Effectiveness of a Positive Youth Development Intervention for Early Adolescents with High Socioeconomic Status in Private Schools

by

Tuğçe Aral

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Koç University

Graduate School of Social Sciences and Humanities

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Tuğçe Aral

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and that any and all revisions required by the final
examining committee have been made.

Committee Members:

Prof. Nazlı Baydar (Advisor)

Prof. Asiye Kumru

Asst. Prof. Yasemin Kisbu-Sakarya

Date: December, 2019

To Prof. Çiğdem Kağıtçıbaşı

ABSTRACT

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Tuğçe Aral

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In the current study, we examined the effectiveness of a positive youth development (PYD) intervention for early adolescents with high socioeconomic status in private schools and a potential moderator of the intervention effectiveness. Specifically, we focused on the effectiveness of the PYD intervention (PERGEL) in growth mindset and self-efficacy and whether the intervention effectiveness differed for early adolescents who have varying levels of emotion regulation. It was expected that PERGEL would be effective in supporting growth mindset and self-efficacy, and the intervention effect would be higher for adolescents who had high levels of emotion regulation skills. The intervention group consisted of 420 fifth and sixth graders in a private school in Turkey (M_{age} = 11.4, 49.7% female). The control group consisted of 166 fifth and sixth graders in a private school (M_{age} = 11.5, 41.6 % female). A multi-group analysis was conducted by using MPLUS and the results revealed that the intervention was effective in supporting growth mindset in the intervention group compared to the control group; however, the direct effects of the intervention on self-efficacy were absent. Contrary to our hypotheses, the results showed that the adolescents with low levels of emotion regulation benefited more from the intervention compared to the adolescents with high levels of emotion regulation. The study disclosed that the PERGEL was effective in supporting a growth mindset for all adolescents and self-efficacy for the adolescents with low levels of emotion regulation in private schools.

Keywords: PYD intervention effectiveness, early adolescents, private schools, growth mindset, self-efficacy, emotion regulation

ÖZETÇE

Özel Okullarda Okuyan Yüksek Gelir Düzeyli Ergenler ile Yaplılan Positif Ergen Gelişimi Müdahale Çalışmasının Etkiniği

Tuğçe Aral

Psikoloji, Yüksek Lisans

6 Aralık 2019

Bu araştırmada, özel okullarda okuyan yüksek gelir düzeyli ergenlere yönelik bir pozitif ergen gelişimi programının (PERGEL) etkisi araştırılmıştır. Özellikle, PERGEL programının ergenlerin insan karakterlerinin değişimine inançları ve öz yeterlilikleri üzerindeki etkisinin, ergenlerin duygu düzenleme becerilerinden dolayı değişkenlik gösterip göstermediği araştırılmıştır. Ergenlerin insan karakterlerinin değişimine inançları ve öz yeterliliğini hedef alan bu çalışmada, pozitif ergen programının (PERGEL) yüksek duygu düzenleme becerisine sahip olan ergenlerde daha etkili olacağı beklenmiştir. Müdahale grubu bir devlet ve bir özel okulun beşinci ve altıncı sınıf öğrencilerin oluşmuştur (N= 420) (Ortalama yaş= 11,4, %49,7 kız). Kontrol grubu bir devlet ve bir özel okulunun beşinci ve altıncı sınıf öğrencilerinden oluşmuştur (N= 166) (Ortalama yaş=11,5, %41,6 kız). Çoklu grup analiz sonuçlarına göre, program ergenlerin insan karakterinin değişimine inançları ve öz yeterlilikleri üzerinde etkili olduğu görülmüştür. Ayrıca, bulgulara göre ergenlerin duygu düzenleme becerisinin, müdahale çalışmasının insan karakterinin değişimine inançları ve öz yeterlilikleri üzerindeki etkilerini belirlediği görüldü. Hipotezlerin aksine, programın öz yeterlilik üzerindeki etkisi düşük duygu düzenleme becerisine sahip ergenlerde, yüksek duygu düzenleme becerisine sahip ergenlere göre daha fazla olduğu bulunmuştur.

Anahtar kelimeler: Pozitif ergen gelişimi, değişime inanç, öz yeterlilik, duygu düzenlemesi

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Chapter 1: Introduction

The current study aimed to investigate the effectiveness of a positive youth development intervention (PERGEL) for early adolescents in private schools and a potential moderator of the intervention effectiveness. Specifically, we focused on the effectiveness of a positive youth development intervention with early adolescents in growth mindset and self-efficacy and whether the intervention effectiveness differed for early adolescents who have varying levels of emotion regulation.

First, we focused on the effectiveness of the positive youth development intervention for mindset. Mindset was defined as individuals' beliefs regarding the malleability of human characteristics, such as intelligence or personality (Dweck, 2010). Growth mindset involved the endorsement of an incremental theory, whereas the fixed mindset involved an entity theory of individual characteristics. Growth mindset contributed to persistence to overcome challenges, and setbacks on the way to learning, as well as boosting the motivation and achievement during challenging academic transitions via its effects on organizing individuals' aims (Blackwell, Trzesniewski, & Dweck, 2007; Priess-Groben, 2017), and by fostering efficient coping mechanisms to overcome challenges (Blackwell et al., 2007; Butler, 2000; Shih, 2011). Thus, it was also indicated as a predictor of success later in life (Molden & Dweck, 2006).

Second, we focused on the effectiveness of the positive youth development intervention for self-efficacy. Self-efficacy was described as individuals' belief in their capabilities to perform actions required to reach the desired outcomes (Bandura 2001, 2006; Catalano et al., 2004) and it was central to the development of human agency (Bandura, 1982; 1986). It influenced the way events affect an individual's psychological functioning through cognitive, motivational, emotional, and decision-making processes (Bandura, 2001). Previous PYD interventions were also designed in ways that aimed to support individuals' self-efficacy (Benson, 2007; Catalano et al., 2004) and they were effective in increasing self-efficacy in adolescents (Catalano et al., 2004; Kagitcibasi, Baydar, & Cemalcilar, 2018).

The positive youth development framework and the empirical research based on the PYD framework emphasized the benefits of optimism about the future, hope, and positive change in the development of adolescents (Lerner, Lerner, Bowers, & Lewin-Bizan, 2012; Kagitcibasi et al., 2018; Nurmi, 2004). Therefore, in line with this framework, a growth mindset, which is a construct, positively contributed to one's beliefs

in the malleability of their characteristics in the future. Simultaneously, self-efficacy was considered as one of the main positive youth development constructs (Tsang, Hui & & Law, 2012). Kagitcibasi and colleagues (2018) suggested that general beliefs about abilities (i.e., growth mindset) influenced specific beliefs also about one's capabilities (i.e., self-efficacy). Drawing on social cognitive theory (Bandura, 2006), growth mindset and self-efficacy were also conceptualized as the initial forces for the development of social agency (Kagitcibasi et al., 2018), which is considered central to positive development in early adolescence.

Some cultural and social contexts might be more susceptible to the emergence and development of a fixed mindset than others, a result of the prevailing cultural norms. Compared to other cultures, Turkish culture has been characterized as a high power distance culture (Hofstede & Minkov, 2010). High power distance refers to the acceptance of power being distributed unequally in society (Hofstede, 1980). As a result, adolescents are likely to formulate goals and expectations that do not challenge social hierarchies. It is likely that these cultural norms might prevent not only the occurrence of the belief in positive change, but also the necessary psychological process to make an effort to change. An empirical study confirmed the premise that students in Turkey were more inclined to endorse a fixed mindset (Beyaztas & Hymer, 2017, 2018) rather than a growth mindset when compared to a Western sample. The current study contributed to the literature by investigating whether PYD interventions targeting mindset and self-efficacy could be effective in such a cultural context.

The extant body of research on PYD interventions targeting the beliefs of adolescents in malleability of human characteristics (e.g., intelligence, personality) showed that interventions were effective in supporting growth mindset and self-efficacy (Aronson, Fried, & Good, 2002; Blackwell, Trzesniewski & Dweck, 2007; Broda et al., 2018; DeBacker et al., 2018; Good, Aronson, & Inzlicht, 2003; Kagitcibasi et al., 2018). However, while it is valuable to know whether an intervention has been effective in general, it may be even more valuable to know which factors are associated with effectiveness - in other words, for which individuals was it effective and what were the reasons for its effectiveness, in order to better understand the causal processes, inform theory and improve future interventions (Walton & Yeager, 2019).

While numerous PYD intervention studies targeting mindset and self-efficacy conducted with adolescents with families of low to lower-middle socioeconomic status (Aronson, Fried, & Good, 2002; Blackwell, Trzesniewski & Dweck, 2007; Broda et al.,

2018; DeBacker et al., 2018; Good, Aronson, & Inzlicht, 2003; Kagictibasi et al., 2018), the effectiveness of these interventions on adolescents with families of middle and high socioeconomic status has not been investigated. Even though some studies showed that high socioeconomic status was associated with few fixed beliefs about academic ability (Aelenei, Lewis & Oyserman, 2016; Claro & Paunesku, 2015; Claro, Paunesku, & Dweck, 2017; Destin et al., 2019) as well as a high level of self-efficacy (Boardman & Robert, 2000), other studies conducted in the US, found that adolescents from higher socioeconomic background endorsed higher levels of fixed mindset compared to adolescents from lower socioeconomic background (Hwang, Reyes & Eccles, 2019).

The processes that influence the development of mindset and self-efficacy might differ for adolescents with families of middle and high socioeconomic status (SES) compared to those with families of low SES because adolescents are exposed to different contexts. First, a sense of entitlement (i.e., the feeling of deserving more positive results than others), which is associated with high SES, may lead to a fixed positive view of oneself that may lessen adolescents' drive to put in effort to tasks and lower the learning goal orientation (Campbell et al., 2004; Lessard, Greenberger, Chen, Farruggia, 2011; Piff, 2013; Watson, 2012). Second, perception of the assurance of family wealth may lead to low self-efficacy due to the expectation that problems can be addressed by family. Families of upper-middle class tended to solve problems for their children, hence might hinder the development of their belief in their capabilities (Luthar & Kumar, 2018). Children of high SES were found to have lower self-efficacy compared to children of low SES (Jurecska et al., 2012). These processes may lead to low levels of positive development and a barrier to reaching one's full potential for adolescents of middle and high SES, later may delay the transition to adulthood through lack of individuation (i.e., psychological independence from family; Givertz & Segrin, 2014). The current study investigated the effectiveness of a PYD intervention that targeted mindset and self-efficacy for adolescents of middle and high SES in private schools in Turkey.

Various factors (e.g., socioeconomic status, gender, being a member of a marginalized group, prior academic achievement) might moderate the effectiveness of PYD interventions (Blackwell, Trzesniewski, & Dweck, 2007; Paunesku et al., 2015). An individual factor suggested as being associated with the effectiveness of a PYD intervention is emotion regulation. Emotion regulation has been defined as changing one's attention and appraisals of a situation to modify an emotion (Ochsner & Gross, 2005). The ability to modify and lessen the impact of negative emotions in the desired

direction is a valuable asset in reducing anxiety related to the perception of the individual's capabilities and the ability to interpret challenges as growth opportunities (Perkun, Goetz, Titz, & Perry, 2002). Emotion regulation contributes to attention and behavioral control, which in turn influences the ability to direct attention in order to acquire new information and to complete the tasks given at school that support the learning process (Graziano, Reavis, Keane, & Calkins, 2007; Masten et al., 2005). The ability to regulate emotions might enable the individual to decrease the impact of negative emotions, and thereby emotion regulation influences the strength of persuasive power, resulting in greater benefits to the participants.

The intervention in the current study (PERGEL) was a school-based intervention with a broader goal of supporting positive development in early adolescence. The intervention curriculum included an active learning program, classroom teaching, and in-class discussions. These teaching methods are also commonly used methods in school-based intervention studies (Eichas et al., 2010; Guilamo-Ramos, Litardo, & Jaccard, 2005; Gutman & Schoon, 2015). The experimental design included evaluation through pre- and posttests administered to the intervention and control groups.

Chapter 2: Literature Review

2.1 Theoretical Basis of the Study

The theoretical framework of this intervention study was grounded in social cognitive theory (Bandura, 2001, 2006) which construes human functioning as a series of reciprocal interactions between individual characteristics (i.e., cognitive, affective, and biological competencies), environmental characteristics (e.g., family, school, society) and individual's behavior. Social cognitive theory employed an agentic perspective. Based on this perspective, the agency referred to one's capability to actively engage in one's development and exercise a measure of control over one's thoughts, feelings, and actions (Bandura, 1986, 2006). This approach was in line with the positive youth development framework (Lerner, Phelps, Forman, & Bowers, 2009; Kagitcibasi et al., 2018; Silbereisen & Lerner, 2007), Bronfenbrenner's bioecological model (Bronfenbrenner & Morris, 2007) and the developmental assets framework (Benson, 2007) contribute to the research on positive adolescent development. These frameworks argued that individuals could use most of their capabilities when they actively engage with their surroundings. The PYD intervention (PERGEL) in the current study employed these approaches in order to support positive development in early adolescents (Kagitcibasi et al., 2018).

According to the social cognitive theory (Bandura 2001, 2006), self-efficacy referred to one's belief in one's capabilities to organize and perform the actions necessary to attain desired outcomes. Self-efficacy played a central role in human agency (Bandura, 1982; 1986), because it influenced the way individuals' function and the way events affect their psychological functioning through four major psychological processes (Bandura, 2001). Self-efficacy influenced the way individuals' function via its effects on cognitive, motivational, emotional, and decision-making processes. *Cognitive processes* involved self-evaluation of one's skills and capabilities, and one's ability to set certain goals to achieve. Cognitive processes played a role in one's capability to attend to tasks and complete them with desired outcomes (Tsang, Hui, & Law, 2012). Self-efficacy beliefs influenced the *motivation constructs* such as casual attribution, given importance to an anticipated outcome, and goal attainment (Tsang, Hui, & Law, 2012; Usher & Pajares, 2008). There are three ways in which efficacy beliefs influenced *emotional processes;* thoughts, actions, and affect. People's perception of their coping capability to exercise control over stressors played a central role in emotional threats and contributed to positive functioning. A person who had belief in their capability to apply control over emotional

threats would be less likely to experience disturbing thought patterns in their functioning. Lastly, beliefs of one's efficacy influenced *decision-making processes* that could shape people's experiences indirectly, and through the types of activities and environments people choose. For example, people preferred to do activities and be in situations within the limits of their coping capabilities and avoided the ones they believe exceed their coping capabilities. These four processes "usually operated in concert rather than on their own" (Bandura, 1997, p.116). In other words, the functioning and development of cognitive, motivational, emotional, and decision-making processes were assumed to be interrelated.

Social cognitive theory identified four ways that an individual's belief in their capabilities could be developed: *mastery experience, social modeling, persuasion*, and *improving physical and emotional states* (Bandura, 2004). *Mastery experience* (direct experience) was defined as individuals' engagement with easy tasks, which lead to gain proficiency for advance aspirations. Individuals must experience sufficient success using what they have learned to become convinced of their efficacy and the value of what they have learned (Bandura, 1986, 2000). In other words, individuals engaged in activities, interpreted the results of their behaviors, and used their interpretations to develop beliefs about their capability to engage in similar activities later on. Outcomes that were interpreted as successful raised their self-efficacy, while outcomes interpreted as failures lowered it. *Social modeling* involved observation, extraction of information from those observations, and making evaluations about the performance of the behavior (Bandura, 2000). In other words, individuals produced behaviors based on the information they received through observing others and the consequences of others' behaviors that are either rewarded or punished. *Persuasion* was defined as supporting and motivating a person to accomplish a task or enact a behavior. Effective persuasion techniques improved individuals' beliefs in their capabilities as well as ensuring that the imagined and desired success is achievable (Pajares, Prestin, Chen & Nabi, 2009). Lastly, *improving emotional states* referred to making sure that the individuals would emotionally positive prior to the attempt of a new behavior because emotional and physiological cues contributed individuals' evaluation of their capabilities (McAlister, Perry, & Parcel, 2008). In line with social cognitive theory, the positive youth development intervention (PERGEL) in the current study relied on these aforementioned approaches to intervene with adolescents' beliefs regarding their capabilities and to change them.

Two of the targeted domains of the current intervention were to promote self-efficacy and a growth mindset. Drawing on social cognitive theory (Bandura, 2006), growth mindset and self-efficacy constructs were conceptualized as the initial forces for the development of social agency (Kagitcibasi et al., 2018), which is central to positive development in early adolescence. Social cognitive theory highlighted the importance of specific beliefs (i.e., self-efficacy) regarding one's capacities and their pervasive effects on psychological processes as well as on the development of the agency. Kagitcibasi and colleagues (2018) also suggested that general beliefs about abilities (i.e., growth mindset) influenced specific beliefs about one's own capabilities (i.e., self-efficacy). The theory also acknowledged that one needs a positive emotional state to be able to learn new attitudes and behaviors. Self, cognition, and emotional processes interact with each other simultaneously. Emotional processes might affect the strength of the persuasive power, and therefore the benefits the participants receive. In line with this theoretical framework, emotion regulation as a part of emotional processes was examined as a potential moderator of the PYD intervention effectiveness.

2.2 Positive Youth Development Interventions with early adolescents

Growth mindset was considered an important positive characteristic from the perspective of positive youth development, especially in adolescence, because adolescents tended to become increasingly pessimistic in their perception of their abilities and highly critical of themselves (Jacobs et al., 2002; Miu & Yeager, 2014). Early adolescence was a developmental period in which children were assumed to get more benefit from an intervention, because, during the period from early to middle adolescence, a general developmental decline occurs in social-emotional wellbeing, and in social agency (Bowers, Gestsdottir, Geldhof, von Eye, & Lerner 2011; Kagitcibasi et al, 2018; Ng-Knight et al., 2016). Children tended to get more pessimistic about their learning abilities and experienced a decline in their motivation to take part in learning activities during the later stages of adolescence (Schmidt, Shumow, & Kackar-Cam, 2017).

Adolescents who endorse entity theories (e.g., a fixed mindset) perceive challenges more negative, have higher levels of stress, lower well-being, and lower grades than adolescents who endorse incremental theories in school (Yeager et al., 2014). Furthermore, endorsing incremental theories (e.g., a growth mindset) had a substantial influence on adolescents' achievement, effort, goal orientation, and persistence in school and later in life (Dweck, 2006, 2014; Hill et al., 2010). A meta-analysis focusing on

mindset, which was based on 85 studies with 28,217 participants (age range 5-42; 44% girls; 58% from the United States of America; Burnette et al., 2013), showed general support for the theoretical framework of the implicit theories of intelligence (fixed vs. incremental; Dweck, 2010). Its findings also supported the associations between implicit theories, goals (performance vs. learning goals), strategies (helpless vs. mastery strategies), responses to setbacks, and learning outcomes.

Previous school-based interventions targeting mindset conveyed the message that personal characteristics (e.g., intelligence) could grow when individuals put effort into challenging tasks, and thus struggle associated with the challenging tasks is taken as an opportunity for growth rather than a threat that needs to be avoided. These interventions aimed to increase adolescents' motivation to challenge themselves and to support their ability to persist, by changing the way they think of academic setbacks and by encouraging them to see failure as an opportunity to grow (Blackwell et al., 2007; Burnette et al., 2013; Kagitcibasi et al., 2018; Yeager & Dweck, 2012). In other words, these interventions did not teach adolescents knowledge about a subject or new skill, but they helped adolescents by changing their attitudes during a challenge or failure so that negative emotions associated with failure did not impede learning (Dweck et al., 2014). They helped adolescents perceive challenges as valuable for learning and developing resilience (Burnette et al., 2013). Consequently, they also contributed to academic outcomes such as school grades, and general point average. Interventions used real-life stories (e.g., stories of students, or famous successful people) and scientific information to change one's beliefs about personal characteristics to design the teaching materials of the interventions (e.g., intelligence; Aronson et al., 2002).

Numerous experimental studies have shown that exposing adolescents and adults to information that is suggestive of a growth mindset is effective (Aronson, Fried, & Good, 2002; Chiu et al., 1997; Dweck & Leggett 1988; Good et al., 2003; Yeager & Dweck, 2012). Some of these interventions were effective in increasing the endorsement of incremental theories (Donohoe, Topping and Hannah, 2012; Murphy & Dweck 2010; Paunesku et al., 2015) and some were effective in preventing the decline in the study outcomes (e.g., growth mindset, school grades) for those who participated in the intervention (Blackwell et al., 2007). For example, a brief school-based intervention was effective in promoting the incremental theory of intelligence and in increasing academic achievement outcomes with 9th grade students (Yeager et al., 2014). The intervention also continued to exhibit its effects eight months after the completion of the intervention;

participants reported lower levels of stress, higher well-being and demonstrated improvement in their academic outcomes compared to the control group (Yeager et al., 2014). Another school-based intervention targeting growth mindset demonstrated its effectiveness by intervening with the decline in the grade trajectory of adolescents as an achievement outcome (Blackwell et al., 2007). The finding of the study showed that teaching adolescents that intelligence is malleable had positive effects on their school success. While the grades of adolescents who endorsed entity theory in the control group dropped, the declining grade trajectory of adolescents in the intervention group was prevented after the intervention. Moreover, this intervention study also demonstrated and supported the long-term effects of school-based interventions. Therefore, the interventions that involved information about the malleability of personal characteristics (e.g., intelligence) over several weeks or months led to improvement of a growth mindset, better academic achievements and motivations to persist that lasted its effects after several months (Yeager et al., 2014) and several years (Blackwell et al., 2007).

A meta-analysis was conducted with 74 published and unpublished articles, and selected interventions with a control condition and random assignment (Lazowski & Hulleman, 2016). The results showed that interventions based on social psychological theories of intelligence were effective and they could affect learning and performance. According to the meta-analysis, six intervention studies targeted mindset (e.g., Aronson, Fried, & Good, 2002, Blackwell et al., 2007; Yeager et.al, 2014; Yeager et.al, 2014; Panesku et al., 2015) produced an average effect size of 0.56 (Cohen's *d*) on learning, performance in academic outcomes, or improvement of motivation (Miller, Rudman, Högman, & Gustavsson, 2016).

A recent school-based intervention (PERGEL) targeting mindset was conducted with 6th grade adolescents of low to the lower-middle socioeconomic background from nine middle schools in Turkey (Kagitcibasi et al., 2018). The intervention was effective in promoting mindset and self-efficacy. Researchers reported that students in the control group demonstrated significantly lower scores at post assessment and follow up on the implicit theories of intelligence, compared to those in the intervention group. This study also demonstrated the normative developmental decline in various components of social agency such as mindset and self-efficacy in the control group. It was reported that adolescents` self-efficacy in the control group declined at the end of the study period, whereas the adolescents` self-efficacy in the intervention group were stable over two time points (before and after the intervention). Therefore, the intervention (PERGEL) was

effective in preventing the decline in adolescents' endorsement of growth mindset and self- efficacy.

The current intervention effectiveness study used the intervention program Kagitcibasi and colleagues (2018) designed and followed a similar procedure to the original intervention study.

2.3 Moderating factors of the intervention effectiveness

Even though the findings of the previous studies indicated that interventions were effective for early adolescents, the interventions generally benefited some participants more and others less. Previous intervention studies suggested various factors that moderated the effectiveness of interventions for early adolescents due to individual (e.g., gender), contextual (e.g., family income) factors or due to factors related to the intervention process such as different types of intervention materials or duration of intervention (e.g., Good, Aronson, & Inzlicht, 2003; Sisk et. al, 2018).

Good, Aronson, and Inzlicht (2003) found that the intervention effectiveness was higher for girls compared to boys, as well as for students who were members of ethnic minorities and who have low family income, compared to those who are members of the ethnic majority and who have a high family income. Furthermore, academic achievement prior to intervention moderated the effectiveness of the intervention studies, so that academically disadvantaged students (Aronson et al., 2002; Blackwell et al., 2007; Good, Aronson, & Inzlicht, 2003; Sisk et. al, 2018; Yeager et al., 2016) and low-performing students (Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009; Hulleman & Haraciewicz, 2009; Lin-Siegler et al., 2016; Paunesku et al., 2015; Sisk et. al, 2018; Yeager et al., 2019) benefited more from the intervention compared to high performing students. Additionally, a growth mindset before intervention (i.e., baseline growth mindset) was pointed as a moderator of the intervention effectiveness (e.g., Miu & Yeager, 2014; Broda et al., 2018). Broda and colleagues (2018) found that students with lower baseline growth mindset received more benefit from the intervention, which was conducted with racially and ethnically diverse first-year college students in the USA (i.e., 6529 students).

Some other moderation effects were related to the factors related to the intervention process. DeBacker and colleagues (2018) reported that the duration of the intervention moderated the effects of the intervention because the study materials were provided in only one session, rather than eight sessions as had been done in previous

studies. Therefore, intervention effects were reported to be lower for one session programs than other studies that used the same study materials (Blackwell et al., 2007; Yeager et al., 2011; Yeager et al., 2013). Sisk and colleagues (2018) found that intervention effectiveness varied depending on how the teaching materials were presented to the participants. Interactive interventions (i.e., reading materials and writing tasks were provided and supported with discussions held in classrooms) were more effective in increasing the academic achievement of the participants compared to passive interventions (i.e., a document or a video on malleability of human characteristics were provided) and feedback intervention (i.e., a feedback was provided regarding participants' growth mindset). In addition, Sisk and colleagues (2018) also found that intervention effects were significant only when studies had an active control group (i.e., groups that were treated similar to intervention groups but received activities that were not irrelevant to intervention topic), rather than the passive control group (i.e., groups in which intervention administrators did not provide any materials to participants) or fixed mindset control group (i.e., groups in which participants were given an intervention about fixed mindset) as the comparison group.

Further, teachers and their mindset moderated the effectiveness of the intervention among students who participated in the intervention (Haimovitz & Dweck, 2017; Hooper, Haimovitz, Wright, Murphy, & Yeager, 2016). However, the moderation effect of teachers' mindset was not valid for the high-ability students who participated in other interventions (Esparza, Shumow, & Schmidt, 2014; Schmidt et al., 2017). Therefore, the interaction between the factors related to the process (i.e., teachers' mindset) and individual (i.e., students' ability) factors also led to selective effectiveness of the interventions. Additionally, the students who have teachers that highlighted the themes related to the mindset (e.g., mastery goal, or conceptual development) in their daily practices of teaching benefitted more from the intervention supporting growth mindset (Schmidt et al., 2015).

A recent nationally representative intervention study (consists of 65 high schools, N=12,486 students) targeted growth mindset in United States revealed that school achievement level and peer norms moderated the effectiveness of an online intervention among lower achieving adolescents (Yeager et al., 2019). It was found that the intervention effects were not significant in the highest achieving schools compared to middle and low achieving schools. Yeager and collogues also found that peer norms about challenge seeking moderated the intervention effects among lower achieving adolescents.

In sum, the interventions that targeted mindset were more effective in promoting growth mindset among lower achieving students when the schools were classified as low to middle achieving and when the peer norms were in line with growth mindset, which was supportive of challenge seeking.

The current study examined an individual factor (i.e., emotion regulation) that was theoretically relevant to the intervention effectiveness for mindset and self-efficacy. Specifically, we examined whether the PYD intervention effectiveness differed due to emotion regulation of the adolescents prior to the intervention.

2.4 The theoretical basis for the moderating role of emotion regulation and empirical findings

Appraisal theory is a cognitive theory of emotions stated that emotions were elicited by appraisals (i.e., subjective evaluations of events; Lazarus, 1999). In other words, an event itself did not directly lead to an emotional reaction however, it was the individuals' subjective evaluation of the event that led to an emotional reaction (Lazarus & Folkman, 1984; Lazarus, 1991; Ortony & Turner, 1990; Troy & Mauss, 2011). Therefore, appraisals have been defined as the meaning and importance that one gives to an event or stimulus. In line with this approach, research had shown that when different individuals were exposed to similar events, they demonstrated a wide variety of emotional reactions that depend on their appraisal of the event (Folkman & Lazarus, 1985; Siemer et al., 2007).

One emotion regulation strategy that has been found to be effective for managing emotions is cognitive reappraisal (Ochsner & Gross, 2005). Cognitive reappraisal involved reframing a situation to alter its effects on the intensity of the emotions. Research has noted that in the context of an emotionally challenging event, cognitive reappraisal might involve interpreting the event more positively (Gross & Thompson, 2007). Adolescents who engaged in effective emotion regulation could use adaptive strategies such as positive reappraisal or acceptance (Martin & Dahlen, 2005). On the other hand, adolescents who could not effectively regulate their emotions might evaluate situations as worse than they are, perceive them as threats, and experience intense levels of arousal.

The ability to modify and moderate negative emotions in the desired direction was a valuable asset to interpret challenges as growth opportunities (Perkun, Goetz, Titz, & Perry, 2002). Some researchers also suggested that adolescents' perception of their

abilities showed variability depending on their emotion regulation skills. For example, it was found that adolescents with emotion regulation problems endorsed more negative perceptions of their abilities compared to those with effective emotion regulation skills (Oram, Ryan, Rogers, & Heath, 2017).

A study reported that effective emotion regulation improved performance in cognitive tasks (Phillips, Bull, Adams, & Fraser, 2002). Blair (2002) also indicated that emotion regulation was related to physiological processes that allowed cognitive processes to function efficiently. These processes (e.g., memory, attention) are necessary to process any information. An inefficiency in the cognitive processes might interfere with children's ability to pay attention to new information and process it (Graziano et al., 2007).

As suggested above, effective emotion regulation had a significant positive influence on the cognitive functioning of adolescents, whereas emotion regulation problems lead to struggles in coping with setbacks. Using emotion regulation adaptively to cope with negative emotions could protect adolescents against pessimistic thoughts and demotivation towards learning. It could also contribute to the prevention of behaviors such as withdrawal, anxiety and maladaptive consequences, as well as adopting an entity theory of intelligence (King, McInerney, & Watkins, 2012; Martocchio, 1994; Robins & Pals, 2002).

In the current study, we focused on emotion regulation as a potential moderator of the intervention effectiveness in growth mindset and self-efficacy. Emotion regulation skills may influence to what extent adolescents' attitudes on the belief in changeability of human characteristics (i.e., growth mindset) and capabilities (i.e., self-efficacy) change after an intervention because effective emotion regulation skill enables individuals to obtain a positive emotional state, which is also necessary to improve the perception about their capabilities.

2.5 School Context: Structural components of private schools in Turkey and approaches to positive youth development

In the current study, the effectiveness of a positive youth development intervention for mindset and self-efficacy was investigated in private schools in Turkey. The education system of Turkey relies on two types of school systems: private and public schools. The private middle schools are supported by corporations and they are subject to inspection and statutory regulations by the ministry of education. They are also required

to follow a curriculum specified by the ministry of education. The youth from middle and high socioeconomic status are likely to attend private schools in Turkey (Alan, Boneva, & Ertac, 2019).

Even though the curriculum of these schools is aligned with the curriculum provided by Education Ministry of Turkey (Dag, 2015; Tunç, 2006), these schools have their mission statements that highlight their principles, values, and goals for the education such as promoting belief in effort, self-confidence, and responsibility. Some private schools included statements such as 'our values: 'I do my best. I work hard', 'I am responsible' in their mission statements. Private schools have the financial capacity to invest in hiring trained psychologists and also in implementing various socio-emotional and achievement-related support programs for students to improve their skills as a result of financial resources (Çelikten, 2010; Dag, 2015).

Private schools were also identified as high achieving schools in a national comparison of schools (Çelikten, 2010; Dag, 2015). Teachers in private schools in Turkey were high in job satisfaction as well as productivity (Taşdan &Tiryaki, 2008; Dag, 2015). These schools had the freedom to hire teachers who had a good that fit with their professional criteria, expectations, and school mission.

Studies also found that the wellbeing and academic achievement of the youth from private schools differ compared to public schools in Turkey. The youth in private schools indicated higher life satisfaction and higher school performance compared to students in public schools (Çelikten, 2010; Dag, 2015).

2.6 The conceptual model and hypotheses

In line with the literature discussed above, a conceptual framework was proposed (Figure 1.1). Two main processes were proposed in this framework: the direct effects of the PYD intervention with mindset and self-efficacy among adolescents, and the moderating effects of emotion regulation on the effectiveness of the PYD intervention for mindset and self-efficacy.

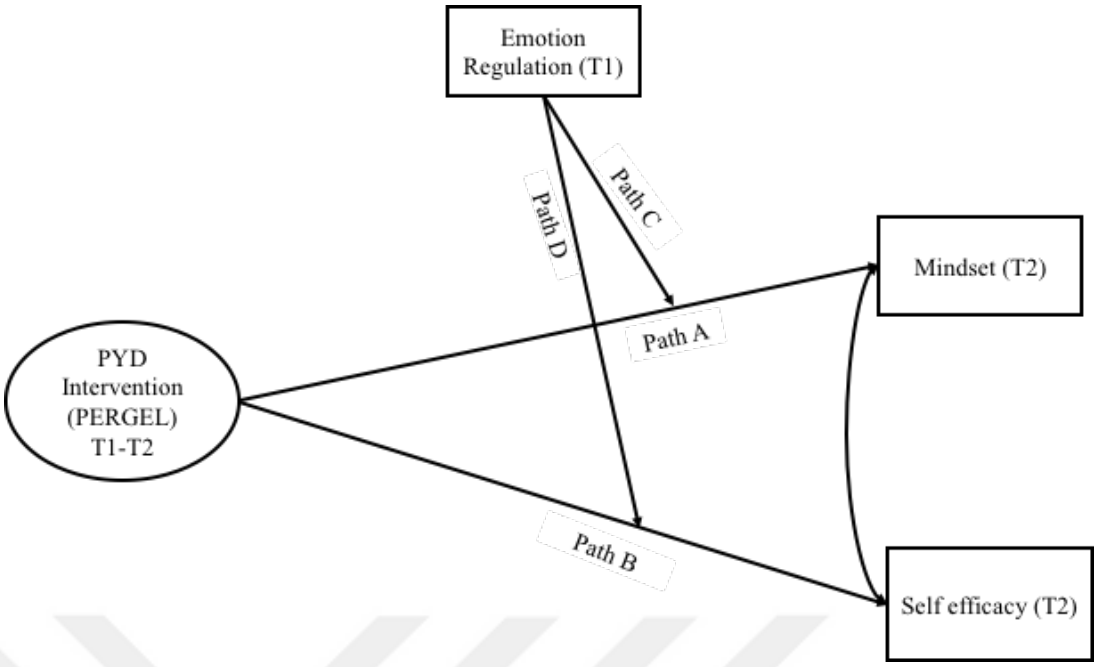

Figure 1. 1 Conceptual model of the study.

The hypotheses of this research are:

1. It was expected that PYD intervention would be effective increasing growth mindset and self-efficacy, therefore it was expected that adolescent in the intervention group would report higher levels of growth mindset (T2) and self-efficacy (T2) compared to the adolescents in the control group (Path A and Path B). Previous intervention studies targeting mindset in early adolescence that were conducted in the United States have demonstrated effectiveness either by preventing the developmental decline in the endorsement of growth mindset or supporting an increase in the academic outcomes of students in the intervention group (Blackwell et al., 2007; Broda et al., 2018; DeBacker et al., 2018; Good, Aronson, & Inzlicht, 2003; Miu & Yeager, 2015; Paunesku et al., 2015; Yeager et al., 2014). A recent study of the same intervention as the current study demonstrated effectiveness in supporting mindset and self-efficacy in early adolescents with low to lower middle socioeconomic status in public schools in Turkey (Kagitcibasi et al., 2018).
2. It was hypothesized that adolescents who have high emotion regulation skills (T1) would experience more benefits from the intervention in terms of gains in growth mindset and self-efficacy than those who have low emotion regulation skills (T1) (Path C and Path D). Social cognitive theory acknowledged that one needs a positive emotional state to be able to learn new

attitudes and behaviors (Bandura, 2001, 2006), and emotion regulation skills might influence the persuasive power of the intervention. Previous studies also pointed out that the ability to modify and moderate negative emotions in the desired direction is a valuable asset to reduce anxiety related to ones' capabilities and to interpret challenges as growth opportunities (Perkun, Goetz, Titz, & Perry, 2002).

Chapter 3: Method

In this section, the sample characteristics, the procedure, including information about the PYD intervention (PERGEL), and the measures used are introduced. Later, the approach to data analysis is discussed.

3.1 Sample

The sample was composed of 586 students (47.3 % female, M_{age} =11.46, *SD*= 0.52) attending Grade 5 and 6 in two private secondary schools in Istanbul, Turkey, during the 2016-2017 academic year. The intervention and control schools were chosen based on their comparability to one another in terms of the socioeconomic levels of the families of the students (middle and high socioeconomic status).

3.2 Intervention

The current intervention study used the PERGEL intervention program that was developed by Kagitcibasi and colleagues (Kagitcibasi et al., 2018). This program has been shown to be effective in promoting the growth mindset and self-efficacy of early adolescents from families of low to lower-middle socioeconomic status in Turkey.

The PERGEL intervention program was developed and piloted between 2010 and 2012 (Kagitcibasi et al., 2018). PERGEL is an intervention program which is in line with the agentic approach of social cognitive theory and the positive youth development framework. The curriculum of the intervention targeted a wide range of social developmental outcomes of early adolescents in Turkey (e.g., growth mindset, empathy, goal attainment, and effort), and two of the targeted developmental outcomes were mindset and self-efficacy. The curriculum of the intervention was designed to be sensitive to the cultural context, therefore it included local proverbs, everyday examples, and relevant visual materials (Kagitcibasi et al., 2018). The PERGEL intervention curriculum has a detailed manual for trainers and a booklet of activities for students. The manual for trainers includes the descriptions of 12 training sessions to be taught and discussed with students over 12 weeks. Each session is designed to last about 40 minutes. Training sessions include alternating brief lectures and group activities. The session specifically targeting the malleability of human characteristics, named “Belief in Change”, focuses on the definition of change and how the change occurs in personal characteristics, such as, intelligence and ability, (see Appendix A). The session consists of different elements such as discussion questions and presentation of scientific information. To explain these

topics in detail, trainers discuss questions with the students such as, “Think of a world in which individuals could not change. How would that world be?” Scientific information was presented through a short video on neuroplasticity, results of scientific studies on neuroplasticity, and the consequences of change in the brain. The training sessions that are conducted in the classrooms are supported by student booklets, which students are asked to complete at home.

Unlike the original PERGEL intervention procedure, where all sessions were conducted by a team of trained graduate students and advanced undergraduate students (Kagitcibasi et al., 2018), all sessions of the intervention in the current study were conducted by regular classroom teachers. The teachers were trained in a one-day workshop by the former project coordinator of the PERGEL intervention program, assisted by three graduate students. This workshop covered detailed explanations of the 12 training sessions, learning materials, and the booklet for students. Unlike the original PERGEL intention where all sessions were conducted weekly and with the addition of booster sessions, the intervention school in the current study were able to organize PERGEL sessions to be taught in every two weeks and booster sessions were not held.

3.3 Procedure

Administrators and counseling staff of the intervention schools were contacted at the beginning of the 2016 school year. Permission was obtained from the Ministry of Education in Turkey to conduct the intervention study. The schools informed the parents of students who participated in the study and obtained their consent.

The intervention was evaluated using an experimental design. It consisted of a pretest (November 2016 for the intervention schools, March 2016 for the control school) and a posttest (May-June 2017, 6 months after the pretest for both intervention and the control schools). A follow-up assessment could not be added due to time restrictions at the end of the academic year. For the evaluation, the pretest was administered via an online link to the Qualtrics platform. These schools were equipped with a computer laboratory where all students could fill out the questionnaires individually. The intervention program started in the first week of December 2016 in the intervention school. The posttest was administered through similar procedures, the week after the intervention was completed for all the classes in the intervention school (15th of May 2017). To complete all measures in the pretest and the posttest took approximately 60

minutes. The students were assisted by graduate students who were trained in the data collection process and present on site at the time of the surveys.

3.4 Measures

3.4.1 Emotion regulation

The Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004) was used to assess emotion regulation. The original scale consisted of six subscales: non-acceptance of emotional responses, difficulties engaging in goal-directed behaviour, impulse control difficulties, lack of emotional awareness, limited access to emotion regulation, and lack of clarity (Gratz & Roemer, 2004). The scale was initially developed to measure emotion dysregulation in adults. In order to validate the compatibility of its items for early adolescents for PERGEL intervention evaluation, Kagitcibasi and colleagues (2018) conducted two pilot studies, and based on these two pilot studies, the number of items of this measure was reduced to 10 items (Kagitcibasi et al., 2018). These items measured three subscales: (i) difficulties engaging in goal-directed behaviours (e.g., when I am upset, I have difficulty in concentrating), (ii) impulse control difficulties (e.g., when I am upset, I lose control over my behaviours) and (iii) limited access to emotion regulation strategies (e.g., when I am upset, I believe I will remain that for a while). A 5-point Likert response scale (from 1-not true at all to 5-very true) was used, where initially higher scores represented high levels of emotion dysregulation. The items were reverse coded; therefore, the higher scores in emotion regulation represented the higher emotion regulation in the current study. Cronbach's alpha of the measure was reported as .88 and .90 for pre- and post-assessments, respectively (Kagitcibasi et al., 2018). In the current study, these 10 items were used, and Cronbach's alpha was .88 and .91 for pre- and post-assessments.

*3.4.2 Implicit theories of i**n**telligence*

The Implicit Theory of Intelligence Scale was used to assess adolescents' mindset (Dweck, 2000, pp 177). The original version of the scale consisted of eight items: four statements indicating agreement with an entity theory and four with an incremental theory. Kagitcibasi and colleagues (2018) conducted two pilot studies and based on these two pilot studies of the PERGEL intervention, the number of items was reduced to five and the response scale of this measure was reduced from a 6-point Likert to 5-point Likert (1-strongly disagree to 5-strongly agree), where higher scores indicated higher level of

agreement with an incremental theory (e.g., people can change the level of their intelligence through hard work and learning). The items indicating the agreement with an entity theory (e.g., people can learn new things, but they cannot change their intelligence) were reverse coded. Cronbach's alpha was reported as .71 and .86 for pre- and post-assessments, respectively (Kagitcibasi et al., 2018). In the current study, these five items were used, and Cronbach's alpha was .71 and .86 for pre- and post-assessments.

3.4.3 Self-efficacy

The adolescents completed the Turkish form of Sherer et al. (1982)'s The Self Efficacy Scale (Gozum & Aksayan, 1999). Kagitcibasi and colleagues (2018) conducted two pilot studies and based on these two pilot studies of the PERGEL intervention evaluation, the 23-item scale was reduced to 11 items (e.g., I am not afraid of challenges and while I start to learn new things, I give up on them quickly if I cannot succeed in the beginning). A 5-point Likert response scale was used (1-not true at all to 5-very true) and the items referring to low levels of self-efficacy were reverse coded. The higher overall scores represented higher self-efficacy. Cronbach's alpha was reported as .85 and .79 for pre- and post-assessments, respectively (Kagitcibasi et al., 2018). In the current study, these 11 items were used, and Cronbach's alpha was .85 and .78 for pre- and post-assessments.

3.4.4 Education level of parents

Adolescents were asked to report their parents' education level. The survey only included information regarding fathers' education level. A 5-point Likert response scale was used (from 1=Primary school to 5= Master's or Ph.D. degree).

3.5 Data analysis plan

The data analyses included the following steps; (i) a comparison of the pre-intervention characteristics of adolescents who attrited or were retained in both the intervention and control groups in order to examine whether there was systematic attrition (i.e., an unequal loss of participants in intervention and/or control conditions or an unequal loss of participants with specific characteristics) (ii) a comparison of the pre-intervention characteristics of adolescents in the intervention and control groups in order to assess the comparability of the intervention and control group participants. These analyses were conducted by using F-tests in SPSS 23 software.

Structural Equation Modeling (SEM) was used to estimate a model, as described in Figure 1.1. For the current study, structural equation modeling aimed to understand the direct and moderated associations among those variables. In order to control for potential confounding factors that could differ between the intervention and control groups, and to increase the statistical power of the estimated model parameters, grade level (i.e., 5th and 6th grades) and parental education (fathers' education level) were controlled. SEM models were estimated with MPLUS 7 software. By default, Mplus used the Full Information Maximum Likelihood (FIML) estimation to handle missing values.

There were three reasons why ANCOVA was not used to test the intervention effect and the moderators in the current study i) a mediation between the pre and posttest characteristics was hypothesized (i.e., mindset T1→ mindset T2 → self-efficacy T2) ii) the background (e.g., grade level, parental education) characteristics of the adolescents were associated with the pretest characteristics of the adolescents iii) there was a high number of missing data due to attrition at posttest, and ANCOVA did not allow the inclusion of attrited cases in the analyses (FIML estimation was used to handle missing data in the SEM).

ANCOVA approach would have accounted for whether the intervention group had higher mean after the treatment. However, ANCOVA would limit the results since the analyses had to be limited to data of the participants who were present in both the pretest and posttest. This would have been a likely source of bias and a threat to the validity of the analyses. For example, it was likely that participants (i.e., students of the private schools) who were least engaged in school and the intervention would have been most likely to attrit at the posttest. This would have led to selective attrition. A selective attrition might affect the results of the study by influencing; i) the statistical power of the study (resulting in Type 2 error), ii) the external validity of randomized controlled experiments since the final group of participants would not represent the original representative sample. Second, ANCOVA would have required imputation as the first step and then would allow conducting analyses. Structural equation modeling allows the two steps to be concurrently executed in a single optimization algorithm.

Chapter 4: Results

In this section, firstly, characteristics of the sample, characteristics of the adolescents who attrited from the study are presented. Second, the comparison of pre intervention characteristics of the adolescents in the intervention and the control groups are presented. Lastly, the results of the SEM analyses are presented. The SEM analyses estimate the direct effects of the intervention on mindset and self-efficacy and the moderated effects of the intervention on mindset and self-efficacy where moderator is emotion regulation.

4.1 Characteristics of the sample in the current study

Table 4.1 displays an overview of the sample based on sex and age of adolescents, school grade level, and parents' education level.

Table 4. 1 *Sample characteristics (N=586)*

Characteristics	Intervention Group (*n* = 420)	Control Group (*n* = 166)
Female (%)	49.7%	41.6%
Age (*M,* SD)	11.44 (.50)	11.53 (.57)
Grade level		
5th Grade (%)	55.6%	45.5%
6th Grade (%)	44.4%	54.5%
Mother's education level (*M,* SD)	No information	No information
Father's education level (*M,* SD)	4.28 (.55)	4.28 (.57)

We did not have any information from intervention and control schools about the mothers' education level. Education of the fathers of adolescents in the intervention and control schools was compared. The results revealed that education of the fathers of adolescents did not significantly differ between the intervention and control groups, $F(1,586) = .005$, $p = .946$.

The characteristics of the intervention and control groups and the mean scores of the variables are displayed in Table 4.1.2. F-tests were conducted to analyze the pre-intervention characteristics of the adolescents in the intervention and the control groups.

There was not any significant difference between intervention and control groups in terms of pre-intervention characteristics.

Table 4.1 1 *Pre-intervention characteristics of the adolescents in the intervention and the control groups (N=586)*

		Intervention Group (n = 420)	Control Group (n = 166)	*df*	*F*	χ^2
Sex						
Female	%	49.7%	41.6%	1		3.10
	N	189	69			
Age (in years)	*M*	11.44	11.53			
	SD	.49	.57	520	2.71	
	N	387	134			
Father's education level	*M*	4.28	4.28			
	SD	.55	.57	585	.00	
	N	420	166			
Implicit theories of intelligence (T1)	*M*	4.03	3.98			
	SD	.73	.81	490	.44	
	N	366	125			
Emotion regulation (T1)	*M*	3.36	3.28			
	SD	.91	.94	493	.67	
	N	367	127			
Self-efficacy(T1)	*M*	4.17	4.14			
	SD	.64	.63	504	.17	
	N	374	131			

Notes: $^{*}p<.05$, $^{**}p<.01$, $^{***}p<.001$.

4.2 The characteristics of adolescents who attrited from the current study

A total of 586 adolescents participated in the pretest (T1). Among the adolescents present for the pretest, 64.3 % (*N*= 377) of them participated in the posttest (T2). Much of this attrition was due to the absence of the adolescents from schools during data collection, as absent adolescents could not attend the posttest on another day because of the busy school schedule at the end of the school year. There was not any significant differences between the intervention and the control groups in terms of attrition, (37.4 % vs. 31.3 %, respectively, χ^2 (1,586) = .00, ns). In order to compare whether the adolescents attrited from the study had different characteristics in the intervention and the control groups, t-tests were conducted.

Table 4.2 displays comparisons of the attrited and retained adolescents in the intervention and control groups, based on their demographic characteristics (e.g., sex, age, father's education level) and their mean scores on implicit theories of intelligence, emotion regulation, and self-efficacy at pretest. There were not any significant differences between attrited and retained adolescents in the intervention group. In the control group, the fathers of the attrited adolescents had higher education levels than the retained adolescents, t (164) = 2.77, p<.001.

Table 4. 2 *Comparing Attrited and Retained Adolescents based on their demographic characteristics and mean scores on implicit theories of intelligence, emotion regulation, and self-efficacy (N=586)*

		Intervention Group (n=420)				
		Attrited	Retained	*df*	*t*	χ^2
Sex[a]						
Female		50%	49.6%	1		.00
	N	64	127			
Age (in years)	*M*	11.41	11.45			
	SD	.49	.49	385	-.68	
	N	124	263			
Father's education level[b]	*M*	4.24	4.30			
	SD	.58	.58	369.36	-1.02	
	N	157	263			
Implicit theories of intelligence (T1)	*M*	3.98	4.00			
	SD	.74	.73	364	-.87	
	N	115	251			
Emotion regulation (T1)	*M*	3.44	3.32			
	SD	.89	.91	365	1.20	
	N	119	248			
Self-efficacy (T1) [b]	*M*	4.10	4.20			
	SD	.69	.61			
	N	121	253	210.70	-1.24	

		Control Group (n=166)				
		Attrited	Retained	*df*	*t*	χ^2
Sex[a]						
Female		30.8%	46.5%	1		.06
	N	52	114			
Age (in years) [b]	*M*	11.64	11.49			
	SD	.49	.59	59.25	1.43	
	N	31	103			
Father's education level	*M*	4.45	4.20			
	SD	.47	.59	164	2.77**	
	N	52	114			
Implicit theories of intelligence (T1)	*M*	4.01	3.97			
	SD	.71	.84	123	.22	
	N	29	96			
Emotion regulation (T1)	*M*	3.21	3.30			
	SD	1.06	.89	125	-.45	
	N	31	96			
Self-efficacy (T1)	*M*	4.17	4.13			
	SD	.66	.63	129	.35	
	N	32	99			

Notes: $^{*}p<.05$, $^{**}p<.01$, $^{***}p<.001$. [a] Chi-square (χ^2) test was used for the categorical variable. [b]Homogenity of variance is not assumed.

4.3 Descriptive statistics and preliminary analyses

Bivariate correlations were estimated to understand the associations among the variables at pretest (T1) and posttest (T2) for the intervention and the control groups. Pearson's correlation coefficients were used for the continuous variables, and Spearman's rank correlation coefficients were used for the ordinal variables. Table 4.3 displays the correlation coefficients for the intervention and the control group. Table 4.3 shows, in the intervention group, father's education was positively correlated with implicit theories of intelligence (r=.13, p<.01 at T2). However, this correlation was too small, therefore we can conclude that education of the fathers of adolescents was not substantially associated with mindset.

There were moderate positive associations among the implicit theories of intelligence at T1 and self-efficacy at T1 (r=.38, p<.01). There were moderate positive associations among implicit theories of intelligence at T2 and self-efficacy at T2 (r=.37, p<.01). The results showed that the more adolescents endorsed a growth mindset, the higher self-efficacy they had before and after the intervention. The associations of emotion regulation at T1 with implicit theories of intelligence *(*r = .20, p<.01 at T1, r = .16, p<.01 at T2) and self-efficacy *(*r = .50, p<.01 at T1, r = .34, p<.01 at T2) were significant. The results showed that the correlation between emotion regulation and implicit theories of intelligence was very small. We can conclude that emotion regulation was not substantially associated with mindset. However, high levels of emotion regulation were associated with high levels of self-efficacy.

In the control group, there were moderate positive associations among implicit theories of intelligence at T1 and self-efficacy at T1 (r=.48, p<.01). There were moderate positive associations among implicit theories of intelligence at T2 and self-efficacy at T2 (r=.41, p<.01). The associations of emotion regulation at T1 with implicit theories of intelligence *(*r = .31, p<.01 at T1,) and self-efficacy *(*r = .53, p<.01 at T1, r = .50, p<.01 at T2) were significant. The results showed that emotion regulation and self-efficacy at T1 and T2 were positively correlated.

Table 4. 3 Bivariate correlations of the outcome variables (N=586)

Intervention Group (n=420)										
Variables		*M*	*SD*	*N*	1	2	3	4	5	6
1.	Grade level (5th vs 6th grade) [a]	0.00	0.00	389	-					
2.	Father's level of education [a]	4.28	.45	420	.05	-				
3.	Implicit theories of intelligence (T1)	4.03	.73	366	-.03	.04	-			
4.	Self-efficacy (T1)	4.17	.64	374	-.08	-.01	.38**	-		
5.	Emotion regulation (T1)	3.36	.91	367	-.08	.04	.20**	.50**	-	
6.	Implicit theories of intelligence (T2)	4.31	.83	253	-.09	.13*	.35**	.17**	.16*	-
7.	Self-efficacy (T2)	4.22	.50	263	-.16**	.05	.30**	.51**	.34**	.37**
Control Group (n=166)										
Variables		*M*	*SD*	*N*	1	2	3	4	5	6
1.	Grade level (5th vs 6th grade)[a]	0.00	0.00	163	-					
2.	Father's level of education [a]	4.28	.57	163	.01	-				
3.	Implicit theories of intelligence (T1)	3.98	.80	125	-.04	.08	-			
4.	Self-efficacy (T1)	4.14	.63	131	-.13	.02	.48**	-		
5.	Emotion regulation (T1)	3.28	.94	127	-.09	-.01	.31**	.53**	-	
6.	Implicit theories of intelligence (T2)	3.90	1.03	111	-.02	-.08	.52**	.34**	.16	-
7.	Self-efficacy (T2)	4.16	.62	113	-.09	-.06	.42**	.75**	.50**	.41**

Note: $^{*}p<.05$, $^{**}p<.01$, $^{***}p<.001$. [a] Spearman's rank correlation was used for the ordinal variables.

4.4 Structural equation models

Structural Equation Modelling (SEM) was used to estimate the models, as described in Figure 1.1. The structural equation models were tested in order to identify how well the hypothesized models fit the data for the intervention and the control groups and to identify the moderated effects of the intervention by emotion regulation on mindset and self-efficacy. First, a multigroup analysis was conducted to test the hypothesized model for the adolescents in the intervention and control groups. Second, regression parameters in the model were tested sequentially in order to examine whether the parameters were equal for the intervention and the control groups. Based on the results of the Wald test, two regression parameters that did not differ significantly between adolescents who were in the intervention and the control groups were constrained to be equal. The goodness of fit indices for each tested model was reported. Third, based on the best fitting model (Model 3), the predicted values (based on the estimated model parameters) were calculated in order to identify the intervention effect. Fourth, both groups were combined, and the intervention effect was added to the model 3 as a dummy variable (Model 4). Fifth, emotion regulation (T1) was added to the Model 4 to test emotion regulation as a moderator of the intervention effect on mindset and self-efficacy (Model 5).

These models were estimated with MPLUS 7 software. By default, MPLUS uses the Full Information Maximum Likelihood (FIML) estimation to handle missing values. Likelihood ratio χ^2, Comparative Fit Index (*CFI*), Tucker-Lewis Index (*TLI*), Root Mean Square Error of Approximation *(RMSEA*), and Standardized Root Mean Square Residual (*SRMR*) fit indices were reported for the models. The cutoff values were a non-significant *p*-value for χ^2, a value greater than .95 for *CFI* and *TLI*, less than .06 for *RMSEA* within 90% *CI* with an upper limit less than .10, less than .08 for *SRMR.* These values were used to evaluate whether the model fits the data well (Yu & Muthén, 2002). Below, the unstandardized and standardized path coefficients are also reported for each model.

4.4.1 Model 1: Baseline model for the intervention and the control groups

As shown in Figure 4.1, Model 1 examined the associations among mindset and self-efficacy at T1 (pretest) and T2 (posttest) in the intervention and control groups. Covariate effects (i.e., father's education, grade level) for the intervention and the control groups were set to equal because there was not a hypothesis that would suggest that these effects would differ. The path from self-efficacy T1 to mindset T2 was not tested in the model, because there was not a hypothesis that would suggest that self-efficacy T1 would predict mindset T2. The fit indices showed that Model 1 fitted the data well, χ^2 (14) =17.48, $p > .05$; *CFI* = .99, *TLI* = .98, *RMSEA*

= .03 (90 % *CI* = .00 - .07), *SRMR* = .04. The chi-square contribution from the intervention group was χ^2 (7) = 9.90, $p > .05$ and from the control group it was χ^2 (7) = 7.58, $p > .05$.

Figure 4.1 presents the standardized path coefficients of Model 1 for the intervention group. In the following, standardized path coefficients are reported. All paths from the control variables (i.e., father's education, grade level) to mindset T1 and self-efficacy T1 were non-significant, except adolescents' grade level. The association between the grade level and self-efficacy T1 was weak but significant (β = -.096). As expected, the association between mindset T1 and self-efficacy T1 (β = .376) was significant. The paths from mindset T1 to mindset T2 (β =.354) and from self-efficacy T1 to self-efficacy T2 (β =.458) were significant. The association between mindset T2 and self-efficacy T2 after the intervention was also significant (β = .303). The path from mindset T1 to self-efficacy T2 was significant (β =.147). The unstandardized and standardized path coefficients for both groups were reported in Table 4.4.

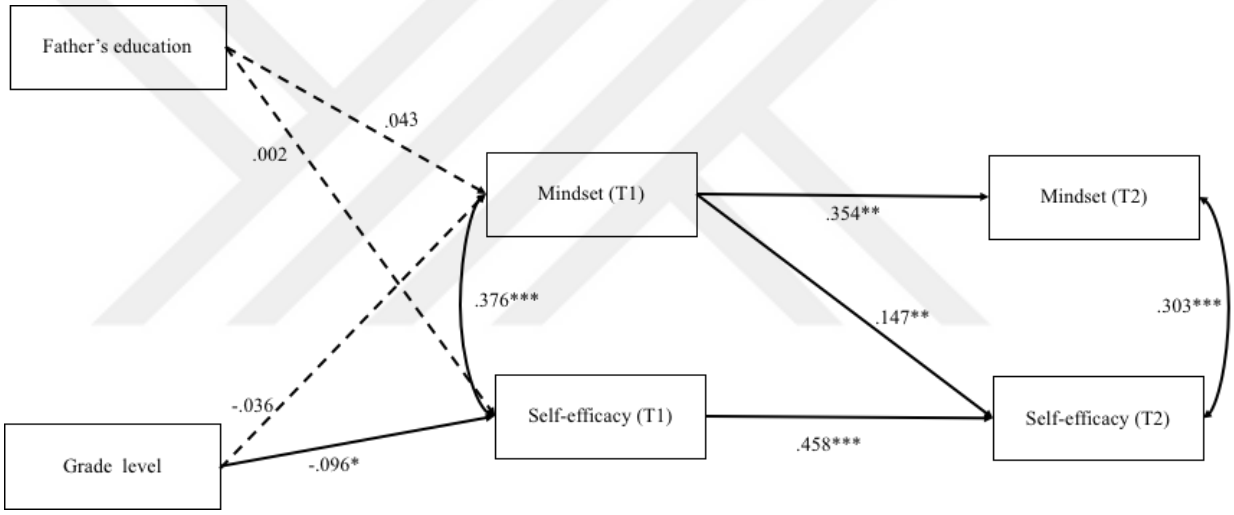

Figure 4. 1 Model 1: Baseline model for the intervention group

Notes. $^{***}p<.001$, $^{**}p<.01$, $^{*}p<.05$. The standardized path coefficients are presented in the model. Dashed lines show the non-significant paths.

Figure 4.2 presents the standardized path coefficients of Model 1 for the control group. As in the intervention group, all paths from control variables (i.e., grade level, fathers' education) to mindset T1 and self-efficacy T1 was not significant, except the grade level. The association between the grade level and self-efficacy at T1 was weak but significant (β = -.096). The association between mindset T1 and self-efficacy at T1 (β = .516) was significant. The path from mindset T1 to mindset T2 (β =.509) and the path from self-efficacy T1 to self-efficacy T2 (β =.710) was significant. However, the path from mindset T1 to self-efficacy T2 was non-significant for the control group. Even though the association between mindset T2 and self-efficacy T2 was not significant.

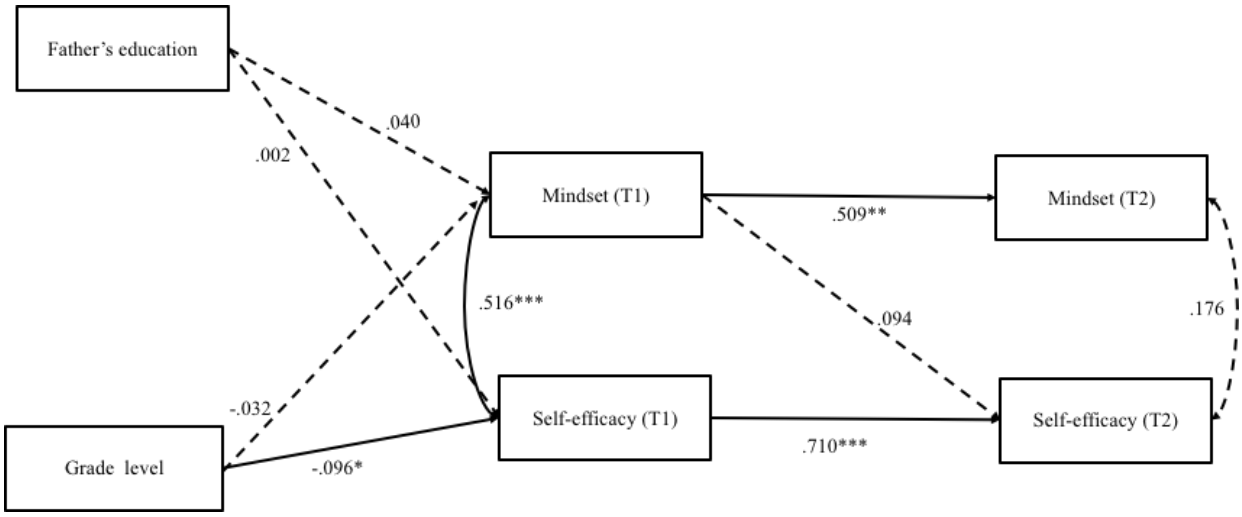

Figure 4. 2 Model 1: Baseline model for the control group
Notes. $^{***}p<.001$, $^{**}p<.01$, $^{*}p<.05$. The standardized path coefficients are presented. Dashed lines show the non-significant paths.

Table 4. 4 *Unstandardized and Standardized Path Coefficients for Model 1 for the intervention and control groups (Standard Errors in Parentheses; N= 586)*

	Intervention Group *(n = 420)*		***Control Group*** *(n = 166)*	
Parameter Estimate	*Unstandardized*	*Standardized*	*Unstandardized*	*Standardized*
Grade level → Mindset(T1)	-.053(0.07)	-.036	-.053(0.07)	-.032
Father's education → Mindset(T1)	.055(0.06)	.043	.055(0.06)	.040
Grade level → Self-efficacy(T1)	-.123(0.07)	-.096*	-.123(0.06)	-.096*
Father's education → Self-efficacy(T1)	.002(0.04)	.002	.002(0.05)	.002
Mindset (T1) → Mindset (T2)	.404(0.07)	.354***	.633(0.08)	.509***
Self-efficacy (T1) → Self-efficacy (T2)	.359(0.04)	.458***	.682(0.07)	.710***
Mindset (T1) → Self-efficacy (T2)	.101(0.04)	.147**	.071(0.05)	.094
Covariance between mindset (T1) self-efficacy (T1)	.175(0.03)	.376***	.270(0.05)	.516***

Covariance between mindset (T2) and self- efficacy (T2)	.100(0.02)	.303***	.061(0.04)	.176

Model 1: χ^2 (14) =17.48, $p > .05$; *CFI* = .99, *TLI* = .98, *RMSEA* = .03 (90 % *CI* = .00 - .07), *SRMR* = .04 *Notes.* ***$p<.001$, ** $p<.01$, *$p<.05$.

4.4.2 Model 2: Constraining a parameter (the path coefficients from mindset T1 to mindset T2) to equality across the intervention and control groups

The equalities of each parameter were tested across the intervention and control groups separately. The first model test was conducted for the path from mindset T1 to mindset T2. A Wald test indicated that there were not any significant differences between the parameters for the intervention and the control group, Wald χ^2 (1, N =586) = 3.45, p = .60. Later, equality constraints were added to the path from mindset T1 to mindset T2 to Model 1 both for the paths in the intervention and the control group. The fit indices showed that Model 2 fitted the data well, χ^2 (15, N = 586) = 20.89, $p > .05$, *CFI* = .99, *TLI* = .97, *RMSEA* = .04 (90 % CI = .00 - .07), *SRMR* = .05 (see Table 4.5). The chi-square contribution from the intervention group was χ^2 (8) = 10.94, $p > .05$ and from the control group was χ^2 (7) = 9.95, $p > .05$. We found that all significant and non-significant paths in Model 2 were the same as Model 1. Table 4.6 presents all standardized and unstandardized path coefficients in Model 2.

In the intervention group, the associations between mindset T1 and self-efficacy T1 (β = .376) as well as the associations between mindset T2 and self-efficacy T2 (β = .303) were significant. The path from mindset T1 to mindset T2 (β =.405) and the path from self-efficacy T1 to self-efficacy T2 (β =.455) was significant. Adolescents' mindset and self-efficacy before the intervention were strongly associated with their mindset after the intervention. The path from mindset T1 to self-efficacy T2 was significant (β =.162). The association between mindset before the intervention and the self-efficacy after the intervention was weak but significant. All paths from the control variables to mindset T1 and self-efficacy T2 were non-significant except the grade level. The association between the grade level and self-efficacy at T1 was weak but significant (β = -.096).

In the control group, the association between mindset and self-efficacy T1 (β = .516) was significant, and this association at T2 was not significant. The path from mindset T1 to mindset T2 was significant (β =401). The path from self-efficacy T1 to self-efficacy T2 (β =.716) was significant. Adolescents' mindset and self-efficacy before the intervention were strongly associated with their mindset after the intervention. The path from mindset T1 to self-efficacy T2 was non-significant for the control group. As in the intervention group, all paths from control

variables to mindset T1 and self-efficacy T2 were non-significant, except the grade level. The association between the grade level and self-efficacy T1 was weak but significant (β = -.096).

Table 4. 5 *Goodness-of-fit indices for the tested models (N=586)*

	NFP	***χ2(df)***	***χ2G1***	***χ2G2***	***CFI***	***TLI***	***RMSEA [90% CI]***	***SRMR***	***AIC***
Model 1	30	17.48(14)	9.903	7.576	.99	.98	.03[.00, .07]	.04	3337.21
Model 2	29	20.89(15)	10.943	9.952	.98	.96	.04[.00, .07]	.05	3338.63
Model 3	28	21.57(16)	11.073	10.501	.98	.97	.04[.00, .07]	.05	3337.07

Notes: G1, intervention group; G2, control group; NFP, Number of Free Parameters; df, degrees of freedom; χ2G1, contribution of G1 to the overall chi-square value; χ2G2, contribution of G2 to the overall chi-square value; CFI, Comparative Fit Index; TLI, Tucker-Lewis Index; RMSEA, Root Mean Square Error of Approximation; CI, confidence intervals; SRMR, Standardized Root Mean Square Residual; AIC, Akaike's Information Criterion.

Table 4. 6 *Unstandardized and Standardized Path Coefficients for Model 2 for the intervention and control groups (Standard Errors in Parentheses; N=586)*

	Intervention Group *(n = 420)*		***Control Group*** *(n = 166)*	
Parameter Estimate	*Unstandardized*	*Standardized*	*Unstandardized*	*Standardized*
Grade level → Mindset(T1)	-.052(0.07)	-.036	-.053(0.05)	-.032
Father's education → Mindset(T1)	.056(0.06)	.044	.056(0.06)	.041
Grade level → Self-efficacy(T1)	-.123(0.06)	-.096*	-.123(0.06)	-.096*
Father's education → Self-efficacy(T1)	.002(0.05)	.002	.002(0.05)	.002
Mindset (T1) → Mindset (T2)	.475(0.06)	.405***	.475(0.05)	.401***
Self-efficacy (T1) → Self-efficacy (T2)	.359(0.04)	.455***	.682(0.07)	.716***
Mindset (T1) → Self-efficacy (T2)	.113(0.04)	.162***	.057(0.05)	.077
Covariance between mindset (T1) self-efficacy (T1)	.175(0.03)	.376***	.271(0.05)	.516***

Covariance between mindset (T2) and self- efficacy (T2)	.101(0.02)	.303***	.065(0.04)	.182*

Model 2: χ^2 (15, N = 586) = 20.89, p > .05, *CFI* = .99, *TLI* = .97, *RMSEA* = .04 (90 % CI = .00 - .07), *SRMR* = .05. *Notes.* ***p<.001, ** p<.01, *p<.05.

4.4.3 Model 3: Full structural model of the current study

The model test was conducted for the path from mindset T1 to self-efficacy T2. A Wald test indicated that there were not any significant differences between the parameter for the intervention and the control group, Wald χ^2 (1, N = 586) = 0.68, p = .41. Later, the equality constraint was added to the path from mindset T1 to self-efficacy T2 to Model 2 both for the intervention and control group. The fit indices showed that Model 3 fitted the data well, χ^2 (16, N = 586) = 21.57, p > .05, *CFI* = .98, *TLI* = .97, *RMSEA* = .04 (90 % CI = .0 - .07), *SRMR* = .05. We found that all significant and non-significant paths in Model 3 were the same as Model 2 (see Table 4.7). The chi-square contribution from the intervention group was χ^2 (8) = 11.073, p > .05 and from the control group was χ^2 (8) = 10.501, p >.05. The chi-square contribution from the intervention group was smaller than the control group, the difference between the chi-square contributions also indicated that the model fit was better for the intervention group compared to the control group. Model 3 indicated that there was a significant difference between the intervention and control groups.

In the intervention group, the associations between mindset T1 and self-efficacy T1 (β = .376), as well as at T2 (β = .301) were significant. The path from mindset T1 to mindset T2 (β =.403) and the path from self-efficacy T1 to self-efficacy T2 (β =.466) were significant. Adolescents' mindset and self-efficacy before the intervention were strongly associated with their mindset after the intervention. The path from mindset T1 to self-efficacy T2 was significant (β =.137). The association between mindset before the intervention and the self-efficacy after the intervention was weak but significant.

In the control group, the association between mindset T1 and self-efficacy T1 (β = .517) was significant, and at T2 (β =.176). The paths from mindset T1 to mindset T2 (β =.399) and the paths from self-efficacy T1 to self-efficacy T1 (β =.687) were significant. Adolescents' mindset and self-efficacy before the intervention were strongly associated with their mindset after the intervention. The path from mindset T1 to self-efficacy T2 was (β =. 127). As in the intervention group, all paths from control variables to mindset T1 and self-efficacy T2 were non-significant, except the grade level. The association between the grade level and self-efficacy at T1 was weak but significant (β = -.096).

Table 4. 7 *Unstandardized and Standardized Path Coefficients for Model 3 for the intervention and control groups (Standard Errors in Parentheses; N=586)*

	Intervention Group *(n = 420)*		***Control Group*** *(n = 166)*	
Parameter Estimate	*Unstandardized*	*Standardized*	*Unstandardized*	*Standardized*
Grade level → Mindset(T1)	-.052(0.07)	-.035	-.052(0.07)	-.031
Father's education → Mindset(T1)	.056(0.05)	.044	.056(0.05)	.041
Grade level → Self-efficacy(T1)	-.123(0.06)	-.096*	-.123(0.06)	-.096*
Father's education → Self-efficacy(T1)	.002(0.06)	.002	.002(0.05)	.072
Mindset (T1) → Mindset (T2)	.472(0.06)	.403***	.472(0.05)	.399***
Self-efficacy (T1) → Self-efficacy (T2)	.366(0.04)	.466***	.658(0.06)	.687***
Mindset (T1) → Self-efficacy (T2)	.094(0.03)	.137**	.094(0.03)	.127**
Covariance between mindset (T1) self-efficacy (T1)	.175(0.03)	.376***	.271(0.05)	.517***
Covariance between mindset (T2) and self- efficacy (T2)	.100(0.02)	.301***	.063(0.04)	.176

Model 3: χ^2 (16, N = 586) = 21.57, p > .05, *CFI* = .98, *TLI* = .97, *RMSEA* = .04 (90 % CI = .0 - .07), *SRMR* = .05. *Notes.* ***p<.001, ** p<.01, *p<.05.

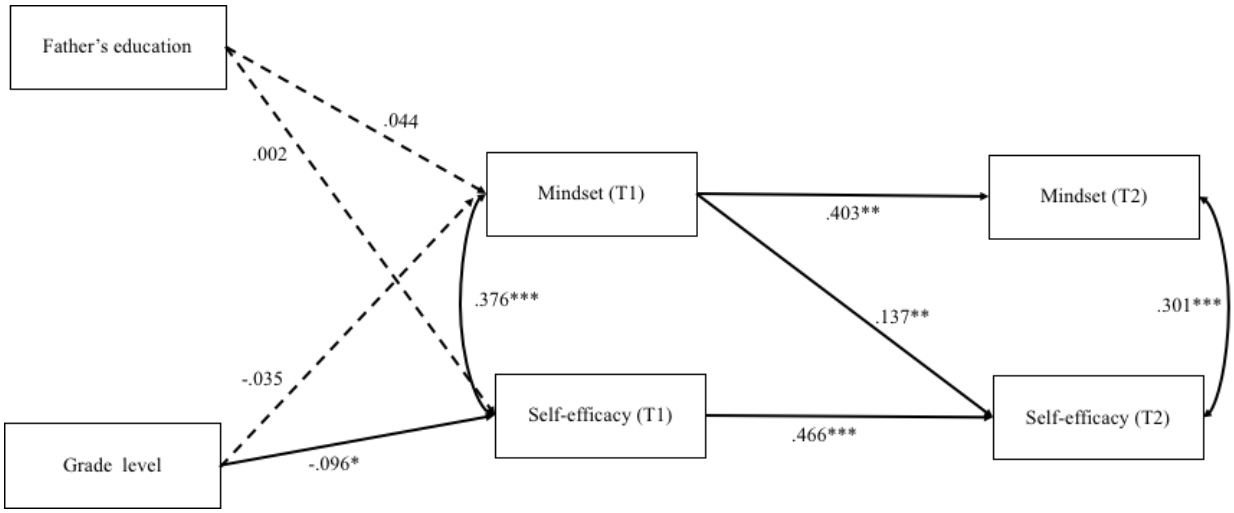

Figure 4. 3 Model 3: Full structural model for the intervention group

Notes. $^{***}p<.001$, $^{**}p<.01$, $^{*}p<.05$. The standardized path coefficients are presented in the model. Dashed lines show the non-significant paths.

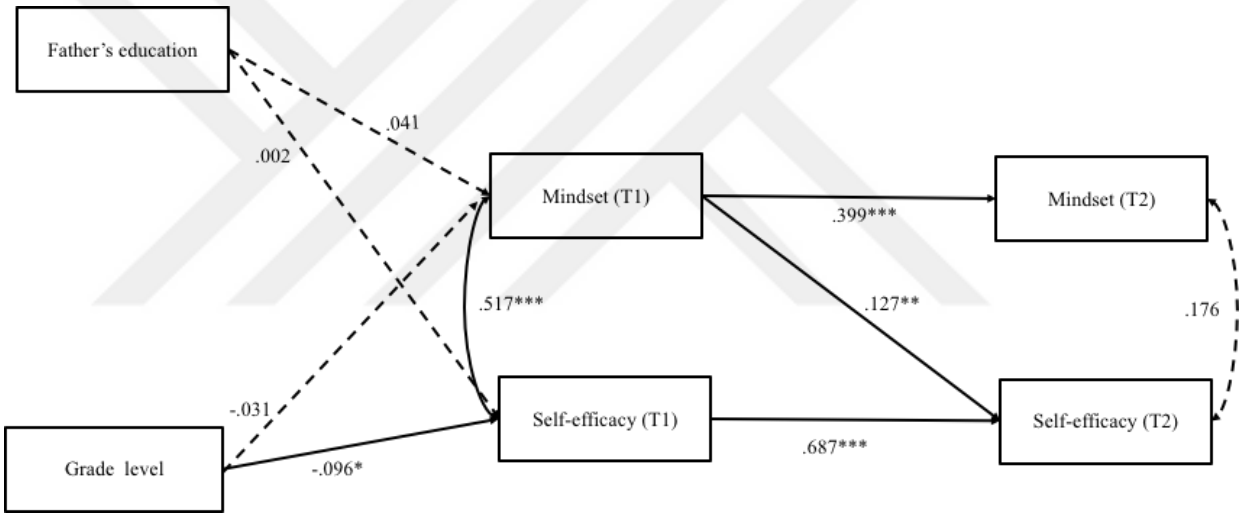

Figure 4. 4 Model 3: Full structural model for the control group

Notes. $^{***}p<.001$, $^{**}p<.01$, $^{*}p<.05$. The standardized path coefficients are presented in the model. Dashed lines show the non-significant paths.

Model 3 was used to calculate the predicted values of mindset and self-efficacy for the intervention and control groups for two time points (Figure 4.5). The adolescents in the intervention group had a higher mindset at posttest compared to the adolescents in the control group. In order to confirm the significant differences between two groups as well as the direct effects of the intervention on mindset and self-efficacy, the following model (Model 4) is tested.

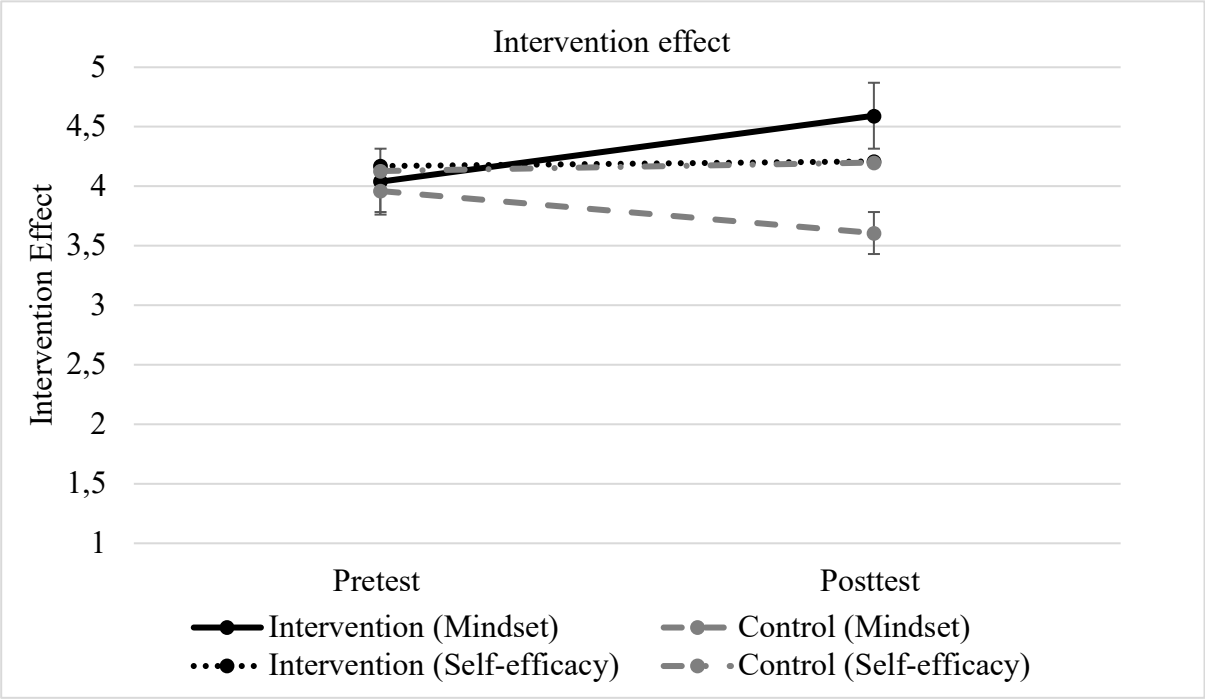

Figure 4. 5 The predicted values of mindset and self-efficacy for the intervention and control groups at pretest and posttest

4.4.4 Model 4: The effect of the intervention on mindset and self-efficacy

The intervention and the control group were combined, and a dummy variable was created to represent the intervention effect in Model 4. The model fit was, χ^2 (5, N =586) = 6.90, p> .05, *CFI* = .99, *TLI* = .98, *RMSEA* = .02, (90 % CI = .00 - .07), *SRMR* = .02. The direct path from the intervention to mindset (T2) was significant, (β =.176) however, the direct path from the intervention to self-efficacy was not significant. This model showed that the direct effects of the intervention were significant on mindset but not on self-efficacy. Model 4 confirmed the results of Model 3 as well as the difference between control and intervention groups that are presented in Figure 4.6.

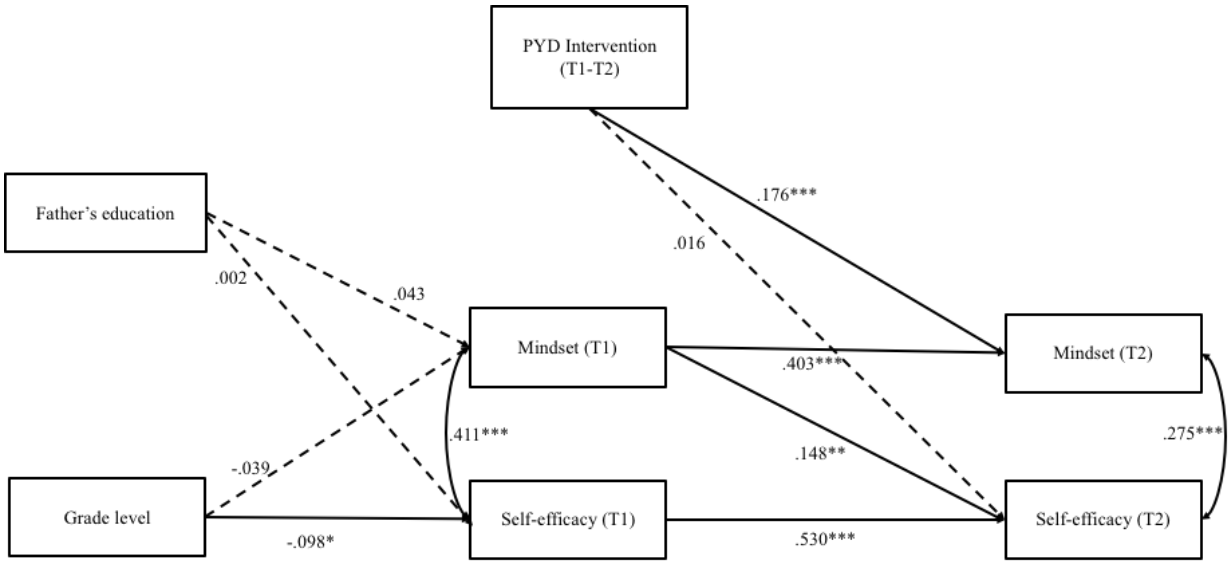

Figure 4. 6 Model 4: Intervention and control groups combined, intervention dummy coded and added to the model.

Notes. $^{***}p<.001$, $^{**}p<.01$, $^{*}p<.05$. The standardized path coefficients are presented in the model. Dashed lines show the non-significant paths.

Table 4. 8 *Unstandardized and Standardized Path Coefficients for Model 4 (Standard Errors in Parentheses; N=586)*

	Sample *(N = 586)*	
Parameter Estimate	*Unstandardized*	*Standardized*
Grade level → Mindset(T1)	-.059(0.07)	-.039
Father's education → Mindset(T1)	.059(0.06)	.043
Grade level → Self-efficacy(T1)	-.126(0.06)	-.098*
Father's education → Self-efficacy(T1)	.003(0.05)	.002
Mindset (T1) → Mindset (T2)	.488(0.06)	.403***
PYD Intervention (T1-T2) → Mindset(T2)	.357(0.09)	.176***
Self-efficacy (T1) → Self-efficacy (T2)	.447(0.04)	.530***
Mindset (T1) → Self-efficacy (T2)	.106(0.03)	.148**
PYD Intervention (T1-T2) → Self- efficacy (T2)	.019(0.05)	.016

Covariance between mindset (T1) and self- efficacy (T1)	.197(0.02)	.411***
Covariance between mindset (T2) and self- efficacy (T2)	.096(0.02)	.275***

Model 4: χ^2 (5, N =586) = 6.90, p> .05, *CFI* = .99, *TLI* = .98, *RMSEA* = .02, (90 % CI = .00 - .07), *SRMR* = .02. *Notes.* ***p<.001, ** p<.01, *p<.05.

4.4.5 Model 5: Emotion regulation as a moderator of intervention effect on mindset and self-efficacy

Emotion regulation was added to Model 4 as a moderator of the intervention effect on mindset and self-efficacy (see Figure 4.7). Model 5 fitted the data well, χ^2 (5, N = 586) = 5.73, p > .05, *CFI* = .99, *TLI* = .99, *RMSEA* = .02, (90 % CI = .00 - .07), *SRMR* = .01. The interaction of emotion regulation and intervention was significant for self-efficacy, but not for mindset (β = -.199, p < .05). Contrary to the hypothesis, the intervention effect on self-efficacy was higher for adolescents with low emotion regulation than those with high emotion regulation.

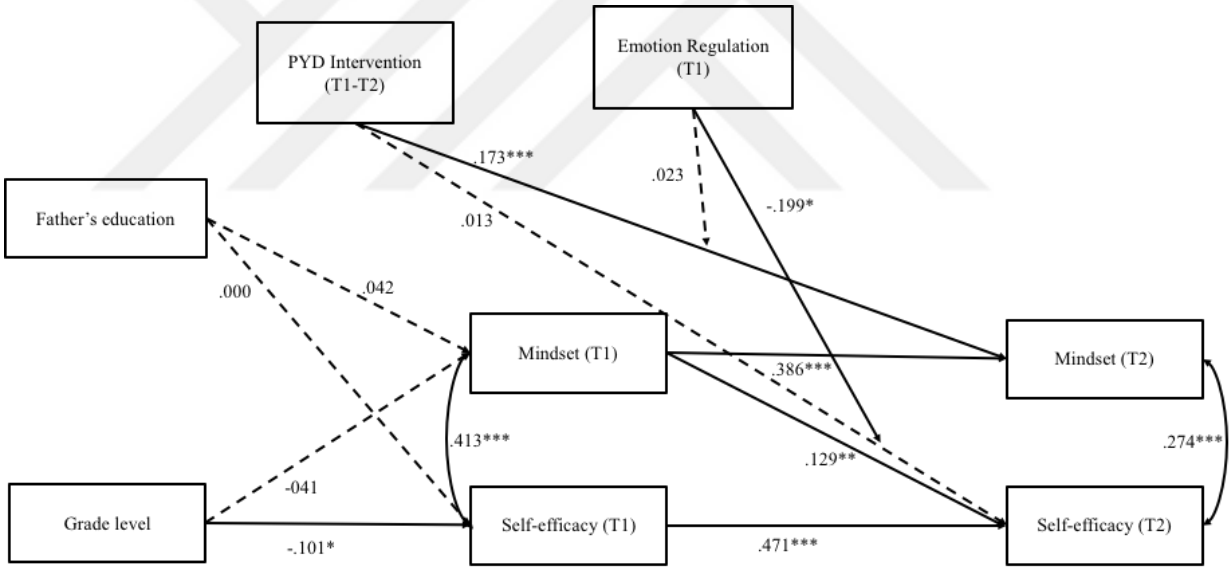

Figure 4. 7 Model 5: Emotion regulation was added to Model 4 as moderator of the intervention effect

Notes. ***p<.001, **p <.01, *p<.05. The standardized path coefficients are presented in the model. Dashed lines show the non-significant paths.

Table 4. 9 *Unstandardized and Standardized Path Coefficients for Model 5 (Standard Errors in Parentheses; N=586)*

	Sample *(N = 586)*

Parameter Estimate	*Unstandardized*	*Standardized*
Grade level → Mindset(T1)	-.062(0.07)	-.038
Father's education → Mindset(T1)	.000(0.05)	.075
Grade level → Self-efficacy(T1)	-.130(0.06)	-.100*
Father's education → Self-efficacy(T1)	.000(0.07)	.075
Mindset (T1) → Mindset (T2)	.468(0.06)	.386***
Emotion Regulation (T1) → Mindset(T2)	.054(0.09)	.055
PYD Intervention (T1-T2) → Mindset(T2)	.351(0.09)	.173***
PYD Intervention (T1-T2) × Emotion Regulation (T1) → Mindset(T2)	.026(0.11)	.023
Self-efficacy (T1) → Self-efficacy (T2)	.398(0.04)	.471***
Mindset (T1) → Self-efficacy (T2)	.093(0.03)	.129**
Emotion Regulation (T1) → Self-efficacy (T2)	.183(0.05)	.309**
PYD Intervention (T1-T2) → Self- efficacy (T2)	.015(0.05)	.013
PYD Intervention (T1-T2) × Emotion Regulation (T1) → Self- efficacy (T2)	-.138(0.06)	-.199*
Covariance between mindset (T2) and self- efficacy (T2)	.096(0.02)	.274***

Model 5 χ^2 (5, N = 586) = 5.73, p > .05, *CFI* = .99, *TLI* = .99, *RMSEA* = .02, (90 % CI = .00 - .07), *SRMR* = .01. *Notes.* ***p<.001, ** p<.01, *p<.05.

Model 5 revealed that emotion regulation moderated the intervention effect on self-efficacy. Emotion regulation was dichotomized as low vs. high emotion regulation by using the mean and the standard deviation of emotion regulation values of the total sample, (M = 3.34, SD=.91). The effects of the intervention on self-efficacy that varied depending on emotion

regulation were calculated based on Model 5 (see Figure 4.8). The adolescents with low levels of emotion regulation experienced more benefits from the intervention in terms of gains in self-efficacy compared to the ones with high levels of emotion regulation.

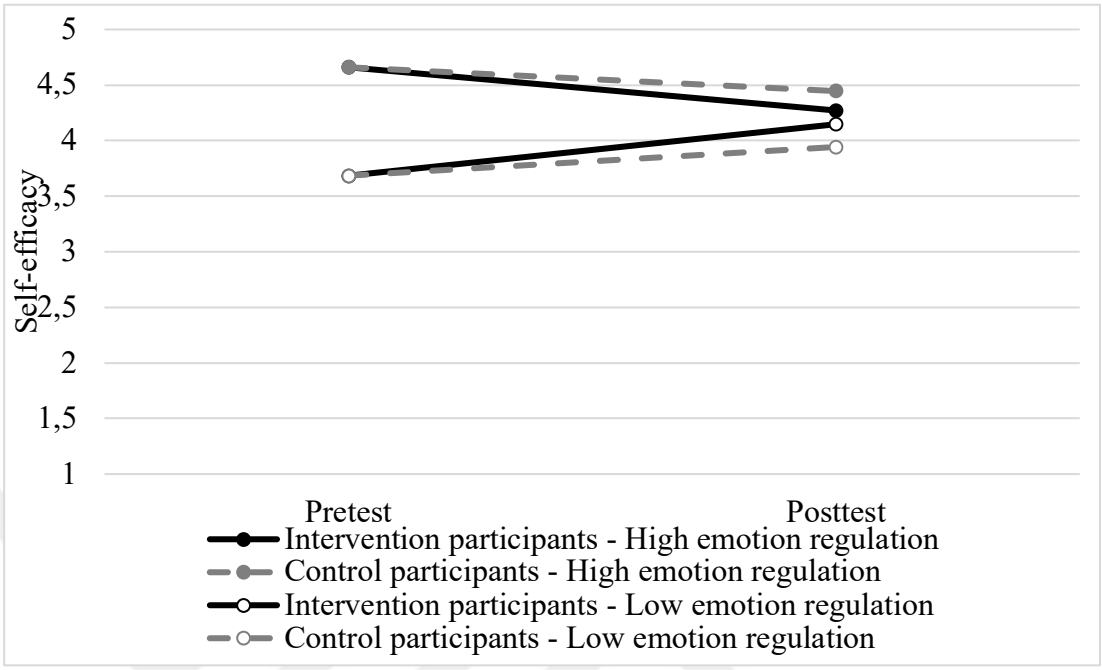

Figure 4. 8 The predicted values of self-efficacy adolescents with high/low emotion regulation in the intervention and control groups.

Chapter 5: Discussion

This chapter presents the summary of the findings of the current study, the contributions it makes to the field, the limitations, and our suggestions for future studies.

5.1 Summary of findings

The current study investigated the effectiveness of a positive youth development intervention (PERGEL) with early adolescents of high socioeconomic status for a growth mindset and self-efficacy. Further, we aimed to investigate emotion regulation as a potential moderator of the intervention effectiveness.

In line with the literature (Aronson, Fried, & Good, 2002; Blackwell, Trzesniewski & Dweck, 2007; Broda et al., 2018; DeBacker et al., 2018; Good, Aronson, & Inzlicht, 2003; Kagitcibasi, et al., 2018), we expected that positive youth development (PYD) intervention would be effective in supporting growth mindset and self-efficacy of adolescents in private schools in Turkey. The results of the current study confirmed and revealed the direct effects of the PYD intervention on growth mindset. The endorsement of a growth mindset at the posttest was higher among adolescents in the intervention group compared to the control group, where we found a decline in the endorsement of a growth mindset between the pretest and posttest.

Contrary to our hypothesis and to previous research that indicated that youth interventions contributed to an increase in self-efficacy (Catalano et al., 2004) and had direct effects on self-efficacy (Kagitcibasi et al., 2018), the results of the current study showed no direct effect of the intervention on self-efficacy. It is possible that the intervention did not contribute much to all the adolescents in our sample, given their high socioeconomic status and the fact that they study in a private school, often considered as a high achieving school. Previous research showed that the achievement level of the schools moderated the effectiveness of interventions, such that the intervention effects were not significant in the highest achieving schools compared to middle and low achieving schools (Yeager et al., 2019). This could indicate that PERGEL intervention might be more effective in supporting the self-efficacy of adolescents with low to lower-middle socioeconomic status in public schools (Kagitcibasi et al., 2018).

The findings of the current study showed that emotion regulation moderated the effects of the PYD intervention (PERGEL) only on self-efficacy and not on growth mindset. However, contrary to our hypotheses, the results indicated that adolescents with low levels of emotion regulation experienced more gains in self-efficacy compared to adolescents with high levels of emotion regulation. It is possible that adolescents who had a high level of emotion regulation already had high levels of self-efficacy and mindset. Hence, the moderation effect was most

likely found because the ones who had low emotion regulation also had low self-efficacy and low growth mindset. Since the results of the moderation analysis were contrary to our expectations, further analyses were conducted to try and find the reasons behind these findings. The distribution of the self-efficacy and growth mindset scores at the pretest revealed that the majority of the adolescents rated their self-efficacy and growth mindset around 4 and above on a scale of 1(low) to 5 (high). The majority of the adolescents in private schools were already high in their endorsement of a growth mindset and self-efficacy, which confirmed the previous research that highlighted that higher socioeconomic status was associated with fewer fixed beliefs about abilities (Claro, Paunesku & Dweck, 2017; Destin et al., 2019) and greater sense of self-efficacy (Boardman & Robert, 2000). The adolescents who had emotion regulation higher than 4 on a scale of 1 to 5 also had high self-efficacy (M=4.66, SD=.38), compared to the ones who scored lower than 3 in emotion regulation (self-efficacy; M=3.75, SD=.67). The findings of the current study were contrary to a recent study conducted in the US, which reported that adolescents with high socioeconomic status tended to hold a fixed mindset compared to adolescents with low socioeconomic status (Hwang, Reyes & Eccles, 2019).

5.2 Contributions

To our knowledge, this was the second study with a PYD intervention targeting mindset and self-efficacy done in Turkish culture (Kagitcibasi et al., 2018). Therefore, the replication of the intervention allowed us to explore how the intervention program exhibits effectiveness, which circumstances are necessary, and which subgroups benefit most from it. The current study suggested that the PYD intervention (PERGEL) exhibited effectiveness in promoting growth mindset and self-efficacy of adolescents with families of high socioeconomic status in private schools in Turkey (Kagitcibasi et al., 2018). The results validated the applicability of the PERGEL in different sub-contexts (private and public schools) in Turkish culture.

Second, the current study aimed to contribute to the literature by investigating an individual factor (i.e., emotion regulation) that might moderate the effectiveness of the intervention. This study was informative by providing several implications for future intervention studies, as it revealed that adolescents with low levels of emotion regulation benefited more from the intervention compared to adolescents with high levels of emotion regulation. However, due to the majority of adolescents' scores on growth mindset and self-efficacy before the intervention was higher than the mean, the moderation by emotion regulation was not informative because our sample had few students from all range of mindset and self-

efficacy values (from 1 to 5). Most of the students were already high in study outcomes, therefore the proposed moderation hypothesis could not be validated with the current sample.

5.3 Limitations, future studies, and suggestions

Three limitations of the current study should be taken into consideration. First, implementation fidelity of the intervention was not ensured in the current study. Unlike the original study (Kagitcibasi et al., 2018), which suggested weekly meetings for one school term with a booster session in its curriculum, the intervention schools in the current study were only able to organize meetings every two weeks without the booster session at the end. Additionally, unlike the original study in which the intervention program was implemented by researchers (Kagitcibasi et al., 2018), the intervention program in the current study was implemented by the classroom teachers. Even though classroom teachers received one-day of training prior to the intervention started, the implementation process was not supervised, and no consultation sessions were held with the teachers during the study while the intervention was taking place. Furthermore, since we did not control for how teachers implemented the intervention, teachers of different classrooms might have conducted the intervention at different times and different days of the week. Feedback regarding the intervention implementation was also not collected from the teachers since the researchers had contact only with the psychological counselors in the intervention school during the intervention process.

Second, previous research suggested that intervention effectiveness might be moderated by teacher-related factors (Durlak et al., 2011; Schmidt et al., 2015) such as teachers' own beliefs regarding the changeability of human characteristics as well as their own self-efficacy. However, the teacher's own beliefs and self-efficacy were not measured in the current study. Varying levels of teachers' beliefs regarding the intervention outcome might also influence the intervention's effectiveness. Future intervention studies could also assess teachers' beliefs in the changeability of human characteristics and capabilities since children spend most of their time at school with their classroom teachers.

Third, mindset and self-efficacy measures were used as the only outcome variables to test the intervention effectiveness. Previous research used grades of the students as an outcome measure to test the intervention effectiveness for mindset and most of the studies showed that intervention led to an increase in lower-achieving students' grades but also indicated that the students who were already higher-achieving also benefited from the interventions. However, the outcome variables to measure the effectiveness of the intervention for the higher-achieving students was chosen as i) willing to take up advanced courses for next school year ii) tendency

to take up academic challenges (Yeager & Dweck, 2019). In order to measure the impact of the intervention comprehensively, future studies could incorporate different outcome measures such as grades, or intentions to undertake academic challenges.

The findings of the current study might have implications for the association between growth mindset and socioeconomic status. Based on the results of the current study, it is possible to infer that these adolescents are already high in their endorsement of a growth mindset and self-efficacy before the intervention. Therefore, the resources around these adolescents (e.g., having parents with a high level of education, the financial resources of the private schools) might have already provided these adolescents with what they would otherwise receive from the intervention. Nevertheless, these results do not suggest that adolescents with high socioeconomic status in private schools do not need a positive youth development intervention because they are already developmentally advanced, but instead that their needs must be explored further.

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APPENDIX A

1. Change and improvement

"Everyone has the power to change and improve"

Session: Change and improvement

The purpose of the session:

The trainer starts the session by introducing himself/herself and explaining the purpose of the program. At the end of the session, the students will have demonstrated the following.

A. An understanding of the idea that people's characteristics, talents, or abilities are not fixed but can change and improve, as well as an understanding of the benefits of self-improvement.
B. The ability to apply these ideas to their real life.

Duration: 40 minutes

Supplements: "The brain" video; Presentation; Student Handbook

Materials: Computer, projector, and speakers

Note: To help the trainer advance the presentation, the headings of the slides that should be presented are shown at the appropriate place in the text (parenthesized and in bold)

Session Plan

Duration	Subheading	Learning Outcomes	Methods
10	I. Introduction and Main Principles	- To get to know the trainer and the program better	Lecture, Q&A, Class discussion
2	II. Our purpose: Change	- To get to know the trainer and the program better	Lecture
15	III. What changes? How does it change? Can a brain change?	Understanding that people's characteristics can improve; understanding the benefits of self-improvement ;ability to apply this to real life	Asking questions, Class discussion, Watching a video
3	IV. Scientific findings	Understanding that people's characteristics can improve; understanding the benefits of self-improvement ;ability to apply this to real life	Lecture
5	V. Session evaluation and purpose recap	Session evaluation - The purpose of the program is recapped	Lecture, Group work

Recommendations for the trainer:

- It is important to cover the whole program because this is the first class of the PERGEL program. However, the trainer can skip slides 8, 12, and 14 if there is not enough time to cover everything.

[Slide 2: Introduction & Who We Are]

I. Introduction and Main Principles

(The trainer introduces himself/herself, talks about why he/she is there)

Hello kids,
You are now in the 6th grade already and you are not so small anymore. The changes you are going through will be fun but they can also be hard sometimes. We are here to teach you some skills that will make the process easier for you and we'll be here with you in these counselling classes for the next couple of months. The topics that we will cover together are very important for you, so it's also important to think about what we can do together to help us explain them and help you learn about them. So let's come up with some principles that will help us do that, and follow these principles throughout the classes we have together

[The trainer asks the class their opinion about the principles. The expected answers are: not to make fun of each other; not to interrupt each other; not to stand up without permission; take the tasks seriously and perform them]

[Main Principles]

1 – Be supportive
2 – Be respectful
3 – Participate in the activities

As **PERGEL** children we will always stick to these principles. We will show each other respect. We will listen carefully when one of us talks, and we will never interrupt each other. We will be supportive of each other. At times, we will engage in group activities. Each member of the group will respect the others, and when I ask you questions, we will come up with the answers together. We will take part in the activities and share our thoughts and ideas with the rest of the group. I can't promise that everyone will be able to answer questions in every class, but you will always be able to participate in the discussions and activities. (The trainer can allow up to three students to answer each question).

Now, let's write down the principles in our student workbooks.

[Slide 3: Do you think in this way?]

In these lessons, we will discuss many problems that kids your age can sometimes face and we will teach you ways to overcome these problems. Now, to get you thinking about the topics, we will read some relevant statements together, and I want you to think about whether you agree with them. (The trainer lets students read the phrases and encourages the class to discuss).

II. Our Purpose: Change

In this week's class we will talk about change toward the better, in other words positive change or improvement.

[Slide 4: Our purpose]

Everyone has the power to change themselves and to improve. This may sometimes be hard to believe, especially when we are in a difficult situation. But it is the truth, and our today we will discuss why and how improvement is always possible.

We are happier when we have positive qualities and have positive relationships with other people. We can hold on to our positive qualities, if we are able to develop and change ourselves for the better.

[Slide 5: A world without change]

(The trainer reads the question and gives the students a few seconds to think over the answers. The trainer calls on three students to answer the questions, and discusses the answers with the rest of the class.)

A possible answer for the trainer: Learning always involves change. So if we never changed, we would never even have learned how to walk and talk as babies. Society would always stay the same and there would never by any new inventions. If we couldn't change, it would be impossible for us to adapt to an environment that is always changing – one example is climate change. Also, if there's something we didn't like about ourselves, we couldn't do anything to improve it.

[Slide 6: A rolling stone gathers no moss!]

(The trainer reads the contents of the slide to the students.)

III. What is changing? How does the change happen? [Slide 7: Examples?]

(The trainer asks the students the question on the slide. The trainer can provide examples such as: people change – they grow up, their thoughts and opinions change; places change - a place can change from a forest to a city; societies and ideas change; nature is in constant change – weather, seasons, evolution/adaptation, etc.)

[Slide 8: One more question: Can a brain change?]

(If the students mentioned the brain in the previous session, the trainer makes the connection, but otherwise reads the following:)

Kids, you've said that we can change a lot of things in our environment and even in ourselves, but now we will talk about something you would not guess, and probably would not even imagine you could change

[Slide 9: The human brain has the capacity to change]

(The trainer reads the slide and then adds the following)
When we work hard and study to improve our knowledge and our skills, the brain grows and becomes more powerful. Science shows that the brain responds in significant ways to studying and learning. Let's watch a video and see how working and learning can change the brain.

(The trainer plays the video called "brain.mp4")

IV. Scientific Findings

So science clearly tells us that a person can change his or her own brain. Did you know that it has been proven that even just *reading* changes the brain?

[Slide 10: Scientific Findings (Reading)]

(The trainer reads the contents of the slide and then adds the following:)

As you know now, we have the power to change ourselves, and even our brains. Understanding and keeping in mind that we can change in his way will be very helpful in our lives. So if we feel that we want to improve ourselves in some area, we always have opportunity to do so, since we can always learn, and our brains will respond and grow stronger. If we need to improve, we can!

[Slide 11: Scientific findings)]

(Before reading the contents of the slide, the trainer reads the following)

Believing that we can improve through effort and hard work can really help us, and there are scientific studies that prove this. These studies have compared two groups of students. Students who know that people can change through hard work and effort, and students who think that people are just born with or without certain characteristics, like intelligence. The studies show that the students who understand how important effort is to change and improvement, learn more, and are more successful.

[Slide 12, 13: Scientific findings]
(The trainer reads the contents of the slides)

Now please turn to **page 5** in your workbooks and do the "fill in the blanks" exercise. Then do the exercise on **page 6** where you answer whether the statements listed are true or false.

V. Session evaluation and purpose recap

[Slide 13: What will we change?]

(The trainer adds the following after reading the slide)

Kids, today we have talked about what our goal is with these lessons, and how important is our goal for you.
If you recall, our goal is: CHANGE! Why is change important? (The trainer accepts answers from the class).

Because by changing for the better we can improve ourselves, build better relationships, and if we have problems we'll find it easier to overcome them. We also learned that there are scientific findings showing that change and improvement is possible for everyone. Our goal of change and improvement is not just a dream, it's a goal that can be reached. So all we need to do is to understand that we can change ourselves and we should always try to do our best!

[Slide 14: Why "PERGEL"?]

Kids, as you see in your handbooks, the name of our program is PERGEL.

S- You know what PERGEL (divider) is, right? (The trainer chooses a student which shortly explains what PERGEL is)

PERGEL can hold one leg constant, while drawing a circle around it with another leg. The best part is that we can draw this circle as big as we want! People are the same, we can hold some of our characteristics constant, while being able to widen the moving leg of the pergel as much as we want and make the circle we draw any size we want. This means that we can also develop ourselves as much as we want in real life. This is in our own hands, because, we are the ones that hold the pergel!

The reason we called our program PERGEL is to give you this idea. PERGEL is not like your other classes, it is just to advance and change ourselves. You will experience the benefits of this program throughout your lives.

[Slide 15: Let's think]

Is there anything you want to change or develop in yourself? (The trainer selects two students to answer the question). Now, I want all of you to write down in one sentence a characteristic of yourself that you want to change. At the end of this term we will look at what we wrote on these notes, and we'll discuss how we could make those changes happen with the methods we have learned.