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The predictive power of university students’ self-leadership strategies on their self-efficacy

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This study aims to analyse correlations between the self-leadership strategies employed by university students and their self-efficacy and to determine whether or not their self-leadership and self-efficacy differ significantly on the basis of gender. The study is in the model of correlational survey and it uses random sampling method. The study was performed with the voluntary participation of undergraduate students (N=341), and the research data were collected through Self-Leadership Scale and General Self-Efficacy Scale. Multiple regression analysis was employed in determining the predictive power of self-leadership strategies. The analysis results demonstrated that self-leadership strategies were correlated with self-efficacy and that self-leadership strategies were predictors of self-efficacy. Accordingly, the strongest predictor of self-efficacy was natural reward strategies. In the context of the conclusions reached in this research, training and activities to promote self-leadership skills can be included in higher education programmes.

Key words: Self-leadership, self-leadership strategies, self-efficacy, university students.

INTRODUCTION

Higher education is the educational environments where students’ personal development is supported in addition to their gaining occupational knowledge and skills. Such environments have developmental potentials for students; because students who are physically away from their family in this process are expected to cope with several tasks and responsibilities. Setting goals, managing and regulating their feelings, thoughts and behaviours are a part of their daily life. On the other hand, coming across tasks that they have not come across before or the difficulty of the tasks required that they have certain skills. They need such performance promoting skills as making the new and difficult tasks enjoyable, setting appropriate goals, motivating oneself by imagining successful performance, making use of the clues in fulfilling a task, thinking constructively and positively and rewarding or punishing oneself in directing behaviours. The aforementioned skills are generally conceptualised as self-leadership in the literature (Manz, 2015).

A review of relevant studies makes it clear that the phenomenon of self-leadership is remarkable mostly in the work life. The studies mentioned in general are concerned with the correlations between employees’ self-leadership and their performance (Arlı and Avci, 2017; Kayral, 2015; Manz, 2015). In the current situation, self-leadership...
leadership is limited to the business world, and it is seen that the role played by humanity (physical and spiritual) and education is neglected despite almost forty years of work in theory and practice and an indisputable place in the daily life of human beings.

On the other hand, it is stated that self-leadership should be considered in different cultural environments and thus whether it is universal or not should be demonstrated (Stewart et al., 2011). Turkey is separated from the collectivist society as individualistic western societies (Hofstede Insights n.d.).

Moreover, no studies concerning the correlations between self-leadership strategies and self-efficacy are available. The unavailability of studies about the correlations between self-leadership and self-efficacy at university level, which prepares students to occupations and to life, has made performing this study a necessity.

Self-leadership

Self-leadership was first conceptualised by Manz (2015) as the art of leading oneself. Self-leadership is a process in which one decides what to do, why to do it, how to do it and when to do it and which one directs. In this process individuals make use of a number of strategies. Employing the strategies leads to individuals’ successful performance, to coping with stress and briefly to being more effective in life. The purpose in self-leadership strategies is to control and manage one’s own feelings, thoughts and behaviours on his own. Individual differences are available in the use of strategies serving to different purposes. According to the theory of self-leadership, strategies are divided into such categories as behaviour-focused strategies, constructive thought strategies and natural reward strategies (Manz, 2015).

Behaviour-focused strategies are composed of self-observation, setting goals for oneself, self-reward, self-punishment and setting reminders for oneself. These strategies cause individuals to focus on their own behaviours, to observe their own behaviours and to determine why they behave in the way they behave and to modify their behaviours to make them fit to the situation. Behaviour-focused strategies also help individuals to make decisions about their life and thus to set goals for the future. A student studying at the university can use the exchange program as a goal for going abroad. In this way, the strategies mentioned cause people to self-reward and to be more effective on attaining their goals. The student can imagine himself in the country he wants to go, he can congratulate himself when his dream abroad is realized and he can start preparations. When the reverse occurs and they cannot attain their goals or they display wrong behaviours, they punish themselves or criticise themselves. When the student’s foreign dream is not realized for a variety of reasons, s/he may be angry at himself and may blame himself. S/He may estrange himself from her/his classes and social life.

On the other hand, individuals make to-do lists throughout the day and thus remind themselves what to do and increase their motivation. After the admission of the student who is admitted to the student exchange program, preparing a list related to the obligations such as liability agreement, training protocol, passport and visa procedures can help to be done on time and result in problem-free. They try to direct their behaviours and to self-lead in this way. Constructive thought strategies, on the other hand, involve individuals’ focusing on their thoughts and transforming the non-functional thoughts into functional ones. These strategies contain individuals’ positive internal dialogues with themselves and their dreaming successful performance. Thus, they direct their thoughts and decide on what to think and how to think it. Students can face difficult and boring tasks such as making presentations, preparing homework and preparing for the exam. In these difficult and tedious tasks, it may be useful to imagine a successful presentation, to change their negative thoughts about the challenge of the homework and the exam. Finally, natural reward strategies focus on the likable sides of an individuals’ tasks or activities or make them enjoyable and thus help individuals to succeed in the tasks or activities (Neck and Houghton, 2006; Norris, 2008; Tat and Zeitel-Bank, 2013). The student who applied to the student exchange program focuses on the difficulties that the applicant will live in the acceptance of the application rather than the difficult and laborious aspects of the application.

Self-efficacy

Human resource needs cognitive, behavioural and self-regulated instruments in the management of the changing conditions of life. In this context, efforts were made to explain how to make human resource more effective in the theory of self-efficacy (Bandura, 2011). Self-efficacy is defined as individuals’ belief in their ability to cope with the current situation when they encounter challenging and stressful situations and feeling that they have the necessary abilities (Lusczynska et al., 2005). In other words, self-efficacy is individuals’ belief that they can skilfully perform a task (Maddux, 2002) and their self-confidence in this respect rather than their perceived skills. In this case, it is important to improve individuals’ self-belief and self-confidence because people having strong self-efficacy beliefs can overcome difficulties and can perform new tasks.

Self-leadership and self-efficacy

It is claimed in the literature of self-leadership that self-
Efficacy should be strong in implementing cognitive and behavioural self-leadership strategies. The studies available have demonstrated that self-leadership is correlated with self-efficacy, that the correlation is positive (Marshall et al., 2012; Norris, 2008; Wang et al., 2016) and that self-leadership is predictive of self-efficacy (Marshall et al., 2012; Rice, 2014). It was observed in the studies conducted on the basis of the results of self-leadership training that self-efficacy increased (Further et al., 2015; Houghton et al., 2012; Unsworth and Mason, 2012) and it was claimed that self-leadership training can improve self-efficacy (Boss and Sims, 2008).

Self-efficacy is individuals’ beliefs in organising and conducting the behaviours necessary for achieving the goals and objectives they set in different areas of their life (Sá de Souza et al., 2014), or their subjective evaluations about those beliefs (Evans and Tress, 2009). Self-efficacy is closely related to the use of self-leadership strategies which are composed of several different skills. Setting personal goals, which is among self-leadership strategies, is influenced by individuals’ evaluation of their abilities (Bandura, 2011). Individuals need to focus on their mission and be persistent so that they can attain the goals they have set (Bradley and Corwyn, 2004). In that case, self-efficacy belief is important. High self-efficacy perception enables individuals to set great goals and not to give up their goals easily (Luszczynska et al., 2005). Thus, self-efficacy can be instrumental to performance which develops depending on self-leadership. Research findings support the claim that self-efficacy is instrumental in the relations between self-leadership and performance (Konradt et al., 2009). Contrary to that, individuals who do not believe in their abilities may easily give up their goals in struggle with difficulties or failure and they may make no efforts. This, in turn, can reduce their performance achievement (O’Sullivan, 2011). Humans try not to be available for activities and environments with which they do not believe they can cope (Bandura, 2011). Those beliefs play important roles in setting certain tasks and goals and in determining the situations with which individuals will cope and the ways to cope with (Further et al., 2015). Therefore, setting personal goals as a self-leadership skill can be applied to individuals with strong self-efficacy more easily. Thus, it may be stated that self-leadership increases on the basis of self-efficacy perceptions.

It is claimed that developing self-leadership strategies will also contribute significantly to self-efficacy (Mansor et al., 2013; Stewart et al., 2011; Tat and Zeitel-Bank, 2013). Thus, self-leadership strategies serve to the formation of strong self-efficacy perceptions and beliefs (Maddux, 2002). Self-leadership strategies aiming to improve performance also promote individuals’ beliefs and self-efficacy in performing a task (Marshall et al., 2012). Besides, self-efficacy is also increased through self-leadership strategies’ increasing the self-control (Konradt et al., 2009). Implementing self-leadership strategies can lead to positive perceptions in individuals about their efficacy and thus can increase their personal effectiveness (Tuovinen, 2010). Thinking the opposite, experiences of competence also cause self-efficacy beliefs to strengthen (Boss and Sims, 2008; Zulkosky, 2009). People with self-leadership skills can cope with the changing conditions and challenging situations more effectively with their strong feelings of self-efficacy (Yun et al., 2006) and can adjust better. Failures, on the other hand, undermine self-efficacy (Bandura, 2011). People having lower self-efficacy perceive the tasks undertake as more difficult than they are and they have higher likelihood of experiencing failure, depression tenseness and helplessness (Van Dinther et al., 2011). In that case, they can resort to self-punishment in the form of negative responses or self-criticism as a result of failure (James, 2009). People who cannot lead themselves are expected to have lower self-efficacy.

It has been found that constructive thought strategies are closely related to self-efficacy. A study trying to change destructive thoughts into constructive thoughts by focussing on usual patterns of thought found that participants’ self-efficacy increases (Neck and Houghton, 2006). Talking positively to oneself, a constructive thought strategy, can result in individuals’ feeling that they can control themselves and thus it can lead to stronger feelings of self-efficacy and better performance (Stewart et al., 2011). It was observed that self-talk in a constructive manner, mental picturing and training focusing on beliefs and assumptions increased self-efficacy in addition to increasing the work performance and positive feelings of employees (James, 2009; Unsworth and Mason, 2012). Additionally, self-clue is also a reminder system protecting individuals in attaining their goals (James, 2009). This reminder system can influence individuals’ perceptions of their self-efficacies in positive ways.

Rewarding activities which are based on natural reward strategies can help individuals to self-control and to feel more capable (Manz, 2015). Thus, envisioning successful experiences in mind can increase self-efficacy. It is known that individuals focussing on constructive thoughts and natural reward experience actualise efficacies leading to higher performance (James, 2009). Consequently, descriptions offered in the literature on the correlations between self-leadership and self-efficacy and the research findings are so different that they can cause confusion. In its relationship with self-leadership, self-efficacy is introduced and investigated as the antecedent and the predictor of self-leadership and as the consequence of or predicted by self-leadership. In this case, it may be stated that there are continuous correlations between the two supporting each other. There is need to know what self-leadership strategies increase self-efficacy. Besides, there are no studies concerning the correlations between self-leadership strategies and self-efficacy. Hence, this study is expected
to contribute to determining the self-leadership strategies university students’ use and to clarifying the correlations between self-leadership and self-efficacy. It can also shed light on the development of university students’ self-leadership and self-efficacy skills and on the arrangement of intervention programmes to be implemented. In addition to that, it can also make contributions to the literature of self-leadership and self-efficacy.

**Self-leadership, self-efficacy and gender**

Gender is an important factor in both self-leadership and self-efficacy. When the self-efficacy literature is examined, it is seen that men have higher self-efficacy than girls (Aypay, 2010; De Carolia and Sagone, 2014; Spence et al., 2010). On the other hand, the literature on self-leadership shows that men appeal to less autonomy strategies than girls (Kyguoliene and Ganusauskaite, 2017). In addition, it is argued that gender can create differences in importance given to strategies of self-efficacy and for this reason it should be taken into account in theory (Bendell et al., 2019). In this case, the predictive power of self-leadership strategies with gender in terms of self-efficacy remains an untapped area. The study seeks answers to the following questions:

1. Are there significant gender differences in university students’ general self-leadership, self-leadership strategies and self-efficacies?
2. What are the predictive powers of university students’ self-leadership strategies on their self-efficacy?

**METHODOLOGY**

**Participants**

This study is in correlational survey model. It uses random sampling method. The participants were 341 undergraduate students who attended a state university located in the west of Turkey and who were included in the research group on the basis of volunteering. 246 of whom were female and 95 of whom were male. The average age was 20.23 (SD=1.66) and the age range was between 18 and 27.

**Measures**

**Self-leadership scale (SLS)**

It is a scale developed by Houghton and Neck (2002) from revised self-leadership list of questions (RSLQ) to measure self-leadership skills and which was later adapted into Turkish by Tabak et al. (2013). It consists of 3 strategies and 8 sub-scales. The three strategies in the scale are behaviour-focused strategies, constructive thought strategies and natural reward strategies. The 29-item scale is in 5-pointed Likert type. The total score received from the scale indicates the level of self-leadership. “I use my imagination to picture myself performing well on important tasks”, “I tend to get down on myself in my mind when I have performed poorly” and “I pay attention to how well I’m doing in my work.” These are expressions of the scale. The reliability coefficient was found as 0.88 for the scale. Confirmatory factor analysis performed demonstrated that the fit indices for the scale (X²/df=2.90, CFI=0.94, GFI=0.96, NFI=0.91, TLI=0.91, IFI=0.94, RMSEA=0.07, RMR=0.04) were acceptable. The Cronbach’s Alpha was found to be 0.85 in this study. The fit indices whose three-factor structure was tested in this study (X²/df=1.84, CFI=0.96, GFI=0.97, NFI=0.93, TLI=0.95, IFI=0.97, RMSEA=0.05, RMR=0.04) goodness of fit.

**General self-efficacy scale (GSES)**

The scale was developed by Schwarzer and Jerusalem (1995) to measure individuals’ perceptions of their ability to cope with stressful experiences and to adapt. The scale contains one factor and 10 items, and it requires responses between “totally agree” and “totally disagree” (in four-pointed Likert type). The scores from the scale vary between 10 and 40 and the high scores are considered to be high self-efficacy in general. “It is easy for me to stick to my aims and accomplish my goals” and “I can solve most problems if I invest the necessary effort”. These are expressions of the scale. The scale was adapted into Turkish by Aypay (2010). The internal consistency coefficient was found as 0.83 for all the scale items. The reliability coefficient for the repetition of the scale was found as 0.80 in a period of eight weeks. The Cronbach’s Alpha coefficient was 0.81. The fit indices (X²/df= 2.53, CFI=0.95, GFI=0.95, NFI=0.92, TLI=0.93, IFI=0.95, RMSEA=0.07, RMR=0.05) for the scale had goodness of fit in this study.

**FINDINGS**

**General self-leadership, self-leadership strategies and self-efficacy levels of university students by gender**

This research analysed the correlations between self-leadership strategies and self-efficacy. The mean and standard deviations for the variables according to gender and according to total scores are shown in Table 1. An examination of Table 1 makes it clear that university students’ general self-leadership scores (M=3.90, SD=0.42) and their self-efficacy scores (M=30.53, SD=3.71) according to total scores are at “medium-high” levels. On looking at the self-leadership strategies used by them, it was found that the most frequently used strategies were natural reward strategies (M=4.09, SD=0.63), which were followed by constructive thought strategies (M=3.99, SD=0.50) and behaviour-focused strategies (M=3.56, SD=0.50), respectively.

The t test was applied to the scores obtained from the university students’ responses on the basis of self-report to seek an answer to first question posed in this study, and the results are shown in Table 2. On examining the test results, it was found that the students’ general self-leadership scores as well as their scores for behaviour-focused strategies, for constructive thought strategies and for natural reward strategies differed significantly according to gender. Thus, the female students got higher scores than the male students both in general self-leadership and the three strategies of self-leadership.
The female students used general self-leadership strategies more than the male ones. Besides, they also used behaviour-focused strategies, constructive thought strategies and natural reward strategies more than the male students. On the other hand, the female students’ self-efficacies were found to be lower than those of male students’.

The power of self-leadership strategies used by university students to predict self-efficacy

The correlations between the variables were analysed through Pearson’s correlation analysis, and binary and partial correlations were checked (Table 3). According to binary correlations, positive and significant correlations were found between behaviour-focused strategies, $r=0.36$, $p<0.05$, constructive thought strategies, $r=0.34$, $p<0.05$, natural reward strategies, $r=0.40$, $p<0.05$ and self-efficacy. As university students’ use of self-leadership strategies increase, their self-efficacy also increases. Negative and significant correlations were found between gender (female) and self-efficacy. According to the partial correlations, behaviour-focused strategies correlated positively with self-efficacy when the other variables in the regression equation were controlled ($r=0.29$, $p<0.05$). By controlling the other variables, positive and significant correlations were found between constructive thought strategies and self-efficacy ($r=0.27$, $p<0.05$). On controlling the other variables for natural reward strategies, the correlation coefficient for its correlations with self-efficacy was found as 0.18 ($p<0.05$). And finally, on controlling gender and self-leadership strategies, negative correlations were found with self-efficacy ($r=-0.29$, $p<0.05$).

And as the answer to the final research question gender, self-leadership strategies and self-efficacy were put to multiple regression analysis. Gender and self-leadership strategies were regarded as the independent variables and self-efficacy was regarded as the

### Table 1. Mean and standard deviations (N=341) for self-leadership strategies and self-efficacy.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total Score</th>
<th>Score range of scales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Behaviour-focused strategies</td>
<td>3.56</td>
<td>0.46</td>
</tr>
<tr>
<td>Constructive thought strategies</td>
<td>3.99</td>
<td>0.50</td>
</tr>
<tr>
<td>Natural reward strategies</td>
<td>4.09</td>
<td>0.63</td>
</tr>
<tr>
<td>General self-leadership</td>
<td>3.90</td>
<td>0.42</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>30.53</td>
<td>3.71</td>
</tr>
</tbody>
</table>

### Table 2. Descriptive statistics and the t-test results for self-leadership strategies and self-efficacy.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Female</th>
<th>Male</th>
<th>95% CI</th>
<th>t</th>
<th>df</th>
<th>Cohen's $d$</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Self-leadership</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behaviour-focused strategies</td>
<td>3.93</td>
<td>0.41</td>
<td>3.75</td>
<td>0.42</td>
<td>0.085,28</td>
<td>3.69*</td>
</tr>
<tr>
<td>Constructive thought strategies</td>
<td>3.61</td>
<td>0.48</td>
<td>3.44</td>
<td>0.40</td>
<td>0.065,28</td>
<td>3.16*</td>
</tr>
<tr>
<td>Natural reward strategies</td>
<td>4.03</td>
<td>0.48</td>
<td>3.87</td>
<td>0.53</td>
<td>0.042,28</td>
<td>2.67*</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>30.18</td>
<td>3.47</td>
<td>31.44</td>
<td>0.43</td>
<td>-2.22,32</td>
<td>2.63*</td>
</tr>
</tbody>
</table>

### Table 3. Multiple regression analysis in relation to predicting self-efficacy.

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>$\beta$</th>
<th>t</th>
<th>p</th>
<th>Zero-order</th>
<th>Partial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>14.08</td>
<td>1.64</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Gender (female)</td>
<td>-2.12</td>
<td>0.39</td>
<td>-</td>
<td>-</td>
<td>3.89</td>
<td>0.001</td>
<td>0.36</td>
</tr>
<tr>
<td>Behaviour-focused strategies</td>
<td>1.69</td>
<td>0.44</td>
<td>0.21</td>
<td>3.41</td>
<td>0.001</td>
<td>0.34</td>
<td>0.18</td>
</tr>
<tr>
<td>Constructive thought strategies</td>
<td>1.34</td>
<td>0.14</td>
<td>0.18</td>
<td>5.19</td>
<td>0.001</td>
<td>0.40</td>
<td>0.27</td>
</tr>
<tr>
<td>Natural reward strategies</td>
<td>1.62</td>
<td>0.31</td>
<td>0.28</td>
<td>-2.22</td>
<td>0.042</td>
<td>2.63</td>
<td>0.51</td>
</tr>
</tbody>
</table>

$R=.54, R^2=0.29, F=33.97, p<0.001.$
dependent variable in this analysis, and efforts were made to determine the power of gender and self-leadership strategies to predict self-efficacy (Table 3). In consequence, it was found that gender along with self-leadership strategies explained 29% of the total variance in general self-efficacy (R²=0.29, F(4, 336)=33.97, p<0.001). The t test results showed that all the variables included in the regression analysis were significant predictors of self-efficacy (Table 3). On examining the predictive power of the predictor variables, it was found that the most powerful predictors were natural reward strategies (β=0.28, p<0.001), gender (β=-0.26, p<0.001), behaviour-focused strategies (β=0.21, p<0.001) and constructive thought strategies (β=0.18, p<0.001).

**DISCUSSION**

This study analysed the correlations between university students’ self-leadership strategies and self-efficacy on the basis of gender. The findings obtained indicated that the students were quite good in terms of general self-leadership skills, self-leadership strategies and self-leadership levels. Gaining a place at university programmes is a challenging process. Coping with the process and being able to continue university education can be dependent on the strength of the students’ self-leadership skills and strategies and of their self-efficacy. On examining the scores the participants received from strategies, it was found that they had received similar scores. Apart from that, it was also found by looking at the scores that the students had used natural reward strategies more often. This was a finding supported by the one obtained in the literature (Kyguoliene and Ganusauskaite, 2017).

The results obtained in this study demonstrated that there were significant differences between men and women in terms of general self-leadership skills, self-leadership strategies and self-efficacy. Accordingly, the women received higher scores in general self-leadership skills and in self-leadership strategies than the men. The relevant literature is supportive of these findings. Women use self-leadership strategies more often than men (Kyguoliene and Ganusauskaite, 2017; Norris, 2008). The explanation for this situation can be that men are achievement oriented while women are more social adjustment oriented (Sherman et al., 2007). Loyalty and relations are important for women (Schultheiss, 2001). Family support is more important for women to continue education. Women receiving the support can be dependent on the condition for gaining their family’s trust. Self-leadership skills can play important roles in gaining the trust. On the other hand, there are also findings in the literature that there are no differences between men and women in using self-leadership strategies (Megheirkouni, 2018).

Self-efficacy was found to be in favour of male students in this study. This result can be explained with gender roles. Differences in terms of gender are attributed to men’s and women’s self-perceptions (Usher and Pajares, 2008). Women’s low expectations about handling tasks specific to men can lead to negative self-evaluations. It is claimed that while women attribute their successful performance to luck, men attribute such performance to their capabilities. Therefore, it is apparent that men have more confidence in their abilities (Bordalo et al., 2016). Apart from that, findings that there are no differences between men and women in terms of self-efficacy are also reported in the literature (Megheirkouni, 2018).

On analysing the correlations between self-leadership and self-efficacy in this study, it was found that strong self-leadership skills were possible through strong self-efficacy perceptions. The main sources of self-efficacy are the direct experiences (Bandura, 2011). The successful or unsuccessful results of the experiences can influence individuals’ judgements and feelings in positive or negative ways (Brown and Marshall, 2006; Rice, 2014; Stewart et al., 2011). This study found that there were positive and significant correlations between self-efficacy and self-leadership strategies. This was a finding consistent with the ones obtained in previous studies (Norris, 2008). Evidence was also provided in the literature that self-efficacy was a complete mediator between the use of self-leadership strategies and their consequences (Megheirkouni, 2018). The results obtained in those studies can be regarded as evidence that self-leadership contributes to self-efficacy.

The results of multiple regression analysis performed in this study showed that the findings were consistent with the ones obtained in the previous studies (Megheirkouni, 2018) and that gender, behaviour-focused strategies, natural reward strategies and constructive thought strategies contributed significantly to self-efficacy. Of the strategies, natural reward strategies were the ones with the most power to predict self-efficacy. They were followed by behaviour-focused strategies and constructive thought strategies, respectively. The findings demonstrated that self-efficacy could be predicted by self-leadership strategies as beliefs formed depending on experiences. According to Manz (2015), natural reward strategies have three elements, namely, ability feelings, self-control and goal. The three elements are fed by natural reward strategies. In that case, natural reward strategies play roles in the formation of feelings of self-control and goal in addition to increasing individuals’ positive feelings about their abilities (Ricketts et al., 2012). This study demonstrated, in support of this situation, that the use of natural reward strategies had more predictive power than the other strategies in predicting self-efficacy. Behaviour-focused strategies, however, help individuals to become aware of their behaviours and to regulate their behaviours according to feedback. Activities based on feedback can support the formation of self-efficacy. A similar finding was obtained.
in a study analysing the correlations between being aware of behaviours and willpower, constructive thought and self-efficacy. The study found that being aware of behaviours and willpower predicted self-efficacy. The strategy with the least power in predicting self-efficacy was constructive thought strategies compared to the other strategies. Constructive thought strategies can focus on thoughts and can transform negative thoughts into positive and thus can serve to the creation of positive feelings about feelings of ability. This was supported by the finding that constructive thought predicted self-efficacy (Rice, 2014). Another finding which was supportive was that replacing unhealthy thoughts with constructive thoughts led to increase in self-efficacy (Neck and Houghton, 2006). On the other hand, it was found those individuals’ thoughts focussing on external obstacles rather than on their own inadequacies could cause increase in self-efficacy (Stewart et al., 2011). Gender, which was included in the regression along with self-leadership strategies, was also found to predict self-efficacy. The value $\beta=0.26$ obtained in the regression analysis indicated that the male participants had higher self-efficacy than the female participants.

According to the Bandura (2011), self-efficacy develops in four ways. Taking someone as a social model, having successful experiences, verbal persuasion and physical and emotional situations, which are the most effective ways of successful experiences, are effective in the development of self-efficacy. In this study, there is evidence of a strong relationship between self-leadership and self-efficacy. It can be asserted that practicing self-leadership strategies in this relationship will contribute to increase self-efficacy.

Higher education is a stage of education at which the number of students increased considerably in recent years, and it is also expected that the number of students will increase substantially (Kavak, 2011). Therefore, it can be recommended that training and activities to increase students’ self-leadership be included in higher education programmes. Thus, self-efficacy can also be increased through self-leadership skills. On the other hand, stress can be reduced (McCormick et al., 2002) with contributions to self-efficacy made by self-leadership experiences and positive feelings can be increased (Unsworth and Mason, 2012). In addition to helping students to cope with difficulties they will encounter throughout their career (Megheirkouni, 2018), self-leadership skills training to be offered to students can also influence their success in their career (Houghton et al., 2012). It is stated in the literature that the need felt for employees having self-leadership knowledge and skills is increasing (Yun et al., 2006).

This study had a number of restrictions. It was conducted with data collected on the basis of self-reports from university students with the selected scales. Other studies could make use of different methods in data collection. The data can be collected through interviews, daily records and observations. This study analysed the correlations between self-leadership and self-efficacy. Different dependent and independent variables along with self-leadership and self-efficacy can be analysed together. Considering self-leadership in educational institutions and in social environments and clarifying its correlations with different variables can contribute to its development, productivity, achievement and even to the healthy relations of humans.

**CONFLICT OF INTERESTS**

The authors have not declared any conflict of interests.

**REFERENCES**

The authors have not declared any conflict of interests.


Orthography and punctuation problem in Turkey within the context of the curricula and textbooks

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In this study, the orthography and punctuation problem was evaluated within the context of the curricula and textbooks. The data obtained from both sources were assessed by way of document reviews, and consequently, it was seen that the orthography and punctuation topics existed as learning outcomes only in the curricula for the 1st, 2nd, 3rd, 4th and 5th grades. No learning outcomes related to orthographic or punctuation rules were found in the curricula from the 6th grade to the 12th grade. The picture of the topic of orthographic and punctuation rules in the textbooks is even more blurred. These two topics were included in the textbooks for the first five grades in line with the learning outcomes of the curriculum. No activities related to orthographic and punctuation rules were seen in the textbooks for the 6, 7 and 8th grades. As a matter of fact, this situation ironically matches the curricula. As for the textbooks for the high school, even though the curriculum does not include, there are activities related to orthographic and punctuation rules. This complex situation is naturally reflected upon the teaching applications as well. Thus, the orthography and punctuation problems starting from the primary school continues through the secondary school and high school. The results of this study were compared with those of the studies in the literature, conducted on the orthography and punctuation mistakes of students.

Key words: Curricula, orthographic rules, punctuation marks, textbooks, writing education.

INTRODUCTION

Virtually, all definitions related to language emphasize the fact that language is a conventional system (Ergin, 1972; Aksan, 1979). Although this emphasis is correct in terms of general function of the language system, one cannot always talk about such an accord in all components of language. It is not possible to say that there is full consensus on the components of the language, from phonetics to syntax. On the other hand, considering the constantly changing and evolving structure of language, it is possible to consider this situation natural. Orthography and punctuation, which are related to style of conversion of language into writing, are also components on which no consensus has been reached yet. According the Krahm (2014), the theoretical and systematic studies on use of punctuation marks date back 150 years, and is a rather new field for grammar studies. Therefore, it is possible to talk about wide variety of punctuations in use (Krahm, 2014). Personal/Arbitrary uses independent from
any language are encountered in terms of use of punctuation marks, which can also be defined as diacritic marks. According to Kalfa (2000), one of the reasons why the punctuation system in particular is not well-established in the Turkish language is that it is perceived as an insignificant detail. When it comes to the Turkish language, it would be appropriate to add the issue of orthography to that uncertainty in application of the punctuation rules. The reason is that the orthography and punctuation topics are dealt with as an integrated whole in the curricula and teaching applications. Even though it has a structure on which the education system in Turkey has consensus on the “rules” section of the orthography and punctuation topics, such situation is not so reflected upon the applications and student products. In this context, it would not be wrong to define language as a conventional system consisting of non-conventional components.

Speech and writing are forms of expression emerging in the spoken and written forms of language. Between these forms, speech is natural, and writing is artificial. As each written text is concretization of a background speech by way of a number of signs. In that sense, a written text has a symbolic meaning. The verbal text pictured in mind can be converted into text only by ordering it in accordance with the grammar rules. Such a text, however, does not always reflect the background verbal text (conception, emotion, intention, request) completely. In such cases, punctuation is used to assist expression. Essentially, a major portion of the punctuation marks, according to Johnson-Sheean (2005), are designed for the purpose to fully reflect the style of speech. In this context, punctuation marks have the same function as the musical notation (Mulderig and Elsbree, 1990). Consequently, the punctuation marks are used for the purpose to clarify the complex sections of a written text that may cause confusion.

On the other hand, orthography is a set of rules (phonetics, morphology, syntax rules) that determine the correct way of writing in a certain language. In this context, topics such as writing some suffixes and compounds separately or combined, capitalizations, writing of the abbreviations, etc., fall within the scope of orthographic rules of the Turkish language.

Mother-tongue education is a process in which basic language skills are taught, and the knowledge learnt is made permanent. One of these basic language skills is writing. The writing skill is learned approximately 6 years after acquisition of listening and speaking skills, and the first several years of the process are spent for teaching the calligraphic features of writing, and for writing the letters of the alphabet.

After this process, the skill to write properly conforming to the rules is taught until the end of the 8th grade; and during high school, effective writing skill as well as the skill to write properly is taught (Ministry of National Education (MEB), 2018a, b). Although the proper Turkish language writing skills are taught in school, as prescribed by the national curricula, process is not sufficient to make the students competent in writing the Turkish language.

Drawing zigzag lines to teach cursive italic handwriting in the Turkish curricula confirm this assertion. While the Turkish language course curriculum of 2015 prescribed “students shall be taught cursive italic handwriting as from the first grade, cursive italic handwriting shall be used in all writing practices, and continued to be used in all grades” (MEB, 2015), the Turkish course curriculum of 2018 left use of cursive italic handwriting and vertical basic letters to the preference of teachers.

The curriculum can be defined as “all activities planned for achieving the learning outcome expected from students” (Doğan, 1974), or as “a programme consisting generally of knowledge categories, and aimed at provision of knowledge and skills in a planned manner and in line with the objectives of the curriculum, allowing focus on skills and practices at some schools” (Küçükahmet, 2003).

The curricula are texts defining the targets to be achieved, activities to be carried out to achieve those targets, the tools and materials to be used, as well as the measurement system to assess the level of attainment of those targets in any course, in line with the overall objectives of the education system. A curriculum is a roadmap, a guideline answering the following questions:

(1) What will be taught/learned?
(2) Why will it be taught/learned?
(3) How will it be taught/learned?
(4) When and within what period of time will it be taught/learned?
(5) How will the amount taught/learned be measured?

These questions correspond to the context, purpose, method, period, and measurement-evaluation elements, respectively.

Assuming that the curriculum is a skeleton structure, the textbooks are their shape in flesh and bones, and the teaching practices are the lifeblood.

The textbooks are the basic teaching materials that transfer the learning objectives defined in the curriculum by way of texts and activities, and that also allow students to learn by themselves (Unsal and Gunes, 2004). According to Çalışkan (2006), textbooks, as materials that are the easiest to access and use, maintain their priority position among all educational materials in Turkey as well as in many other countries. In the last quarter century, an increase and diversity is observed in learning materials owing to effective use of teaching technologies. In spite of this diversity, the textbooks continue to be indispensable elements of education.

In Turkey, the Turkish course is given at the primary school level from the 1st grade to the 4th grade; secondary school level from the 5th grade to the 8th grade; and the Turkish Language and Literature course is given at the high school level from the 9th grade to the
Table 1. Distribution of orthographic rules in curricula.

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<th>Grades</th>
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<td></td>
<td>Primary</td>
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<tr>
<td>1. Use of Circumflex (^) [â, ï, ü]</td>
<td>1 2 3 4 5</td>
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<tr>
<td>2. Writing of words with Vowel Raise</td>
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<td>3. Writing of words with Consonant Harmony</td>
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<td>4. Writing of words with Consonant Deletion</td>
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<td>5. Writing of the conjunction “de”</td>
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<td>6. Writing of the conjunction “ki”</td>
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<td>7. Writing of the Interrogative Particles</td>
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<td>8. Writing of the Intensive Adjectives</td>
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<td>10. Capitalization</td>
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<td>11. Writing of the Compound Words</td>
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<td>12. Writing of the Loanwords</td>
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<td>13. Writing of the Abbreviations</td>
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<td>14. Hyphenation</td>
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<tr>
<td>15. General Writing Mistakes</td>
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</table>

12th grade. Furthermore, the Turkish Language course is given as a compulsory course in all fields of education at the university level. The mother-tongue education at all levels aim at improving skills of students in the listening, speaking, reading, and writing fields. Furthermore, grammar topics are taught to students by correlating them with these skills. Even though each has its own set of challenges in teaching, among the fields of listening, speaking, reading, writing and grammar, the biggest challenge encountered in the field of writing is the fact that students are unable to apply the orthographic and punctuation rules adequately.

Although they can be partially found in books of “composition” or “grammar” traditionally, the main source of orthographic and punctuation rules are the sources of the type of a “spelling book”. However, it is not possible to talk about a full consensus on orthographic and punctuation rules in Turkey. Spelling books that are published by a number of publishing houses and that contradict each other in terms of the rules can be considered a concrete indicator of this situation. Since the education and training services are based on generally-accepted information, the Ministry of National Education recommends the use of the Spelling Book (Yazım Kılavuzu) prepared by the Turkish Language Institution in the curricula and textbooks. Consequently, the official spelling book is used in education in Turkey. This situation provides facilities in teaching the orthographic and punctuation rules. On the other hand, it is also known that some rules are explained in a complicated way in the spelling book. As a matter of fact, the Turkish Language Institution and the Istanbul University had to hold a “Workshop on Orthographic Problems” in 2017. During the workshop, the orthographic and punctuation rules of Turkish, as well as the associated challenges and their reflections in education were discussed. The “Introduction” section of the Spelling Book published by the Turkish Language Institution addresses the orthographic and punctuation rules in detail. The orthographic and punctuation rules specified in the Spelling Book are provided in Table 1.

In this study, the problems encountered in teaching the orthographic and punctuation rules were examined within the scope of the curricula and textbooks. Furthermore, the results of other studies conducted on the same subject were also used for the purpose of discussing the problem.

METHODOLOGY

The survey research method was used in this study, which addresses the orthographic and punctuation problem within the context of Turkish language curricula and textbooks. In the survey research method, it is aimed to describe a situation that existed in the past or that currently exists, in the form it existed/exists. It is endeavoured to describe an event, an individual or an object constituting the subject matter of the study under respective conditions and as is. At that point, it is important to observe what exists as is, without any changes (Karasar, 2014).

The data obtained from the study were evaluated using the document review method. In document reviews, written materials containing information about the facts or events were analyzed. In this method, any written or visual materials related to the problem constituting the subject matter of the study can be included in the study in cases where it is not possible to carry out direct observations and interviews related to events of historical nature, or to increase the validity of the study (Yıldırım and Şimşek, 2016).

In this context, the Turkish Course Curriculum dated 2018
FINDINGS

Findings related to orthographic and punctuation rules in the curricula

Here, presents the findings related to distribution of the orthographic and punctuation rules in the curricula for the 1st to 12th grades. The orthographic and punctuation rules are addressed in the Turkish textbooks in the primary and secondary schools (1st to 8th grades) within the scope of the Turkish course, and in the Turkish Language and Literature textbooks in high school (9 to 12th grades). The orthographic and punctuation rules are addressed within the scope of "writing" lessons in the 1st to 8th grades, and "grammar" lessons in the 9 to 12th grades.

The data here were obtained by reviewing the Turkish Course Curriculum (MEB, 2018a) and Turkish Language and Literature Course Curriculum (MEB, 2018b). Furthermore, 15 orthographic rules and 17 punctuation rules contained in Table 1 were identified based on the Spelling Book (Turkish Language Institution (TDK), 2009).

Among special objectives of the Turkish Course Curriculum for the 1st to 8th grades are, as specified in the said curriculum, as follows:

"With the Turkish Course Curriculum prepared in line with the General Objectives and Basic Principles of the Turkish National Education as specified in the Law No. 1739 on National Education dated 14.06.1973, it is aimed (MEB, 2018a):

(1) to improve the listening, speaking, reading and writing skills of students,
(2) to ensure that students use the Turkish language consciously, correctly and carefully in accordance with the speaking and writing rules”.

According to this statement, punctuation and orthography were addressed within a framework exceeding the learning achievements set out in the curriculum, and shown as the special objectives of the Turkish course.

In this context, application of the punctuation marks and orthographic rules, which are ancillary items supporting the writing skill, enables use of the language in written form correctly and carefully. These special objectives in the curricula were partially distributed progressively and with a spiral approach.

Table 1 shows the grades in which the orthographic rules are addressed in the respective curricula. As shown in Table 1, only 8 out of all 15 orthographic rules specified in the curricula are covered. Additionally, there is no spirality or systematic integrity in the distribution of the 8 orthographic rules covered. Among these rules, only the “Capitalization” item is addressed in the first 5 grades uninterruptedly. The circumflex (^) used in some loanwords from Arabic and Persian is a semantic distinguisher (‘hala’: father’s sister; ‘hâlâ’: still). Use of the circumflex, however, poses a problem at virtually all levels of education, including the higher education. The fact that this orthographic rule is not covered in the curricula can be considered a problem by itself. Likewise, separate/combined use of the “de” and “ki” in Turkish is also a semantic distinguisher, and this topic is limited only with the 4th grade in the curricula. One of the most common orthographic problems in Turkish is the writing of the compound words, and this topic is not covered in any curricula. The orthographic rules are addressed in a general way in the curricula for the 6, 7 and 8th grades, unlike the previous grades. The following expressions are included among the learning outcomes for these grades: “Students should be encouraged to make use of the spelling book and to use the new vocabulary they learned,” and “…should be limited to the orthographic and punctuation rules appropriate for the grade level”. These ambiguous expressions that do not make references to any rules are also seen in the curricula for the high school grades. The orthography topic is addressed in the grammar section of the curricula for the 9 to 12th grades, and it is circumvented with an explanatory sentence such as "Exercises in orthography and punctuation shall be carried out based on texts”.

It is seen that the punctuation rules are addressed more intensively in the curricula. As can be seen in Table 2, the punctuation rules are generally addressed with a spiral approach at the 1st to 5th grades. However, the punctuation rules were addressed with general statements only (without making references to any punctuation marks) from the 6th grade to the 12th grade. As in the orthographic rules, the punctuation rules were addressed with ambiguous expressions in the curricula for the 6 to 8th and 9 to 12th grades. These ambiguous expressions related to both the orthographic rules and punctuation rules in the curricula for the 6 to 12th grades give the impression that these topics are left to the initiative of the textbook authors and teachers.

Findings related to orthography and punctuation in the textbooks

The data here were obtained by reviewing the Primary
Table 2. Distribution of punctuation rules in curricula.

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<th>Grades</th>
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<td></td>
<td>Primary</td>
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<tr>
<td>1. Full Stop (.)</td>
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<tr>
<td>2. Comma (,)</td>
<td>*</td>
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<tr>
<td>3. Semicolon (;)</td>
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<tr>
<td>4. Colon (:)</td>
<td>*</td>
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<tr>
<td>5. Ellipsis (…)</td>
<td>*</td>
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<tr>
<td>6. Question mark (?)</td>
<td>*</td>
</tr>
<tr>
<td>7. Exclamation mark (!)</td>
<td>*</td>
</tr>
<tr>
<td>8. Hyphen (-)</td>
<td>*</td>
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<tr>
<td>9. Dash (−)</td>
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<tr>
<td>10. Slash (/)</td>
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<td>11. Backslash (/)</td>
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<td>12. Quotation Marks (“ ”)</td>
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<td>13. Single Quotation Marks (‘ ’)</td>
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<td>14. Ditto Mark (*)</td>
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<td>15. Round Brackets ( ( ) )</td>
<td>*</td>
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<td>16. Square Brackets ( [ ] )</td>
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<td>17. Apostrophe (‘’)</td>
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Table 3. Distribution of orthographic rules in textbooks.

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<td>15. General Writing Mistakes</td>
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School Turkish Textbooks (Yalçın and Yurdusever, 2018; Ataşçi, 2018; Karaduman et al., 2018; Kaftanayan et al., 2018), Secondary School Turkish Textbooks (Ağın et al., 2018; Şekerci, 2018; Kaya, 2018; Mete et al., 2018), and High School Turkish Language and Literature Textbooks (Özcan, 2018; Karaca et al., 2018a, b; Yerlikaya, 2018).

The orthographic and punctuation rules are addressed in the textbooks that have activity-based design, in line with the respective curricula. The orthographic and punctuation rules are, as in the curricula, covered under the writing topic in grades 1 to 8, and under grammar topic in grades 9 to 12.

As shown in Table 3, there is no specific system in distribution of the orthographic rules in the textbooks. Essentially, the orthographic rules were included in the textbooks depending on the preference of their respective
Table 4. Distribution of punctuation marks in textbooks.

<table>
<thead>
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<tr>
<td>15. Round Brackets (())</td>
<td>*</td>
</tr>
<tr>
<td>16. Square Brackets ([ ])</td>
<td>*</td>
</tr>
<tr>
<td>17. Apostrophe (’)</td>
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</tr>
</tbody>
</table>

authors. For example, although the topic covering the use of circumflex is prescribed in the curricula, they were not included in the textbooks for the 10, 11 and 12th grades.

It can be said that the punctuation rules are more complicated in the textbooks. In spite of the fact that the punctuation topic is terminated in the 5th grade in the curricula, it is intensively addressed in the high school textbooks. However, the fact that this topic is not covered in the textbooks for the 6, 7 and 8th grades, which are critical periods, creates a considerable gap.

Table 4 shows that there is a gap in coverage of punctuation rules in the 6, 7 and 8th grades. This gap arises from the curricula, and naturally, the punctuation rules are not covered in textbooks for these grades. However, in spite of the same gap in the curricula for the high school, punctuation rules were heavily covered in the textbooks for 9 to 12th grades. A random attitude is observed in use of some punctuation rules; e.g. while use of the semicolon is a topic prescribed by the curricula to be taught in the 5th grade, teaching of this rule started as from the 3rd grade. In this respect, it is clear that the textbooks do not observe the curricula.

With reference to the orthographic and punctuation rules, while there are no concrete and guiding instructions in the curricula as from the 6th grade, there is no reasonable explanation as to why these topics are not covered in the textbooks for the 6, 7 and 8th grades, but in the textbooks for the 9, 10, 11, and 12th grades. It can be presumed that the situation arises due to the personal preferences of the textbook authors.

On the other hand, while one orthography and punctuation question is asked in the university entrance exams traditionally, the fact that 4 questions, 1 related to punctuation rules and 3 related to the orthographic rules, were asked in the Higher Education Examination held in 2018 poses another problem. It would not be wrong to say that this situation will lead the students to exam-focused learning.

**DISCUSSION**

This study addressed the problems in teaching of orthography and punctuation at primary, secondary and high school levels based on the curricula and textbooks. According to the findings of this study, the orthography and punctuation topics are covered in the curricula for the 1st, 2nd, 3rd, 4th, and 5th grades incrementally, but they are circumvented with general/ambiguous expressions in curricula for the following grades. Both topics were covered in the textbooks irregularly. The orthography and punctuation topics were generally addressed by way of activities in the textbooks for the 1st, 2nd, 3rd, 4th, and 5th grades, but no activities were found in the textbooks for the 6, 7, and 8th grades. The textbooks for the 9, 10, 11, and 12th grades contain various activities on both topics.

This scattered and irregular coverage of the orthography and punctuation topics in the textbooks naturally led to a situation in which students fail to adopt the orthography and punctuation skills. This result is supported by various studies in the literature.
In their study conducted on the writing skills of the 1st graders, Özkan and Ataş (2015) found the level of students to apply the orthographic rules to be 70%, and the level to apply the punctuation rules to be 90%. These percentages show that students achieve the full learning level at the 1st grade level (Özkaya and Ataş, 2015). Özcan (2012) conducted a study on the orthography and punctuation mistakes in the workbooks for the 4 and 5th grades, and with reference to the orthography and punctuation mistakes, came to the conclusion that students fail to put their knowledge of orthography and punctuation into practice (Özcan, 2012). In his study, Çetin (2013) found that the level of 4th graders to apply the orthographic and punctuation rules was far below the expected level (Çetin, 2013).

It is seen that the studies on orthography and punctuation problems in the literature concentrate mainly upon the secondary school level. This concentration should also arise from the gap in the curricula and textbooks, for the secondary school is a critical stage where the knowledge acquired in the primary school becomes a second nature. The studies conducted on secondary school level found that the 5, 6, 7, and 8th graders had a level of achievement below the acceptable level with respect to orthography and punctuation. In his study on orthography and punctuation mistakes of 6, 7, and 8th graders, Karagül (2010) found that students had troubles in applying the orthographic and punctuation rules. According to the data of his study, 90% of the 7th graders used some punctuation marks incorrectly (Karagül, 2010). Kara (2010) conducted a study on orthography and punctuation mistakes made by secondary school students in the activity books, and found that students made orthography and punctuation mistakes frequently. In another study related to the level of application of the orthographic and punctuation rules by the 8th graders, it was found that students made mistakes more than they were expected in both topics (Oğuz, 2012). Although the curricula and textbooks circumvent the matter with general expressions regarding the learning outcomes, it is known that some teachers attach special importance to these topics. Thus, the duty-bound teachers are able to compensate for the problems arising from the curricula and textbooks. According to a study investigating the effects of the cueing and feedback techniques in orthography and punctuation mistakes of 8th graders, there is 80% decrease in the number of mistakes found in the student texts when the cueing and feedback techniques are used (Pekaz, 2007). This result matches the results of a similar study conducted among 6th graders (Yıldız, 2016). In his study, Maden (2013) found that students made lower levels of orthography and punctuation mistakes in classrooms where active learning techniques are used. He further found that level of orthography and punctuation mistakes decreased in classrooms where active learning techniques are used compared to classrooms where traditional teaching techniques are used. This result significantly matches the results of similar studies in the literature (Karateke, 2006; Ergin, 2009; Maden, 2011).

As mentioned earlier, the orthography and punctuation topics were circumvented in the High School Turkish Language and Literature Curricula with a rather general explanatory sentence, but both topics were addressed with a number of activities in the textbooks. However, high school has a rather difficult content in terms of course load. Consequently, even though they are included in the textbooks, the orthography and punctuation topics are overshadowed by the literature topics. Moreover, the fact that these topics are covered in the high school textbook is inadequate for compensating for the gap arising from the 6, 7, and 8th grades. As a matter of fact, the studies on orthography and punctuation problems on high school level support this opinion. In a study conducted on the level of application of the orthographic and punctuation rules by 9th graders, it was seen that students were incapable in the level of application of both orthographic and punctuation rules (Erdem, 2007). In his study conducted on the orthographic and punctuation mistakes made by 9 and 11th graders, Acar (2011) found that the average number of mistakes made by the 11th graders was higher than that of the 9th graders (Acar, 2011), while the rate of mistakes is expected to decrease at higher grades. This is an indication that mistakes become automatic in the course of time.

Unfortunately, the problem is not limited to primary school, secondary school, and high school. It is highly possible to find similar results in studies conducted among university students as well. For example, a study conducted among prospective teachers studying at the undergraduate program of Turkish language teaching showed that the knowledge of the prospective teachers of the orthographic rules was at average level, and of the punctuation rules at lower levels (Karabuğa, 2011). Furthermore, it is also known that the orthographic and punctuation rules are not always observed in textbooks and other teaching materials either.

**Suggestions**

The following recommendations were based upon the findings from the study.

The orthographic rules should be simplified and explained with abundance of examples in the Spelling Book, taking into consideration the grade levels for schools. The orthographic and punctuation rules should be taught with a progressive and spiral approach from the 1st grade to the 12th grade in the curricula.

Orthographic and punctuation rules pages can be supplemented as standard pages at the end of the Turkish textbooks and Turkish Language and Literature textbooks.
Since not only the language and literature course teachers but also all other teachers are responsible for observing the orthographic and punctuation rules, the prospective teachers in other branches as well should be trained accordingly.

CONFLICT OF INTERESTS
The authors have not declared any conflict of interests.

REFERENCES

Ergin M (1972). Türk dili bilgisi. İstanbul: İstanbul University Faculty of Letters Publications.
Full Length Research Paper

Supervision on early intervention practices for teachers of the deaf

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The objective of the present study was to examine the early intervention practices of two teachers working with infants with hearing loss and the supervision provided to these teachers to improve their practices. It was designed as a qualitative case study. Data were collected with intervention session video recordings, evaluation meeting audio recordings, session plans, the reflective journals, teacher evaluation forms and interviews conducted with teachers. The data were analysed with the inductive analysis method. Study findings were presented under four themes; the early intervention process, supervision of this process, teacher views and the views of the supervisor on the supervision process and improvements observed in teacher skills. It was found that teachers shared similar intervention goals, however their implementation and management of the process were different. The supervisor provided corrective and confirmatory feedback to the teachers. It was determined that the positive relationship formed between the teachers and the supervisor was considered important by both parties.

Key words: Teachers of the deaf, early intervention, teacher supervision, qualitative research.

INTRODUCTION

Children with hearing loss experience difficulties in developing language skills when compared with their peers with typical development (Barker et al., 2009; Niparko et al., 2010). Delays in language development could lead to a variety of challenges in other developmental domains (Antia et al., 2009; Dammeyer, 2010). Therefore, early intervention is highly recommended for children with hearing loss to prevent significant problems in language and academic skills during their school years and adulthood (Joint Committee on Infant Hearing (JCIH), 2007).

It was stressed that early intervention for infants and toddlers with hearing loss should include parents as the most important agents for supporting their young children's language development and professionals who work with parents should focus on promoting their abilities to provide a language-rich environment within everyday routines and activities for their children (JCIH, 2007; Moeller et al., 2013; Yoshinaga-Itano, 2014).

Teachers of the deaf play an important and specialized role in providing early education services to families of the infants and toddlers with hearing loss (Martin-Prudent et al., 2016). Nevertheless, several professionals, who were initially trained to work with deaf and hard of hearing children, do not receive professional training that would prepare them to meet the needs of the parents in
supporting their young children’s language development (Munoz et al., 2011; Robbins and Caraway, 2010). Teaching parents is different than teaching in classroom. When working with a parent, the teacher should provide information on how to use the methods needed to support the development of their child and enable them to practice the skills that they acquire. (Brown and Nott, 2005; Martin-Prudent et al., 2016; Nelson and Meehan, 2016).

Opportunities to practice under the supervision of an experienced teacher would make an important contribution to professional development of teachers and help to improve the quality of the provided services (Bergmark and Westman, 2016; De Rijdt et al., 2016; McIntyre and Hobson, 2016). During supervision, the supervisor is expected to support the development of preservice teachers for a predefined period of time, particularly about the content knowledge and instructional methods (McIntyre and Hobson, 2016). In other words, throughout this process, the supervisor supports the teachers in their efforts to acquire in-depth knowledge about the topics that they would teach and to learn how to teach (De Rijdt et al., 2016). In the field of teacher training, different authors emphasizes the importance of teaching practice, sharing experiences and receiving feedback from more experienced educators (Hooton-Kurtoglu, 2016; Menaa et al., 2016).

Considering the need to train teachers of the deaf who intend to work in early intervention, examining the supervision process may improve the knowledge in this specific field. It may also provide information about the content of education sessions which was reported to be complex and with vague definitions (Martin-Prudent et al., 2016). Thus, the present study aimed to examine the early intervention practices of two teachers working with parents of infants with hearing loss and the supervision provided to these teachers to improve their practices.

METHODS

The present study was conducted with a qualitative case study design. Case studies enable researchers to explore individuals, organizations, simple or complex interventions, relationships, communities or programs in depth (Creswell, 2005; Yin, 2009).

Participants

Two teachers of the deaf working towards their masters’ degrees in early intervention and a supervisor of these teachers were the participants of the study. Their initials were used instead of full names for the anonymity of the participants.

Teacher A

Teacher A was a teacher of the deaf with 12 years of experience and was employed as a preschool classroom teacher for children with hearing loss. For the last six years, she has been working with the parents of 3-5 years old children in addition to her work as a classroom teacher.

Teacher E

After graduating from a program for teachers of the deaf five years ago, teacher E worked with families at a private rehabilitation centre for two years, and then enrolled in a master’s program. Both teachers took courses on the theoretical foundations of early intervention during their undergraduate and graduate education, including basics in audiology.

The supervisor

The supervisor was the academic advisor for both teachers. She has been working with parents as an audiologist for a long period of time at a university research centre, and runs the early intervention program and teaches undergraduate and graduate courses on education of the children with hearing loss.

The research setting

The study was conducted at a school and research centre for children with hearing loss located at a university. The centre adopted a natural auditory-oral approach. It has an early intervention program as well as providing pre-school and primary school education to children with hearing loss.

Data collection and analysis of the data

The data were collected with early intervention session video recordings conducted by the teachers, audio recordings of sessions conducted to evaluate the video recordings, researcher reflective journals, session plans for early intervention, audio recordings of the interviews conducted with teachers and transcriptions of these records. The collected data were analysed with the inductive method. Inductive analysis is the most useful method when the objective is to discover relationships between the raw data collected for a study (Creswell, 2005; Thomas, 2006). The research findings emerge from the frequent, dominant, or significant themes inherent in raw data, without the restraints imposed by structured methodologies. Therefore, the transcriptions of the data of this research were coded and themes were established considering the scope of the research, while a breakdown of the data collected for the study are presented Table 1. Teacher evaluation forms were used to evaluate teachers’ practices. It was developed by the author for the present study based on the main goals of the early intervention.

Validity and reliability

To establish the validity and reliability of the data, a second academician, who was working in the field of hearing loss and had expertise in qualitative research methods, critically examined the video recordings and transcripts on a regular basis during and after data collection, and confirmed its validity and reliability. Teacher evaluation forms for the first and last teacher sessions were used to record teachers’ improvement. The content validity of the evaluation form was controlled and confirmed by two other teachers of the deaf. It is presented in Appendix A.

RESULTS

70 codes and 4 main themes and 6 subthemes were emerged by analysis of the data. The themes and
Table 1. Data collected for the study.

<table>
<thead>
<tr>
<th>Data</th>
<th>Teacher A</th>
<th>Teacher E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early intervention plans</td>
<td>10 sessions</td>
<td>8 sessions</td>
</tr>
<tr>
<td>Video recordings</td>
<td>10 h</td>
<td>8 h</td>
</tr>
<tr>
<td>Session evaluation meetings (by the supervisor and the teacher)</td>
<td>11 h</td>
<td>9 h</td>
</tr>
<tr>
<td>Reflective teacher journals</td>
<td>15 pages</td>
<td>20 pages</td>
</tr>
<tr>
<td>Reflective supervisor journals</td>
<td>10 pages</td>
<td>10 pages</td>
</tr>
<tr>
<td>Recordings of the interviews with teachers A and E.</td>
<td>10 min</td>
<td>15 min</td>
</tr>
</tbody>
</table>

Table 2. Main themes and subthemes.

<table>
<thead>
<tr>
<th>Main theme</th>
<th>Subtheme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early intervention practice</td>
<td>Development of intervention plans and material</td>
</tr>
<tr>
<td></td>
<td>Sharing the information with the mother</td>
</tr>
<tr>
<td></td>
<td>Session evaluation</td>
</tr>
<tr>
<td>Supervision of the intervention</td>
<td>Recommendations on the content and the structure of sessions</td>
</tr>
<tr>
<td>Recommendations on interactions with the mother and the child</td>
<td>-</td>
</tr>
<tr>
<td>Teacher and the supervisor views</td>
<td>Views on the content and form of the recommendations.</td>
</tr>
<tr>
<td></td>
<td>Views on the relationship established between the supervisor and the teachers.</td>
</tr>
</tbody>
</table>

subthemes are presented in Table 2.

**Early intervention practice**

**Development of intervention plans and material**

Prior to each session, teachers planned three games suitable for the age group of the child and set session goals. The games selected included activities that helped to observe the interaction between the child and the mother and the development of the child. Session goals were established in the context of these games for the mother and the child. The goals aimed to develop the linguistic, listening, cognitive and communication skills of the child, improve the interaction between the mother and child through these interactions, teach parents how to use strategies to provide rich linguistic input for the child. However, certain differences were observed between the teachers’ session plans based on the skills of the child and the mother.

For the mother, Teacher A set session goals that would improve her skills in management of child behaviour, using age appropriate materials for interaction, playing by monitoring the child’s interests, making games more fun, providing age appropriate language input, engaging the child in conversation, expecting the child to use the words and sound imitations that are included in her vocabulary. For the child, she set session goals that would improve her age appropriate behaviour, increase her attention span, allow her to follow simple rules in games, understand simple phrases only through audition, use adequate words and sound imitations. On the other hand, Teacher E set session goals that would improve mother’s interactive behaviour with her child. She worked with mother in providing interactive opportunities for the child, to wait for the child to respond, to monitor the child’s interests, to take turns during the games, not to intervene physically in the child’s play, to use more elaborate language input, to use less commands, and to draw child’s attention to the sounds. For the child, she set session goals that would improve his listening skills and production of sound imitations, to improve his age appropriate behaviour and play.

**Information sharing between the mother and teacher**

In the beginning of each session, the mothers informed the teachers about the activities they conducted at home with the child, experiences and interests of the child at home, and the development of the child’s linguistic and listening skills.

In each session, the teachers also shared their observations on the child’s progress. They made recommendations to improve the play and interaction skills of the mother. To provide information to the mothers, teachers employed a number of strategies:

i. Observing the interaction between the mother and the child and making recommendations based on their observations.
ii. Interacting with the child themselves and acting as a role model for the mother
iii. Making explanations and providing direct information.

Both teachers observed the way mothers interacted with their children as they played with the child. When the mother experienced difficulties, they played with the child themselves, acted as a role model for the mother using different strategies to improve listening and linguistic skills, and explained these strategies.

Session evaluation

Following the intervention sessions, the teachers wrote evaluation reports and developed the plan for the next session. Evaluation reports included information on the reaction of the child to sounds (based on information received from the mother and observations made during the session), linguistic development of the child (based on information received from the mother and observations made during the session), participation of the child in the games, new ideas introduced and contributions made by the child about the play, responsiveness of the mother to the child, the mother’s ability to improve the language and playing skills of the child and to develop and maintain shared interests, behavioural management of the child, and the needs of the mother.

The supervision process

A review of the audio recordings of the evaluation meetings, intervention plans and the teachers’ reflective journals demonstrated that the supervisor’s recommendations to the teachers could be grouped under two themes: Recommendations on the content and structure of intervention, and recommendations on the interactions between the mother and the child.

**Recommendations on the content and structure of sessions**

Recommendations under this theme were as follows: using age-appropriate material for the child and the material that could be easily obtained by the parents, establishing session goals, and organizing the structure of intervention.

The teachers did not experience much difficulty in preparing age-appropriate materials for the children; on the other hand, they did experience occasional problems with setting goals that were adequate for the children’s level of development and organizing the flow of sessions.

For example, Teacher A experienced the most difficulty in organizing the part of the session where the mother and the child played. Although recommendations were made during the first four sessions on this issue, video recordings demonstrated that the teacher did not provide sufficient opportunities for the mother. Therefore, the supervisor and the teacher watched the same section of the intervention session using teacher E’s videos, and the supervisor made further explanations. Following this, A experienced no further problem in observing the play between the mother and the child during intervention sessions and providing feedback to the mother. Teacher E, on the other hand, experienced the most difficulty with play-related issues such as which materials to use, playing games adequate for the child’s level, creating game variations, and making the games more fun. The supervisor explained the types of games and how to play them at the child’s level and provided examples for how to play these games.

**Recommendations on the interactions with the mother and the child**

Recommendations on the interaction between the teachers and the mother and the child throughout the intervention process focused on the atmosphere the teachers created and the communications during the sessions. The supervisor answered teachers’ questions on the subject and pointed out the positive aspects of their interactions.

Records of the evaluation meetings demonstrated that in these meetings, teachers evaluated their own performances, discussed their shortcomings with the supervisor and asked for clarification to better understand the issues. The supervisor listened to teachers’ self-evaluations and indicated their strengths as well as weaknesses. Suggestions provided for the teachers varied based on their needs. E mostly received recommendations on interaction during the games, whereas A received support on the need to provide the mother and the child more interaction opportunities and ensure the active participation of the mother in the sessions.

**Participants views on the supervision process**

Based on the collected data, the teacher and the supervisor views on the supervision process were grouped under two themes: The content and form of the recommendations and the relationship established between the supervisor and the teachers.

**The content and form of the recommendations provided throughout the supervision process**

Both teachers described the process as difficult but fun. They stated that the method that benefited them the most was the use of tangible examples from their actual work to clarify and explain the issues. Teacher E explained this as follows: “you said no such technique existed, and then explained what I could do instead. You gave examples”.
As Teacher A stated, “watching and discussing what I did was really very helpful”. Teacher A also said that watching a section in Teacher E’s video was very effective in helping her to change the behaviour that she previously struggled to change: “I used to intervene too much with the mother. You explained what I should do instead several times, but I could not help myself; then we watched a part of E’s session and it really helped. I realized how it was done.”

Furthermore, the teachers stated that holding the evaluation meetings immediately after the intervention sessions was beneficial since it made it easier for them to develop the next session and, because their memories were still fresh, it was easier to internalize the recommendations. Both teachers stated that they grasped the importance of the active involvement of the mothers in the educational process over the course of these sessions. Teacher A emphasized that this was the greatest benefit of working with a supervisor: “I mean, we read articles and such on family centred education, but it is something else to be guided by a real person and this is mentoring, and I guess it was just what I needed.” The supervisor’s journal entries and records on the evaluation meetings demonstrated that the supervisor evaluated the teachers’ performance based on the natural auditory-oral approach with a family-centred philosophy and recommendations were made accordingly. The supervisor made sure to point out shortcomings and areas of improvement for the teachers and based her recommendations on the characteristics of the child and the mother. For example, the supervisor said the following to A: “The child has moderate hearing loss, she can hear many sounds. Therefore, the mother speaks in an easy and natural way, and provides the child several opportunities, but her play skills are problematic. She does not play, she always tries to teach, and naturally, the child is bored” (Evaluation meeting with A on the 4th intervention session).

The supervisor also noted that the teachers had different professional developmental needs and emphasized this point during evaluations: “A is more experienced with children; therefore, she is more comfortable when starting a game with the child. However, her expectations are too high for an 18-month old. She needs to go easier on the mother.” (Journal entry) “E seems to get along very well with the mother, but she is having difficulties in dealing with the child. It is not easy to control a child at this age, though. We should talk about characteristics of 2-year old children in the next meeting” (Journal entry).

The relationship between the supervisor and the teachers

Another area of emphasis for the teachers was the relationship they had with the supervisor. Both teachers stated that developing a positive relationship with the supervisor made it easier for them to accept criticism and improve their practices. Teacher E stated the following: “Another thing is that I have confidence in you; for example, when preparing the transcripts, I also noticed stuff. I said this was wrong, I should have done something else, and so on, but I did not get nervous before the evaluation meetings and I did not feel bad”. Teacher A stated the following: “I never said this was it, I cannot do this. Otherwise, I would have given up long ago, but after the evaluations, I left with a feeling that I am doing good, but I can do better. Your kindness was also very important as you were not harsh on me.”

The supervisor was pleased with the improvement that both teachers showed over the course of the sessions: “Both E and A are making rapid progress and they do everything I say. It is a pleasure to work with them” (Journal entry). Furthermore, the supervisor thought the teachers were eager to learn, and good teachers: “Both are great teachers, they prepare very well and are very organized. They know when they make mistakes and are not offended by criticism. This makes my job easy, there were no hard feelings” (Journal entry).

Improvement observed in teachers’ practices

The author and another teacher of the deaf, experienced in early intervention, evaluated the first and last sessions of the teachers separately. Teacher A scored 49 and teacher E scored 50 points out of 88. They both received the top score (88) for the last session. Interrater score was .89 for the first sessions and .100 for the last sessions. The detailed examination of the form demonstrated that teacher E had the lowest scores on the areas of preparation of appropriate play materials and interaction with the child, on the other hand, teacher A had the lowest scores on providing interaction opportunities to mother and supporting her skills, consistent with the video evaluations.

DISCUSSION

The present study findings provided evidence that teachers of the deaf may benefit from the training that focuses on working with infants and toddlers with hearing loss. The results also demonstrated that parental involvement in the intervention to children with hearing loss was versatile in nature and incorporated a broad range of behaviour and practices (Thomas and Marvin, 2016). Both parents and children’s needs should be considered while developing session plans (Dunst, 2002; Nelson-Lartz and Meehan, 2016).

The intervention session content was examined in the present study based on the theoretical foundations of the educational approach adopted by the institution where the study was conducted. This approach aimed to
normalize the communication behaviour that might deteriorate in a family after the diagnosis of hearing loss and to provide natural language input for the child to support his/her language acquisition (Clark, 2007). In this perspective, the content knowledge provided for the teachers aimed to enforce and improve teachers’ theoretical knowledge base on the language development, the effects of parent-child interaction on development and to ensure proper implementation of this knowledge in practice (Kaiser and Hancock, 2003). 

Educational recommendations provided by teachers for the parents were based on the needs of the mother and the child that they were working with. Intervention plans demonstrated that both teachers aimed to support the mothers’ interaction with their children, and helped improve the children’s linguistic, listening and cognitive skills; however, the methods utilized by the teachers in this process were different. Like mothers, teachers needed to develop different skills as educators, and the supervision process focused on these needs. Teacher A experienced difficulties in changing her interaction style with the child and the mother, while Teacher E needed further support in providing feedback to the mother and playing with the child. The supervisor and the teachers identified needs together and shared their thoughts on issues. In addition to the feedback provided by the supervisor, the teachers were also provided self-criticism on their work and engaged in reflective thinking, which arguably contributed to their endeavour to affect the desired change in their behaviour. Reflecting upon and discussing one’s own work helps better understand one’s own practices (De Rijdt et al., 2016; Menaa et al., 2016; and makes transformative learning possible (Mezirow, 2000).

Instructions provided during the supervision process were problem-oriented, focused on applied knowledge and based on the experiences of the teachers specified. Both teachers, who participated in the study, had varying levels of teaching experience, and undergraduate degrees from programs that adopted the same theoretical approach used in the intervention practice. Thus, the recommendations they received on the intervention content helped them transfer their existing knowledge to the field of early intervention. In this perspective, it can be argued that the teachers created new meanings by re-interpreting their previous experiences (Mezirow, 2000). In the conducted interviews, both teachers emphasized that focusing on their own practices, receiving recommendations on their practices, and reflecting on their practices, contributed to their professional development. This finding was consistent with the argument that adult learning takes place not through fictional activities, but when associated with real life situations (Lave and Wenger, 1991; Marsick and Watkins, 1990) and with Knowles’ (1984) principle that during learning, adults draw upon their life experiences.

The supervisor provided two types of feedback; confirmatory and corrective. Confirmatory feedback is positive feedback that confirms and supports a teacher’s quality, instruction skills, behaviour, or a decision made by the teacher during the session. Corrective feedback, on the other hand, calls attention to and discusses areas of improvement, and provides explanations (Hooton-Kurtoglu, 2016). Both corrective and confirmatory feedback contribute to the development of teachers in two different manners. Confirmatory feedback improves teachers’ feelings of confidence and competence, whereas corrective feedback improves their knowledge in the subject area; however, for an effective corrective feedback, the feedback needs to be specific, detailed and informative (Hooton-Kurtoglu, 2016; Lindahl and Beecher, 2016). At each meeting, the present study’s supervisor pointed out techniques where the teachers needed to improve further; however, also provided confirmatory feedback on issues such as mastered techniques, relationships formed with the parents, intervention plans, and play skills. Corrective feedback was accompanied by several examples. This attitude does not only result in better learning but also in a more positive relationship between the supervisor and the teacher (Ginkela et al., 2016).

On the other hand, the findings of the current study underlined the importance of the relationship with the supervisor in professional development of the teachers. Besides representing a privileged setting for monitoring the teachers’ development, for reflection on their practices, or the devise of a more consolidated and integrated knowledge of the hows and whys of the teaching, the supervising relationship emerged as an important source of support. Previous studies drew attention to the relationship dimension of the learning-teaching process (Cranton, 2011; Mezirow, 2000). The social interaction that accompanies learning is very important for the nature of learning. Bordin (1983) argued that individual change is related to two factors. The first factor is the bond between the person who aims to change and the person that mediates this change, and the second factor is whether this bond includes an agreement on goals and duties. Emotional bonds between the advisor and the advisee, such as liking, protection and trust, are considered as important mediators of change and development. Advisees, who described their relationship with their advisors as positive and supportive, reported experiencing higher levels of positive change. These results were consistent with the findings of more recent studies (Hardy, 2016; Geller and Foley, 2009; McIntyre and Hobson, 2016).

Conclusions and recommendations

The overall findings of the present study indicated that teachers of the deaf need support in different areas when working with parents and their young children, and this difference is due to the characteristics of both teachers
and parents. It is important to take these needs into consideration when providing supervision. Reflective thinking of the teachers and focusing on the real-life situations were found as important sources of learning as well as positive relationship established between the supervisor and the teachers.

More studies using qualitative methodologies might be recommended for better understanding the content of early intervention programs. Qualitative research designs aim to answer the why and how questions, and the knowledge they generate is different in nature and more in-depth when compared to the knowledge generated by quantitative studies (Creswell, 2005; Yin, 2009). These studies can also help update and transform our knowledge on teacher training by providing insights into the requirements for training practitioners.

**CONFLICT OF INTERESTS**

The author has not declared any conflict of interests.

**REFERENCES**


## Appendix A. Teacher evaluation form.

<table>
<thead>
<tr>
<th>Teacher’s behavior</th>
<th>Always (4)</th>
<th>Frequently (3)</th>
<th>Sometimes (2)</th>
<th>Never (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepares session plans appropriate to the child and family</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asks questions to the parents considering the child’s language development</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Asks questions to the parents considering the child’s listening skills and hearing aid use</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Asks questions to the parents considering the daily routines</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uses age appropriate games and toys</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uses educational material appropriate to the family (easy to obtain, not expensive, can be used at home etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establishes play routines</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Draws attention to the sound during play</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recognizes and uses spontaneous language learning opportunities (names the objects and actions the child involves)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow child’s attention to enhance language learning</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulates the pace of the session according to the child</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Models language supportive interaction for the parent</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provides time and space for the parent during play</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observes parent-child interaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provides suggestions considering parent-child interaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provides appropriate answers to the parent’s questions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provides support for appropriate solutions to the problems which parent faced</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provides information on the child’s progress</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encourages the parent’s skills using positive remarks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provides guidance to support the parent’s skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summarizes the session at the end</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establishes a positive relationship with the parent</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total score</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Participating in a high school debate program and college matriculation and completion: Evidence from the Chicago Debate League

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Prior work has demonstrated that debate is associated with academic achievement in high school. Whether debate in high school is predictive of better college outcomes beyond its established relationship with promoting college readiness as indicated by the ACT is unknown. This research examines and evaluates the impact of participating in a high school debate program on college matriculation and completion. Data come from a cohort of 6,411 high school graduates from the Chicago Public School system, 26% of whom participated in the Chicago Debate League, from 1997 to 2007. Logistic regression was used to estimate the relationship between debate participation and college matriculation, type of college attended, and college graduation, with college-readiness, as indicated by performance on the ACT, examined as a mediating variable. Debaters were more likely to matriculate to college, particularly to 4-year versus 2-year institutions, than comparison students and these relationships were largely explained by debaters’ better performance on the ACT. However, debate was not associated with higher likelihood of graduating from college.

Key words: College attainment, debate, extracurricular activities, mediation, urban education.

INTRODUCTION

An evolving global economy has generated immense demand for highly skilled workers. Out of the 11.6 million jobs added to the US economy since 2010, 99% have gone to workers with at least some college education (Carnevale et al., 2016). By 2020, nearly one-third of all jobs will require at least a bachelor’s degree (Carnevale et al., 2013); however, only 66% of US high school graduates matriculate to college (either 2 or 4-year programs) (DeNavas-Walt and Proctor, 2015). Among students at 4-year colleges, only 60% graduate with a bachelor’s degree within 6 years (Kena et al., 2016); for those at 2-year colleges, only 40% graduate, or transfer to a bachelor’s program, within 6 years (Shapiro et al., 2015). These proportions are even lower for urban school
districts. For example, in Chicago only 19% of high school graduates earn a bachelors degree within 6 years (Nagaoka and Healy, 2016). A college education is increasingly critical for socioeconomic mobility (Hout, 2012), and thus practitioners and policymakers must find innovative means of supporting postsecondary education.

A large body of research indicates that student participation in extracurricular programs in high school increases the likelihood of college matriculation and, to a more modest degree, college completion (Eccles and Barber, 1999; Eccles et al., 2003; Gardner et al., 2008; Gibbs et al., 2015; Kaufman and Gabler, 2004; Mahoney et al., 2003; Marsh and Kleitman, 2002; Peck et al., 2008; Zaff et al., 2003). This research suggests that the structure of extracurricular activities in general (rather than the particular content of specific programs) drives the relationship. For example, the benefits of extracurricular activities are conjectured to stem from elements inherent to all extracurricular programs such as enhanced social networks of educational aspirations, shared cultural capital (Kaufman and Gabler, 2004), and adult supervision (Zaff et al., 2003). The literature thus gives the impression that when it comes to extracurricular activities and college matriculation, it is not necessarily what students do in an activity that matters, merely that that they participate in activities under adult supervision. That is, that chess club and the basketball team are interchangeable vis-à-vis promoting postsecondary education.

In contrast to this perspective of extracurricular activities as a broad tool for supporting school engagement, there is an emerging body of research that has focused on programs that are more academically-oriented, redirecting the conversation from generalities to the specifics of extracurricular activities. High school policy debate is one specific extracurricular activity that may promote college attainment due to the explicit practice and performance of reading and writing skills by participating students. Previous research has shown that students who participate in debate are more likely to meet college readiness benchmarks in the English, Science, and Reading sections of the ACT (Mezuk, 2009; Mezuk et al., 2011), suggesting that debaters may gain academic benefits that prepare them for college above and beyond the general structural and environmental support that extracurricular activities provide.

While the literature on extracurricular activities does not provide a clear consensus on why these programs influence college attainment (Farb and Matjasko, 2012; Feldman and Matjasko, 2005), research on a specific extracurricular activity, such as debate, may be able to tease apart the various mechanisms that impact students’ educational trajectories. The present study thus investigates the relationship between participating in a high school debate program and college matriculation and graduation in a large sample of students from the Chicago Public Schools (CPS) System over a 10-year period. The primary hypotheses are that among high school graduates, participating in debate is associated with a greater likelihood of (a) college matriculation, (b) matriculating to a four-year versus two-year institution, and (c) college completion. These relationships are hypothesized to be largely explained by the established relationship between debate participation and improved academic performance in high school with scores from the ACT used as a mediating variable.

**Existing research on extracurricular activities and college attainment**

While participating in extracurricular activities is positively associated with college attainment (Eccles et al., 2003; Gardner et al., 2008; Gibbs et al., 2015; Kaufman and Gabler, 2004; Mahoney et al., 2003; Marsh and Kleitman, 2002; Zaff et al., 2003), there is no consensus regarding the mediating mechanisms. Zaff et al. (2003) argue that extracurricular activities provide adolescents with a safe space during the high-risk after-school hours, and that the adult supervision (for example, team coaches, club directors) inherent in these activities provides needed support for positive youth development. Marsh and Kleitman (2002) show that extracurricular activities foster a sense of school engagement that promotes college attainment. Kaufman and Gabler (2004) propose a cultural capital theory whereby students informally share desirable attributes related to college (for example, knowledge about college admissions processes, social norms regarding education). Another hypothesized pathway stems from simply being exposed to academically-orientated and engaged peers for a prolonged period of time (Eccles et al., 2003; Gibbs et al., 2015).

However, there are important limitations to this research. In most of these reports, extracurricular activities were examined as a general group, or as broad types (for example, sports, academic, etc.), with little information regarding the specific content of the programs (Eccles and Barber, 1999; Eccles et al., 2003; Gibbs et al., 2015; Kaufman and Gabler, 2004; Mahoney et al., 2003; Marsh and Kleitman, 2002; Zaff et al., 2003). Also, most prior work is based on cross-sectional surveys of self-reported student participation, or relies on a single dichotomous indicator of whether a student participated in an activity or not, with no information about duration or intensity of involvement (Eccles et al., 2003; Gibbs et al., 2015; Kaufman and Gabler, 2004; Zaff et al., 2003). Finally, few studies comprehensively account for student achievement selection bias, particularly achievement prior to participating in the activity. Longitudinal investigations with objective, detailed information about the level of student participation in a specific activity provide a better setting for evaluating the competing hypotheses outlined.
Debate as an extracurricular activity

Policy debate is a competitive extracurricular activity in which teams of students engage in structured argumentation about social policies (Breger, 2000). Students work in two-person teams to craft and defend arguments about a particular topic (called a resolution) which changes annually. Throughout the academic year, debate leagues host tournaments (usually three to six of 90 min debate rounds) where students participate in switch-side debating (that is, alternatively debating to affirm or negate the resolution) (Winkler, 2011). As a result, students must become adept at arguing both sides of an issue persuasively. These debates are judged by other coaches and community volunteers, and students receive individual and team awards based on their performance. In practical terms, the activity of policy debate is characterized by the training of academic skills such as reading and interpreting complex non-fiction text, developing and writing arguments based on these texts, verbally expressing and defending evidence-based claims, and listening to and interpreting opponents’ arguments (Mitchell, 1998).

Previous studies show that participating in debate is robustly associated with academic achievement in high school. In a 10-year longitudinal study of over 12,000 CPS high school students, including over 2,500 students who participated in the Chicago Debate League. Mezuk et al. (2011) show that even after accounting for self-selection into the activity using propensity score matching, students who debated were more likely to graduate high school, more likely to meet college readiness benchmarks in the English, Science, and Reading sections of the ACT, and had greater gains in cumulative grade point average (GPA) over the course of high school relative to comparable peers. In a follow-up analysis, Anderson and Mezuk (2015) found that school, social, and civic engagements were higher among debaters than non-debaters, but that these characteristics did not explain the relationship between debate and academic achievement.

These quantitative findings are in line with years of qualitative research that illustrates positive impacts for students. In one of the only comprehensive ethnographic studies on the subculture of high school policy debaters, Fine (2001) concludes that participating in debate instills high levels of self-confidence and shapes relationships in participants’ personal, professional, and civic lives. Winkler (2011) qualitative evaluation of the Milwaukee and Atlanta urban debate leagues provides a further glimpse into the possible mechanisms by which debate promotes college access. When asked to explain why debate supports school engagement, one participant noted: Since joining debate, I am more interested in going to college... Debate makes me believe I could succeed in life.

Debate is unlike most extracurricular activities in that it develops skills that align well with many scholastic goals. The English language arts and reading objectives outlined in the common core explicitly focus literary education on the analysis of non-fiction texts and oral communication (that is, listening, speaking and presenting) (Porter et al., 2011). For example, the first writing standard for grades 9 and 10 states that students should be able to write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence (National Governors Association, 2010). Thus, unlike mentoring programs, sports teams, or other extracurricular activities, debate may potentially reinforce the same academic writing and language skills that are the focus of standardized reading and writing tests. Because the likelihood of college matriculation and degree completion is moderately predicted by performance on college entrance exams such as the ACT (Lotkowski et al., 2004), it is plausible that debate is an extracurricular activity where students gain both the academic and social skills necessary to succeed in college.

Present study

This study examines the relationship between debate participation and college matriculation and completion using a longitudinal cohort of high school students from CPS. This study uses objective debate tournament attendance records, which have been linked to official administrative data on high school performance and college outcomes, to quantify engagement in this activity during high school. The primary hypothesis is that among high school graduates, participating in debate will be positively associated with a) college matriculation, b) attending a four-year versus two-year institution, and c) college graduation. For these analyses, college-readiness, as indicated by performance on the ACT, is examined as a mediating variable. A mediator is a variable that is in the causal pathway linking an exposure (that is, debate) and an outcome (college achievement) (Fairchild and Mackinnon, 2009), while all standardized college entrance exams are imperfect instruments for predicting overall college performance (Lotkowski et al., 2004). Radunzel and Noble (2012) found that students who met the individual ACT benchmarks were substantially more likely than those who did not; to enroll in college the fall immediately following high school graduation, to earn a college degree, and to earn a degree in a timely manner. This suggests that debate may improve college outcomes by setting participants on a more positive trajectory when they enter college, which then persists over time.

Prior work has demonstrated that debate is associated with better performance on the ACT, including greater likelihood of meeting established college readiness benchmarks on this exam (Mezuk et al., 2011); in turn,
the ACT is among the strongest predictors of academic performance for college Freshman (Lotkowski et al., 2014; Radunzel and Noble, 2012; ACT, 2013). However, whether debate in high school is predictive of better college outcomes beyond its established relationship with promoting college readiness as indicated by the ACT, is unknown. If the academic skills (proxied by the ACT) learned in debate explain the debate-college relationship, then debate participation should no longer be associated with college outcomes after accounting for ACT performance. In contrast, if the structural or social benefits of extracurricular activities explain the debate-college relationship, then debate should still be associated with college outcomes even after accounting for ACT performance.

The secondary hypothesis is that among debaters, the amount of participation and degree of competitive success in this activity will be associated with college outcomes. This analysis provides a more detailed examination of the potential mechanisms driving the relationships tested by the first hypothesis. If the academic skills learned in debate explain the debate-college relationship, then measures of intensity of participation will be significantly associated with college outcomes. In contrast, if the structural and social benefits of debate explain the debate-college relationship, then measures of participation intensity of participation will not be significantly associated with college outcomes.

**DATA AND METHODS**

**Sample**

Data come from CPS and the Consortium on Chicago School Research (CCSR) at the University of Chicago. The CCSR has maintained enrollment, demographic, and academic data on CPS high school students since 1991. The CPS district includes 116 high schools with enrollment of approximately 112,000 students. Private and charter schools were not included. The racial/ethnic makeup of the CPS district is 47% Black, 39% Latino, 8% White, 3% Asian, and 3% multiracial (CPS, 2009). To construct the analytic cohort, the CCSR linked enrollment, demographic, and academic performance data from CPS administrative records with tournament participation records from the Chicago Debate League (CDL) from the 1997-98 through 2006-07 school years. These data were then linked to records from the National Student Clearinghouse (NSC) provided by CPS. The NSC includes data from over 3,600 colleges and covers approximately 98% of US college students (Shapiro et al., 2015).

A random sample of comparison students who did not debate was selected for each debater by the CCSR. In order to account for school-level factors, comparison students were selected from the pool that attended the same school and entered high school in the same year as each debate participant (Mezuk, 2009). Additionally, to maximize statistical power, the selection targeted four comparison students for every one debate participant (actual sampling ratio was 3.978:1). Overall, 12,179 CPS students enrolled in high school at some point during the 1997-98 through 2006-07 school years were selected, of which 2,449 (20%) had participated in at least one CDL tournament. This analysis was limited to students who graduated high school between 1997 and 2007 and have information on college outcomes (N = 6,411). The study was approved by the CPS Office of Research and the Institutional Review Board at [BLINDED].

**Independent variables**

For this analysis, students who participated in at least one debate tournament were considered debaters; comparison non-debater students were identified from CPS records as described. Next, among debaters, two metrics were created to indicate intensity of participation; quantity and competitive success. Quantity of participation was indexed by the cumulative number of preliminary debate rounds that each student completed over the course of high school. Each CDL tournament consisted of five preliminary rounds (students who did well in these rounds went on to elimination rounds, however CDL did not keep records of these elimination rounds and thus they are not included in our data). Each year the CDL held between five and seven tournaments, representing between 25 and 35 potential rounds that a student could have debated each year. Competitive success was indexed by cumulative win percentage (number of wins divided by number of total rounds completed) at CDL tournaments.

**Dependent variables**

Three indicators relating to college were abstracted from the NSC data: a) matriculation to any type of college (yes vs. no), b) type of college attended (4-year institution vs. 2-year institution), and, among those who matriculated, c) college completion (yes vs. no).

Type of college was coded according to the first institution attended (for example, a student who transferred to a 4-year institution after initially attending a 2-year one would be coded as the latter).

**Covariates**

Analyses were adjusted for gender, race/ethnicity (White, Black, Hispanic, Asian/other), age at high school graduation, academic performance prior to debate participation (measured by 8th grade standardized test scores), neighborhood poverty, and composite ACT score, all recorded in CPS data and provided by the CCSR. Neighborhood poverty was calculated by census block from the percent of adult males who were employed and the percent of families with incomes above the poverty line. Two standardized tests were used by CPS to assess 8th grade student performance during this study period; the Iowa Test for Basic Skills and the Illinois Standards Achievement Test. These scores were mean-standardized individually to yield one estimate for 8th grade reading and one estimate for 8th grade math, as previously described (Mezuk et al., 2011). The ACT consists of four sections (reading, English, mathematics, and science) of multiple-choice questions, each scored out of 36. The composite ACT score is the average across all four sections.

**Analysis**

Logistic regression was used to assess the relationship between debate participation and college matriculation, type of college attended, and college completion. For each outcome, three models were fit: a) a crude model regressing college outcomes on debate participation, unadjusted for covariates, b) a model adjusted for age at graduation, sex, race/ethnicity, 8th grade standardized test scores, and neighborhood poverty, and c) a model additionally adjusting for composite ACT score. The degree to which ACT performance mediated the debate-college relationship was quantified using a
Table 1a. Student characteristics by college matriculation status: Chicago Public Schools 1997 – 2007.

<table>
<thead>
<tr>
<th>Student characteristics</th>
<th>Total</th>
<th>Did not matriculate</th>
<th>Matriculated</th>
<th>X² or t, p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>6416</td>
<td>1592</td>
<td>4824</td>
<td></td>
</tr>
<tr>
<td>Debater (N, %)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age at HS graduation (M, SD)</td>
<td>18.03 (0.61)</td>
<td>18.21 (0.68)</td>
<td>17.97 (0.57)</td>
<td>54.7, &lt;.0001</td>
</tr>
<tr>
<td>Female (N, %)</td>
<td>3705</td>
<td>822 (51.63)</td>
<td>2883 (59.76)</td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>993</td>
<td>169 (10.62)</td>
<td>824 (17.08)</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>2926</td>
<td>625 (39.26)</td>
<td>2301 (47.70)</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>1985</td>
<td>738 (46.36)</td>
<td>1247 (25.85)</td>
<td></td>
</tr>
<tr>
<td>Asian/other</td>
<td>512</td>
<td>60 (3.77)</td>
<td>452 (9.37)</td>
<td></td>
</tr>
<tr>
<td>Neighborhood poverty (M, SD)</td>
<td>0.07 (0.64)</td>
<td>0.17 (0.62)</td>
<td>0.04 (0.64)</td>
<td>7.6, &lt;.0001</td>
</tr>
<tr>
<td>Overall ACT (M, SD)</td>
<td>19.07</td>
<td>16.33 (4.13)</td>
<td>19.94 (4.77)</td>
<td>-23.2, &lt;.0001</td>
</tr>
<tr>
<td>English ACT (M, SD)</td>
<td>18.86</td>
<td>15.50 (5.34)</td>
<td>19.92 (5.76)</td>
<td>-23.2, &lt;.0001</td>
</tr>
<tr>
<td>Reading ACT (M, SD)</td>
<td>19.59</td>
<td>16.59 (5.21)</td>
<td>20.54 (6.01)</td>
<td>-20.1, &lt;.0001</td>
</tr>
<tr>
<td>Science ACT (M, SD)</td>
<td>19.03</td>
<td>16.76 (4.26)</td>
<td>19.75 (4.58)</td>
<td>-19.7, &lt;.0001</td>
</tr>
<tr>
<td>Math ACT (M, SD)</td>
<td>18.81</td>
<td>16.47 (3.66)</td>
<td>19.55 (4.84)</td>
<td>-19.9, &lt;.0001</td>
</tr>
<tr>
<td>8th grade standardized test score (M, SD)</td>
<td>0.19 (0.95)</td>
<td>-0.32 (0.89)</td>
<td>0.36 (0.91)</td>
<td>-23.7, &lt;.0001</td>
</tr>
<tr>
<td>Type of college attended (N, %)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associates (2 year)</td>
<td>--</td>
<td>--</td>
<td>1497 (31.03)</td>
<td>--</td>
</tr>
<tr>
<td>Bachelors (4 year)</td>
<td>--</td>
<td>--</td>
<td>3327 (68.97)</td>
<td>--</td>
</tr>
<tr>
<td>Graduated college</td>
<td>--</td>
<td>--</td>
<td>859 (17.81)</td>
<td>--</td>
</tr>
</tbody>
</table>

modified version of the Sobel test, which provides estimates for the total, direct, and indirect effects of exposure-mediator-outcome relationship and a p-value for the statistical significance of the indirect/direct effect ratio (MacKinnon and Dwyer, 1993). Initial tests of model fit assumptions indicated that the relationship between 8th grade standardized test and ACT scores with the college outcomes was curvilinear, and thus these models included a squared term on both variables. These models were also estimated within the restricted sample of debate participants to examine the influence of debate intensity (quantity and competitive success) on college attainment.

Absolute model fit, which reflects the predictive capability of the model, was evaluated using the C-statistic. The C-statistic represents the proportion of outcomes correctly classified by the model; it ranges from 0.5 to 1 and values greater than 0.7 indicate adequate classification ability (Hosmer and Lemeshow, 2000). All analyses were conducted using SAS (version 9.4) and all p-values refer to two-tailed tests.

RESULTS

Table 1a illustrates the characteristics of CPS high school graduates stratified by college matriculation status; while Table 1b shows these same characteristics stratified by debater status. Students who matriculated were younger when they graduated from high school, more likely to be female, less likely to be Hispanic, and lived in lower poverty neighborhoods than students who did not matriculate. As expected, both 8th grade test scores and ACT scores were substantially higher among students who matriculated versus those that did not. Among those who matriculated, 18% of students graduated from college during the study period. Table 1b shows that debaters were younger when they graduated high school, were more likely to be female, and had higher 8th grade and ACT test scores relative to non-debaters.

Figure 1 shows the distribution of college matriculation and graduation for debaters and comparison students from 1997 to 2007. Debaters were substantially more likely to matriculate to college, a difference that was largely driven by 4-year institutions (63.5 vs. 47.7%). Differences in graduation from college were less pronounced but still favored debaters (21.0 vs. 16.5%). Among college graduates, debaters and non-debaters took similar average lengths of time to earn their degrees [2-year institutions (debaters: 3.71 years, non-debaters: 3.65 years; 4-year institutions (debaters: 4.19 years, non-debaters: 4.20 years)].

College matriculation

Table 2 illustrates the relationship between participating in debate and college matriculation. Consistent with the
Table 1b. Student characteristics by debater status: Chicago Public Schools 1997 – 2007.

<table>
<thead>
<tr>
<th>Student characteristics</th>
<th>Total</th>
<th>Non-debater</th>
<th>Debater</th>
<th>X² or t, p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>6416</td>
<td>4720</td>
<td>1696</td>
<td></td>
</tr>
<tr>
<td>Demographics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age at HS graduation (M, SD)</td>
<td>18.03 (0.61)</td>
<td>18.06 (0.62)</td>
<td>17.93 (0.57)</td>
<td>7.64, &lt;.0001</td>
</tr>
<tr>
<td>Female (N, %)</td>
<td>3705 (57.75)</td>
<td>3669 (56.55)</td>
<td>1036 (61.08)</td>
<td>10.5, 0.0012</td>
</tr>
<tr>
<td>Race/ethnicity (N, %)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>993 (15.48)</td>
<td>714 (15.13)</td>
<td>279 (16.45)</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>2926 (45.60)</td>
<td>2112 (44.75)</td>
<td>814 (48.00)</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>1985 (30.94)</td>
<td>1513 (32.06)</td>
<td>472 (27.83)</td>
<td></td>
</tr>
<tr>
<td>Asian/other</td>
<td>512 (7.98)</td>
<td>381 (8.07)</td>
<td>131 (7.72)</td>
<td></td>
</tr>
<tr>
<td>Neighborhood poverty (M, SD)</td>
<td>0.07 (0.64)</td>
<td>0.07 (0.64)</td>
<td>0.07 (0.65)</td>
<td>-0.30, 0.7625</td>
</tr>
<tr>
<td>Academic performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall ACT (M, SD)</td>
<td>19.07 (4.88)</td>
<td>18.61 (4.80)</td>
<td>20.28 (4.87)</td>
<td>-10.78, &lt;.0001</td>
</tr>
<tr>
<td>English ACT (M, SD)</td>
<td>18.86 (5.97)</td>
<td>18.28 (5.92)</td>
<td>20.38 (5.83)</td>
<td>-11.09, &lt;.0001</td>
</tr>
<tr>
<td>Reading ACT (M, SD)</td>
<td>19.59 (6.07)</td>
<td>19.01 (5.96)</td>
<td>21.13 (6.08)</td>
<td>-11.03, &lt;.0001</td>
</tr>
<tr>
<td>Science ACT (M, SD)</td>
<td>19.03 (4.69)</td>
<td>18.61 (4.65)</td>
<td>20.13 (4.61)</td>
<td>-10.13, &lt;.0001</td>
</tr>
<tr>
<td>Math ACT (M, SD)</td>
<td>18.81 (4.77)</td>
<td>18.55 (4.65)</td>
<td>19.49 (5.01)</td>
<td>-6.15, &lt;.0001</td>
</tr>
<tr>
<td>8th grade standardized test score (M, SD)</td>
<td>0.19 (0.95)</td>
<td>0.12 (0.97)</td>
<td>0.38 (0.89)</td>
<td>-8.87, &lt;.0001</td>
</tr>
<tr>
<td>College characteristics</td>
<td></td>
<td></td>
<td></td>
<td>126.1, &lt;.0001</td>
</tr>
<tr>
<td>Type of college attended (N, %)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>1592 (24.81)</td>
<td>1284 (27.20)</td>
<td>308 (18.16)</td>
<td></td>
</tr>
<tr>
<td>Associates/2 year</td>
<td>1497 (23.33)</td>
<td>1186 (25.13)</td>
<td>311 (18.34)</td>
<td></td>
</tr>
<tr>
<td>Bachelors/4 year</td>
<td>3327 (51.85)</td>
<td>2250 (47.67)</td>
<td>1077 (63.50)</td>
<td></td>
</tr>
<tr>
<td>Graduated college</td>
<td>859 (17.81)</td>
<td>568 (16.53)</td>
<td>291 (20.97)</td>
<td>13.3, 0.0003</td>
</tr>
</tbody>
</table>

Figure 1. Distribution of college matriculation and graduation among high school graduates in the Chicago Public School system: 1997 - 2007. Unadjusted percentage of CPS graduates who matriculated to and graduated from any, 2-year, and 4-year institutions from 1997 – 2007, stratified by debater status. N=6,416.
primary hypothesis, debaters were more likely to matriculate to college. After accounting for demographic characteristics, neighborhood poverty, and 8th grade standardized test scores, debaters had 27% greater odds (95% confidence interval (CI): 1.06 – 1.52) of matriculating to college relative to comparison students. To test the mediation hypothesis, we first confirmed the relationship between debating and ACT performance. Supplemental Table 1 shows the results for each of the four sections and the composite (overall) score. Consistent with prior work in this cohort, debaters had significantly higher mean ACT composite scores (β=0.53, 95% CI: 0.37 – 0.69), and higher scores on the reading, English, and science sections, even after accounting for demographic characteristics and 8th grade standardized test scores. This established that ACT is a potential mediator of the relationship between debate and college outcomes.

As shown by Table 2 (Model 3), debaters were no longer significantly more likely to matriculate after accounting for performance on the ACT (Odds ratio (OR): 1.17, 95% CI: 0.97 – 1.41). The formal Sobel test of this mediation relationship showed that 70% of the total effect between debate and college matriculation was mediated by ACT score (total effect (ignoring ACT) of debate: 0.11; direct effect: 0.03; indirect effect through ACT: 0.07; ratio of indirect/direct: 2.33, Sobel Z: 11.10, p<0.0001). This indicates that this metric of college readiness partially mediates the relationship between debate participation and college matriculation. Turning to type of college, debaters were significantly more likely to matriculate to a 4-year institution compared to non-debaters, even after accounting for ACT score (OR: 1.43, 95% CI: 1.17 – 1.76). Model fit was acceptable, with C-statistics >0.7 for all fully-adjusted models, indicating that these models have adequate discriminating power at predicting college matriculation.

### College completion

Table 3 shows the relationship between debate participation and college graduation. Debaters were not significantly more likely to graduate from college overall even in the crude model (OR: 1.20; 95% CI: 0.96 – 1.51). Results were similar when looking at the type of college attended; debaters were not significantly more likely to graduate from college, regardless of whether they

### Table 2. Relationship between debate participation and college matriculation.

<table>
<thead>
<tr>
<th>High school graduate</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debater (reference group = No)</td>
<td>1.60 (1.35, 1.89)</td>
<td>1.27 (1.06, 1.52)</td>
<td>1.17 (0.97, 1.41)</td>
</tr>
<tr>
<td>Age at high school graduation</td>
<td>0.65 (0.55, 0.76)</td>
<td>0.71 (0.60, 0.83)</td>
<td></td>
</tr>
<tr>
<td>Sex (reference group = Male)</td>
<td>1.36 (1.17, 1.59)</td>
<td>1.34 (1.14, 1.57)</td>
<td></td>
</tr>
<tr>
<td>Race/ethnicity (reference group = White)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Black</td>
<td>1.63 (1.19, 2.24)</td>
<td>1.73 (1.25, 2.39)</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.62 (0.47, 0.82)</td>
<td>0.64 (0.48, 0.85)</td>
<td></td>
</tr>
<tr>
<td>Asian/other</td>
<td>1.64 (1.06, 2.54)</td>
<td>1.51 (0.98, 2.35)</td>
<td></td>
</tr>
<tr>
<td>Neighborhood poverty</td>
<td>0.69 (0.59, 0.81)</td>
<td>0.70 (0.60, 0.83)</td>
<td></td>
</tr>
<tr>
<td>8th grade standardized tests (at mean)</td>
<td>1.81 (1.57, 2.10)</td>
<td>1.04 (0.82, 1.32)</td>
<td></td>
</tr>
<tr>
<td>Cumulative ACT score (at mean)</td>
<td>-</td>
<td>-</td>
<td>1.15 (1.11, 1.20)</td>
</tr>
<tr>
<td>N</td>
<td>4129</td>
<td>4129</td>
<td>4129</td>
</tr>
<tr>
<td>C-statistic</td>
<td>0.54</td>
<td>0.74</td>
<td>0.75</td>
</tr>
</tbody>
</table>

Outcome: Any type of institution

<table>
<thead>
<tr>
<th>High school graduate</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debater (reference group = No)</td>
<td>1.84 (1.54, 2.20)</td>
<td>1.61 (1.32, 1.97)</td>
<td>1.43 (1.17, 1.76)</td>
</tr>
<tr>
<td>Age at high school graduation</td>
<td>0.53 (0.43, 0.66)</td>
<td>0.62 (0.50, 0.76)</td>
<td></td>
</tr>
<tr>
<td>Sex (reference group = Male)</td>
<td>1.62 (1.35, 1.94)</td>
<td>1.66 (1.38, 2.00)</td>
<td></td>
</tr>
<tr>
<td>Race/ethnicity (reference group = White)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Black</td>
<td>1.95 (1.41, 2.69)</td>
<td>2.52 (1.79, 3.54)</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>1.07 (0.79, 1.45)</td>
<td>1.28 (0.94, 1.76)</td>
<td></td>
</tr>
<tr>
<td>Asian/other</td>
<td>1.94 (1.26, 2.97)</td>
<td>1.95 (1.25, 3.04)</td>
<td></td>
</tr>
<tr>
<td>Neighborhood poverty</td>
<td>0.91 (0.76, 1.08)</td>
<td>0.95 (0.79, 1.13)</td>
<td></td>
</tr>
<tr>
<td>8th grade standardized tests (at mean)</td>
<td>3.53 (2.86, 4.35)</td>
<td>1.24 (0.92, 1.67)</td>
<td></td>
</tr>
<tr>
<td>Cumulative ACT score (at mean)</td>
<td>-</td>
<td>-</td>
<td>1.29 (1.23, 1.35)</td>
</tr>
<tr>
<td>N</td>
<td>3127</td>
<td>3127</td>
<td>3127</td>
</tr>
<tr>
<td>C-statistic</td>
<td>0.56</td>
<td>0.79</td>
<td>0.82</td>
</tr>
</tbody>
</table>

Outcome: 4-year vs 2 year institution

Values are odds ratios (95% confidence intervals). Both the 8th grade standardized test score and the ACT variables include square terms in Models 2 and 3. Parameter estimates for these variables are reported at their respective mean values (0.22 for 8th grade test scores and 19.0 for the ACT).
attended a 2-year or 4-year institution. As shown by the lower C-statistics, the predictive power of these models was not as robust as the matriculation models, which is expected given the lag between the exposures (for example, activities in high school activities) and the outcome (college graduation approximately four years later). It is also worth noting that ACT performance, despite being strongly predictive of college matriculation, is itself only weakly, albeit significantly, associated with college graduation (OR: 1.06, 95% CI: 1.01 – 1.11); indeed, the magnitude of this association is almost identical to that of debate in the fully-adjusted model (OR: 1.07; 95% CI: 0.84 – 1.35). Because debate was not a significant predictor of college graduation, there was no justification for formally testing whether ACT mediated this (non-significant) relationship.

Supplemental Figure 1 summarizes the findings between debate participation and college matriculation and graduation; overall, for 2-year institutions, and for 4-year institutions. Taken together, these findings show that the relationship between debate participation and college matriculation is partially mediated by college readiness as indicated by the ACT. There is no evidence that debate participation in high school is associated with graduating from college, regardless of the type of institution attended.

**Characteristics of debate participation and college outcomes**

Figures 2a and 2b show the relationship between quantity of debate participation and competitive success at the activity with college matriculation and completion. There was a modest, but positive, relationship between quantity of participation and college matriculation even after accounting for demographic characteristics and standardized test scores (OR: 1.01, 95% CI: 1.00 – 1.02). Quantity of participation was not significantly associated with college graduation (OR: 1.01, 0.99 – 1.01). Competitive success was significantly associated with matriculation (OR: 1.01, 1.00 – 1.02), but not completion (OR: 1.01, 95% CI: 0.99 – 1.02), in crude models; these associations were no longer statistically significant after accounting for standardized test scores (matriculation OR: 1.00, 95% CI: 0.99 – 1.01; graduation OR: 1.01, 95% CI: 0.99 – 1.02).

**DISCUSSION**

The primary finding from this study is that, even after accounting for prior achievement, high school graduates who participated in the CDL were more likely to matriculate to college, specifically 4-year institutions, than those who did not participate. However, these relationships are largely explained by debaters’ better performance on the ACT, which itself is a strong predictor of college matriculation (Coca et al., 2017; Lotkowski et al., 2004; Radunzel and Noble, 2012). There was no evidence that debate participation in high school predicted college completion, regardless of the type of institution attended. Prior work has demonstrated that debate is predictive of substantially better performance on the reading, science, and writing sections of the ACT (Mezuk et al., 2011). Taken together, these findings are consistent with the hypothesis that debate improves college readiness, as indicated by the ACT, which in turn promotes college matriculation.

These findings call into question hypotheses that

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**Table 3. Relationship between debate participation and college graduation.**

<table>
<thead>
<tr>
<th>Outcome: Graduate from any type of institution</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debater (reference group = No)</td>
<td>1.20 (0.96, 1.51)</td>
<td>1.09 (0.87, 1.38)</td>
<td>1.07 (0.84, 1.35)</td>
</tr>
<tr>
<td>Age at high school graduation</td>
<td>-</td>
<td>0.74 (0.57, 0.95)</td>
<td>0.76 (0.59, 0.98)</td>
</tr>
<tr>
<td>Sex (reference group = Male)</td>
<td>-</td>
<td>1.86 (1.47, 2.36)</td>
<td>1.88 (1.48, 2.39)</td>
</tr>
<tr>
<td>Race/ethnicity (reference group = White)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Black</td>
<td>-</td>
<td>0.92 (0.64, 1.39)</td>
<td>0.97 (0.67, 1.41)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-</td>
<td>0.86 (0.60, 1.24)</td>
<td>0.90 (0.63, 1.30)</td>
</tr>
<tr>
<td>Asian/other</td>
<td>-</td>
<td>1.13 (0.74, 1.71)</td>
<td>1.13 (0.74, 1.71)</td>
</tr>
<tr>
<td>Neighborhood poverty</td>
<td>-</td>
<td>0.88 (0.71, 1.09)</td>
<td>0.89 (0.72, 1.10)</td>
</tr>
<tr>
<td>8th grade standardized tests (at mean)</td>
<td>-</td>
<td>1.38 (1.19, 1.60)</td>
<td>1.09 (0.85, 1.42)</td>
</tr>
<tr>
<td>Cumulative ACT (at mean)</td>
<td>-</td>
<td>-</td>
<td>1.06 (1.01, 1.11)</td>
</tr>
<tr>
<td>N</td>
<td>3127</td>
<td>3127</td>
<td>3127</td>
</tr>
<tr>
<td>C-statistic</td>
<td>0.52</td>
<td>0.65</td>
<td>0.65</td>
</tr>
</tbody>
</table>

Values are odds ratios (95% confidence intervals). Both the 8th grade standardized test score and the ACT variables include square terms in Models 2 and 3. Parameter estimates for these variables are reported at their respective mean values (0.22 for 8th grade test scores and 19.0 for the ACT).
Figure 2a, b. Values are predicted probabilities of matriculating to any college institution and of graduating from any institution as a function of (2a) number of rounds debated: Predicted probability of college matriculation and graduation by cumulative number of rounds among debaters in the Chicago Debate League, 1997 – 2007. (2b) cumulative win percentage among high school graduates who debated in the CDL from 1997 to 2007 (N=920). Values are adjusted for age at high school graduation, sex, race/ethnicity, neighborhood poverty, 8th grade standardized test scores, and cumulative ACT score: Predicted probability of college matriculation and graduation by cumulative competitive success among debaters in the Chicago Debate League, 1997 – 2007.

emphasize factors related to socialization or norms about the value of education as the primary drivers of the relationship between debate and college outcomes. That is, there was little evidence of a benefit of debate on college outcomes after accounting for college readiness, which would have been expected if social or cultural factors were significant contributors. Instead, these findings indicate that the pathway linking debate participation to college outcomes is largely driven by academic factors rather than by social aspects of this
activity. This is critical, since there is not a strong positive relationship between participating in extracurricular activities and ACT performance in general; indeed, as the number of extracurricular activities participated in increases, ACT performance tends to decline (ACT, 2015). In sum, this study extends the growing body of evidence on the academic benefits associated with high school policy debate program participation and college attainment.

These findings contrast with prior work positing that elements of the general social structure of extracurricular activities drive the relationship between participation and college outcomes. Instead, if there are distinct benefits from the social and environmental structure of academically-oriented activities like debate, their influence is likely indirect and correlated with college readiness. While prior work has found that positive peer relationships, social norms, expectations about college, and overall school engagement are correlated with debate participation (Anderson and Mezuk, 2015), these factors are not strongly associated with ACT performance, nor do they substantially mediate the relationship between debate and high school achievement. It is perhaps better to consider debate a co-curricular, rather than extra-curricular, activity.

The hypothesis that extracurricular activities (at least those that explicitly involve the practice of reading and writing) promote college success through supporting academic performance is not prominent in the extant literature. For example, Eccles et al., (2003) report that all extracurricular programs (prosocial activities, team sports, performing arts, school-involvement activities, and academic clubs) were associated with college matriculation and college graduation. The lack of specificity to a specific type of activity was interpreted by the authors as evidence that the way extracurricular activities promote college success is through social pathways (that is, participants were interacting with more peers who planned to attend college and were engaged in school versus the peer groups of non-participants).

More recently, Gibbs et al., (2015) report that participating in extracurricular activities whose participants have high GPA is predictive of enrolling in college regardless of the student’s own GPA. They conclude that peers likely play a role in modeling achievement by creating norms of college-going and providing paths to information about how postsecondary education works. The authors provide the following example to illustrate their findings; debate fosters work ethic that increases a student’s confidence for attending college or it signals to admissions that the student is prepared for college (Gibbs et al., 2015, p. 378). The results of this present study, however, demonstrate that debate is not simply a means to improve student confidence in pursuing higher education; instead it provides a vehicle for directly improving academic readiness, which in turn is among the strongest predictors of college matriculation and completion.

Strengths and limitations

These results should be understood in the context of study limitations. Without a randomized controlled experiment in which students are assigned to participate in debate or not, it is impossible to fully account for self-selection into this activity. However, prior work in this cohort using quasi-experimental propensity score techniques has shown that debate is predictive of both ACT performance and GPA change over time (Mezuk et al., 2011), indicating that these findings are robust to selection bias based on observable characteristics. Moreover, limiting this analysis to high school graduates, which are already selected for higher academic achievement, minimizes bias due to self-selection. While this study had detailed information on debate participation, it lacked data on other activities students may have also participated in (both for debaters and non-debater peers). However, the analysis examining debate quantity and competition suggests that the extent to which students participate in debate, as opposed to the structural benefits that all participants receive regardless of intensity, helps explain the positive relationship with college outcomes. Finally, this study examined debaters as a whole; further research as to whether the relationship between debate (and extracurricular activities in general) and college outcomes varies across social groups (for example, gender, and race/ethnicity) is warranted.

This study also has a number of strengths. All data were derived from objective records of tournament participation and academic records, which overcomes limits of student self-reported participation. The large, representative nature of this cohort allowed for a robust examination of the relationship between debate participation and multiple college outcomes. The detailed records on debate participation allowed for a more nuanced analysis of the roles of competitive success and duration of participation, which stands in contrast to much prior work on extracurricular activities which generally lacks information on intensity of involvement. Finally, to the authors’ knowledge, this study constitutes the first quantitative test of the relationship between high school debate participation and college attainment.

Implications for policy and practice

These findings suggest that education practitioners and policymakers can support educational trajectories to higher education by promoting extracurricular activity programs like debate. In urban districts like Chicago, which serve a substantial percentage of low-income and minority students, debate may be a critical program for
broadening college access. There are persistent socioeconomic and racial gaps in postsecondary attainment across the U.S. (Kena et al., 2016). In Chicago, racial gaps in four-year college enrollment amongst high school graduates have increased (Coca et al., 2017), while Black and Latino college enrollees consistently have lower rates of bachelor’s degree attainment than their White and Asian counterparts (Nagaoka et al., 2017). However, multiple studies (ACT, 2013; Radunzel and Noble, 2012) have demonstrated that gaps in college enrollment, retention, and degree completion rates narrow substantially among students who are academically-prepared for postsecondary education. Debate is an activity that promotes college readiness. However, these findings also show that there is a need for continued support while in college to promote graduation.

Furthermore, while there is warranted enthusiasm for the importance of supporting school success early in life on educational trajectories (Heckman, 2006), debate presents an opportunity to impact college matriculation among adolescents in the later stages of their academic trajectories. With the adoption of the Common Core Standards, in addition to recent efforts to promote innovation in education programming such as Race to the Top initiatives, practitioners and policymakers should consider promoting educational programs that align with explicit academic skills and learning objectives. As school boards across the United States contemplate the funding and development of extracurricular activities in a time of tightening budgets, our results demonstrate that programs like debate, which focus on academic content and improve college readiness, can play a significant role in promoting college access.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

REFERENCES

ACT (2013). What are ACT’s college readiness benchmarks? Iowa City, IA: ACT.

Lotkowski VA, Robbins SB, Noeth RJ (2004). The role of academic and non-academic factors in improving college retention. Iowa City, IA: ACT.
Peck SC, Roeser RW, Zarrett N, Eccles JS (2008). Exploring the roles...


Supplemental table

Table S1. Relationship between debate and ACT performance among Chicago Public Schools high school graduates.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Β (95% CI)</td>
<td>Β (95% CI)</td>
</tr>
<tr>
<td>Composite ACT score</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Debate</td>
<td>1.59 (1.26, 1.91)</td>
<td>0.53 (0.37, 0.69)</td>
</tr>
<tr>
<td>English ACT section score</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Debate</td>
<td>1.99 (1.60, 2.38)</td>
<td>0.72 (0.49, 0.96)</td>
</tr>
<tr>
<td>Reading ACT section score</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Debate</td>
<td>2.06 (1.66, 2.47)</td>
<td>0.86 (0.60, 1.13)</td>
</tr>
<tr>
<td>Science ACT section score</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Debate</td>
<td>1.42 (1.11, 1.73)</td>
<td>0.56 (0.36, 0.76)</td>
</tr>
<tr>
<td>Math ACT section score</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Debate</td>
<td>0.87 (0.55, 1.19)</td>
<td>-0.01 (-0.20, 0.17)</td>
</tr>
</tbody>
</table>

Model 1 is unadjusted. Model 2 is adjusted for age at high school graduation, sex, race/ethnicity, 8th grade standardized test scores, and neighborhood poverty.

Supplemental figure

Figure S1. Relative odds of matriculating and graduating for debaters compared to non-debaters. Values are relative odds of (a) matriculating to a 2 or 4-year institution as compared to not matriculating to any college, and (b) graduating from a 2-year or 4-year institution as compared to attending but not graduating from any type of college. Values are adjusted for age at high school graduation, sex, race/ethnicity, neighborhood poverty, 8th grade standardized test scores, and cumulative ACT score.