Research Paper

The impact of growth mindset and resilience on school engagement among adolescents

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ABSTRACT

The present study was conducted to investigate the impact of growth mindset and resilience on school engagement among adolescents. The main objective of the current study was to find out the relationship between growth mindset and resilience. It also aimed at finding out the effect of growth mindset on school engagement and the mediating role of resilience among the study variables. The study was conducted with the sample of 300 adolescent students (male=150) (females=150) on the basis of age, gender, education, and family income. The results of the study were that growth mindset predicted school engagement. The mediating role of resilience was investigated through process Macro of Hayes (2013). The path analysis of mediator on the study variable was consistent with the hypothesis. The results showed that resilience acted as a significant mediator between growth mindset and school engagement among adolescents. Gender difference was also studied on school engagement of adolescents. The results showed a significant difference among male and female adolescents on school engagement. Females showed greater school engagement than males. This study suggests that there is a greater need of students to adequately understand their mindsets and gain the idea that their educational and social setbacks have the potential to get better. Once they have this recognition than they can help students to change their mindsets which in turn enhance their level of resilience. Further, resilience can enhance higher level of engagement in schools when they successfully face challenges.

Key words: Growth mindset, resilience, school engagement.

INTRODUCTION

Schools serve as one of the most important source of development in people's lives and they can lead to successful adaptation through the utilization of people's competencies and abilities (Hamilton and Hamilton, 2009). Schools also provide relatively stable and accessible sites which locate the interventions that promote wellbeing (Bond et al., 2007). Therefore, schools provide a medium to promote the wellbeing of young people (Seligman et al., 2009).

Positive Education is a paradigm that is developed recently, consists of the application of Positive Psychology in reference to contexts of education (Green et al., 2011). Seligman (2011) defines Positive Education as an education that is traditional and that focuses on skill development in academics, illustrated by an approach that enhance wellbeing and may lead to positive mental health. Positive Education can be illustrated as a discipline of positive psychology that provides finest teaching which supports and motivate individuals so that they may flourish within their communities.

Within the school community, the main purpose of Positive Education is to enhance good mental health. Peterson (2007) illustrated the idea that schools could become positive institutions, not only by placing great
emphasis on the educational performance but also on their wellbeing and character. Positive education enhances student's skills and encourages them to build their character strength, resilience, forming relations that are positive, optimism, and other aspects that add to endorse flourishing or positive mental health through the practice of these skills.

School engagement is defined as "a positive, fulfilling and study-related state of mind characterized by vigor, dedication, and absorption" (Schaufeli et al., 2002). Whereas, vigor is described as "a high level of energy and mental resilience when studying; dedication refers to a sense of significance, enthusiasm, inspiration, pride and challenge, While absorption means concentration and happiness when performing one's studying tasks" (Schaufeli et al., 2002). School engagement illustrate students' thoughts, behaviors, and feelings about what they experience in school and is important as it relates to academic outcomes, such as high school completion and achievement.

In order for students to gain educational success, it is important for them to actively engage in school (Finn and Rock, 1997). For the youth to acquire knowledge and skills, they must be actively engaged in school for the purpose of successful transition from primary level to post secondary career and programs (Wang and Eccles, 2012). School engagement can also be considered as a state in which a school context can shape accordingly. Particularly at the secondary level, the engagement of students is aimed at understanding the student boredom problems, high dropout rates and achievement levels (Marks, 2000).

Adolescents is a crucial period in an individual's life in which they have to pass through the storms and stress as they make the difficult transition of both physical and psychological development. The experience, the emotional changes and challenges in order to adapt to the new roles and challenges in life referred to as psycho-social development. According to Erickson (1968), there are eight stages of human psycho-social development. According to him, social interaction and many other important factors have an ability to overcome challenges and perform effectively in life. There are two important stages of development during school period: industry versus inferiority and identity versus role-confusion. In industry versus inferiority, the students learn from their success and value while they also encounter the bitterness of failure. Identity versus role confusion is also understood as individuals trying to recognize themselves and portray themselves according to their idols or role models. It is during these stages that the adolescent students need the most support and understanding from their surroundings. During this period, the crucial role is of teachers to provide desired support and guidance. Teachers should be able to make the students feel welcomed and engage them in school activities (Reyes et al., 2012).

In a study conducted by Patrick et al. (2007) the relationships amongst social environment of classroom, school engagement, and accomplishment of early adolescent's students in the 5th grade were examined. Results showed that the support of teachers, as well as students was included in social environment of classroom, and communication was positively associated with behavioral and cognitive engagement of students at school. They also revealed that greater school engagement of the 5th grade students resulted in greater achievement among early adolescents.

It has indicated by researchers that children who had an unconstructive relationships with their teachers were more expected to have more problems related to academic achievement and school engagement (Baker, 2006; Birch and Ladd, 1997; Hamre and Pianta, 2001; Stipek and Miles, 2008). In a study by Ladd and Burgess (2001), they found that when conflicts existed in the teacher-child relationship, then those students were less likely to be engaged in classroom environment did not enjoy school, and had a greater risk of poor academic performance.

In another study conducted by Baker (2006) it was found that lower grades and test scores were associated with greater teacher-child conflicts. There is evidence that early relationship problems faced by children have a lasting effect throughout their life. In a study by Hamre and Pianta (2001), it was shown that those students in kindergarten who had more conflicts with their teachers had lesser academic success and greater behavioral problems, such as discipline problems and poor habits of work through eighth grade.

Academic performance and engagement has also been linked to the socio-emotional environment of classroom quality of teacher. These high-quality classrooms provide an environment that is warm, centered around children, and promote support for independence. Beside, the teachers also present positive and helpful feedback, by asking open-ended questions, and offer different activities in differing learning styles and maintain interest of student's (Pianta et al., 2002). Therefore, the student's achievement and engagement in school is enhanced by the effective and social environment of classroom.

Resilience is defined as "good outcomes in spite of serious threats to adaptation or development" (Masten, 2001). Block and Kremen (1996) refer to resilience as "an ability to bounce back from negative emotional experiences and flexibly adapt to the changing environment". Ryff et al. (1998) define resilience as "the capacity to maintain or recover high well-being in the face of life adversity". Studies have shown that individuals who are resilient could maintain both their psychological and physical health through effectively encountering the negative events (Connor and Davidson, 2003), and by improving their psychological well-being (Ryff and Singer, 2000).

In order to build the social and emotional skills of the students, schools should play the most important role in...
Growth mindset effectively enhances resilience while the fixed mindset does not (Dweck, 1995; Dweck, 2006). Students with growth mindset are inclined to think that their academic lives are a process of gaining knowledge, developing, and growing. Students who possess a growth mindset know that challenges, hardships, and attempt are approaches to effectively improve their intelligence, capability and practice.

It has been documented in many studies that mindsets have influence on behaviors, which in turn, have effect on students’ academic achievement. Students with a fixed mindset tend to believe that failure in any experience determines their intelligence and as such, tend to circumvent situations in which they might struggle or fail. In contrast, growth mindset students feel that difficult task only increase their abilities (Blackwell et al., 2007), and it is an opportunity for them seek knowledge that will allow them to increase their learning process (Mueller and Dweck, 1998; Romero et al., 2014).

A study conducted by Aronson et al. (2002) on African American students motivated to view intellect as changeable, reported greater pleasure in the educational process, higher engagement in school, and also better “grade point averages” (GPA) than the students in the two control groups. The results of the study also revealed that enhancing the growth mindset of students help to increase their grades in maths, especially of African American students, whereas the control group showed no achievement in grades. Along with this White and African American students, differences also disappeared regarding achievement, and the African students value and enjoyment of classes also increased.

Good et al. (2007) conducted a research on females of Elite University who offer calculus courses in order to understand whether their mindsets had any influence on their sense of belongingness in maths and also their desire to choose maths courses further in the future. They also studied whether mindsets influenced their maths grades. The results showed that the female mindsets played an important role. It revealed that the negative effects of stereotypes did not affect those females with growth mindset. In contrast, those females with a fixed mindset were affected more by negative stereotypes and when this happened, they had a lesser desire to take maths in the future and as a result, a major decline in their maths grades.

**Rationale**

The aim of this research is to figure out whether growth mindset has an impact on school engagement of Pakistani adolescent’s students. There has been limited research on this area in Pakistan, especially the implicit theories of intelligence and its contribution towards adolescent’s engagement in school.
This research attempts to determine the influence of growth mindset on school engagement, using previous studies to understand the mechanism among Pakistani adolescent's students. Adolescents is the crucial period of development whether physical, psychological or mental. It is the stage where students learn to adapt to their environment more effectively and respond positively towards challenges. Adolescents need to adequately understand their mindsets and gain the idea that their educational and social setbacks can get better. As soon as they understand this mechanism, they can be taught the social skills and intellect required to be resilient.

Such study can be quite effective on our society in which people can gain an idea related to their mindsets and apply them in their life. This study can be used in schools and family environment to gain a better understanding of the problems that students face. It can be used to enhance the knowledge of teachers regarding study environment and how it can foster student's mindsets, which in turn, can have an effect on their daily life activities.

**MATERIALS AND METHODS**

**Objectives**

The main objectives of the study are:
1. To investigate whether growth mindset has an impact on school engagement among adolescents.
2. To study whether resilience plays a mediating role between growth mindset and school engagement among Pakistani adolescents.
3. To investigate the gender difference in school engagement among adolescents.

**Hypothesis**

1. There is a positive relationship between growth mindset and resilience.
2. Growth mindset has a positive impact on school engagement among adolescents.
3. Resilience plays a mediating role between growth mindset on psychological well being and school engagement.
4. Female students tend to have a higher level of school engagement than male students.

**Sample**

The sample of the present study comprised 300 adolescent students. 150 female and 150 male adolescent students were selected. Purposive sampling technique was used to collect the information from the participants. A diverse sample was employed in order to enhance the generalizability of the study. Participants were selected from Abbottabad, Islamabad and Rawalpindi equally, that comprised of 150 adolescents students including 75 males and 75 females from both cities.

The average age range of participants was 14-19 years. All the participants were selected from English Medium schools. They were recruited from City School, Modernage Public school, Burnhall School and college, Beaconhouse, The Educators, The Smart School and the Frontier School. The education level of participants was 8th class, along with matric and intermediate level. The sample was randomly selected from these classes in order to have wide range of responses.

**Operational definition**

**Growth mindset**

Growth mindsets are defined as “core assumptions about the malleability of personal qualities” (Dweck and Leggett, 1988; Dweck, 1995; Molden and Dweck, 2006; Yeager and Dweck, 2012). Growth mindset students “see intellectual ability as something that can be grown or developed over time” (Yeager and Dweck, 2012).

It can be operationally defined as the scores on the growth mindset inventory. Low score on the scale will indicate high growth mindset orientation while high score will indicate high fixed mindset orientation among adolescents.

**School engagement**

School engagement is “a positive, fulfilling and study-related state of mind characterized by vigor, dedication, and absorption” (Schaufeli et al., 2002).

School engagement is operationally defined as the scores obtained on the emotional, behavioural and cognitive engagement of the school engagement scale. High score indicates higher level of school engagement among adolescents.

**Resilience**

Resilience is defined as "good outcomes in spite of serious threats to adaptation or development" (Masten, 2001). Block and Kremen (1996) refer to resilience as “an ability to bounce back from negative emotional experiences and flexibly adapt to the changing environment”.

It is operationally defined as the scores on the brief resilience scale. High score indicates high resilience among adolescents.
Instrument

Demographic sheet

The demographic variables included were age, gender, city, education, education type, no of siblings, father education and occupation along with mother education and occupation.

Growth mindset inventory

Growth mindset inventory is provided by Greenleaf Learning (2014). It attempts to measure both growth and fixed mindsets. It captures current student's level of understanding and depth of knowledge of key concepts. It is a five item inventory (e.g. I am comfortable with making many mistakes along the way to figuring things out). Responses are made on a likert scale of 7 points. The scale has 0.70 reliability.

School engagement scale

This scale was developed by Fredericks et al. (2005). It includes items which were drawn from variety of measures such as behavioural, cognitive and emotional engagement. It consists of 15 items that include 4 behavioural engagement items (e.g. "I pay attention in class"), 6 emotional engagement items (e.g. "I feel excited by the work in school") and 5 cognitive engagement items (e.g. "I study at home even when I don’t have a test"). The items 2, 4 and 6 are reversed scored. Respondents had to score on a 5 point likert scale (1- Very true and 5- Very false). It has a good reliability of 0.74-0.86.

Brief resilience scale

The Brief Resilience Scale (BRS) was developed by Smith et al. (2008). It was created to access the ability to bounce back or recover from stressful life events (e.g., "I tend to bounce back quickly after bad times"), and was used to measure participants' resilience. It is a six item scale; three items are negative and the other three are positive. Items 1, 3 and 5 are worded positively and items 2, 4 and 6 are worded negatively. The participants were asked to answer each question by representing their agreement with each statement using the 5-point Likert type scale ("1: strongly disagree and 5: strongly agree"). The Alpha Cronbach's reliability ranges from 0.80-0.90.

Procedure

In present study, a sample was selected from English Medium schools of Abbottabad, Islamabad and Rawalpindi. Firstly, permission was obtained from the school administration to conduct the survey in their area. Most of the school were helpful in this process but many rejected and did not approve working in their school. The data was collected during regular school hours. The survey was conducted in different class rooms from the required specific age group. Before the application of the questionnaires, the participants were informed about the objectives of the study, and confirmed that all data would be kept confidential. Then informed consent was obtained from participants of the study. Only those participants who were willing to take part in the survey were selected.

As soon as the participants were provided with the questionnaires they were illustrated with verbal instructions and were motivated to complete their questionnaires. They were also informed that if they had any difficulty while completing the questions they were free to ask from the researcher. Students completed the questionnaires with least difficulty. The same process was applied to all the schools and data were gathered from different classes and different age groups.

RESULTS

Table 1 shows that the Cronbach alpha reliability of growth mindset scale was 0.65, brief resilience scale was 0.73, and school engagement scale was 0.74. The reliability analysis indicates that the reliability coefficients of all scales are significant and positively related. The results also showed good skewness distribution <1.

The results given in Table 2 showed that growth mindset, resilience, and school engagement were positively and significantly associated with each other. Correlations of all the variables were significant at 0.01 level.

Table 3 shows the results of simple linear regression
Table 2: Pearson product moment correlations among the study variables (N=300).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Growth mindset</th>
<th>Resilience</th>
<th>School engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth mindset</td>
<td>-</td>
<td>0.55**</td>
<td>-</td>
</tr>
<tr>
<td>Resilience</td>
<td>0.55**</td>
<td>-</td>
<td>0.59**</td>
</tr>
<tr>
<td>School Engagement</td>
<td>0.66**</td>
<td>0.59**</td>
<td>-</td>
</tr>
</tbody>
</table>

Note. **p< 0.01.

Table 3: Linear regression analysis of growth mindset and school engagement (N=300).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model school engagement</th>
<th>95%Confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>UL</td>
</tr>
<tr>
<td>Constant</td>
<td>2.66</td>
<td>-2.97</td>
</tr>
<tr>
<td>Growth Mindset</td>
<td>2.19</td>
<td>1.91</td>
</tr>
<tr>
<td>R²</td>
<td>0.440</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>233.8</td>
<td></td>
</tr>
</tbody>
</table>

Note. UL=Upper Limit, LL=Lower Limit, **p<0.001.

Table 4: Mean standard deviation and t-value for school engagement scale (N=300).

<table>
<thead>
<tr>
<th>Scale</th>
<th>Males (n=150)</th>
<th>Females (n=150)</th>
<th>95 % CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>School Engagement</td>
<td>44.69</td>
<td>7.63</td>
<td>47.69</td>
</tr>
</tbody>
</table>

Note: **P < 0.01 **P<0.05.

Resilience

![Diagram of Resilience](#)

Growth Mindset → 0.60** M

X

0.98**

Y_i

1.59 (2.19)**

School Engagement

among growth mindset and school engagement. A significant regression model was found between growth mindset and school engagement among adolescents (β=.663, p<.01) (F (1,298) = 233.8, p< .000), with an R² of .440. Therefore, these results showed that growth mindset positively predicated school engagement with 44% variance.

Table 4 shows that there was a significant difference between school engagement among males (M=44.6, SD=7.63) and females (M=47.6, SD=6.75) with t (298) = 3.60, p=0.00 and 95% CI [ LL= -4.63, UL= -1.36]. Results indicated significant gender difference on school engagement, as females showed greater school engagement than males.

Simple mediation analysis of school engagement

Direct and indirect effect of growth mindset on school engagement through resilience (N=300)

The conceptual model of school engagement is represented through path diagram of simple mediation analysis (Figure 1).
The results of the mediation analysis are shown in Tables 5, 6, and 7. The results consist of the association between growth mindset and school engagement (c path), the effect of growth mindset on resilience (a path), and the association between growth mindset and school engagement through resilience (c’ path). Firstly, Table 5 shows that growth mindset was positively associated with school engagement ($\beta = 2.19$, $t_{(298)} = 15.29$, $p = 0.00$). By this analysis, it can be concluded that the results of this path are significant. It was also found in table 7 that growth mindset was positively related to resilience ($\beta = 0.602$, $t_{(298)} = 11.41$, $p = 0.00$), which also represented significant results. Lastly, the results in Table 6 showed that resilience was positively associated with school engagement ($\beta = 0.986$, $t_{(297)} = 6.71$, $p = 0.00$) which revealed significant results, as well. Mediation analysis was tested using the Hayes (2013) method. In the present study, 95% confidence interval of the indirect effect was obtained with 5000 bootstrap samples (Hayes, 2013). Bootstrapping is a method for deriving robust estimates of standard errors and confidence intervals for estimates, such as the mean, median, proportion, correlation coefficient or regression coefficient. It can also be used for constructing hypothesis tests. Bootstrapping is the most used as an alternative to parametric estimates when the assumptions of those methods are in doubt, or where parametric inference is impossible or requires very complicated formulas for the calculation of standard errors. Table 6 indicates that the $c’$ path of the association between growth mindset and school engagement was highly significant ($\beta = 1.59$, $t_{(297)} = 9.96$, $p = 0.00$), thus suggesting mediation. Sobel’s test (1990) was carried out to determine the significance of indirect effect of growth mindset on school engagement through the mediation of resilience. The result showed significance at alpha = $0.01$ ($z = 5.772$, $p = 0.00$). This means that the results of mediation analysis of resilience in the relationship between growth mindset and school engagement are significant, indicating that resilience acts as a mediator between growth mindset and school engagement.

DISCUSSION

The purpose of this study was to investigate the impact of
growth mindset on school engagement among adolescents in Pakistan. Along with this, the study also showed whether resilience acted as a mediator between the variables. Both male and female adolescents have been examined along these variables.

The results showed a positive relationship between growth mindset and resilience. Several possible explanations contribute to this relationship which include that implicit theories develop students personal characteristics during educational and social adversities that affect resilience (Yeager and Dweck, 2012). Thus, the results are related to previous studies that are shown in different contexts. Resilience is defined as “successful adaptation in the face of adversity and environmental stressors, such as poverty, unemployment, homelessness, and family instability and breakdown” (Masten, 1994). In order to manage such challenges, growth mindset is of utmost importance (Peterson et al., 2007). The subjective experiences are valued by positive psychology towards the past, present and future and it also helps enhance the positive qualities that could be used to prevent and effectively deal with everyday problems (Seligman and Csikszentmihalyi, 2000). It focuses on cognitive processes, such as thinking optimistically, positive self talk, awareness and regulating the emotions positively.

Regression analysis was done to measure the impact of growth mindset on school engagement. The results of the linear regression analysis showed that growth mindset predicted school engagement. According to past investigations, it was observed that students with a growth mindset tend to earn higher grades and are involved more in school engagement because it provides a platform for them to learn from challenges and mistakes rather than just looking smart (Blackwell et al., 2007). Blackwell et al. (2007) conducted a research on growth mindset and achievement grades among minority students in USA. Participants were those making a difficult transition from 7th grade and were already showing declining grades and educational activities. To study this, two groups were assigned: control and intervention group. The control group received eight sessions of study skills, whereas the intervention group received eight sessions of study skills along with particular training on growth mindset. The training that was provided on growth mindset involvement was that student’s brain forms new connections due to effort and they were the ones who could control it. The study showed that the growth mindset intervention group resulted in greater achievement due to higher grades and to new pathway of improvement.

Simple mediation analysis was used to test the hypothesis that resilience acts as a mediator between growth mindset and school engagement. In order to calculate the direct and indirect effect of this simple mediation, Model 4 in the PROCESS macro of Hayes (2013) was used.

The results of the study showed that resilience does act as a mediator between growth mindset and school engagement. These findings are in line with the study of Zeng et al. (2016) who reported the relationship between growth mindset and school engagement, as well as the mediating role of resilience. In their study, they proposed that resilience acts as a partial mediator between growth mindset and school engagement. Thus the results are in line with the study presented in past literature.

Conclusion

The aim of this study was to investigate the mediating role of resilience between growth mindset and school engagement. This study also investigated whether growth mindset predicted school engagement among Pakistani adolescents. The analysis of the results showed that all the variables correlated with each other. The results revealed that growth mindset predicted school engagement among adolescents.

The mediation analysis of resilience was also considered in the study. Mediation was carried out using PROCESS Macro developed by Hayes (2013) in which the results showed that resilience acted as a mediator between the relationship of growth mindset and school engagement.

Implications

The findings of this research have many implications on the academic and social tasks of students. In Pakistan, there is a greater need of students to adequately understand their mindsets and gain the idea that their educational and social setbacks can get better. Once students have this understanding that their mindsets can be changed, then this change can alternatively have an impact on their resilience level, which in turn, have an effect on their social skills and intellect to get better in life. Schools can apply this study in order for teachers to understand that mindset can be improved by their motivation and effort. With this recognition, they can help students to change their mindsets, which in turn, enhance their level of resilience. Further, resilience can enhance higher level of engagement in schools when the students have successfully face challenges.

Limitations

The limitations of the study are:

1. The study was only conducted on students of English Medium Schools of Abbottabad, Islamabad and Rawalpindi.
2. Only adolescents were selected so the sample was not
very broad. 
3. Limited ranges of participants were chosen from these specific places. 
4. Sample size of the study was also relatively small. 
5. The view of teachers could have been considered related to the school engagement and growth mindset of student’s, in order to gain better understanding.

Suggestions

The following suggestions must be kept in consideration for future research:
1. The sample size should be increased.
2. It is recommended that a broad spectrum of age should be taken.
3. Vast area could be used to collect sample participants.
4. Schools other than English medium could also be taken into consideration.
5. In future studies, data can also be taken from teachers in order to get a better understanding of the students.

REFERENCES

students believe that personal characteristics can be developed. Educ. Psychol. 47:302–314.

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