

## CHAPTER TWO

### REVIEW OF RELATED LITERATURE

#### **2.1 Introduction**

This chapter dealt with the synthesis of research studies from different sources like research articles, books and government reports that confer about the issues and concerns discussed in the previous chapter ( i.e. chapter 1). The process of examining these related documents is considered as review of related literature. The literature reviews “describe the past and current state of information on the topic of your research study” (Creswell, 2015, p. 80). In line with these imperatives, the researcher has reviewed related literature on the problems and issues introduced in the previous chapter (i.e. chapter 1) as signified in the following sections:

#### **2.2 Review of related literature**

##### **2.2.1 Gender differences in student views of teachers’ classroom support and engagement**

Literature (Allen et al., 2013) has demonstrated how students perceive teachers’ engagement and involvement in teaching and how teachers provide emotional support to students have positive effects on several student outcomes like interest in learning, achievement, and student engagement. For example, Kaya (2020) reported that, as students’ perceived teacher affective support increased, difficulties of the students especially, in Mathematics decreased. Furthermore, Rimm-Kaufman et al. (2015) argued that Students in classes with instructors working hard, exhibiting compassion, and individual attentiveness to their pupils felt better classroom experiences. Therefore, teachers’ engagement in classroom teaching is highly associated with students’ engagement and students’ success.

##### ***2.2.1.1 Gender difference in teacher support in favor of girls***

Students learn better when they feel that their teachers are active, engaged and involved in class. However, Vansteenkiste et al. (2012) has reported that males demonstrated lesser teacher support than females. Furthermore, Females perceive their relationships with instructors more positively than males (Tennant et al., 2015). The literature

females are more aligned than males to report better teacher support (Lietaert, Roorda, Laevers, Verschueren, & De Fraine, 2015; Reddy, Rhodes, & Mulhall, 2003). In addition, research shows that instructors' support is more crucial for the school transition of adolescents, particularly for males (Hamre & Pianta, 2001). In a study (Lietaert et al., 2015) on 385 seventh graders in the context of Dutch language classrooms, girls demonstrated higher support from instructors in all three sub-scales (viz. autonomy support, structure, and involvement) with Cohen's *d* coefficients for gender disparities in those dimensions as .52, .60, and .31, respectively.

On the same line of argument, studies revealed that students' perceived support from their teachers differs significantly across gender with the explanation that the females reported more appreciation and motivation while males reported more criticism from teachers (den Brok et al., 2006; Wentzel et al., 2010). It is thus expected that boys' and girls' perceptions of their teachers' engagement also may differ. In support of the gender difference in perceived teacher support in favor of girls, some studies (e.g. Younger, Warrington, and Williams, 1999) have provided another explanation that teachers treat females better than males showing a lack of patience towards disruptive behavior of the male students (Vansteenkiste et al., 2012; Wang & Eccles, 2012) and perceiving females as ideal students. However, handful studies (e.g. Dee, 2007) have reported that most teachers favor males over females by providing a more beneficial instructional environment to them.

An explanation regarding gender difference in perceived teacher support in favor of girls may be documented from the arguments of Younger et al. (1999) that in accordance with the notion that females are more cooperative, ready to please, organized, and communicative than boys, teachers consider 'female' to be the ideal gender for students. In addition, Meece et al. (2006) found that males are more often asked to answer questions and get negative feedback from their teachers.

#### ***2.2.1.2 Gender gap in teacher support in favor of boys***

On contrary to the findings regarding the lower perceptions of boys' regarding teacher support, Viira and Koka (2010) showed that boys perceived significantly higher their teacher's supportive behavior significantly higher than girls did. This supports the

findings of the earlier studies showing that teachers communicate more frequently with boys than with girls (Brown et al., 1996; Davis, 2003; Dunbar & O'Sullivan, 1986; Nicaise et al., 2007) and teachers provide boys with more choices and options in class. In addition, instructors present boys with more favorable thoughtful and deliberate their academic excellence (i.e., competence-supportive behavior).

There is evidence in literature dealing with gender differences in perceived teacher engagement and teacher support that teachers tend to interact with students differently (Viira & Koka, 2010). The literature review conducted by Davis (2003) reveals that instructors communicate verbally with males more often than with girls. Boys, as opposed to girls, viewed their instructors as asking them questions (Brown et al., 1996; Dunbar & O'Sullivan, 1986) and offering them with general positive responses (i.e., praise and encouragement) more often (Nicaise et al., 2007).

### ***2.2.1.3 Inconsistency in gender gap in perceived teacher engagement, involvement and support***

Researchers have shown that what a teacher really communicates and how students receive and understand the material are not necessarily congruent (Martinek, 1988). Therefore, it becomes vital to investigate how the learners perceive and understand different components of classroom student-teacher interaction. On the basis of the findings reported in the earlier studies, question remains whether this gender difference is truly present in learners' perceptions of instructors' engagement. On the whole, the literature on gender disparities in students' perceptions of teacher engagement is scant and ambiguous. Roorda et al. (2011) reported in their meta-analysis that it is unclear whether emotional teacher-student connections are more essential for boys or girls.

Although a prominent gender gap in students' perceived support from teachers favoring females has been reported in most studies, contrasting images have also emerged from several studies. In sum, the differential teacher behavior may make the students to perceive teachers as less supportive in class and less engaged in teaching. Thus, examination of gender difference in learners' perceptions of instructor engagement in class becomes important to understand classroom dynamics in general. Therefore, the

gender differences in the learners' perceptions of instructors' engagement in teaching must be tested. Thus, the gender difference in perceived teacher engagement considering all the engagement dimensions in a single study must be investigated.

### **2.2.2 Gender gap in student engagement**

Psychological research has a long history of examining gender variations in academic engagement. Not only do boys report lower levels of motivation on average (Butler, 2014), but they also appear to be less engaged (Lam et al., 2012). Klem and Connell (2004) conducted a study on 2430 students and demonstrated that 68% of the they were more likely to be disengaged. Researchers (Sedlak, Wheeler, Pullin, & Cusick, 1996; Steinberg, Brown, & Dornbusch, 1996) reported that 40 percent to 60 percent of adolescents are perennially disinterested in class by the end of high school education.

Studies across elementary, middle school, and secondary school grades reported that boys and girls students vary in their perceived level of engagement, and specifically, female students reported higher engagement in academic activities in schools (e.g., Marks, 2000). Moreover, such gender gap becomes more concerning for the young adolescents at secondary schools (Kelly & Price, 2014; Murray & Zvoch, 2011; Wang & Eccles, 2012) as compared to the students just entering high schools (Kelly & Zhang, 2016) especially in the behavioral dimension of engagement (Covell, 2010; Wang et al., 2011). Besides, the gender difference was found as the males reported lower behavioral and cognitive engagement as compared to the females (Poysa, et al., 2018). Similar observations were reported by other studies (e.g. Finn & Cox, 1992; Lee & Smith, 1993). Further, girls are more sincere in completing homework, remain highly motivated, and are more enthusiastic towards future learning (Cox, 2000; Warrington et al., 2000) which indicate that they are cognitively more engaged than the boys do. Such disparity in engagement may be attributed to girls' higher academic rigor (Cooper, 2014), desire to learn, higher level of using meta-cognitive strategies (Kenney- Benson, Pomerantz, Ryan, & Patrick, 2006), and interested in academic activities (Williams, Burden, & Lanvers, 2002). Based on review of previous literature regarding gender gap in student engagement, the following issues may be addressed in the context of the present study:

### ***2.2.2.1 Gender difference in classroom engagement in favor of girls***

Literature shows that females, on average, have higher school engagement and lower dropout rates than males (Wang & Eccles, 2012). Cooper (2014) showed identical outcomes for 1,132 American students in grades 9 through 12. Further, student engagement seemed to drop regardless of students' gender at secondary level education (Wang & Eccles, 2012), where several researches (e.g. Dotterer, McHale, & Crouter, 2009) suggesting a greater drop in engagement for boys than for girls, hence exacerbating the gender difference. Further, Lamote et al. (2013) investigated secondary school students and demonstrated that males were more likely than females to show low engagement or the declining engagement.

While explaining the gender difference in pupils' engagement with regard to personal characteristics, Figueroa (2000) proposes that boys develop an anti-school mindset as a result of socialization processes. In contrast to what is required of females in the classroom, boys have considerably more flexibility to pick what they choose to accomplish and when and how they wish to do it (Figueroa, 2000; Parry, 2000). In a similar vein, Mazjub and Rais (2010) note that certain males are unable to “mug” or focus on learning information for lengthy amounts of time, and they struggle to stay quietly in the classroom behaviors required to assimilate subject-related knowledge. These writers also argue that certain males have a propensity for sports and outdoor activities which frequently clashes with their focus for academics.

The male-female disparities in work ethic and maturation are the fundamental characteristics contributing to the gender gap. They (Figueroa, 2000; Joseph, 2016) felt that girls had more goal-orientation, emotional maturity, and work ethic than boys. Similar but fewer proportions of participants believed that the education system benefited females which is associated with the “feminization of schooling hypothesis” (Figueroa, 2000; Joseph, 2016). This highlights the lower or detrimental engagement trajectory of boys throughout secondary education. Thus, it becomes essential to consider gender gaps in secondary school students' engagement.

### ***2.2.2.2 Gender gap in classroom engagement in favor of boys***

Studies indicate that female students are less active than male students (Leraas, Kippen, and Larson, 2018;). For instance, Crombie and colleagues (2003) demonstrated that male students self-reported being more active participants than female students. Furthermore, male students reported much more and longer contacts with their instructors than female students. Crawford and MacLeod (1990) showed that female students assessed themselves to be less involved than their male counterparts. In addition, they observed that boys and girls had distinct motivations for not engaging. Female students were more likely to blame their lack of engagement to factors like their “ideas were not well-formed”, “did not know enough about the topic”, or “fear of seeming stupid in front of peers”. Male students, on the other side, were more likely to ascribe their lack of engagement to “not having completed the necessary reading” or “concerns that their remarks may adversely impact their grades” (Crawford & MacLeod, 1990, p. 116). Some study, however, has failed to demonstrate these gender differences (Rocca, 2010), or has shown very limited sex differences, such as gender variations in the sorts of questions posed (Pearson & West, 1991).

Further, female students reported lower positive attitudes towards Mathematics and poorly rated their ability in this subject domain (Eccles, Adler, & Meece, 1984; Wigfield et al., 1991). On the same tone, male students have manifested higher interest and perceived higher importance of Mathematics in high schools as compared to the female students (Frenzel, Goetz, Pekrun, & Watt, 2010). However, to achieve the goal of promoting the level of engagement among male and female students, it is highly necessary to find whether all the engagement dimensions are gender-sensitive.

### ***2.2.2.3 No significant difference in student engagement across students' gender***

Although the gender gap continues to affect students through the impact of students' engagement in learning, the study by Mohammed, Atagana, and Edawoke (2014) at South Wollo Zone Schools in Ethiopia, reported that no statistically significant difference was found between male and female students in academic engagement. Besides, the study by Jelas et al. (2014) also showed similar results. Further, Wang et al. (2011) reported that males and females did not substantially vary in terms of classroom engagement.

#### ***2.2.2.4 Inconsistency in gender gap in student engagement dimensions***

Wang, Willett, and Eccles (2011) evaluated 1103 middle school children in the United States and found that females had higher mean scores on behavioral and emotional engagement but not cognitive engagement. The research conducted by Lietaert, Roorda, Laevers, and Verschueren (2014) on 385 seventh-grade children revealed that men were less interested than girls.

Results (Viira & Koka, 2010) implied higher engagement for females than males on cognitive and emotional engagement measures. Rimm-Kaufman et al. (2014) found that in the environment of more instructional support, males demonstrated higher social engagement than female students. The correlation between cognitive and emotional engagement and classroom settings (emotional and organizational support) was stronger for males than for females (Rimm-Kaufman et al., 2015).

On the whole, research results examining gender differences related to engagement are inconsistent. For instance, Hu and Kuh (2002) imply that although their average levels of involvement may not vary, boys are prone to be either very disengaged or highly involved. In contrast, Kuh (2003) found that girls are, on average, more involved than boys. Likewise, Zhao, Carini, and Kuh (2005) found that sometimes females reported higher levels of student engagement, and occasionally males reported higher levels of student engagement, but that no obvious connections between students' gender and student engagement appeared. Thus, gender difference in engagement of students in class considering all engagement dimensions in a single study must be examined.

#### **2.2.3 Gender difference regarding students' academic achievement**

The gender gaps in achievement over time have attracted researchers' interest (Ceci & Williams, 2007; Hyde, 2014). In the past, some psychological studies in neuroscience linked male advantage in mathematics and the greater proportion of males engaged with STEM disciplines to biological features that predisposition males to be more adept at the cognitive processes involved in mathematical learning (e.g. Baron-Cohen, 2002). However, the current psychological perspective does not support the notion of a male 'intrinsic aptitude' for mathematics, as research indicates no gender disparity in students'

cognitive abilities and, consequently, no difference in the potential for females and males to achieve in mathematics on average (Spelke, 2005).

### ***2.2.3.1 Gender gap in academic achievement in favor of boys***

In the United States, females outperform males on reading success tests, although they usually score poorly in science and mathematics. The gender-based interactions between students and instructors account for a significant proportion of these disparities (e.g., role-model and Pygmalion effects). In addition, instructors of the same gender may express distinct (and self-fulfilling) demands to boys and girls in their classes (i.e., Pygmalion effects; Dee, 2005). Nevertheless, the evidence on the significance of these interactions is scarce and conflicting.

Several national studies on gender discrepancies in educational performance indicate that male and female students in the United States score comparably on maths examinations, while females outperform males students on reading or English language arts (ELA) assessments (Cimpian, Lubienski, Timmer, Makowski, & Miller, 2016).

### ***2.2.3.2 Gender gap in academic achievement in favor of girls***

Boys trail behind girls in terms of subject grades, secondary school graduation, and enrollment in and completion of postsecondary education, according to early researches (e.g. Clark, Lee, Goodman, & Yacco, 2008; Parker, Van Zanden, & Parker, 2018). Male underachievement was emphasised by Majzub and Rais (2010), who demonstrated that females outperformed boys in almost all subject areas, regardless of whether those were science or non-science majors. Empirical studies indicate that girls outperform boys at various stages of the school process, have superior grades, and get post-secondary credentials in greater numbers (Matthews, Morrison, & Ponitz, 2009; Voyer & Voyer, 2014). This tendency persists even after adjusting for the socioeconomic backgrounds of the pupils (Matthews et al., 2009).

Males are slipping farther and further behind girls in school. The results of a research conducted by Gurian and Stevens (2007) on the minds of males revealed that boys receive poorer grades and the bulk of failing grades, and they drop out of school four times more often than girls. In addition, boys are recognised for disciplinary offences ten



times more often than girls (Gurian & Stevens, 2007). Other studies also supported that boys perform worse than girls especially, in secondary school (Voyer & Voyer, 2014). In OECD nations, 15-year-old boys are more likely than girls to fail to achieve a basic level of competency in reading, maths, and science (OECD, 2015). This disadvantage has significant repercussions: males who fall behind run the risk of dropping out of high school, not attending college or university, and/or being jobless. In OECD countries, 66% of girls enrolled in college in 2009, compared to 52% that of men, and this disparity is growing (OECD, 2012). In 2015, 43% of European women aged 30–34 completed postsecondary education, compared to 34% of European men in the same age range. In the last decade, this disparity has grown by 4.4 percentage points (OECD, 2015).

Researchers are split regarding the significance of gender disparities in mathematics and scientific achievement, with some believing that the inequalities are tiny (Hyde, 2014; Zell, Krizan, & Teeter, 2015) but yet important (Benbow et al. 2000; Gallagher and Kaufman 2005; Reilly et al. 2015). Gender inequalities in science achievement are studied less often than in mathematics achievement and are slightly higher in magnitude, but their presence is contested by some academics, particularly at younger ages (e.g., Haworth et al., 2010).

### ***2.2.3.3 Inconsistency regarding gender gap in students' academic achievement***

It has been widely documented that males begin to outperform females in math tests in many industrialized countries and that this gap persists over time in OECD countries (Bedard & Cho, 2010). Much of the evidence has focused on the United States with some recent studies suggesting that the average gender difference in math achievement among teenagers has been narrowing (Hyde & Mertz, 2009). According to literature (e.g., Devi & Mayuri, 2003), males have more challenges achieving academic success than girls.

According to studies, the achievement gap between boys and girls in mathematics increases from kindergarten through fifth grade, with males exhibiting higher academic achievement than girls (Hyde & Mertz, 2009). However, in the context of middle schools, the scenario is different, as females demonstrate greater academic gains than males (Robinson & Lubienski, 2011). However, in mathematics courses, gender differences in achievement require additional investigation. Thus, the gender gap in

academic achievement must be examined as it largely contributes in improving classroom teaching-learning process. These gender gaps are alarming, and theories as well as empirical studies on the factors that may contribute to these disparities are required to improve pedagogical practice about how instructors might better encourage learner engagement and their achievement for both genders. Admittedly, early studies either have overlooked gender differences or were restricted to comparing the mean levels of classroom engagement between boys and girls (Vecchione, Alessandri, & Marsicano, 2014). Thus, the gender disparity in achievement among students must be addressed.

#### **2.2.4 The explaining role of perceived teacher engagement on the association between students' gender and their engagement.**

##### ***2.2.4.1 Gender disparity in student engagement***

Females reported higher engagement in learning as opposed to male students (Covell, 2010; Pagani, Fitzpatrick, & Parent, 2012). Further, students' self-reported engagement follow a declining trend as they traverse from elementary to secondary school, particularly at an increasing rate among male students (Wang & Eccles, 2012). However, several researches demonstrated comparable engagement of students regardless of their gender (Virtanen et al., 2015). Such findings highlight the significance of fostering high-quality classroom instructions and student participation in class and class-related activities.

Girls reported significantly greater behavioral engagement than boys, which is consistent with the hypothesis and is in agreement with the results of other studies (Covell, 2010). Further, girls' higher behavioral engagement may reveal why they earn higher grades than the boys in multiple nations (Freudenthaler, Spinath, & Neubauer, 2008). However, girls may not always prefer school as frequently as boys, although they may put optimal effort to secure higher academic performance standards than males.

##### ***2.2.4.2 Gender gap in perceived teacher engagement may explain gender gap in student engagement***

Males often reported poorer degree of instructional support (Vansteenkiste et al., 2012). Younger et al. (1999) stated that instructors are less tolerant of the poor behavior of males

because they perceive females as the ideal students. They correlated this feminine behavior with characteristics such as more compliance and propensity to please, as well as improved organizational abilities. So, it is anticipated that learners' views of teacher engagement might play significant role in explaining the gender disparity in their engagement in classroom learning activities.

#### ***2.2.4.3 Link between perceived teacher engagement and student engagement***

As per the Flow theory, students facing difficulties like feeling bored, frustrated, and anxious generally lead to being disengaged from learning (Csikszentmihalyi, 1990). In this context, the motivational and need supportive roles of teachers are vital in fostering sustained engagement among the students (Shernoff et al., 2017).

Previous researches (e.g., Chen, 2005) have reported positive association between perceived teacher engagement/support and student engagement. Past researches across different school levels have shown that students perceiving greater feelings of closeness to their instructors found to be manifest higher engagement particularly in emotional and behavioral dimensions (Murray & Greenberg, 2001). Some empirical studies also found teacher support to be significantly positively related to student engagement across the elementary, middle school, and high school students (Marks, 2000) and also in the case of young adolescents in general (Stroet et al., 2013).

However, previous studies dealt with general measures of student engagement and have overlooked whether all the engagement dimensions are significantly influenced by teacher support. Consequently, which engagement dimensions can be highly regulated by shaping teacher support remained unexplored. Further, in the current literature, much effort is not available that attempted to examine whether the gender gap in perceptions of teacher engagement reflects the gender disparity in all the engagement dimensions.

Stroet et al. (2013) in their review have reported an insufficient number of researches on teacher support as a mediator on the link between students' gender and the engagement dimensions. Hence, the present study attempts to get insights whether the gender disparity in perceived teacher engagement play significant role in explaining the gender gaps in all the engagement dimensions. While these researches enquired into the

relationship between students' perceptions of teacher support/engagement, those did not evaluate whether teacher engagement components are the causes behind the gender imbalance in engagement. In this study, the researcher examined whether three sub-scales of teacher engagement explain the gender gaps in three factors of student engagement.

## **2.2.5 Gender exerts moderation effect the association between teacher engagement and student engagement**

### ***2.2.5.1 Contribution of perceived teacher engagement in promoting engagement among students***

In accordance with SDT, it might be argued that instructor support is favorable for the engagement of both male and female students (Ryan & Deci, 2000). In school intervention research, engagement is an important malleable factor, as Christenson et al. (2012) noted: "Engagement is an alterable state of being that is highly influenced by the capacity of school, family, and peers to provide consistent expectations and supports for learning" (pp. v–vi). Several experts have emphasized the need of increasing students' engagement as a prerequisite for educational achievement, as well as enhancing the quality of education (Coates, 2010).

Teacher support positively influences students' overall engagement, irrespective of their gender (Ryan & Deci, 2000). However, less importance was assigned to the role of students' gender on the association between instructor support and student engagement (Stroet et al. 2013). According to studies, students with caring and supportive interpersonal interactions exhibit more positive academic attitudes and values, as well as greater school satisfaction (Solomon, Battistich, Watson, Schaps, & Lewis, 2000). These students also are more engaged academically (Connell & Wellborn, 1991; Solomon, Battistich, Watson, Schaps, & Lewis, 2000; Marks, 2000; Ryan & Patrick, 2001), irrespective of their gender.

Studies have shown that students' evaluations of teacher support are strongly associated with their engagement, such as an interest in learning and a desire to pursue academic achievement (e.g., Goodenow, 1993; Wentzel, 1997). Males and females seem to have varied degrees of engagement, and instructor support has often been associated with

learners' engagement (Stroet et al., 2013). Further, it was supported that instructors give greater autonomy support and are better involved with females than with boys (Vansteenkiste et al., 2012).

#### ***2.2.5.2 Relationship between teacher engagement and student engagement is different for males and females***

Some studies (e.g. Marks, 2000) showed that the differential relationship between teacher support and students' overall engagement for males and for females. Teacher support in the form of positive teacher-taught relationships, emotional attachment, warmth, and caring towards students was found more beneficial for the engagement of the male students, as they show disruptive behavior in class, are less motivated to learn, and are reported lower academic achievement. Hence, teacher support is more needful for males as they are at a potential risk of academic disengagement in school (Hamre & Pianta, 2001). Some studies (e.g., Marks, 2000) have been carried out to examine the differential role of teacher support rather on students' overall engagement than on the separate dimensions of engagement for male and female students. Teacher-student interaction in terms of emotional support to the students influenced emotional engagement differently for males and females (Lietaert et al., 2015).

Further, Martin (2003) revealed from interview data that the presentation of interesting activities, the provision of choices, the relevance of schoolwork, and the respect for students' opinions were considered by the male students as highly engaging classroom practices. Further, Geist and King (2008) contended that males were often more diverted than girls while executing repetitive tasks passively and proposed that boys would benefit from flexibility, exploration, and hands-on activities. This may suggest that providing varieties in classroom learning activities is more important for boys.

#### ***2.2.5.3 Influence of perceived teacher engagement dimensions on student engagement***

Regarding the emotional component of teacher support or engagement, Roorda et al. (2011) concluded that teachers' emotional connections with their students are more influential for males' school engagement than for girls'. Similarly, Greene et al. (2004) demonstrated that emotional support had a larger impact on males' involvement than on

females'. On contrary, Thijs and Verkuyten (2009) revealed that increased teacher engagement positively affected girls' engagement more than boys'. However, several researches revealed that the association between teacher participation and students' involvement was equally strong for males and females (Hafen et al., 2012; Lam et al., 2012).

Positive teacher-student relationships enhance student engagement (Anderson et al., 2004; Roorda, Koomen, Spilt, & Oort, 2011). Furthermore, Spilt, Koomen, and Thijs (2011) demonstrate that positive teacher-student interactions not only lead to increased student engagement but also to teacher well-being. Students that have a more favorable perception of their teachers perform better and have fewer challenges (Crosnoe, Kirkpatrick Johnson, & Elder, 2004).

Consequently, there is substantial evidence of the association between teacher emotional support and student engagement (Green et al., 2008; Murray, 2009). These positive associations have been reported in studies including both student and instructor reports of support (Klem & Connell, 2004). In sixth and seventh grade, teacher attempts to encourage prosocial conduct correlate to greater behavioural and social involvement (Matsumura, Slater, & Crosson, 2008). Positive teacher emotion is associated with engagement, whereas negative teacher affect is associated with disengaged behaviour (Roorda, Koomen, Spilt, & Oort, 2011).

In light of these limited and inconsistent results, it may be inferred that additional investigations are required (1) to augment the limited body of literature and (2) to include the components of teacher engagement within a single model. Thus, this current research analyses the differential impacts of the components of teacher engagement on boys' and girls' engagement. With such inconstancies in the findings and lack of knowledge, it is evident that extensive research is required to extend the existing literature by taking into account all the engagement dimensions within in a single study that enquires into differential effects of teacher support on each engagement dimension. Admittedly, insufficient research has been conducted on the potential moderating effect of teacher engagement on the relationship between gender and student engagement (Stroet et al., 2013). Thus, in the present study, students' engagement and their perceived teacher

engagement were measured concurrently to examine the temporal coupling between instructors' behaviors and learners' experiences.

## **2.2.6 Student engagement explaining the association between students' gender and their achievement**

### ***2.2.6.1 Influence of student engagement on achievement of the students***

Student engagement is the most immediate and persisting issue for improving student learning outcomes (e.g. achievement) (Park, 2005; Lee, 2013; Baroody, Rimm-Kaufman, Larsen, & Curby, 2016; Wang, Fredricks, Ye, Hofkens, & Linn, 2016; Furlong & Christenson, 2008). According to research, the most blatantly disengaged students either interrupt classes or fail to finish tasks. Disengagement contributes to academic issues such as student boredom, isolation, high dropout rates, and poor academic success (Fredricks, Filsecker, & Lawson, 2016; McFarland, Cui, Rathbun, & Holmes, 2018). Academically engaged students put optimum efforts for success in school (Li & Lerner, 2011). Balfanz and Byrnes (2006) analysed the relationship between engagement and achievement and concluded that learner engagement is crucial for predicting academic achievement. Past researches have proven that learners' engagement is a predictor of their achievement (Deveci & Karademir, 2019; Finn & Zimmer, 2012; Finn, & Voelkl, 1993). Specifically, the association between student engagement and achievement has received attention from researchers from the past to the present (Carini, Kuh, & Klein, 2006; Delfino, 2019).

Starting from middle childhood to early adolescence is a vital period for children to develop the core skills, aptitude, interests, and social relationships necessary for a healthy adjustment. Student engagement and achievement are important indications of adolescents' academic success and subsequent employment prospects (Roorda et al., 2011). Students' engagement is associated with several adolescent outcomes, including academic achievement (Wang and Holcombe, 2010), dropout from school as well as psychological wellbeing of the students (Bond et al., 2007). Regrettably, it appears that student engagement is declining with the decline in academic accomplishment (Mahatmya et al., 2012). It is reported that 25 to 40% of adolescents exhibit disengagement (e.g., apathy, being inattentive, not trying hard; Yazzie-Minz, 2007).

Many researchers have demonstrated that student engagement is a predictor of students' achievement (Wu, Hughes, & Kwok, 2010). Researchers (e.g. Chen, 2005) have also shown that students' academic engagement is positively associated with their achievement outcomes. Chen (2005) found that "students in the high-achieving group were more self-motivated, persistent and responsible in doing their homework than those in the low-achieving group" (p. 133).

#### ***2.2.6.2 Gender difference in student engagement and academic achievement***

In the literature, students' academic achievement was found to be influenced by multiple factors, out of which student engagement is one of the most important factors (e.g. Wigfield et al., 2015). It has also been demonstrated that males often reported poorer levels of academic engagement. This can be attributed to the findings of Younger, Warrington, and Williams (1999) who reported that instructors are less lenient towards male students' misbehavior since they perceive the 'ideal' student to be female. The teachers connected this feminine behaviour with characteristics such as greater compliance, a propensity to please, and superior organizing abilities. So, it may be assumed that males' and females' levels of classroom participation may account for the gender difference in academic achievement.

In the past two decades, the phenomenon of females earning higher grades than boys has been demonstrated worldwide. In many countries, this holds relevant throughout the elementary, secondary, and even college years (Perkins, Kleiner, Roey, & Brown, 2004; Van Houtte, 2004). Nonetheless, a number of researchers (e.g. Johnson, 2008) have claimed that gender disparities in academic success are due to interpersonal and motivational characteristics of individuals rather than cognitive factors.

#### ***2.2.6.3 Gender gap in student engagement may explain gender gap in students' achievement***

On the basis of the available research, it is possible to hypothesize that gender disparities in engagement may affect gender inequalities in students' achievement. Further, student engagement mediated the relationship between gender and students' achievement (Lam et al., 2012). Thus, it explained the gender differences in academic achievement, despite the fact that its mediating impact was modest. Lam et al. (2012) also demonstrated that



student engagement, as a combination of interpersonal and motivational characteristics, might partially explain for gender disparities in academic achievement (Lam et al., 2012). In general, data supported the hypotheses that student engagement is a mediating variable of the association between students' socio-cultural status and students' academic achievement (Ribeiro, Rosário, Núñez, Gaeta, & Fuentes, 2019)

Credé et al. (2010) identify behavioural engagement as the most promising determinant of academic performance. Behavioral engagement measures the participation, efforts, and perseverance of students in academic activities. According to Fredricks et al. (2004, p.60), "cognitive engagement draws on the idea of investment; it incorporates thoughtfulness and willingness to exert the effort necessary to comprehend complex ideas and master difficult skills." This construct (i.e. cognitive engagement) refers to engagement of the mind (Appleton et al., 2008), to investment in an in-depth and comprehensive understanding of the courses and the matter taught. The effect of cognitive engagement on achievement in higher education has been emphasized in literature (Kuh, 2001).

Additionally, Fung et al. (2018) suggested that the mathematics success of students who are simultaneously affectively and behaviorally engaged is predicted to be greater than that of their counterparts who are either affectively or behaviorally engaged. Findings (Ribeiro, Rosário, Núñez, Gaeta, & Fuentes, 2019) indicate that cognitive and behavioral engagement mediated the association between students' background variables and their achievement. Because researchers who focused on the effects of student engagement on achievement have differed in their definitions and measures of engagement, it is difficult to integrate findings across studies (Hughes et al., 2008). Often, investigators incorporated various types of constructs in their measurement of engagement, an inclusiveness that makes it difficult to determine the unique precursors and consequences of different types of engagement (Hughes et al., 2008).

## **2.2.7 Gender moderates the relationship between student engagement and academic achievement**

### ***2.2.7.1 Role of student engagement in enhancing students' academic achievement***

Student engagement was a process variable with impacts on academic achievement, as shown by Lee (2014). This result is consistent with findings from earlier research indicating strong correlations between student engagement and other student outcomes (such as academic success) (e.g., Christenson, Reschly, & Wylie, 2012; Reyes, Brackett, Rivers, White, & Salovey, 2012). This indicates that educational interventions might target student engagement as a proximal outcome that leads to distal outcomes like improved academic performance.

Engagement has long been acknowledged as a crucial element in student learning and achievement (Lei et al., 2018; Fredricks, Filsecker, & Lawson, 2016) and was designated as a vital aim of national school reform initiatives by the National Research Council (2003). Consistently, high student engagement is connected with academic achievements like course grades and achievement test scores (Fredricks et al., 2016). Student engagement is essential to educational success (Reyes et al., 2012). Engaged and motivated students are attentive, actively participate in class discussions, and make an effort during class activities (Fredricks, Blumenfeld, & Paris, 2004; Marks, 2000). Further, the engaged students improves the academic performance of students whose grades have been low (Marks, 2000).

Studies have found that engagement leads to greater learning and academic success (Lawson & Masyn, 2015). For example, in one study (Klem & Connell, 2004), middle school students who indicated greater engagement levels were 75% more likely to achieve higher grades and attend school regularly compared to students who reported lower engagement levels. Chase, Hilliard, Geldhof, Warren, and Lerner (2014) recruited 710 participants at random (69% female and 31% male) in order to determine the degree to which engagement is associated with students' achievement among secondary level students. Findings demonstrated that learners had a competent participation rate, although a somewhat favorable association was identified between engagement and achievement. In addition, Lee (2014) observed that student engagement is the most important predictor

of performance. Further, van Rooij et al. (2017) conducted a research on 669 students to explore the association between engagement, academic adjustment, and achievement. Researchers determined that children with a high level of engagement fared well academically. Wara, Aloka, and Odongo (2018) selected 316 secondary school students to investigate the link between academic engagement and academic outcomes. They found a mildly significant positive correlation between student engagement and academic outcomes. In addition, Gull (2018) examined 1410 students enrolled in 25 high schools and reported a favorable correlation between student engagement and academic achievement.

Students who are disinterested in the school reported being bored, worried, or even furious about attending class (Skinner & Belmont, 1993). So, effective learning is contingent upon the degree to which students participate in instructional tasks (Wang & Pomerantz, 2009). Students who are both behaviorally and cognitively engaged are likely to do better in mathematics than those who are either behaviorally or cognitively engaged (Fung et al., 2018). For instance, students may exhibit external compliance (behavioral engagement) in their learning due to parental or instructor pressure (Holloway, 2015). Children may also engage in compliant conduct to avoid being penalized for misconduct (Green & Mizrahi, 2016). Unfortunately, this behavioral conformity may not be enough when children meet learning challenges. In fact, these students must also be personally motivated to overcome math learning challenges. Intrinsic motivation pertains to a student's willingness to seek out new challenges and acquire new knowledge (Bass & Ball, 2015). Thus, for students to attain high levels of academic success, it is crucial for them to be both behaviorally and cognitively engaged, simultaneously.

It is expected that students who are both emotionally and cognitively engaged would do better in mathematics than their counterparts who are either affectively or cognitively engaged (Fung et al., 2018). For instance, students those are extremely motivated to learn mathematics (emotional engagement) may experience several learning challenges. To transfer their enthusiasm into academic achievement, they must be persistent (Bass & Ball, 2015) and use a variety of innovative problem-solving strategies (Adogdu & Ayaz, 2008). However, Willms (2003) stated that academic engagement did not predict

academic success of each and every learner. While feeling of belongingness (i.e. affective engagement) was found to have a direct effect on academic success, no clear correlation was identified (Gunuc, 2014). It was also mentioned in the research that a feeling of belonging resulted in improved learning outcomes (Kember et al., 2001).

#### ***2.2.7.2 Effect of student engagement on academic achievement is different for boys and girls***

Several student engagement theories and models also described student achievement. For example, explaining engagement with a participation-identification model, Finn (1989) found that there was a strong linear association of participation with academic achievement. In other words, the higher the participation level, the higher the achievement scores in reading, mathematics, science, and social studies. According to the model, engagement in class and class activities promotes students' performance and achievement, and students' performance affects their sense of identification with the school. According to Csikszentmihalyi (1990; 1997), focused intensively on teaching using the Flow Theory enhances the learning process. Flow activities, especially cognitively challenging activities, are often rewarding and enjoyable (Shernoff et al., 2003).

According to Lam et al. (2012), student engagement was related to academic success. It is notable that these connections did not differ across the genders. There was no gender-based moderating impact. In addition, these results are congruent with those of Ruban and McCoach (2005), Sánchez, Colón, and Esparza (2005), and Steinmayr and Spinath (2005). They did not find any gender-based differences in the predictability and relative importance of academic achievement predictors. Nonetheless, these results differ from those of Freudenthaler et al. (2008), who revealed that school-related intrinsic motivation was more important to boys' academic success than to girls'. Due to the fact that schoolwork is not always interesting or enjoyable, this disparity is an additional benefit for girls. Even when the tasks appear tedious, they exert effort and maintain engagement. Notably, the effect sizes were not negligible, as reported by Lam et al. (2012). They found that, compared to boys, girls reported a higher level of engagement in school and secured higher grades, as rated by their teachers.

Nonetheless, the results of Freudenthaler et al. (2008) and Lam et al. (2012) were not conclusive, as other studies reported contradictory evidence. For example, Steinmayr and Spinath (2008) found no gender differences in the relationships between motivation and academic success. Ruban and McCoach (2005) reported no gender differences in the influence of self-regulatory and motivational variables on academic achievement. In light of these contradicting results, further investigation is necessary to examine the link between student engagement and academic achievement among girls and boys.

#### ***2.2.7.3 Differential effects of student engagement on boys' and girls' achievement***

In addition, studies find that both boys' and girls' have a competent level of involvement, although the gap between girls' and boys' academic engagement is considerable (Abid & Akhtar, 2020). Research showed that gender had a substantial impact on students' academic engagement, with female individuals exhibiting more academic interest than male ones. These findings corroborate the conclusions of previous studies by Chase et al. (2014), Eades (2014), and Wang and Eccles (2012). Nevertheless, data given by Gull (2018) and Wang, Willett, and Eccles (2011) indicate no gender-based differences in student engagement.

#### ***2.2.7.4 Link between student engagement dimensions and achievement differs for boys and girls***

According to the findings of the research (Maamin et al., 2022), there is a substantial correlation between each component (cognitive, behavioral, and emotional engagement) and the mathematics success of secondary school pupils. Several studies have shown the favorable association between engagement dimensions and academic success (Phuntsho & Dhendup, 2020). The importance of student involvement and cognitive and emotional engagement in learning activities for academic accomplishment cannot be overstated (Schnitzler et al., 2021). Patrick et al. (2007) explored correlations between engagement and accomplishment among early adolescents and found that behavioral engagement had a favorable effect on the maths grade of students. King (2015) noticed similar results and concluded that academic performance was positively connected with behavioral and emotional engagement. Additionally, Wang and Holcombe (2010) found evidence of effect size variation in a small longitudinal trial. In contrast to the other two variables,

their research indicated that emotional engagement was strongly associated to student academic progress.

Some studies claimed that no significant association was established between student behavioral engagement and academic success (Chang et al., 2016). This suggests a low degree of student engagement with educational activities. Several investigations have found an association between behavioral engagement and academic success (Furrer & Skinner, 2003). Moreover, when instructors provide a caring and socially supportive setting, children have a greater opportunity to engage in school and develop a connection to it, since such school contexts meet students' requirements for relatedness. Teachers must thus develop a loving and socially supportive classroom climate in order to maintain students' behavioral engagement. In addition, students should actively engage in learning activities to maintain their behavioral engagement in school.

Academic performance has always been viewed as a crucial result of student engagement (Park, 2005; Finn, 1993; Marks, 2000; Greenwood, 1991). Yet, a number of research (e.g. Chen et al., 2013; Shernoff & Schmidt, 2008; Shernoff, 2010) have revealed no association between student interest and academic success (Chang et al., 2016). Consequently, despite the advantages of student engagement documented in the research, the link between student engagement and academic success has not been conclusively demonstrated (Lee, 2014). This discrepancy between the dimensions of student engagement and educational success requires more research in a variety of contexts.

Most studies did not analyze the effect and interrelationships of various student engagement components on achievement in a systematic and statistical manner (Fredricks et al., 2004; Taylor & Parsons, 2011). According to the previous literature review, there are still research gaps in terms of student engagement and related academic success. Firstly, the majority of research do not concurrently examine the cognitive, behavioral, and emotional elements of student engagement (Murray, Mitchell, Gale, Edwards, & Zyngier, 2004; Dogan, 2015; Lei, Cui, & Zhou, 2018). Second, most studies focused on student engagement in institutions of higher learning (Schnitzler, Holzberger, & Seidel, 2020; Weiss & García, 2015).

## **2.2.8 Student engagement mediates the relationship between perceived teacher engagement and academic achievement**

### ***2.2.8.1 Link between perceived teacher engagement and student engagement***

It has also been found that student engagement is considered to be malleable through several factors like students' perceptions of teacher engagement in classroom teaching process. Yet, Saucier et al. (2022) believe that the subjective experiences of instructors, both good and bad, may “trickle down” to influence the subjective experiences of students in the classroom, for better or for worse. Consequently, it is worthwhile to investigate the relationship between students' views of teachers' interest in teaching and students' engagement in learning and academic success (e.g., grades). It is also important to investigate whether students' perceptions of faculty experiences in the classroom (i.e., whether the faculty member is perceived to be engaged in the content and/or teaching) influence students' experiences (i.e., engagement in learning) and performance through a process is termed as ‘Trickle-Down Engagement’ (Saucier et al., 2022).

Thus it is expected that teacher engagement may influence achievement through student engagement. Teachers' personality, motivation, and behavior are heavily researched and have significant impact on their performance which ultimately reflects in the students' outcome (Griffin & Brownell, 2018). Teachers' efforts develop engagement experience for the students for their class, and it is the engagement factor which is actually responsible for the development and progress of the students; better the engagement, better is their development (Siddiqi, 2018).

### ***2.2.8.2 Link between perceived teacher engagement and achievement***

Engagement plays a meditational role linking teachers' emotional support and achievement of students in both upper elementary (Reyes et al., 2012) and middle school grades (Voelkl, 1995) Teachers' efforts are translated into the feelings of engagement among its student, and it is the level of engagement that is directly related to the level of success of the students. Jelas et al. (2016) demonstrated that student perceptions of academic support affect success in school both directly and indirectly through their effect on the three dimensions of student engagement.

Researchers (e.g., Birch & Ladd, 1996; Eccles et al., 1993; Wentzel & Asher, 1995) have demonstrated that positive interactions with teachers and peers contribute to students' motivation to learn, academic achievement, and psychological functioning, whereas negative interactions with teachers and peers place students at risk for manifesting behavioural problems, resulting in poorer school performance.

Researchers have shown a substantial relationship between students' views of teacher support and their academic engagement, such as displaying an interest in learning and being motivated to strive for academic achievement (e.g., Goodenow, 1993; Wentzel, 1997; Wentzel & Asher, 1995). In a longitudinal research of 248 U.S. children in grades 6–8, Wentzel (1997) showed that students' views of caring instructors were positively associated with their motivating outcomes, even after controlling for other factors, such as earlier (6th grade) motivation and performance. This conclusion shows that studies on student achievement should include students' self-perceptions.

### ***2.2.8.3 Link between perceived teacher engagement dimensions and achievement***

Students who express a stronger sense of belonging to their teachers are more emotionally and behaviorally engaged, according to prior studies (Gest, Welsh, & Domitrovich, 2005). Hence, it is reasonable to assume that social and emotional support (i.e., care and concern) from instructors might foster student engagement. Researchers (e.g., Berndt & Keefe, 1995; Epstein, 1983; Gottfried, Fleming, & Gottfried, 1994) have identified three sources of support (viz. teachers, peers, and parents) as crucial to optimizing students' own academic engagement and achievement.

Jelas et al. (2016) further examined the mediation effects of the three dimensions of student engagement. For instance, whereas a positive relationship between behavioural and cognitive engagement and academic success has been widely established (Wolters and Taylor, 2012), the unique contribution of emotional engagement is not well recognized and has not been experimentally established (Janosz 2012).

Several investigations have examined the importance of socialising agents (i.e. peers, instructors, and parents) as sources of significant influence on performance, as well as the importance of student engagement as a mediating factor (Shen et al. 2014; Wentzel et al.



2010). Similarly, it has been shown that the engagement of learners and the instructors in their social environments may have a substantial impact on their academic progress (Li & Lerner, 2013; Wentzel, 2012).

Although these studies have investigated the relationship between student engagement and academic achievement, they have not considered whether all three student engagement dimensions (viz. cognitive, behavioral, and emotional engagement) explain the relationship between three students' perceived teacher engagement dimensions (viz. PCPE, PSEE, and PPE) and their academic achievement. The present study therefore examined whether three dimensions of student engagement can help to gain insight into the relationship between three dimensions of students' perceived teacher engagement and their academic achievement.

## **2.3 Critical analysis: Hypothesis development**

### **2.3.1 Gender gap in student engagement and role (explaining role and differential role) of teacher engagement herein**

One of the most unequivocal results in educational research is that, on average, males have poorer school engagement and success and greater dropout rates as compared to females (Lamote et al., 2013; Wang & Eccles, 2012). In Grades 7-9, for instance, females reported more engagement than males in a data set of 3,400 students from 12 nations (Lam et al., 2012). Cooper (2014) showed identical outcomes for 1,132 American students in grades 9 through 12 in the United States. Moreover, in secondary school, student involvement seemed to drop for both genders (Wang & Eccles, 2012), with some research suggesting a greater fall for boys than for girls, hence enlarging the gender difference (Dotterer, McHale, & Crouter, 2009). This underscores boys' greater negative engagement trajectories across secondary school. Thus, it becomes essential to consider gender variations in secondary school student engagement. The current research further analyses the gender disparity in students' engagement and the effect of students' perceptions of teacher engagement herein.

Student engagement has been regarded to be malleable via many contextual factors, including teacher and peer support (Hafen et al., 2012). Teacher support has been

recognized as one of the most significant of these factors (Allen et al., 2013; Lam et al., 2012). In the same line, how students perceive their teachers' engagement in classroom teaching might influence students' engagement in learning. In this perspective, this study examines whether gender differences in students' perceptions of teachers' engagement can explain the gender gap in secondary school students' engagement (i.e., mediation hypothesis).

Moreover, support has been found for teacher engagement possibly being more critical for the school adjustment of boys (Hamre & Pianta, 2001; Roorda et al., 2011). Therefore, the researcher examined whether and which of these perceived teacher engagement sub-scales matter more for boys' as compared to girls' engagement (i.e., moderation or differential effects hypothesis).

In conclusion, these theoretical considerations offer two interesting research issues pertaining to gender differences in engagement: (1) whether perceived teacher engagement acts as an explaining mechanism in the gender gap in students' engagement and (2) whether there are differential effects of perceived teacher engagement for boys' as opposed to girls' engagement.

### **2.3.2 Gender gap in academic achievement and role (explaining and differential) of student engagement herein**

One of the most consistent outcomes in educational research is that, on average, males have poorer school engagement and success and greater dropout rates as opposed to females (Lamote, Speybroeck, Van Den Noortgate, & Van Damme, 2013; Wang & Eccles, 2012). For example, in Grades 7–9, for instance, girls reported greater engagement than boys in a data set compiled from 3,400 students in 12 countries. Cooper (2014) showed identical outcomes for 1,132 American students in grades 9 through 12 in the United States. Further, in secondary school, student involvement seemed to drop for both genders (Wang & Eccles, 2012), with some research suggesting a greater fall for boys than for girls, hence extending the gender difference (Dotterer, McHale, & Crouter, 2009; Watt, 2000). Thus, it is important to give consideration to gender inequalities in academic achievement among students in secondary schools. The current study

thus examines further the gender gap in academic achievement and the influence of student engagement in this context.

Previous studies are in consensus regarding the robust finding that student engagement exerts strong effects on academic achievement of students (Fredricks et al., 2016; Marks, 2000). Students who are interested and motivated to learn are attentive, take part in class discussions, and show effort in class activities (Fredricks, Blumenfeld, & Paris, 2004; Marks, 2000; Skinner & Belmont, 1993). Academically engaged students demonstrate school success efforts (Li & Lerner, 2011). Balfanz and Byrnes (2006) analysed the relationship between engagement and achievement and reported that learner engagement is crucial for predicting academic performance. Past studies have proven that student engagement is a predictor of academic achievement (Deveci & Karademir, 2019; Finn & Zimmer, 2012; Finn, & Voelkl, 1993). Specifically, the relationship between student engagement and academic achievement has received attention from researchers from the past to the present (Carini, Kuh, & Klein, 2006; Delfino, 2019). This research investigates whether gender disparities in student engagement might explain the gender gap in academic achievement among students in secondary schools (i.e., mediation hypothesis).

Moreover, evidence has been found for student engagement possibly being more important for the academic achievement of certain groups of students (e.g., for boys) (Hamre & Pianta, 2001; Roorda et al., 2011). Therefore, as a parallel hypothesis, the researcher examined whether and which of these student engagement dimensions matter more for boys' as opposed to girls' achievement (i.e., moderation or differential effects hypothesis).

To sum up, these theoretical arguments provide us with two subjects of investigation that are considered relevant with regard to gender differences in academic achievement: (1) whether student engagement acts as an explaining mechanism in the gender gap in students' academic achievement and (2) whether there are differential effects of student engagement for boys' as opposed to girls' academic achievement.

### **2.3.3 Explaining role of student engagement on the relationship between perceived teacher engagement and academic achievement**

Previous studies (e.g. Fredricks et al., 2016; Marks, 2000) are in consensus regarding the robust finding that student engagement exerts strong effects on academic achievement of students. Besides, how students perceive their teachers are engaged in class has been considered to be one of the most important factors affecting students' performance. Thus, it is worthy to examine the mechanism of the effect of perceptions of teacher engagement propagates through student engagement dimensions resulting higher achievement of the students. This may indicate which student engagement dimensions are more sensitive to teacher engagement and might become regulatory factor to influence students' achievement. In this perspective, this study examines whether student engagement acts as an explaining mechanism in the relationship between students' perceptions of teacher engagement and their academic achievement.

### **2.4 Emergent questions**

The following questions have emerged out of the critical review of related literature:

1. How do boys and girls differ regarding their engagement, their achievement, and regarding their perceptions of their teachers' engagement in class?
2. Which teacher engagement dimension(s) can explain the relationship between gender and three student engagement dimensions (mediation effects)?
3. Does teacher engagement matter more for boys' as opposed to girls' engagement and for which specific teacher engagement dimension(s) is this the case (differential effects)?
4. Which student engagement dimension(s) can explain the relationship between gender and students' academic achievement (mediation effects)?
5. Does student engagement matter more for boys' as opposed to girls' achievement and for which specific student engagement dimension(s) is this the case (differential effects)?
6. Which student engagement dimension(s) can explain the relationship between teacher engagement and students' academic achievement (mediation effects)?