., 2024, 2025a; Dettmers et al., 2011; Goetz et al., 2012; Luo et al., 2016).

In the context of measuring emotional reactions, scales that assess anxiety in academic environments, particularly during exams, have examined this emotion by separating its cognitive, emotional, and physiological dimensions (Lowe & Ang, 2012; Putwain et al., 2021). However, the Homework-Related Emotions Scale (HRES) (Avcı et al., 2024; Goetz et al., 2012), which is frequently used in homework-related literature, measures anxiety as a unidimensional construct. Studies on worry independent of anxiety in the context of homework are limited (Hong et al., 2015). Hong et al. (2015) found that homework worry was negatively related to self-efficacy, whereas value was positively related to worry. Therefore, it can be concluded that worry is a factor that weakens students' emotional and cognitive engagement in the homework process. Therefore, evaluating worry as a separate construct provides a more accurate picture of the multidimensional nature of academic emotions.

2.3. The Present Study

The Disaffection and Worry Scale, developed within the scope of this study, utilizes items from previous studies that measured disaffection (Zhou et al., 2020) and worry (Hong et al., 2015). Research shows that disaffection and worry are significantly related and independent constructs (González et al., 2015; Ma, 2022; Raufelder et al., 2013). However, the strong relationship between the two constructs, as well as the fact that they both reflect negative perceptions of homework, suggests that these dimensions can sometimes be evaluated under a single, common construct. In this study, however, it was hypothesized that disaffection and worry would show an independent two-dimensional structure.

To test the construct validity of the scale, the variables of expectancy, value, and task effort were chosen. According to Expectancy-Value theory, a student's belief in their ability to perform an academic task is called expectancy, and the importance they place on the task is called value (Eccles & Wigfield, 2020). These two variables are frequently used in homework literature to measure student motivation (Avcı et al., 2025b; Xu et al., 2025; Xu & Corno, 2022). General academic literature shows that motivation and disaffection (González & Paoloni, 2014; Skinner et al., 2009) and worry (Goetz et al., 2006; Lichtenfeld et al., 2012) are negatively related. Within the scope of homework, students with higher expectancy-value perceptions were found to experience fewer negative emotions (Avcı et al., 2025b; Avcı & Özgenel, 2025). In the homework literature, expectancy has been found to be positively correlated with value engagement (Gladstone et al., 2022a; Nagengast et al.,

2013; Suárez et al., 2019). Taken together, these findings suggest that expectancy and value are negatively related to disaffection and worry.
Homework effort refers to a student's level of effort in completing homework assignments (Trautwein, 2007). Students only exert more effort when they are motivated to do homework (Trautwein et al., 2006; Xu et al., 2025). Students who have negative feelings about homework put less effort into it and complete less (Avcı et al., 2025b; Avcı & Özgenel, 2025; Dettmers et al., 2011). Some studies consider homework behaviors as a whole when measuring engagement (Valle et al., 2016). Therefore, there is a high positive correlation between engagement and homework effort. Accordingly, this study hypothesized that Disaffection and Worry would be negatively related to homework effort.

3. Method

3.1.Participants

The study used two participant groups. Data from the first group (n = 475) were used for confirmatory factor analysis, convergent validity, and reliability, while data from the second group were used for predictive validity and test-retest reliability. Eighth grade students were included in both groups. Data from the first group were collected from four different schools in Istanbul and a total of sixteen classes. Participants ranged in age from 11 to 15 years old. The majority of the sample was 13 years old (76.21%), followed by 14 years old (14.67%) and 12 years old (8.31%). Findings on the education level of the participants' fathers show that most of them graduated from high school (38.87%), earned a bachelor's degree (19.28%), or attended secondary school (18.77%). A similar distribution was observed for mothers' education levels, with the largest group being high school graduates (35.59%). Rates of other education levels were lower.

A second group of 346 participants was recruited from twelve different classrooms in four schools in Istanbul. The gender distribution was balanced, with 49.13% female and 50.87% male. The majority of the students were 13 years old (81.79%), followed by 14 (13.29%) and 12 (4.05%) years old. According to their fathers' education levels, most graduated from high school (41.33%), followed by those who completed undergraduate studies (20.23%) and those who completed secondary school (16.47%). A similar distribution was observed for the mothers' education levels, with the largest group being high school graduates (38.44%). Other education levels were represented at lower rates.

Prior to data collection, necessary permissions were obtained from the local education authority and school administrations. Written informed consent was obtained from the parents of participating students, who were only included in the study if they volunteered. Trained research assistants administered the questionnaires in paper form during class hours. Each session lasted approximately 20–30 minutes. The first phase of data collection took place in November 2024, and the second phase took place in May 2025.

3.2. Instruments

Homework Disaffection and Worry Scale (HDWS): The HDWS aims to identify students' negative attitudes toward homework. The disaffection dimension assesses negative emotional reactions to homework, and the worry dimension assesses cognitive-level worries and negative expectations about homework. Scale items were adapted from previous studies (Zhou et al., 2020; Hong et al., 2015).

As part of the scale development and adaptation process, items related to the disaffection dimension were adapted from scales developed by Zhou et al. (2020), and items related to the worry dimension were adapted from scales developed by Hong et al (2015). Two researchers and three experts translated the original items into Turkish, and then a single Turkish text was prepared. The text was then revised for linguistic clarity, appropriateness for the age group, and cultural fit. Content validity was then assessed by consulting two experts in the field, and necessary revisions were made. Finally, a pilot study was conducted with ten students to test the comprehensibility of the items.

The eight-item scale, consisting of two sub-dimensions of four items each, used a 7-point Likert-type rating system ranging from 1 (does not describe me at all) to 7 (describes me completely) to determine the extent to which students identify with it. Sample items from the scale are as follows: "Disaffection: Math homework is an extra task that my teacher gives to me." "Worry:While completing math homework, I find myself thinking about the consequences of failing."

Expectancy Value Scale (EVS): The EVS is a scale that assesses students' beliefs about the expectancy and value of math homework (Avcı & Özgenel, 2024b; Yang & Xu, 2018). The expectancy dimension reflects students' beliefs about their ability to complete math homework, and the value dimension reflects their perception of its importance and usefulness. The EVS consists of eight items in two sub-dimensions: expectancy and value. Participants rated each item on a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree), indicating how well each item suited them. Sample items from the scale are as follows: "Expectancy: "Whether or not I do my math homework, I don't understand the lesson anyway," and "Value: Our math homework takes a lot of time and is of little use to me." The scale was found to be highly reliable (expectation α = .80; value α = .85).

Homework Effort Scale (HES): The HES scale assesses students' determination and effort in completing math homework (Avcı & Özgenel, 2024a; Xu, 2024a). The scale consists of four items that determine students' level of perseverance and dedication to their homework. Participants responded to each item on a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree), indicating the extent to which each item described them. A sample item is as follows: "I do my best in mathematics homework." The HES's internal consistency was found to be high (α = .82).

Academic Achievement: Academic achievement was determined based on students' end-of-year math report card grades. These grades were obtained from school administrations. In Turkey, report card grades are calculated as an average of four exam scores and four performance scores, including homework, projects, and class participation. Performance scores are based on teacher evaluations and grades for assigned tasks. All grades are evaluated on a 100-point scale.

3.3. Statistical Analysis

This study examined the psychometric properties of the HDWS using a multi-stage statistical analysis process. The scale's factor structure is based on a predefined two-dimensional model (Disaffection and Worry), which aligns with the theoretical foundations and findings from previous studies. Confirmatory factor analysis (CFA) was used instead of exploratory factor analysis (EFA) to confirm the predefined factor structure (Brown & Moore, 2012). Because the scale has a theoretical two-factor structure (disaffection and worry), the two-factor correlation model was tested. Because the HDWS items are Likert-type and categorical, the diagonally weighted least squares (DWLS) estimator was used in the analyses. DWLS is recommended because it produces more accurate standard errors and fit values, particularly in CFA models with categorical observations (Mindrila, 2010). After testing construct validity, Pearson correlation analysis was used to examine the convergent and predictive validity of the scale by testing the relationships between the HDWS sub-dimensions and the variables Effort, Expectancy, Value, and Achievement. The correlation coefficients were evaluated in terms of concurrent and predictive validity. Finally, Cronbach's alpha, omega coefficient, and test-retest reliability methods were used to examine the reliability of the scale. For test-retest reliability, correlation coefficients were calculated between two time points. All analyses were performed in R software using the lavaan and psych packages.

4. Findings

4.1. Preliminary Analysis

Table 1 presents the descriptive statistics of the variables used in the study. Disaffection and worry scores showed a significant level of variance, and the skewness and kurtosis values remained within the range of ±1, which is compatible with the assumption of a normal distribution. These results support the feasibility of confirmatory factor analysis (CFA) and correlation analyses.

Table 1: *Descriptive Statistics for HDWS Subscales and Criterion Variables*

Variable	Mean	SD	Skewness	Kurtosis
Disaffection	14.04	7.39	0.35	-0.94
Worry	15.64	7.42	0.16	-1.09
Effort	11.73	2.70	-0.50	0.08
Expectancy	8.79	3.28	0.28	-0.71
Value	8.11	3.15	0.59	-0.20

4.2. Validity

Construct Validity

Examining the initial (unmodified) version of the two-factor model revealed that it provided a limited fit to the data. The chi-square value was significant ($\chi^2(19) = 119.34$, $p < .001$), and the χ^2/df ratio, in particular, was high at 6.28, indicating a poor fit between the model and the data. Additionally, the RMSEA value of .106 and its confidence interval (.088-.124) supported this poor fit, indicating local incompatibilities in the model. Although the CFI = .991 and the TLI = .987 represent an acceptable level of fit, these high values could not compensate for the poor fit indicated by the RMSEA and the χ^2/df ratio. While the SRMR value of .067, which is below .08, indicates that the residual structure of the model is generally acceptable, it is clear that the unmodified model does not provide an adequate fit in a holistic evaluation.

After examining the modification indices, a significant improvement in the model fit was observed when two local modifications were applied (HDW1 ↔ HDW2 and HDW7 ↔ HDW8 residual covariances). While the chi-square value of the modified model was significant ($\chi^2(17) = 54.96$, $p < .001$), the χ^2/df ratio decreased to 3.23, suggesting a substantial improvement in model fit. Additionally, the CFI = .997 and TLI = .995 values reveal that the model provides a nearly perfect fit. The RMSEA = .069 and its confidence interval (.049-.089) suggest that the model shows an acceptable fit. Furthermore, SRMR = .046 suggests that the residuals are low and the model aligns well with the data. The findings are presented in Table 2.

Table 2: *Standardized Parameter Estimates for the Original and Modified Two-Factor Models*

Parameter	Model 1	Model 2
Disaffection → HDW1	0.76 (0.73-0.79), 45.00**	0.72 (0.68-0.76), 38.51**
Disaffection → HDW2	0.74 (0.71-0.77), 43.54**	0.69 (0.66-0.73), 36.69**
Disaffection → HDW3	0.79 (0.76-0.82), 48.03**	0.80 (0.77-0.83), 47.68**
Disaffection → HDW4	0.91 (0.88-0.95), 54.96**	0.92 (0.89-0.95), 54.14**
Worry → HDW5	0.93 (0.90-0.96), 59.55**	0.93 (0.90-0.96), 59.19**
Worry → HDW6	0.84 (0.81-0.87), 53.28**	0.84 (0.81-0.87), 53.17**
Worry → HDW7	0.81 (0.78-0.84), 53.08**	0.79 (0.76-0.82), 51.63**
Worry → HDW8	0.41 (0.37-0.45), 19.95**	0.34 (0.29-0.39), 14.71**
Worry ↔ Disaffection	0.84 (0.81-0.87), 51.35**	0.86 (0.83-0.90), 50.21**
HDW1 ↔ HDW2	-	0.34 (0.23-0.46), 5.78**
HDW ↔ HDW8	-	0.42 (0.29-0.55), 6.39**

Note. All estimates are standardized. CI = confidence interval. $p < .05$, $p < .01$. Model 1 represents the original two-factor model, whereas Model 2 represents the two-factor model with modifications.

Upon analyzing the path coefficients related to the two-factor structure of the HDWS, it was evident that the items comprising the Disaffection and Worry sub-dimensions strongly reflected the factor structure. The standardized loadings of items on the Disaffection factor ranged from .69 to .92, indicating that each item adequately represented the relevant latent construct. Similarly, items belonging to the Worry factor make significant contributions, with loadings ranging from .34 to .93. HDW5, HDW6, and HDW7 items, in particular, show that the Worry dimension is consistently defined with high factor loadings. HDW8 produced a relatively lower loading value of .34 in the modified model, indicating that it represents the latent construct less strongly than the other items. However, the significant and acceptable level of the item loading indicates that it continues to contribute to the scale.

The covariance values between the two factors also support the theoretical structure of the scale. The relationship between the Disaffection and Worry factors is high and significant (r = .86 in the modified model). This strong correlation suggests that students' tendencies toward disaffection are closely related to their worry levels. The strong covariance suggests that, while the two dimensions are not completely independent, they are still distinguishable constructs. This indicates that the two-factor model of the scale is both theoretically and empirically appropriate.

The effect of the two local modifications is evident in the model parameters as well. Adding the residual covariances of HDW1 ↔ HDW2 and HDW7 ↔ HDW8 to the model improved the factor loadings and overall fit, as it accounted for the common variance due to the proximity of these items' content. The significant values of these covariances (e.g., .34 for HDW1 ↔ HDW2 and .42 for HDW7 ↔ HDW8) suggest that the measurement

model accurately reflects the shared meaning between items. The significant improvement in the model fit indices (e.g., RMSEA decreased from .106 to .069 and CFI increased from .991 to .997) after these modifications indicates that the residual correlations increased the model's explanatory power.

Discriminant validity was examined using the Fornell–Larcker criterion and model comparison. The correlation between Disaffection and Worry was high (r = .86), corresponding to a squared correlation of r^2 = .74. The AVE values were lower than the squared correlation, indicating that discriminant validity was not fully supported. To further evaluate construct distinctiveness, a nested model comparison was conducted. The two-factor model demonstrated a significantly better fit than the one-factor model, $\Delta\chi^2(1) = 96.65$, $p < .001$ (two-factor: $\chi^2(19) = 255.06$, AIC = 31,777, BIC = 31,899; one-factor: $\chi^2(20) = 473.54$, AIC = 31,994, BIC = 32,111). These findings suggest that, despite the high correlation, Disaffection and Worry are empirically distinguishable yet strongly related constructs.

Concurrent Validity

To examine the convergent validity of the HDWS, we calculated correlations between the Disaffection and Worry subdimensions and the Effort, Expectancy, Value, and Achievement variables. The findings were significant and consistent with theoretical expectations. Scores on the sub-dimensions were significantly associated with perceptions of low effort, low expectancy, and low value. Additionally, high HDWS scores were negatively related to academic achievement, supporting the scale's convergent validity. The findings are presented in Table 3. The correlations reported in Table 3 represent concurrent validity, as all variables were measured at the same time point using the first sample.

Table 3: *Concurrent validity: Correlations between HDWS and criterion variable*

Variable	1	2	3	4	5
1. Disaffection					
2. Worry	0.62**				
3. Effort	-0.35**	-0.16**			
4. Expectancy	-0.46**	-0.41**	0.37**		
5. Value	-0.50**	-0.28**	0.39**	0.63**	
6. Achievement	-0.09	-0.12**	0.23**	0.28**	0.21**

Note. *p < .05, **p < .01,

Predictive Validity

To assess predictive validity, HDWS scores measured at Time 1 were used to predict outcome variables (effort, expectancy, value, and achievement) measured at Time 2. The results presented in Table 4 indicate that both Disaffection and Worry were negatively associated with all outcome variables over time, supporting the predictive validity of the scale. To examine temporal stability, test–retest reliability was calculated based on HDWS scores measured at two time points approximately six months apart. The correlation coefficients indicated moderate but significant stability (Disaffection: r = .43, p < .001; Worry: r = .35, p < .001). These findings suggest that the HDWS demonstrates acceptable temporal reliability.

Table 4: *Predictive validity: Time-lagged associations between HDWS and outcome variables*

	Effort	Expectancy	Value	Achievement
Disaffection	-0.34***	-0.31***	-0.36***	-0.27***
Worry	-0.17**	-0.25***	-0.22***	-0.16**

Note. Values represent predictive correlations (Time 1 HDWS → Time 2 outcomes). *p < .05, **p < .01, ***p < .001.

4.3. Reliability

The Disaffection subscale demonstrated high internal consistency (α = .83), while the reliability of the Worry subscale was deemed acceptable (α = .80). The omega coefficient for the total score obtained from all items was quite high (.90), indicating strong overall reliability of the scale.

Test-retest reliability was evaluated by correlating HDWS scores obtained at Time 1 and Time 2. The disaffection subscale demonstrated moderate temporal stability (r = .43, **p < .001). The Worry subscale exhibited a similar pattern, r = .35, p < .001. Taken together, these results suggest that the HDWS demonstrates adequate test-retest reliability across two measurement occasions.

5. Discussion

The main purpose of this study was to develop a valid and reliable instrument to measure students' levels of disaffection and worry during the homework process. The findings suggest that the two-dimensional structure of the HDWS effectively assesses middle school students' negative emotional reactions and cognitive-level concerns about math homework. The results also revealed that the disaffection and worry dimensions are independent constructs reflecting the negative attitudes students experience during the homework process. Analyses of validity and reliability revealed that the HDWS demonstrated strong psychometric properties in terms of construct validity, criterion validity, and internal consistency.

The moderate test–retest reliability coefficients may indicate that disaffection and worry are not entirely stable traits but are sensitive to situational and contextual changes. Given that these constructs reflect emotional and cognitive reactions to homework, some degree of fluctuation over time is expected and may reflect the scale's sensitivity to change rather than a limitation.

The findings show that the two-factor structure of the scale, Disaffection and Worry, aligns with theoretical expectations and previous scale development studies. The items loaded significantly and highly on the two factors, indicating that the HDWS reliably captures students' negative emotional reactions and cognitive worries about homework. Previous studies that considered the disaffection and worry dimensions alongside different components revealed that these two constructs are independent (Hong et al., 2015; Xu, 2025; Zhou et al., 2020). Therefore, the findings are consistent with previous literature, and the HDWS validly reflects this distinction.

The high, yet not fully overlapping, relationship between the disaffection and worry sub-dimensions suggests that these two constructs are partially overlapping processes. To further examine discriminant validity, the Fornell–Larcker criterion was applied by comparing the average variance extracted (AVE) values with the squared inter-factor correlation. The findings indicated that the AVE values did not exceed the shared variance between the constructs, suggesting that discriminant validity was not fully supported. Nevertheless, additional model comparisons demonstrated that the two-factor structure provided a better representation of the data than a unidimensional alternative. Taken together, these results suggest that although the constructs exhibit substantial empirical overlap, they remain theoretically and structurally distinguishable. Conversely, as indicators of disaffection, such as emotional detachment and reluctance, increase, students are more likely to experience cognitive worry about the assignment. Research has identified the interaction between disaffection and worry. González et al. (2015) suggested that anxiety is a strong predictor of general disaffection. More recently, Ma (2022) found a significant relationship between disaffection and cognitive worry. Additionally, Raufelder et al. (2013) found a positive relationship between worry and disaffection. However, the fact that the factors remain statistically distinguishable suggests that disaffection and worry are distinct constructs, as described in the literature (Davey & Wells, 2006; Eysenck et al., 2007; Pekrun et al., 2011). Considering worry as the cognitive component of anxiety alone (APA, 2013) allows for a better understanding of the multidimensional structure of emotions during the homework process. This approach shows that academic worry can be monitored through students' mental preoccupations, independent of emotional and physiological symptoms.

Findings on convergent and predictive validity revealed that the relationships between the HDWS and motivational and behavioral indicators were consistent with previous literature. The negative relationship between Disaffection and Worry scores and expectancy, value beliefs, and homework effort measures aligns with Expectancy-Value theory principles (Gladstone et al., 2022b) and previous study results (Avcı et al., 2025b; Avcı & Özgenel, 2025; Goetz et al., 2006; Lichtenfeld et al., 2012). Students who perceive homework as important and useful (value) and feel competent in this task (expectancy) experience fewer negative emotions and cognitive worry. However, some studies show that value is positively related to worry (Hong et al., 2015; Pekrun, 2006). The negative relationship between Disaffection and Worry and homework effort is also consistent with the literature. Studies in this context have revealed that students with high anxiety and negative feelings toward homework generally spend less effort on it (Avcı et al., 2025b; Avcı & Özgenel, 2025; Dettmers et al., 2011). This finding provides important evidence for the HDWS's validity.

Finally, the relationship between HDWS and academic achievement provides important insights into performance outcomes. While worry showed a significant negative association with achievement, the

relationship between disaffection and achievement was not statistically significant. This finding suggests that emotional disengagement may not directly translate into performance outcomes. Academic achievement is influenced by multiple cognitive and contextual factors, and the effect of disaffection may operate indirectly through motivational variables such as effort, expectancy, and value. Previous studies have reported that increased worry and anxiety in the homework context have a suppressive effect on students' homework completion and test performance (Hong et al., 2015; Seipp, 1991; von der Embse et al., 2018). Consistent with this literature, the present findings highlight the stronger role of cognitive worry compared to emotional disaffection in predicting academic outcomes. Taken together, these findings support the predictive validity of the HDWS, particularly in terms of its ability to capture students' cognitive vulnerabilities related to homework over time.

6. Limitations, Recommendations and Conclusion

This study found that the HDWS is a valid and reliable instrument for measuring the levels of disaffection and worry that middle school students experience regarding homework. Conducting confirmatory factor analysis, as well as assessing convergent and predictive validity, internal consistency, and test-retest reliability within the scope of scale development, showed that the HDWS has strong psychometric properties.

However, when generalizing the findings, some limitations should be considered. First, the study was conducted only with seventh grade middle school students. Therefore, validity and reliability studies should be conducted with different age groups before applying the scale to them. Additionally, the study was conducted with students living in a large city, so this should be taken into consideration when conducting studies in rural areas. The validity analysis of the scale used expectation, value, homework effort, and academic achievement variables. These variables are based on models of the homework process from the literature (Avcı & Özgenel, 2025; Xu & Corno, 2022). These models include variables such as parental and teacher involvement, intrinsic and extrinsic motivation, approach to homework, and self-regulation. In future studies, these variables can be used to assess criterion validity. Furthermore, testing the scale at different grade levels and in different subject areas (e.g., science or language homework) and cultural contexts would strengthen the validity findings. Examining measurement invariance by gender and school type would contribute to the usability of HDWS scores in intergroup comparisons.

The findings of this study offer valuable insights into the literature on homework. This study's significant contribution is examining disaffection and worry in the context of homework in an educational system like Turkey's, where exam pressure and homework loads are high. Studies in Turkey reveal that many students perceive homework as stressful, wasteful, and burdensome, leading to disengagement from school (Dilekçi, 2023; Ekleş & Doğru, 2024; Epçaçan, 2025; Oğuz et al., 2023). These studies demonstrate that long-term homework assignments that do not align with students' interests and proficiency levels can lead to negative attitudes toward the course, school, and even withdrawal from education. The HDWS was developed in this context, suggesting that it can reveal students' emotional risk profiles, particularly in exam-oriented, homework-intensive education systems. Thus, it may contribute to rethinking homework in terms of not only academic gains but also students' emotional well-being. From a practical perspective, the HDWS can serve as a monitoring tool for teachers and school counselors. By identifying disaffection and worry profiles at the classroom level, teachers can determine which classes or groups of students have more negative feelings about homework. This information can guide the design of more autonomy-supportive assignments that are appropriate for students' levels and interests and balanced in terms of duration and difficulty.

7. References

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