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Predicting Procrastination: The Role of Academic Achievement, Self-efficacy and Perfectionism

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Abstract

The aim of this study was to examine the relations of academic achievement, self-efficacy, and perfectionism with procrastination in University students, and to examine whether procrastination can be predicted by academic achievement, self-efficacy, and perfectionism dimensions. 227 University students from different faculties completed Tuckmans' procrastination scale, Almost Perfect Scale – Revised (APS-R; Slaney Rice, Mobley, Trippi, & Ashby, 2001) and General self-Efficacy Scale (GSE; Schwarzer & Jerusalem, 1995), as well as data about academic achievement at the end of last academic year. Results have shown negative correlations of academic achievement, self-efficacy and adaptive perfectionism with procrastination, and a positive correlation between maladaptive perfectionism and procrastination. Results have also shown that self-efficacy is positively correlated with adaptive perfectionism and negatively with maladaptive perfectionism. Maladaptive perfectionism was a positive predictor of procrastination, while academic achievement, self-efficacy and adaptive perfectionism were all negative predictors. Finally, we used Hayes bootstrapping method to examine possible mediations. The results have shown that self-efficacy, by its self, is not a significant mediator, while paths containing self-efficacy and adaptive or maladaptive perfectionism mediate the relation between academic achievement and procrastination. Furthermore, both adaptive and maladaptive perfectionism mediated the relation between self-efficacy and procrastination.

Keywords: procrastination, academic achievement, self-efficacy, perfectionism, University students

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Predicción de la Procrastinación: El Papel del Logro Académico, la Autoeficacia y el Perfeccionismo

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Abstract

El objetivo de este estudio fue examinar la relación entre rendimiento académico, autoeficacia, perfeccionismo y procrastinación en los estudiantes universitarios, y para examinar si la procrastinación puede ser predicha de acuerdo con las variables del logro académico, la autoeficacia y el perfeccionismo. 227 estudiantes universitarios de diferentes facultades completaron la Escala de Procrastinación de Tuckmans, la Escala casi Perfecta - Revisada y la Escala de Autoeficacia General, así como datos sobre logros académicos al final del último curso. Los resultados han mostrado una correlación negativa entre logro académico, autoeficacia, perfeccionismo adaptativo y procrastinación. Se halló una correlación positiva entre el perfeccionismo desadaptativo y la procrastinación. La autoeficacia tiene una correlación positiva con el perfeccionismo adaptativo y una correlación negativa con el perfeccionismo desadaptivo. El perfeccionismo desadaptativo fue un predictor positivo de la procrastinación, mientras el logro académico, la autoeficacia y el perfeccionismo adaptativo fueron predictores negativos. Finalmente, utilizamos las técnicas de Bootstrapping de Hayes para analizar posibles mediaciones. La autoeficacia, por sí misma, no es un mediador significativo, mientras que los caminos que contienen las variables moderadoras de la autoeficacia y el perfeccionismo adaptativo o desadaptativo median la relación entre los logros académicos y la procrastinación. Además, tanto el perfeccionismo adaptativo como el desadaptativo mediada la relación entre la autoeficacia y la procreación.

Keywords: procrastination, academic achievement, self-efficacy, perfectionism, University students

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Steel (2007) explains procrastination as delaying the commencement or completion of a planned behavior or delay of making a decision. All people occasionally procrastinate (Van Eerde, 2003), and procrastination can occur at school and at work, daily activities, obligations, free time, family and partnership, as well as in social contacts (Klingsieck, 2013). Although it occurs in various areas, it is most commonly associated with education and work, due to external and specific deadlines set for the completion of a task or a job (Klingsieck, 2013). Procrastination is widespread among students and, according to some studies, about 80-95% of students procrastinate (Ellis & Knaus, 1997). A survey of academic procrastination conducted by Hill, Hill, Chabot and Barral (1978) has found that about 50% of students are prone to academic procrastination, and that there was a noticeable increase in procrastination in the later years of study.

Procrastination is often investigated because of potential negative consequences such as low academic achievement, poor physical and mental health or problems in interpersonal relationships. Longitudinal studies show that procrastination has a significant effect on physical health. Tice and Baumeister (1997) reported that students, who procrastinate, experience lower stress levels and are less sick at the beginning of the semester, but by the end of the same semester, they become more susceptible to stress and illness compared to students who do not procrastinate. Rice, Richardson, and Clark (2012) also found that students, who were more likely to procrastinate early in the semester, were the most distressed by the end of the term. Therefore, procrastination is often accompanied by distress, which led some authors to include distress in the definition of procrastination (Ferrari, 1998; Milgram, 1991), Procrastination is also related to many psychological problems, including depression, anxiety, and low self-esteem (Abbasi & Alghamdi, 2015; Beswick, Rothblum, & Mann, 1988; Beutel et al., 2016; Boysan & Kiral, 2017), although correlations are usually moderate (Van Eerde, 2003).

Therefore, procrastination clearly has an adverse effect on one's academic functioning, including academic achievement. However, less is known about possible reverse effects of academic achievement on procrastination as well as other factors that could explain students' tendency to procrastinate.

According to social–cognitive perspective, self-regulation entails generation of thoughts, emotions and behavior in a mutually dependent and cyclic manner (Zimmerman, 1998). Feedback, at either point of that cycle, will affect future goals, strategies and self-evaluation. Therefore, it is worthwhile to consider academic achievement as a predictor of various outcomes, and not solely as an outcome. In other words, we assume that feedback about performance (i. e. academic achievement) should have an effect on a person's approach to future tasks, in a sense that negative feedback could give rise to difficulties with either starting or completing similar tasks. Klassen, Krawchuk and Rajani (2008) have indeed found that GPA predicts procrastination and that its effect could be mediated by self-regulatory mechanisms.

Assuming that procrastination is not a strategic, conscientious choice (i.e. active procrastination), but that it is associated with negative emotions, such as uncertainty, anxiety or fear of failure, it seems useful to focus on cognitive factors that might explain what drives students to procrastinate. Since procrastination is, essentially, avoidant behavior, self-efficacy and perfectionism may be relevant in predicting it. Self-efficacy refers to students' belief whether they are able to achieve desired outcome (Bandura, 1977), successfully execute a particular task, and cope with obstacles or challenges (Pajares, 1996). It determines future behavior, the amount of effort that people will invest in certain situations, as well as the choices of activities and perseverance in coping with difficulties, which further affect the outcome of a certain behavior. Thus, individuals who have a higher level of self-efficacy will decide to take the necessary action more easily and approach the task with less anxiety, they will invest more effort in order to achieve their goals, and will be more persistent when faced with obstacles. People with a strong sense of personal efficacy attribut failure to insufficient effort and invest more effort in order to overcome certain difficulties. Those who doubt their self-efficacy will reduce their effort and quickly give up on achieving their goals (Bandura, 1977, 1986). Belief in one's efficacy also strongly affects one's emotional reactions to life events. Low self-efficacy in achieving one's goals can lead to depression, which can later affect a person's coping strategies (Bandura, 1986). Indeed, studies do show that students with higher general self-efficacy are less likely to procrastinate (Ferrari, 1992; Haycock, McCarthy, & Skay, 1998;

Hicks & Meng Yao Wu, 2015; Kurland and Siegel, 2016). Perfectionism is defined as the aspiration to and expectation of exceptionally high results, which are associated with high personal standards (Slaney, Rice, & Ashby, 2002). Perfectionists are often described as pessimistic people who tend to exaggerate and are too self-critical. Originally, perfectionism was considered as a one-dimensional maladaptive trait (Burns, 1980), with mostly negative consequences, such as depression, anxiety, personality disorders, and low self-esteem (Lessin & Pardo, 2017; Ashby & Rice, 2002). Later, authors developed multidimensional models of perfectionism, which included both adaptive and maladaptive features. Frost, Marten, Lahart and Rosenblate (1990) defined perfectionism in terms of six dimensions; Personal standards, Organization (adaptive dimensions), Concerns over mistakes, Doubts about actions, Parental expectations and Parental criticism (maladaptive dimensions). Hewitt and Flett (1991) introduced a three-dimensional model of perfectionism, which included an interpersonal aspect: self-oriented, other-oriented and socially prescribed perfectionism. The main difference between these dimensions does not apply to behavior but the object toward which perfectionistic tendencies are directed; toward oneself, toward others or the perception of expectations of others. Self-oriented perfectionism is considered adaptive, while other-oriented and socially prescribed perfectionism are considered maladaptive. Slaney and Ashby (1996) identified three basic characteristics of perfectionism; setting high standards of performance, order and perception of discrepancy between high goals and actual personal performance. In order to better explain positive and negative aspects of perfectionism, Slaney et al. (2001) constructed the revised scale of aspirations towards perfectionism (Almost perfect scale; APS-R). APS-R consist of three subscales: Standards and Order, which reflect adaptive perfectionism, and Discrepancy, which reflects maladaptive perfectionism (Slaney et al., 2001). Many studies have supported the adaptive/maladaptive perfectionism distinction, showing that adaptive aspects of perfectionism are associated with a variety of positive outcomes, including life satisfaction, extraversion, conscientiousness, persistence, hope, self-efficacy, resilience, optimism, and success on exams (Bieling, Israeli, Smith, & Antony, 2003; Chang, Watkin, & Banks, 2004; Hicks & Meng Yao Wu, 2015; Parker and Stumpf, 1995; Stumpf & Parker, 2000).

Maladaptive aspects of perfectionism have been connected to anxiety, depression, suicidality and neuroticism (Bieling et al., 2004; Enns et al., 2001; Rice, Richardson, & Clark, 2012).

When considering the relation between perfectionism and procrastination, researchers claim that many people procrastinate because they are perfectionists (Burke &Yuen, 1983; Onwuegbuzie, 2000). Perfectionists set unrealistically high standards for themselves and procrastinate because they believe that these standards cannot be achieved, because they are never satisfied with their performance or are afraid of making a mistake and being negatively evaluated. Studies consistently show that procrastination is positively related to maladaptive aspects of perfectionism, as conceptualized in different models of perfectionism, while adaptive aspects of perfectionism are either unrelated or negatively related to procrastination. Adaptive, "healthy" perfectionists strive to achieve, expect success and feel proud if they achieve their expectations and goals (Rice & Ashby, 2007; Seo, 2008). They are effective in using metacognitive and cognitive learning skills (Mills & Blankstein, 2000), have more effective time management skills (Klibert, Langhinrichsen – Rohling, & Saito, 2005) and a high level of self-efficacy (Locicero & Ashby, 2000). Maladaptive, "unhealthy" perfectionism is described as an assessment and ongoing concern about errors, doubt in their own abilities, feelings of guilt and shame (Fedewa, Burns, & Gomez, 2005). Maladaptive perfectionists have high expectations and a high level of self-blame if they do not achieve the standards they set (Rice & Ashby, 2007). They are motivated by fear of failure and concern about what others would say if they do not meet their expectations. In addition, they avoid certain situations, such as refusing to give an answer unless they are fully confident in it, so they procrastinate further.

Given the negative ramifications of procrastination in students, and lack of insight into its determinants, the aim of this study was to examine the relations of academic achievement, self-efficacy and perfectionism with procrastination in students, especially focusing on possible mediational paths that serve as mechanism at the base of procrastination.

Method

Participants and Procedure

A total of 227 university students (143 female, 84 male, mean age 20.59) participated in the study. Students from different faculties were involved in the study; Faculty of Economics (8,8%), Faculty of Electrical Engineering, Computer Science and Information Technology (28,2%), Faculty of Humanities and Social Sciences (22,4) and Faculty of education (18,9%), Faculty of law (21,6). The sample was convenient, i. e. there was no recruitment criteria except being a full time student at given faculties. The study was approved by institutional ethics committee, and permissions from each faculties dean was obtained. The questionnaires were administered during regular classes, and their order varied randomly. At the beginning of each questionnaire set, there were questions about socio-demographic variables (gender and age) and academic achievement at the end of last academic year (range from 1 to 5). The examination was anonymous and participant knew that they could terminate their involvement in the study at any time without consequences.

Measures

Procrastination. Tuckmans procrastination scale – short form (TPS; Tuckman, 1991) was used to measure procrastination. It is a 16 item self-report measure of students' procrastination as a result of their ability to self-regulate or to manage their work schedule. The participants are supposed to rate each item on a 5-point scale ranging from 1 (doesn't apply to me at all) to 5 (completely applies to me). Possible range of the results is 16 to 64 with higher scores meaning higher tendency to procrastinate. Reliability coefficient was 0.93. **Perfectionism.** Almost Perfect Scale – Revised (APS-R; Slaney Rice, Mobley, Trippi, & Ashby, 2001) was used to measure perfectionistic tendencies. It is a 23 item self-report measure of adaptive and maladaptive aspect of perfectionism. The participants are supposed to rate each item on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). APR – R measures three dimensions; Standards – a person's tendency to set high standards for him/herself (7 items), Discrepancy – a person's perception that he/she cannot meet those standards (12 items), and Order - a person's need for order and organization

(4 items). Standards and Order reflect adaptive perfectionistic tendencies, while Discrepancy reflects maladaptive tendencies. Possible ranges are as follows; Standards (7 - 49), Discrepancy (12 to 84), and Order (4 to 28). Reliability coefficients were .86 for Standards, .91 for Discrepancy, and .88 for Order. **Self-efficacy.** General self-efficacy Scale (GSE; Schwarzer & Jerusalem, 1995) was used to measure self-efficacy. GSE scale is a 10 item self-report measure of a person's sense of efficacy in dealing with everyday situations and adapt to stressful life events. Participants sre supposed to rate each item on a 4-point scale ranging from 1 (not at all correct) to 4 (completely correct). Possible range is 10 to 40, with higher scores meaning higher sense of self-efficacy. Reliability coefficient was .84.

Results

Descriptive data are presented in table 1.

Table 1. *Descriptive data for measured variables*

Variable	*M*	*SD*	Range.	Theoretical range
Procrastination	45.60	14.93	16-80	16-80
Standards	36.24	7.48	8-49	7-49
Order	21.68	5.02	5-28	4-28
Discrepancy	41.20	13,77	13-81	12-84
Self-efficacy	31.22	3.98	19-40	10-40
Academic achievement	3.67	0.56	2.30-5.00	1 - 5

First, we examined correlations between gender, age, academic achievement, self-efficacy, perfectionism and procrastination. Correlations are shown in table 2.

Table 2. *Correlations matrix*

	1	2	3	4	5	6	7
1. Gender	-						
2. Age	.09	-					
3.Academic achievement	-.23**	-.10	-				
4. Self-efficacy	.01	-.01	.16*	-			
5. Standards	-.30**	-.10	.32**	.31**	-		
6. Order	-.31**	-.08	.24**	.16*	.43**	-	
7. Discrepancy	.00	-.00	-.11	-.32**	.13	-.02	-
8. Procrastination	.16*	.14*	-.28**	-.31**	-.43**	-.53**	.31**

* $p<0.05$, ** $p<0.01$

As expected, self-efficacy, as well as all three perfectionism dimensions were correlated with procrastination; self-efficacy, Standards and Order negatively, and Discrepancy positively. Furthermore, female and more successful students procrastinated less, while older students tended to procrastinate more. However, correlations of gender and age with procrastination were very low and their significance could have been due to sample size.

Next, a hierarchical regression analysis was performed in order to investigate the effects self-efficacy and perfectionism on procrastination. Gender, age, and academic achievement were entered in the first step of the HRA, self-efficacy in the second, and perfectionism dimensions in the third. HRA enables researchers to test predictions according to a proposed model, and it enables testing for possible mediations, which was important given the aim of our study.

Table 3. *Summary of hierarchical regression analysis predicting procrastination*

Predictor	B	ΔR^2
1. step		
Gender	.10	
Age	.12	.10***
Academic achievement	-.25***	
2. step		
Gender	.09	
Age	.12	.07***
Academic achievement	-.20**	
Self-efficacy	-.30***	
3. step		
Gender	.05	
Age	.08	
Academic achievement	-.06	
Self-efficacy	-.04	.30***
Standards	-.26***	
Order	-.39***	
Discrepancy	.32***	

*** p<0.001 ** p<0.01

The results show that, out of the variables entered in the first step, only academic achievement predicted lower procrastination. After controlling for variables in the first step, self-efficacy predicted lower procrastination in the second step. After controlling for variables in the first two steps, all three perfectionism dimensions predicted procrastination (Standards and Order negatively, and Discrepancy positively). Total variance explained by this model was 47%. However, once perfectionism was entered in the third step of the equation, neither academic achievement nor self-efficacy showed significant effects, suggesting that their effects were mediated. Preacher and Hayes (2008) suggest a bootstrapping method of testing multiple mediations instead of several simple mediations (Preacher & Hayes, 2008). So, instead of checking further whether the results meet Barons and Kennys (1989) requirements for mediation and then supplementing it with a Sobel test, we performed an analysis for testing

multiple mediations between a single predictor and criterion - for the relation between academic achievement and procrastination (potential mediators being self-efficacy and perfectionism dimensions). The results are shown in table 4.

Table 4. *Mediations of academic achievement on procrastination through self-efficacy and perfectionism (standards, order and discrepancy)*

Total effect of academic achievement on procrastination					
	Effect	SE	T	p	Bootstraping BCa 95% CI
					Lower Upper
	-6.6668	1.7656	-3.7759	.0002	-10.1466 -3.1871
Direct effect of academic achievement on procrastination					
	Effect	SE	T	p	Bootstraping BCa 95% CI
					Lower Upper
	-1.7452	1.4629	-1.1930	.2342	-4.6286 1.1381
Indirect effect of academic achievement on procrastination					
	Effect		SE		Bootstraping BCa 95% CI
					Lower Upper
Total	-4.9216		1.2009		-7.4358 -2.7092
1. Self-efficacy	-.1979		.2955		-1.0469 .2093
2. Self-efficacy - standards	**-.3189**		**.1797**		**-.8252** **-.0704**
3. Self-efficacy – order	-.0797		.1673		-.5099 .1906
4. Self-efficacy-discrepancy	**-.5717**		**.2971**		**-1.3284** **-.1226**
5. Standards	**-1.5419**		**.6656**		**-3.2809** **-.5414**
6. Order	-.8424		.6813		-2.3480 .3333

Table 4. *Mediations of academic achievement on procrastination through self-efficacy and perfectionism (standards, order and discrepancy)* (Continued)

7. Discrepancy	-1.0789	.6413	-2.4341	.1214
Comparison of indirect effects				
2 vs 4	.2527	.2221	-.0356	.8947
2 vs 5	**1.2230**	**.6594**	**.2370**	**2.9628**
4 vs 5	**-.4120**	**.2512**	**-1.1342**	**-.0707**

As can be seen in table 4, the difference between total and direct effects of academic achievement on procrastination (i.e. total indirect effect) was significant with confidence interval not containing zero, while direct effect was not, confirming that the effect of academic achievement on procrastination was mediated. However, upon inspection of specific indirect effects, it was clear that not all potential paths were significant. When it comes to single mediations, only Standards were a significant mediator. However, even though self-efficacy by itself did not mediate the relation between academic achievement and procrastination, the paths through self-efficacy and standards, as well as self-efficacy and discrepancy were significant. Basically, our data suggest that, self-efficacy is not a strong enough mediator by itself, but together with Standards and Discrepancy it does mediate between academic achievement and procrastination. Furthermore, pairwise comparisons of the magnitude of significant indirect effects showed that mediation through self-efficacy and Standards was stronger than mediation through Standards alone, which was stronger than mediation through self-efficacy and Discrepancy. In order to clarify the directions of indirect effects, table 5 shows the results of regressing perfectionism dimensions that were significant mediators on academic achievement and self-efficacy, and regressing self-efficacy on academic achievement.

Table 5. *Regressing standards and discrepancy on academic achievement and self-efficacy, and self-efficacy on academic achievement*

Criterion	*Predictors*	β	t	p
Standards	Academic achievement	.28	4.51	.000
	Self-efficacy	.26	4.22	.000
Discrepancy	Academic achievement	-.06	-.94	.349
	Self-efficacy	-.32	-4.95	.000
Self-efficacy	Academic achievement	.16	2.37	.019

As seen in table 5, lower academic achievement leads to lower self-efficacy, which can lead to less adaptive perfectionism or more maladaptive perfectionism, both of which can lead to more procrastinating. **Discussion**

The aim of our study was to examine the possibility of predicting procrastination based on academic achievement, self-efficacy and perfectionism, and to examine possible mediated effects.

Results of our study are consistent with previous research showing negative relations between academic achievement and procrastination (Steel, 2007; Solomon & Rothblum, 1984; Akinsola, Tella, & Tella, 2007; Fritzsche, Young, & Hickson, 2003; Jackson, Fritch, Nagasaka, & Pope 2003; Kljajic & Gaudreau, 2018; You, 2015). According to Steel (2007), procrastination is essentially self-handicapping behavior resulting from deficits in self-regulation, which understandably lead to poorer achievement. However, he believes that poor self-regulation in procrastinators could also explain why poor success can lead to more procrastinating, due to negative emotions following failure.

Academic achievement was positively correlated with self-efficacy, Standards and Order (adaptive perfectionism) which is also consistent with previous researches. Adaptive perfectionism is associated with various positive outcomes and characteristics including life satisfaction, extraversion, conscientiousness, persistence, hope, self-efficacy, resilience, optimism and success in examinations (Bieling, Israeli, Smith, & Antony, 2003, Chang, Watkin, & Banks, 2004; Hicks & Meng Yao Wu, 2015; Parker & Stumpf, 1995; Parker, 2000 Pintrich and De Groot, 1990) stated that students, who believe in their own capabilities, use more cognitive and

metacognitive strategies and are more likely to persevere in the task, thus more likely to succeed, compared to students who do not believe in their own ability to perform the task.

Age and gender also correlated significantly with procrastination, in a sense that students in the initial years of studying procrastinate less than graduate students, and male students procrastinate more than female students. Other studies have also shown that age and gender can affect delaying behavior, and authors assume that male students delay execution of academic commitments because they have poorer self-control, are more impulsive and more easily distracted by other activities than female students (Ferrari et al., 1995; Khan, Arif, Noor, & Muneer, 2014).

Similarly to other studies, Standard, Order and self-efficacy (negatively), as well as Discrepancy (positively) correlated with procrastination (Chang, 2014; Flett et al., 1992; Frost et al., 1990; Harrison, 2014; Hicks & Meng Yao Wu, 2015; Jadidi, Mohammadkhani, Shahram, & Komeil, 2011; Klibert et al., 2005; Narges, Salman, & Baharak, 2014; Onwuebuzie, 2000). Due to unrealistic and excessive expectations from themselves (whether self-imposed or perceived from others), maladaptive perfectionists are not like to feel in control and confident in achieving those standards. The discrepancy between personal or socially prescribed standards and one's ability is likely to lead to fear of failure, anxiety (Holloway, 2009), as well as worries about others' opinion of them, which may lead to procrastination as an attempt to avoid failure. Adaptive perfectionists, on the other hand, procrastinate less because they are motivated towards achievement, self-confident, and persistent in their efforts to achieve goals they have set for themselves (Seo, 2008). This assumption is also supported by positive correlations of self-efficacy with Standards and Order, and negative correlations with Discrepancy in our study.

A negative correlation between self-efficacy and procrastination is in line with other studies (Cerina, 2014; Tuckman, 1991; Ferrari, Packer, & Ware, 1992; Klassen, Krawchuk, & Rajani, 2008Tuckman and Sexton, 1992) found that the belief in one's efficacy mediates between external events (i.e. academic success or failure) and self-regulation. Given the fact that procrastination is, according to Steel (2007), a failure in self-regulation, Tuckman and Sexton (1992) concluded that lower sense of personal

efficacy in dealing with external events leads to procrastination. These findings are also in line with Bandura's (1977) theory of self-efficacy. Bandura (1977) concluded that strong beliefs about efficacy lead to initiating and perseverance in the task, while weak beliefs about the efficacy lead to weaker perseverance in the task as well as avoidance, which is a form of procrastination. High levels of self-efficacy are associated with positive outcomes, such as flexible coping skills, promotion of healthy behaviors and better psychological adjustment to stressful situations, while low levels of self-efficacy are associated with negative outcomes, such as depression, anxiety and helplessness (Ashby & Rice, 2002; Scholz, 2002), all of which are also associated with procrastination (Flett, Blankstein, & Martin, 1995; Ferrari, 2000).

As expected perfectionism was significantly correlated with procrastination, Standards and Order negatively, and Discrepancy positively, with Order showing the highest correlation with procrastination. Therefore, our results suggest that being an adaptive perfectionist (i.e. having high standards and being organized and punctual) is beneficial to students, as long as there is not a discrepancy between what they strive to achieve and what they actually achieve (or perceive to have achieved). Studies have confirmed negative relations of adaptive perfectionism and procrastination (Blackler, 2011; Harrison, 2014; Hicks & Meng Yao Wu, 2015; Rahmani, Zarei, & Hamedi, 2014). However, when it comes to maladaptive perfectionism, results are inconsistent, with some studies reporting positive relations with procrastination (Rahmani, Zarei, & Hamedi, 2014; Rice, Richardson, & Clark, 2012), while others have found no significant relation with procrastination (Blackler, 2011; Harrison, 2014; Seo, 2008). Those discrepancies could have been caused by different measures of perfectionism used in each study, or it is possible that the relation of procrastination with maladaptive perfectionism is not as straight forward as with adaptive perfectionism. Indeed, Blackler (2011) found that gender and mood moderated the relationbetween maladaptive perfectionism and procrastination.

Perfectionism and self-efficacy have similar behavioral patterns (Burns, 1980), so it is not surprising that they were correlated. There are two patterns of behavior in adaptive and maladaptive perfectionists. Maladaptive perfectionists have a strong fear of failure and they worry of

what others think of them (Fedewa, Burns, & Gomez, 2005). As opposed to maladaptive perfectionists, adaptive perfectionists have a strong motivation for success and achievement. They demonstrate approach behavior because they want to constantly improve themselves, learn, and be excellent (Seo, 2008). Therefore, the differences in motivation between maladaptive and adaptive perfectionist might be the main factors accounting for the difference in their relations with procrastination.

Prediction of Procrastination Based on Perfectionism and Self-Efficacy

We used hierarchical regression analysis to examine prediction of procrastination based on academic achievement, self-efficacy and perfectionism. Both academic achievement and self-efficacy were significant predictors of procrastination in the expected direction. However, once perfectionism was entered in the third step of HRA, neither academic achievement nor self-efficacy showed significant effects. All three perfectionism dimensions predicted procrastination (Standards and Order negatively, and Discrepancy positively). Given that both academic achievement and self-efficacy were no longer significant after entering perfectionism in HRA, we tested mediational paths between academic achievement and procrastination; through self-efficacy alone, through self-efficacy and each perfectionism dimensions, and through each perfectionism dimension alone.

Mediation analysis has shown that lower academic achievement leads to lower self-efficacy, which can lead to less adaptive perfectionism or more maladaptive perfectionism, both of which can lead to more procrastinating. Interestingly, even though Order has shown the highest correlation with procrastination, it was not a significant mediator. Students, who are organized and punctual, usually don't procrastinate. However, failure (or low academic achievement) and consequent low self-efficacy should not affect someone's tendency for order. On the other hand, poor academic achievement can make a student doubt his or her ability to achieve goals. As a result, they will reduce their expectations (i. e. Standards) and thus procrastinate. Similarly, it can also lead to bigger discrepancy between what students strive for and what they actually achieve (or what they perceive their achievement to be). Therefore, our results suggest that there are two distinct paths between low self-efficacy and procrastination, one decreasing

adaptive perfectionistic tendencies and one increasing maladaptive perfectionistic tendencies. Although we are not aware of studies testing this particular directions of effects, there are studies suggesting that reduction in motivation (both intrinsic and extrinsic) might be the mechanism by which adaptive perfectionism affects procrastination, while emotional states (such as depression, anxiety or fear of failure) might account for relation between maladaptive perfectionism and procrastination (Chang, 2014; Schouwenburg, 1992). Simply put, first path would mean that after lowering their standards, students procrastinate because they are no longer motivated, probably because those goals are not as appealing anymore. Second path would mean that student procrastinate to avoid negative feelings associated with maladaptive perfectionism.

It is worth mentioning that, while low academic achievement did predict low self-efficacy, the path containing self-efficacy alone was not significant. It is possible that only perfectionists are at risk for procrastination after failure, because low self-efficacy will affect their perfectionistic tendencies, while non-perfectionistic students are less likely to start procrastinating even though their self-efficacy is diminished. However, we are not aware of any studies examining the moderating role of perfectionism in the relation of failure, self-efficacy and procrastination, so this assumption remains to be tested.

Implications and Limitations

The major contribution of our study is in examining directions of effect, which are still understudied. First, the attention is usually focused on procrastinations effects on academic achievement, but rarely the other way around. We feel that our results highlight an important risk for students who are vulnerable to procrastinating, but have not yet been in a position to do so. Poor success, especially when first starting University, may be the trigger which leads students to procrastinate, even if they have not done so before (probably due to a relatively structured schedule in high school). This hypothesis is supported by results, which show that students who procrastinate have a low risk of stress and stress-related illness at the beginning of the semester, while a higher degree of stress and illness occurs later during the semester (Tice & Baumeister, 1997). Second, in examining relations between self-efficacy, perfectionism and procrastination, authors

focus on self-efficacy as a mediator between perfectionism and procrastination. We are not aware of any studies testing whether perfectionism mediates the relations of academic achievement and self-efficacy with procrastination. We believe that our findings provide a better insight into this, relatively unexplored, relations and provide important implications.

There are few implications of this study that are important for students' education. Student should be taught about planning and time organization because, in high school, obligations and responsibilities are more structured , as opposed to University, where responsibility for organizing their time is entirely on them. It would be useful to teach students efficient ways of dealing with failures, in order to prevent feelings of inadequacy after initial failures. Students should also be taught to set realistic goals and to expect success. Interventions to overcome academic procrastination can include exercises to improve perceived time control and highlighting experience where tasks are successfully completed on time. Finally, feedback from teachers could help students, who are afraid of failure and perfectionistic (Fritzsche, Young, & Hickson, 2003). It would be advisable for teachers to build feedback into student's assignments, so that all students get constructive and informative feedback for their work from the teachers or their colleagues.

Furthermore, there are implications for Universities counseling services, in a sense that attention should be given to identifying the effects of academic underachievement and self-efficacy on perfectionism and procrastination, for they might require different approaches. When it comes to effects on adaptive perfectionism, interventions should include improving self-efficacy, learning skills and reevaluating ones goals. On the other hand, when it comes to maladaptive perfectionism, attention should be focused on possible distortions. Maladaptive perfectionists are usually not realistic in their goal setting nor evaluating their actual performance. Therefore, interventions should include more realistic goal setting, correcting distortions about ones capabilities, discrepancy between goals and achievement, tolerance of occasional setback and equating mistakes with failure.

Future research should focus on identifying students, who are at risk of procrastinating based on personal characteristics (e. g. personality factors),

other motivational factors (e. g. goal orientations or task value), or their interactions. Identifying risk factors and mechanisms through which they affect procrastination as well as moderating factors could help efforts to prevent procrastination. Finally, there are some limitation of this study that should be addressed. First, the sample vas convenient, and the proportion of students from different faculties in the sample did not fully correspond to the population. Self-report measures were used to assess self-efficacy, perfectionism and procrastination, which increases the likelihood of socially desirable responses. Finally, correlational nature of the design limits the possibility of conclusions about causality.

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Grade Level Differences in the Cognitive, Behavioral, and Physiological Components of Test Anxiety

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Grade Level Differences in the Cognitive, Behavioral, and Physiological Components of Test Anxiety

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Abstract

The capacity to cope with test anxiety that contain high concentrations of cognitive, behavioral, and physiological manifestations, is becoming increasingly important in educational contexts as well as evaluative settings. The developing ability to deal with test anxiety relative to the increasingly strict evaluative practices students encounter points that students' test anxiety may decline as they move through school years. This study examined three test anxiety components (*thoughts*, *off-task behaviors*, and *autonomic reactions*) with students from 3 public schools in İstanbul, Turkey. Using a diverse sample of elementary (Grade 4; N = 414) and middle (Grade 6; N = 201) school students, grade level differences in these components were investigated. Applying a multivariate approach, significant differences were found in the overall test anxiety, favoring fourth grade students. The results also revealed Grade 4 advantage for *off-task behaviors* and *autonomic reactions*, η^2= .014 and η^2= .011, but no grade level differences in the *thoughts*. Educational implications of the findings are discussed.

Keywords: test anxiety, thoughts, off-task behaviors, autonomic reactions, grade level, individual differences

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Diferencias en el Nivel de Grado en los Componentes Cognitivos y Fisiológicos de la Ansiedad ante los Exámenes

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Abstract

La capacidad de hacer frente a la ansiedad ante los exámenes que contienen altas concentraciones de manifestaciones cognitivas, conductuales y fisiológicas, es cada vez más importante en contextos educativos, así como en los entornos evaluativos. La capacidad de desarrollar para tratar la ansiedad ante los exámenes con respecto a las prácticas de evaluación cada vez más estrictas de los estudiantes encuentra puntos que la ansiedad ante los exámenes de los estudiantes puede declinar mientras que se mueven a través de años escolares. Este estudio examinó tres componentes de la ansiedad ante los exámenes (pensamientos, comportamientos fuera de la tarea, y reacciones autonómicas) con los estudiantes de 3 escuelas públicas en Estanbul, Turquía. Utilizando una muestra diversa de estudiantes de primaria (Grado 4, N = 414) y medio (Grado 6; N = 201), se investigaron las diferencias por curso en estos componentes. Aplicando un enfoque multivariado, se encontraron diferencias significativas en la ansiedad ante los exámenes en general, favoreciendo a los estudiantes de cuarto grado. Los resultados también revelaron la ventaja del Grado 4 para los comportamientos fuera de la tarea y las reacciones autonómicas, η^2= .014 y η^2= .011, pero no hay diferencias por curso en los pensamientos. Se discuten las implicaciones educativas de los hallazgos.

Palabras clave: ansiedad ante los exámenes, pensamientos, comportamientos fuera de la tarea, reacciones autonómicas, nivel de grado, diferencias individuales

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The undeniable fact is that the educational accountability movement in all over the world has greatly increased the importance of testing has on educational and occupational outcomes of students (Baş, 2016; Schwarzer & Bowler, 1982; Segool, Carlson, Goforth, von der Embse, & Barterian, 2013). Besides, testing is a common practice in contemporary society (Lowe, Lee, Witteborg, Prichard, Luhr, Cullinan et al., 2008) as "we live in a test-conscious, test-giving culture in which the lives of people are in part determined by their test performance" (Sarason, 1959, p.26). When one considers the influence of the results of tests used for making important decisions about a student's status in school, university, and further in work (Zeidner, 1998), it is likely that evaluations and evaluative contexts may produce test anxiety in students.

Testing is widely used in Turkish schools. That is, students taking national standardized test and classroom examinations are a common occurrence in Turkish schools. Nationwide standardized tests, such as Transition from Basic Education to Secondary Education Exam (Grade 8) and Undergraduate Placement Exam (Grade 12) conducted by the Ministry of National Education and the Measurement, Selection and Placement Centre, respectively, have contributed to increased testing and testing requirements in Turkish schools (e.g., Berberoğlu & Kalender 2005). The prevalence and stakes of standardized testing for elementary, middle, and high school students have also dramatically increased in other countries by requiring annual testing of nationwide academic achievement in the areas of mathematics, science, and/or reading (e.g., Bodas & Ollendick, 2005; Segool et al., 2013).

Drawing on these assertions, it is no wonder that test anxiety will continue to be a serious and pervasive problem among elementary (e.g., Bodas & Ollendick, 2005; Ergene, 2003), middle (e.g., Putwain & Best, 2011; Wren & Benson, 2004), high (e.g., Lowe 2014; Lowe et al. 2008) school students, and even among undergraduate and graduate students (e.g., Chapell et al., 2005; Hembree, 2008; Huntley, Young, Jha, & Fisher, 2016). In general, test-anxious students feel worried and nervous before, during, or after tests (Spielberger & Vagg, 1995), and thus exhibit apprehensive and inattentive behaviors in testing situations (Putwain, 2007). These students perform overwhelmingly poor on standardized achievement tests (Bodas &

Ollendick, 2005; Everson, Millsap, & Rodriguez, 1991) and/or experience academic failure (Chapell et al., 2005; Lowe, Grumbein, & Raad, 2011).

With the rise in test anxiety among elementary, middle, and high school students, it is possible that the test anxiety construct may not be the same for children and adolescents due to developmental differences (Wren & Benson, 2004) and/or scholastic differences (Wigfield & Eccless, 1989). As the test anxiety among students appears as early as Grade 2 (Hill, 1972) and heightens throughout school years (Hembree, 1988), there is a need to investigate the grade level differences in students' test anxiety.

Although a substantial amount of research documented that test anxiety has negative effects on students' learning and academic achievement (Sub & Prabha, 2003) and that individual differences occur in the test anxiety (see Hembree 1988 for an extensive review), there have been few attempts to systematically analyze these differences. A broad body of research focused on investigating gender-related differences in test anxiety (e.g., Bandalos, Yates, & Thorndike-Christ, 1995; Lowe & Lee, 2008; Putwain, 2007; Zeidner, 1990). This study strives to fill this gap in test anxiety research by taking into account the disparity across grade levels. It is important to note that the objective of this study was grade level differences and that gender differences regarding test anxiety were investigated within the previous studies of the author (see Aydin (2019) for details).

As mentioned above, researchers have shown that levels of test anxiety and concomitant patterns of educational outcomes are apparently different for students attending to elementary, middle, and high school students (e.g., Hembree, 1988; Wigfield & Eccles, 1989). The present study investigates this important issue of potential differences between elementary and middle school students using a Turkish sample of fourth and sixth graders. The findings may lead to a better understanding of developmental issues related to test anxiety that is considered to be a significant educational problem affecting students in schools as well as universities (Everson et al., 1991).

Test Anxiety

Test anxiety has been defined as the cognitive, physiological, and behavioral responses surrounding the concerns about the possibilities of poor

performance on a test (Bodas, Ollendick, & Sovani, 2008) or consequences of negative evaluation on an upcoming test (Zeidner, 1998). Taken as a whole, all these reactions occur in association with concerns about the negative outcomes resulting from failure in evaluative situations (Segool et al., 2013).

In the early days, test anxiety was viewed as consisting of two components: *worry* and *emotionality* (Liebert & Morris, 1967). The *worry* component includes evaluative concerns about one's performance, whereas the *emotionality* component involves subjective awareness and/or interpretation of physiological arousal in evaluative situations. Previous research (Lowe & Lee, 2008; Lowe et al., 2008) confirms that psychological (e.g., emotional or cognitive), physiological (e.g., biological), and social (e.g., parent pressure) factors contribute to development and expression of test anxiety. That is, individuals are involved in three different processes to express test anxiety including their cognition (i.e., worry), behavior (i.e., task-relevant and task irrelevant actions), and physiology (i.e., emotional arousal). In association with these factors, Wren and Benson (2004) also conceptualized test anxiety as consisting of three distinct but interrelated components: *thoughts*, *off-task behaviors*, and *autonomic reactions*. The *thoughts* component involves individuals' internal dialogue regarding evaluative situations. It centers on self-critical, test-relevant, and test-irrelevant concerns (e.g., feeling unprepared for evaluative situations or causing sorrow for parents). The *off-task behaviors* component includes attentional symptoms of task-irrelevant stimuli. It focuses on nervous habits and other distracting behaviors (e.g., object manipulation or inattentive behaviors). The *autonomic reactions* component encompasses somatic responses to test-related stress (e.g., physiological manifestations or somatic signs). Viewed together, students with test anxiety perceive evaluative situations as threatening, and thus fail to concentrate on the task at hand because of dividing their attention among the task, their cognitions and emotions about how they are doing.

Given the above-mentioned review of research on test anxiety developed over the years, it can be concluded that the paradigms differ in how they conceptualize the test anxiety (Lowe et al., 2008). There appears, however, an agreement among researchers that test anxiety is a complex (Zeidner, 1998) and a multidimensional (Benson, 1998) construct. Across all the

studies employing this view, the comparability of thoughts, off-task behaviors, and autonomic reactions, and their different relations to performance suggest that it is useful to distinguish among these three components of test anxiety. For instance, high test–anxious students have more test-related concerns (*thoughts*), attend less well to important concepts/procedures needed to solve a problem (*off-task behaviors*). High test-anxious students who repeat nervous habits also have been shown to display somatic responses during problem solving (*autonomic reactions*). Accordingly, test anxiety can be considered to interfere with performance in different school years, and that there might be different components of anxiety in, for instance, elementary school students and in middle school students (Wigfield & Eccles, 1989; Zeidner, 1998).

In this regard, it is sound to assume that students experience anxiety in different ways and for different reasons (Wigfield & Eccles, 1989). To further build on this assumption, researchers need to examine more fully individual differences in how students display test anxiety in evaluative situations.

Grade Level Differences

Grade level differences have been documented on test anxiety in the elementary, middle, and high school (e.g., Bodas et al., 2008; Wigfield & Eccles,1989) as well as undergraduate and graduate (e.g., Hembree, 1988) student populations, with participants reporting higher levels of overall test anxiety in the early school years (e.g., Bodas et al., 2008; Lowe et al., 2008). In practical terms, test anxiety scores are shown to rise to a high point in junior high (Grade 9) and level off through the rest of high school (from Grade 10 to Grade 12). Researchers on test anxiety have also suggested that students attending to diverse grade levels may differ in some components of test anxiety (e.g. Bodas et al. 2008; Lowe 2014; Wren & Benson 2004). Some of these differences may be explained in terms of developmental differences. For example, students in lower grades are found be less aware of their cognitions and emotions (Harter, 1983), and thus tend to have higher test anxiety in terms of their thoughts, off-task behaviors, and autonomic reactions (Lowe et al., 2008) or their worry and emotionality (Bodas et al., 2008).

Hembree (1988) investigated the results of test anxiety studies integrated by meta-analysis to show the correlates, causes, effects, and treatment of test anxiety among students in different grade levels (K-12 through graduate). Of the 562 studies reviewed, 360 studies, to some extent, shed light into the grade level differences in test anxiety. Hembree found that students in the early grades have little test anxiety, but its prevalence increases sharply in Grades 3 to 5, stays fairly constant through high school, and lowers in university years. Indeed, Bodas et al. (2008) indicated that middle school students (Grades 5 to 7) displayed higher levels of overall test anxiety; specifically worry and emotionality than did high school students (Grades 8 to 9). With respect to national research on grade level differences in test anxiety (Yenilmez & Özbey 2006), a fairly consistent finding is that lower grade students (Grade 5) tend to be more test anxious compared to higher grade students (Grades 6 and 7). In stark contrast to this downward developmental trend, Lowe (2014) documented that high school students (Grades 9 to 12) exhibited higher cognitive interference, task irrelevant behavior, and worry than did middle school students (Grades 6 to 8).

Little research on grade-level trends on the different components of test anxiety (e.g., Lowe et al., 2011) showed that students in lower grades endorse similar levels of cognitive interference and worry, resulting in nonsignificant differences. Similarly, Wren and Benson (2004) indicated that students' test anxiety regarding the thoughts, off-task behaviors, and autonomic reactions components tends to be stable as they progress through elementary to middle school (Grades 3 to 6). National research also pointed out no significant differences in test anxiety among middle school (Grades 6 to 8) and high school (Grades 9 to 11) students (Oksal, Durmaz, & Akın 2013; Yenilmez & Özabacı 2003).

Viewed together, research on the grade level differences related to the test anxiety and its components has proved to be inconclusive. However, the relevance of the findings is that students experience changes in components and amount of test anxiety as they move through grade levels (Hembree, 1988). Likewise, students' test anxiety may vary somewhat with age (Lowe, 2014). As students develop with a growing understanding of themselves and how they compare with their peers (Yeung, 2011), these variations in specific age groups that reflect, to some extent, the grade level disparity in test anxiety should be carefully examined.

Against this background of the literature, the purpose of the present study was to investigate the grade level differences in three components of test anxiety thoughts, off-task behaviors, and autonomic reactions. In this regard, it was hypothesized that (i) Students in Grade 4 would exhibit higher levels of overall test anxiety than did students in Grade 6, and (ii) Students in Grade 4, compared to students in Grade 6, would have an increased test anxiety in terms of thoughts, off-task behaviors, and autonomic reactions.

Methods

Procedure and Participants

The Children's Test Anxiety Scale (CTAS) was administered to students during 2014/2015 academic year in İstanbul, a major metropolitan city in Turkey. Each student received a copy of the 30-item instrument, which included demographic questions (i.e., school, class affiliation, and grade level), written instructions (i.e., requesting students to respond in terms of how they think, feel, or act during a test), and a sample item for practice (i.e., each question is responded with a stem "While I am taking a test…"). All administrations were completed in the students' classrooms during regular school hours within one class period (40 min). School administrators, teachers, and students were assured of confidentiality.

Participants were from three public elementary and middle schools. With 24 participating classes from Grade 4 (N = 15) and Grade 6 (N = 9), 648 students who were present on the days of data collection were the initial sample. The reason for selecting particularly Grade 4 and Grade 6 students was to provide a supportive lens to the differences among elementary (e.g., Grade 4) and middle (e.g., Grade 6) school students which were consistently documented in previous studies on test anxiety and reviewed in the above lines. In addition, when the developmental level of the students were taken into consideration together with the fact that the CTAS was originally developed for students from Grade 3 to Grade 6, choosing the sample of students from these particular grade levels would be accurate for drawing conclusions about the differences between elementary (e.g., Grade 4) and middle (e.g., Grade 6) school students. Prior to data analysis with this initial sample, missing data analysis was conducted. In this regard, Little's MCAR

test (Little, 1988) was performed to examine the item non-response in the data set (i.e., demographic and outcome variables). Results revealed that the data were missing completely at random (MCAR) (p= .573, p > .05). Given the low percentage of overall nonresponse rate (0.09%) of the data and that, the data are MCAR; the listwise deletion procedure that would give unbiased estimates (Cohen, Cohen, West, & Aiken, 2003) was used. Following that, 25 cases from the Grade 4 sample and 8 cases from the Grade 6 sample were eliminated due to showing insincerity in their responses (e.g., all "1"s or all "5"s), not completing the instrument, multivariate outliers (2 cases), or missing demographic information (e.g., grade level not specified), leaving 414 fourth graders (205 females and 209 males) and 201 sixth graders (100 females and 101 males), with a total of 615 students. The mean age of the participants were 9.62 and 11.73 for Grade 4 and Grade 6, respectively.

Measures

Children's Test Anxiety Scale (CTAS)

In order to measure students' overall test anxiety with particular reference to their *thoughts*, *off-task behaviors*, and *autonomic reactions* the CTAS, originally developed by Wren and Benson (2004) was used.

The instrument was adapted to Turkish by Aydin and Bulgan (2017). In line with the recommendations of the Standards for Educational and Psychological Testing (AERA, APA, & NCME 1999), two studies were conducted for the cross-cultural validation of the CTAS. Study 1 involved two phases: translation of the CTAS into Turkish and piloting of the instrument. Study 2 involved four phases to test the applicability of the CTAS: test administration, confirmatory factor analyses, reliability analysis, and subgroup validity analysis. In brief, findings from the adaptation process confirmed that the underlying structure of the CTAS is formed by three components that assess thoughts, off-task behaviors, and autonomic reactions. Results of the confirmatory factor analysis provided evidence based on construct validity indicating that the three-factor model fit the data well: (χ^2= 1414.72, df = 356.35, p = .00, χ^2/ = 3.97, RMSEA= .05, SRMR= .05, CFI= .97, GFI= .92, AGFI= .90). Findings demonstrated that the 30-item CTAS was comprised of three subdimensions: Thoughts, Off-Task

Behaviors, and Autonomic Reactions. Findings of the reliability analysis indicated that the internal consistency estimates (coefficient alpha) of scores for the three components were .82, .72, and .75 for thoughts, off-task behaviors, and autonomic reactions, respectively. The reliability coefficient for the total instrument was α= .88. All these estimates were higher than .60 indicating satisfactory reliability for both the whole instrument and its sub-dimensions (Tabachnick & Fidell, 2007) and that scores on the CTAS provide consistent information with regard to students' test anxiety.

The scale included 30 items. Specimen items are: "While I am taking tests I worry about doing something wrong." (*thoughts;* 13 items), "While I am taking tests I tap my feet." (*off-task behaviors*; 8 items), "While I am taking tests I feel warm." (*autonomic reactions*; 9 items). Participants rated themselves on the 4-point scale: (1) *almost never*, (2) *some of the time*, (3) *most of the time*, and (4) *almost always*. The possible scores on the CTAS ranged from 30 to 120. High scores on the scale indicate that the student displays high levels of test anxiety, whereas low scores show that the student demonstrates low levels of test anxiety.

Data Analysis

To examine the grade level differences, a multivariate approach to analysis of variance (One-Way MANOVA) was performed with one within-subject factor (test anxiety; 3 components) and one between-subject factor (grade level).

Three dependent variables were used: thoughts, off-task behaviors, and automatic reactions. The independent variable was grade level. Accordingly, grade level was coded as 1 = Grade 4 and 2 = Grade 6 and total scores for each component (i.e., thoughts, off-task behaviors, and autonomic reactions) and the whole scale (i.e., test anxiety). Following that coding process, preliminary assumption testing on univariate normality and homogeneity of variance matrices (i.e., Levene's test, $p > .05$) was conducted and no violations were detected. For multivariate results, the Wilks' Lambda criterion was applied using the significance level .05. To present the effect size partial eta squared (partial η^2) was calculated separately. All the analyses were conducted by using PASW Statistics 18 (Statistical Package for the Social Sciences Inc., 2010).

Results

Descriptive Statistics

The means and standard deviations of the scores on the three components and the overall test anxiety were presented by grade level in Table 1.

Table 1 Descriptive statistics by grade level

	Thoughts		Off-Task Behaviors		Autonomic Reactions		Test Anxiety	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Grade 4	32.77	8.10	15.63	4.60	18.62	5.47	67.02	15.15
Grade 6	32.81	7.71	14.47	4.25	17.42	4.85	64.70	14.16
Total	32.78	7.97	15.25	4.52	18.23	5.30	66.26	14.86

Note. $N = 615$ with Test anxiety; Grade 4 = 414; Grade 6 = 201

For the overall test anxiety, the mean score was 66.26 indicating that the majority of students felt nervous and stressed before a test, and thus exhibit inattentive or distracted behaviors. When the components of test anxiety were inspected separately, thoughts ($M = 32.78$; $SD = 7.97$) scores were the highest, followed by autonomic reactions ($M = 18.23$; $SD = 5.30$) and off-task behaviors ($M = 15.25$; $SD = 4.52$). These scores reflected that the fourth and sixth grade students had more psychological (*thoughts*) concerns than they had physiological (*autonomic reactions*) and/or behavioral (*off-task behaviors*) worries about taking tests.

More specifically, the differences between grade levels' means were minor on *off-task behaviors* and *autonomic reactions* components, and

almost negligible on the *thoughts* component (see Table 1), but the fourth graders reported slightly higher than sixth graders on all components, except for *thoughts*. This indicated that, for instance, fourth graders are more inattentive than sixth graders, and that they more frequently look around the classroom (*off-task behaviors*) or feel more scared (*autonomic reactions*) while taking a test.

Grade Level Differences

Summary statistics for the one-way MANOVA performed on the CTAS, with grade level as between subjects factor, the three components of test anxiety as within subjects factor was displayed in Table 2.

Table 2 Summary statistics for the One-Way MANOVA

Components	$F(1, 613)$	p	Partial η^2
Thoughts	.00	.959	.000
Off-Task Behaviors	8.94	.003*	.014
Autonomic Reactions	7.00	.008*	.011

*$p < .05$

Results revealed that there was a statistically significant difference between fourth grade students and sixth grade students on the combined test anxiety, $F(3, 611) = 5.45$, $p = .001$, Wilks' Lambda = .97, partial $\eta^2 = .026$. An inspection of the η^2 indicated a small effect (Cohen, 1988), and that the grade level explained 2.6% of the differences in the overall test anxiety of students in Grade 4 and Grade 6. When the results for the components were considered separately, there were statistically significant differences between fourth graders and sixth graders in *off-task behaviors*, $F(1, 613) = 8.94$, $p = .003$, partial $\eta^2 = .014$ and *autonomic reactions*, $F(1, 613) = 7.00$, $p = .008$, partial $\eta^2 = .011$. However, there were no statistically significant differences across fourth and sixth graders in *thoughts*, $F(1, 613) = .003$, $p = .959$, partial $\eta^2 = .000$. Profile plots of estimated marginal means of *thoughts*, *off-*

task behaviors, and *autonomic reactions* (Thoughts = THOUGHTS, Off-Task Behaviors = OFFTASK, and Autonomic Reactions = AUTONOM regarding the coding process) by grade level (Grade 4 = 2 and Grade 6 = 4 regarding the coding process) were presented in Figure 1, Figure 2, and Figure 3, respectively.

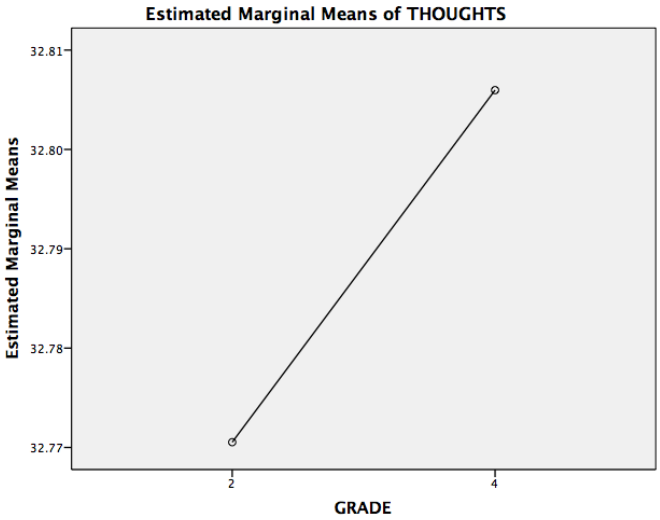

Figure 1. Profile plot of thoughts

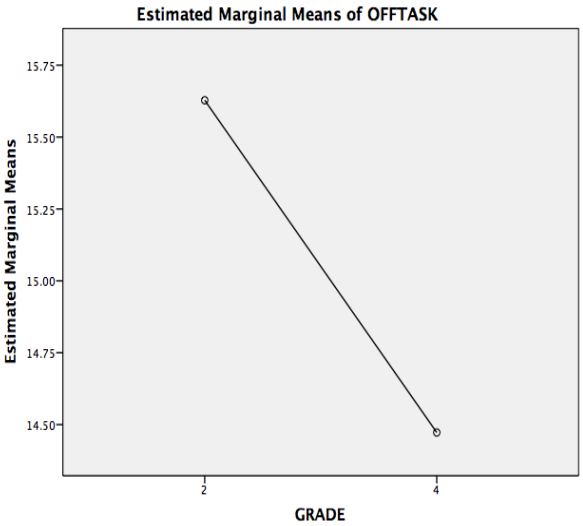

Figure 2. Profile plot of off-task behaviors

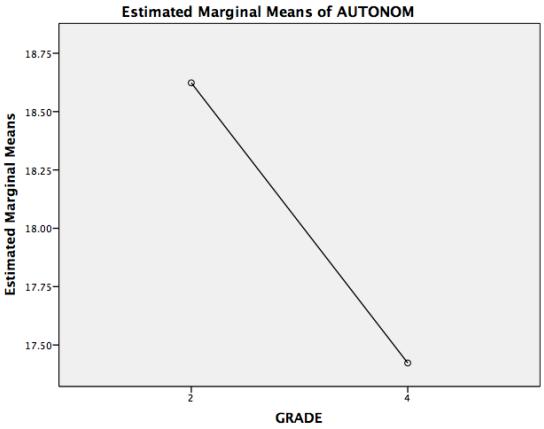

Figure 3. Profile plot of autonomy reactions

Viewed together, across each of the components except *thoughts*, the fourth grade students' mean scores were higher than that of the sixth grade students (see Table 1) with this trend most evident across the *autonomic reactions* and to a lesser extent, *off-task behaviors*. This showed that students in Grade 4 had more test-related concerns and thus react stressfully (*autonomic reactions*) or displayed more auto-manipulation (off-task behaviors) than did students in Grade 6.

Furthermore, the partial η^2 values of .000, .014, and .011 could be interpreted as negligible to small effect (Cohen, 1988) indicating that 0%, 1.4%, and 1.1% of the variance in *thoughts*, *off-task behaviors*, and *autonomic reactions*, respectively can be explained by grade level.

Discussion

The aim of this study was to examine the hypothesis that there exists grade level disparity in students' not only overall test anxiety, but also their thoughts, off-task behaviors, and autonomic reactions. Students in Grade 4 reported higher levels of overall test anxiety and specifically displayed more off-task behaviors and autonomic reactions than did students in Grade 6. Sixth graders, on the other hand, reported slightly higher on thoughts than did fourth graders. Upon these variations in the means, significant differences were found between fourth grade and sixth grade students for the off-task behaviors and autonomic reactions, whereas nonsignificant differences were found for thoughts.

These findings are of key importance in using thoughts, off-task behaviors, and autonomic reactions components of test anxiety to demonstrate that different components as well as the construct itself vary among grade levels, specifically for students in Grade 4 and Grade 6. It is possible that the increased use of self-regulation and motivation strategies (Cleary & Chen, 2009) may be related in some way to typical development of coping with test anxiety as students proceed from lower to higher grade levels, as suggested by Wigfield and Eccles (1989). These patterns might also emerge as a function of curricular differences across grade levels. For example, Turkish students at higher grade levels are employed in testing situations (e.g., national standardized tests, classroom examinations) more

often and more used to being evaluated, and so they report feeling less worried about failing in a test.

Previous research has shown that the level of test anxiety declines as students move through school years, but the investigation of the particular components used in the present study adds weight to the view that components of test anxiety are differentially displayed across grade levels. These findings support the previous work by Bodas et al. (2008) and Yenilmez and Özbey (2006), showing that students' overall test anxiety, specifically worry and emotionality tend to increase at the lower grade levels (e.g., Grades 5 to 7). There is, however, additional body of work suggesting that nonsignificant differences in grade level can be found for thoughts, off-task behaviors, and autonomic reactions (Wren & Benson, 2004). This indicates that the level of test anxiety may also operate in the reverse direction to the one reported here for the off-task behaviors and autonomic reactions; students attending to different grade levels tend to exhibit equal levels of thought, off-task behaviors, and autonomic reactions. Although this study clearly showed that there are statistically significant differences between Grade 4 and Grade 6 students in the overall test anxiety and off-task behaviors and autonomic reactions components, future research may wish to include additional grade levels to examine the possibility that students respond differentially to test anxiety, whether increases in test anxiety are reported in all consecutive stages of, for instance, elementary, middle, and high school years or more strongly in those who reported high scores on thoughts, off-task behaviors, and autonomic reactions at the early years of schooling.

The findings supplement the existing research in several respects. First, the results were particularly important in relation to the fact that different methods and perspectives were used to evaluate grade level differences in test anxiety across different components using the CTAS, which was originally developed by Wren and Benson (2004). The CTAS was used in prior cross-cultural research (see Putwain & Daniels, 2010); however, the present study is the first to address the grade level differences in test anxiety with a Turkish sample of students using its adapted version by Aydin and Bulgan (2017). Second, the present study examined the grade level differences in test anxiety in general and thoughts, off-task behaviors, and autonomic reactions in particular. Most previous studies have focused on the

differences in the worry and emotionality components of test anxiety (e.g., Bodas et al., 2008) and/or solely investigated these differences in the overall test anxiety regarding different testing experiences (e.g., Segool et al., 2013).

Limitations and Future Research

The present findings must be considered in light of certain limitations. First, student reports on the CTAS were the sole source of information. Additional qualitative methods (e.g., interviews) might provide deeper insights into the grade level differences in future research. Second, the generalizability of the present results remains uncertain. Findings apply specifically to students in Grade 4 and Grade 6, and to Turkish students. As the variance in test anxiety can be predicted based on cultural settings (e.g., Nyroos et al., 2015) cross-cultural studies are necessary to test the generalizability of the differences found in the current study. Third, a single test anxiety scale (i.e., the CTAS) was used to investigate the grade level differences in the components of the construct. Additional quantitative methods could also be implemented by including psychophysiological measures to index physiological constructs such as stress. By doing so, future researchers would shed light onto the possible interactions between text anxiety and the physiological and their main effects on the grade level differences. Finally, in a related vein, as the present study involved two independent samples (e.g., Grade 4 and Grade 6), future researchers should consider conducting longitudinal studies to draw more generalizable conclusions about the real grade level differences.

Educational Implications

This study also has important implications. How should instruction be designed to reduce test anxiety with particular attention to students in lower grades? Many studies (von Der Embse, 2013; Weems et al., 2010) found promising results that the efficient and effective test anxiety intervention or treatment programs lead to reduction in test anxiety from kindergarten through Grade 12. Likewise, Ergene (2003) suggested that test anxiety intervention programs should be designed specifically for elementary, middle, and high school students. These suggestions are relevant to the grade level differences found in the present study, challenging that well-structured

interventions or treatments to reduce younger children's test anxiety and increase academic performance.

In supporting younger students with test anxiety, teachers can take into consideration the communication of the importance of test outcomes. Casbarro (2005) recommended, for instance, using reinforcing messages rather than strong language; "This test is an opportunity for you to demonstrate your success." versus "If you don't want to fail, you need to perform your best on this test." In addition, teachers can collaborate with the Department of Guidance and Psychological Counseling to use relaxation techniques. Accordingly, von der Embse and Hasson (2012) suggested asking students to complete deep breathing exercises and/or identify their anxious cognitions and emotions before, during, or after an evaluative situation.

In conclusion, knowledge about test anxiety and its components may enhance our understanding of the developmental aspects of test anxiety in students across different grade levels and may inform theory and research in the field of test anxiety as well as educational practice. As research on the affective dimensions of learning and achievement in important school subjects (e.g., mathematics) has tended to focus on possible negative emotions and on domain-specific anxiety (e.g., mathematics anxiety) in particular (e.g., Villavicencio & Bernardo, 2016). The present study extended prior research by demonstrating the importance of not only the overall test anxiety but also its three components: thoughts, off-task behaviors, and autonomic reactions across grade levels.

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Developing School-relevant Language and Literacy Skills through Dialogic Literary Gatherings

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Developing School-relevant Language and Literacy Skills through Dialogic Literary Gatherings

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Abstract

Research in the field of educational linguistics has found that low levels of academic language development negatively affect children's language, reading and writing skills and, therefore, academic achievements. This is more noticeable in students from low SES backgrounds, who traditionally have a lower exposure to academic language. Nevertheless, dialogic learning environments such as Dialogic Literary Gatherings (DLGs), a worldwide educational practice where participants read and debate literary classics in an egalitarian dialogue, contribute to the appearance of school-relevant language and literacy skills. Although multiple studies on DLGs have shown their impact in different levels, including improving vocabulary and reading skills, the emergence of such skills has not been studied in depth yet. This exploratory study aims to analyze the emergence of academic language and literacy skills in 19 students between the ages of 11 and 13 studying in a school in Spain with over 90% immigrant students. Results show that the egalitarian dialogue in which DLGs are based favors the emergence of school-relevant language and literacy skills, such as judgements and arguments, referential links, or connectives.

Keywords: Dialogic Literary Gatherings, school-relevant language and literacy skills, egalitarian dialogue, universal classics of literature

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Desarrollando Lenguaje y Competencia Lingüística para la Escuela a través de Tertulias Literarias Dialógicas

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Abstract

Las investigaciones en el campo de lingüística educativa han encontrado que los bajos niveles de desarrollo del lenguaje académico afectan las habilidades de los niños del lenguaje, lectura y escritura. Esto es aún más evidente en estudiantes de bajos niveles socioeconómicos, quienes tradicionalmente han tenido una menor exposición al lenguaje académico. Sin embargo, las Tertulias Literarias Dialógicas (TLD), una práctica educativa mundial en la que los participantes leen y debaten clásicos literarios en un diálogo igualitario, contribuye a la aparición de habilidades de lenguaje y de competencia lingüística relevantes para la escuela. Aunque muchos estudios sobre TLD han demostrado sus impactos a diferentes niveles, como mejora del vocabulario y habilidades de lectura, la aparición de las habilidades mencionadas no se ha estudiado aún en profundidad. Este estudio exploratorio pretende analizar la aparición de habilidades de lenguaje y competencia lingüística relevantes para la escuela en estudiantes de entre 11 y 13 de una escuela en España con más de 90% de estudiantes inmigrantes. Los resultados muestran que el diálogo igualitario en el que las TLD se basan favorece la aparición de habilidades de lenguaje y competencia lingüística relevantes para la escuela como juicios y argumentos, referencias, o conectores.

Palabras clave: Tertulias Literarias Dialógicas, habilidades de lenguaje y competencia lingüística relevantes para la escuela, diálogo igualitario, clásicos de la literatura universal

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As society becomes increasingly dialogic, language and social interaction gain importance in our everyday lives, becoming the center of all human relationships and contexts. Authors such as Vygotsky (1962, 1978) and others who have followed his research line (Bakhtin, 1981; Bruner, 1996; Mercer, 2000) have defined learning as occurring both at the personal and social level, mediated by language as a cultural and psychological tool. As children grow up, the communication skills they need to master for successful academic and professional trajectories become more and more complex. Therefore, school should provide them the right skills which will contribute to opening possibilities for them to succeed in social life. Nevertheless, many students face barriers in adult life due to poor academic performance, which closes many doors for their higher academic and professional futures. Research has found that one of the drivers of the lack of academic success is that students do not develop the academic language and literacy skills necessary for reading comprehension, writing and other communicative skills needed to succeed at school (Snow & Uccelli, 2009; Lawrence et al., 2010; Uccelli et al., 2015b). Moreover, the lower their exposure to language and literacy skills relevant for academic success, the lower their acquisition of such skills. Children living in low SES backgrounds are usually the ones receiving less inputs of school-relevant language and literacy skills (Snow et al., 1998; Uccelli et al., 2015a). All students, regardless of their SES background, ethnicity, gender or age, need to be granted the same educational opportunities, and this includes high-quality interactions with teachers, peers, and academic and literary texts. Dialogic learning environments such as Dialogic Literary Gatherings (DLGs), in which egalitarian dialogue becomes the center, guarantee all children's inherent right to education by providing them with high-quality dialogic spaces in which they read and debate some of the greatest literary human creations (Flecha, 2000). The richness of the literary texts and the egalitarian dialogue which underpins the gatherings provide them with equal opportunities for academic and personal success as reported by several articles (Soler, 2015).

Nevertheless, they are thought to contribute to children's emergence of academic language and literacy skills, although no study has explored in detail these outcomes yet. This exploratory study analyzes the emergence of children's school-relevant language and literacy skills through DLGs.

Academic Language Skills and School Achievement

In the field of language and literacy learning, a number of research has been conducted on the relationship between academic or school-relevant language proficiency and academic achievements (Cummins, 1979; Cummins, 2008; Snow & Uccelli, 2009; Uccelli et al., 2015a). It has been found that mastering school-relevant language and literacy skills contributes to academic success, and that when students are not proficient in these skills, they have more difficulties to succeed at school (Fang et al., 2006; Snow & Uccelli, 2009; Uccelli et al., 2015a). Lack of proficiency and understanding of school-relevant language and literacy skills make reading comprehension challenging for students, especially for understanding the academic language of school texts (Uccelli et al., 2015a).

However, academic language proficiency is not only linked with reading comprehension, but also with other school subjects such as math or science, where academic texts are plentiful (Snow & Uccelli, 2009). Moreover, having difficulties for mastering academic language entails barriers for accessing higher education and a wide range of opportunities outside school, such as health, political and civic information, as society increasingly demands complex communication skills (Fang et al., 2006; Meneses et al., 2017). As Fang, Schleppegrell & Cox (2006) point out, although acquiring academic language and literacy skills does not automatically provide students with future professional success, a lack of such skills does limit their opportunities and access to future professional and social success. Therefore, it is educational researchers' responsibility to provide knowledge on educational practices that contribute to students' development of academic language skills.

Literature on school-relevant language and literacy skills' development suggests that students need a greater exposure to academic or cognitively demanding texts, as well as explicit learning of language and literacy skills present in such texts (Fang et al., 2006; Lawrence et al., 2010; Uccelli et al., 2015a). As Lawrence, White and Snow (2010) state, teaching and learning of "cross-content, whole-school vocabulary instruction" (p. 23), rather than content-specific vocabulary instruction, could contribute to a greater acquisition of academic language and literacy skills and, thus, to a better understanding of texts. Along the same line, Uccelli et al.'s (2015a, 2015b) construct of CALS (Core Academic Language Skills), which includes

knowledge of connectives, nominalizations, embedded clauses or structures for organizing texts across content areas, have been found to strengthen reading comprehension. Others point at teaching students strategies for being engaged with school texts easily and with a critical mind (Fang et al., 2006). Research also highlights the need for students' need of multiple exposures and in different contexts to acquire and develop academic language skills in order to learn it (Lawrence et al., 2010).

Lower Access to Academic Language and Literacy Skills in Children from Low SES Backgrounds

Language, as being socially situated, is learned and developed through interactions and exposure to it, and the same is known for learning and developing academic language skills (Snow et al., 2009; Uccelli et al., 2015a). Studies in the field underline the importance of children to be exposed to and engaged with academically complex texts and discourses throughout all school years in order to acquire school-relevant language and literacy skills (Snow et al., 2009; Uccelli et al., 2015a). That is, children need high-quality texts, instruction and interactions in order to develop academic proficiency and succeed in and outside school (Uccelli et al., 2015a; García-Carrión & Villardón-Gallego, 2016). Unfortunately, although not exclusively, children from low SES backgrounds have traditionally had limited access to texts of great linguistic richness, such as academic texts or universal classics of literature. They usually have less opportunities to engage and interact with school-relevant texts and discourses, which poses a barrier for them to develop language and literacy skills necessary for educational, personal and social success (Snow et al., 1998; Fang et al., 2006; Uccelli et al., 2015a, 2015b).

Nevertheless, more research is needed to shed light on successful educational practices which contribute to children from low SES backgrounds' development of school-relevant language and literacy skills.

Dialogic Learning Environments Contributing to the Emergence of School-Relevant Language and Literacy Skills: Dialogic Literary Gatherings

An educational practice which has been found to potentially contribute to children's development of school-relevant language and literacy skills are

DLGs. DLGs were identified as a Successful Educational Action (SEA) by the FP6 INCLUD-ED project (2006-2011), the only Social Sciences and Humanities project among the ten selected by the European Commission due to its scientific, political, and social impact. Breaking down elitist walls, DLGs bring some of the greatest literary creations closer to everyone regardless of their SES background, age, level of academic studies or ethnicity.

Dialogic reading has proved to promote language and learning, especially when students talk about what they have read and receive feedback regarding their interpretations and ideas (Valdez-Menchaca & Whitehurst, 1992). It is especially beneficial for improving reading comprehension skills, which are increasingly complex in school and, therefore, essential to succeed academically (Goldman, 2012). DLGs are a type of dialogic reading activity currently being implemented in more than 3000 diverse schools and other centers all over the world, from favelas in Brazil (Mello & Braga, 2018) to high SES schools in Cambridge (García-Carrión, 2015) or prisons (Alvarez et al., 2018) and mental health centers in Spain. However, their impacts have been especially noticeable in linguistically and culturally diverse schools, where access to rich texts and dialogues has traditionally been denied. The egalitarian dialogue underlying DLGs and the dialogic reading of universal classics favor a dialogic learning environment in which participants read and debate universal issues and profound feelings which have moved humankind from Ancient Greece, as in The Odyssey or The Iliad, written by Homer in the VIII century BC.

In DLGs, students read and debate a previously agreed upon fragment of high-quality age-appropriate versions of classic literature. Although in children's case the texts are adapted to their age, these versions do not use childish language and stay faithful to the main storylines of the classics. While reading at home and, in some cases, at school, they need to choose a paragraph and develop reasoning on why they have chosen that paragraph. During the DLG sessions, students voluntarily share the paragraph they have chosen and argue why they have done so, and then the rest of students start debating on that paragraph or idea the student has raised. The aim of the DLGs is not to reach an agreed interpretation of the book or finding the author's intended meaning; rather, it is to reflect and find meaning on participants' own lives and experiences through the classic texts and the

egalitarian dialogue (Soler, 2015). Therefore, the more diverse the voices participating in the DLGs, the richer the debate and the interpretations of the texts.

An indispensable aspect of DLGs is that interactions based on egalitarian dialogue prevail (Soler, 2015). This means that when participants read the paragraphs they have chosen and the reasons why, their interpretations must always be based on arguments instead of on power positions (Serrano et al., 2010; Oliver & Gatt, 2010). In other words, no student's interpretation is more valid than anyone else's, no matter what their power status, academic level, ethnicity or nationality is, as long as they are always based on respect and supported by arguments (Habermas, 1984). This dialogic learning (Flecha, 2000) framework promotes freedom and respect towards diversity, thus contributing to overcoming inequalities and creating more egalitarian social structures (Serrano et al., 2010). Moreover, the egalitarian dialogue forces students to always look for reasoning and arguments behind their ideas and interpretations, preparing them for an increasingly dialogic and democratic society.

A number of publications have provided evidence on DLGs' academic impacts in improving vocabulary acquisition (Hargreaves & García-Carrión, 2016; Garcia Yeste et al., 2017); developing reading and speech skills (de Botton et al., 2014); increasing teacher-student talk ratio in classrooms to 75% (Hargreaves & García-Carrión, 2016); widening cultural and historical knowledge while improving participants' families' literacy and reading skills (de Botton et al., 2014). Other studies have highlighted the transformations in participants' lives and relationships such as social inclusion (Flecha et al., 2013) empowering participants to overcome inequalities and barriers (Aubert, 2015); promoting children's prosocial behavior (Villardón-Gallego et al., 2018); or increasing values such as respect, tolerance and solidarity among participants and their social environments outside school (García Yeste et al., 2017).

However, there is a gap in the literature on DLGs and dialogic reading regarding, specifically, the development of school-relevant language and literacy skills through DLGs in children living and studying in low SES environments. This exploratory study aims at contributing evidence on the emergence of academic language and literacy skills in children from low SES backgrounds through their participation in DLGs.

Materials and Methods

Design

This study focuses on the analysis of the emergence of school-relevant language and literacy skills in DLGs carried out in a School as Learning Community located in one of the poorest neighborhoods at the outskirts of Terrassa, a large municipality in Catalonia (Spain). The Learning Community has 98% student diversity, most of them from Muslim or Roma communities, and many students belong to unstructured families at risk of social exclusion. Yet, after it started implementing DLGs and other SEAs 18 years ago, students achieving in reading comprehension in standardized tests went from 17% to 85%. In 2018 it won the Education Award from the Economy Circle [Círculo de Economía].

In order to achieve its objectives, this study has used the Communicative Methodology of Research as it not only describes reality but, through the inclusion of participants' voices throughout the whole process, it makes an analysis of reality which provides actions and elements that contribute to overcoming inequalities and transforming their lives and social contexts (Gómez, Puigvert & Flecha, 2011; Soler, 2015). In CMR, researchers establish an egalitarian dialogue with participants in which the former bring the existing scientific evidence on the issue being studied and the latter bring their own experience and cultural intelligence (Flecha, 2014).

Participants

The study's participants the students from the school's 6th grade class, made up by 6 girls and 13 boys between the ages of 11 and 13, from Spanish, Moroccan and Ecuadorian nationalities.

Procedure

Two DLG sessions have been observed inductively in March and May 2017. Participants read and commented an age-appropriate Spanish adaptation of Homer's "The Iliad". Previous to the sessions, participants read at home the pages agreed upon and selected a fragment they wanted to share with their classmates, writing down the arguments for choosing such fragments. Moreover, a weekly session, prior to the DLG session as well,

was dedicated in class to reading the pages, selecting the fragment and elaborating the argument with the teacher's help. During the DLGs, students shared their selected fragments in an egalitarian dialogue moderated by the teacher, while the researcher, who was familiar with the school's staff and students, was observing and audio-recording the sessions.

Once the Principal gave permission for the study to be carried out, students' parents and the teacher were informed about its nature and purpose, and that participation was anonymous and voluntary, giving students the opportunity to request audio-recordings to be stopped at any moment of the study. Informed written consents for the audio-recordings from students' parents were achieved through the school's Principal. A total of 1 hour and 26 minutes have been recorded, transcribed and analyzed for the purpose of this study.

Data Analysis

Audios from both DLG sessions were transcribed, meticulously read several times, and analyzed and classified into the categories defined for the purpose of this study. Categories were defined based on an extensive literature review in the field of academic and school-relevant language and literacy skills, and on specific data gathered for this study. First, some of the main articles in the field have been reviewed in order to determine the elements/characteristics of academic and school-relevant language and literacy skills they use and mention in their works. Next, a first list of the 20 most recurrent skills in the different publications was gathered. After the initial list was made, both transcriptions were read several times looking, one by one, for each of the skills. From the 20 initial elements, seven were found throughout the DLGs.

The skills that composed the final classification are: Nominalization, Connectives, Morphologically Derived Words, Referential Links, Construction of Judgement and Value, and Arguments. Table 1 shows the seven elements and the reviewed literature in which they have been found. Once the categories that were going to be analyzed in the DLGs were defined, both transcriptions were read again, and elements in the transcriptions which fit any of the categories set out were classified upon them.

Table 1. *Academic language skills identified in the literature*

	Uccelli et al., 2015	Snow & Uccelli, 2009	Fang et al., 2006	Meneses et al., 2017
Nominlization	X	X	X	X
Connectives	X	X		X
Derived words	X			X
Referential links	X		X	
Construction of judgement and value			X	
Arguments	X	X	X	X
Discourse structure	X	X	X	X

Results

The data analysis reveals the appearance of many of the school-relevant language and literacy skills that children from low SES backgrounds traditionally lack. Having access to, reading, and collectively reflecting on universal classics such as The Iliad gives them the opportunity to connect, order and express ideas which both the text and their classmates' interactions strengthen. Moreover, the egalitarian dialogue in which DLGs are centered, based on arguments rather than on positions of power, forces/encourages them to always look for an argument to support their ideas and opinions. Indeed, 58 out of the 167 student interactions analyzed in this study either contain a judgement, value, or argument. Observations of the DLGs show the emergence of the following school-relevant language

and literacy skills: judgements and arguments, referential links, discourse structure and grammatical skills such as nominalization, connectives and derived words.

Constructing Judgements and Arguments: 'I Agree with Aquiles because…'

Students at the DLGs are used to constructing and formulating judgements and values regarding the passages they read, often showing disagreement with the texts or the characters. When students read and comment them in the DLGs, they learn to situate them in a specific period of time which is often far away from current society. When reading passages that show such values, they often express their opinions against them. For instance, when discussing the slaves that Aquiles is offered in return for going to war against Trojans, children showed their disagreement and rejection towards the matter, and started a debate on equality among women and men: "I think women have their right to give an opinion and that men wouldn't like to be treated the way they treat women"

Following the same debate, children continued discussing differences and equalities among women and men, arguing we all deserve to be treated with equal respect.

> I think men are equal to women, ok? There is no difference, physical, of course, there are some physical differences, but you know, in the inside we're all the same, and we all like to be treated with respect and we don't like being nobody's slaves

Moreover, when constructing judgements, they are usually supported with arguments. Indeed, one of the principles of DLGs is egalitarian dialogue, therefore students know their opinions must be based on arguments, as can be seen when a student argues why he thinks Agamenón has not been responsible.

> Agamenon hasn't been responsible because he tries to escape
> As these examples illustrate, they often disagree with the actions carried out by the books' characters, as the following quote regarding The Iliad and slaves shows.

> I don't agree because he's using slaves as if they were horses or currency and moreover, what are the gifts worth for if his own mother says he's going to die?

This egalitarian dialogue in which the interactions among participants are based promotes participation and expressing one's opinion with the assurance that no one is going to laugh at them or that no one's opinion is going to be valued more than anyone else's, unless opinions are based on power positions. Therefore, students feel free to express whatever opinion they might have, even if it is opposite to a classmate's opinion, as they know that all voices will be respected. When discussing whether women can currently go to war or not, most participants supported the idea that anyone, regardless of their gender, could go to war. Nevertheless, a student argued that men did not want women to go to war because of their wellbeing.

> If you want to go to war you can go, I mean you have permission to go, but I think men, I mean they do it for your own good, they don't want you to get hurt and… I mean they don't want you to get hurt, they want you and your children to be safe. I think that's whythey don't let you

Making Referential Links to Classmates and the Texts: 'As my Classmate Said',

As seen in the previous example, students are used to commenting on their classmates' opinions. In fact, after someone reads aloud the fragment they have chosen and explains the reason for that, the rest of the students are given the opportunity to comment on what their classmates have just said. In the following quote, during the same debate on slavery and equality among women and men, a student picked up on what some of his classmates said to support his disagreement with Agamenón in selling his daughters: "I agree with Mohammed, women are very important, and also with Bryan, who said that Agamenón is selling one of his daughters and that I wouldn't sell one of my daughters".

Another classmate also supported his arguments with a classmates' opinion on why they do not want women to go to war: "As my classmate

Khadija has said, we don't want them to go to war because, so that they don't get hurt and all that".

Students are also used to making references to what they are reading, to the passages and characters from the books. They base their opinions on what they have read, constantly making references to the paragraphs or pages they are debating. Thus, references such as "in this paragraph Ulises…" or "in previous paragraphs…" are common throughout the DLG sessions.

When students read the texts at home, they often find connections to their own lives and experiences. During the DLGs, they are encouraged to relate the readings with their lives or current society, learning to develop a critical attitude towards what they have seen and experienced. One of the students compared women's work and position in society as portrayed in the book with their role in current society.

> Currently, things have changed a lot because women now, let's say, not in everything, but I don't know, I don't know how to tell you, but they do more work than boys, and they are more, a little bit more important than boys

When discussing Patroclo's funeral, which was celebrated with sports and games, many children were surprised as it seemed more like Olympic games (as students referred to the funeral) rather than a funeral, and started a debate comparing each of their diverse cultural traditions of funerals.

> The day my father died (…) we, at home, put a candle for him and we can't play music nor laugh because, I mean, it's like a lack of respect for the person who has died because he'll think we're celebrating his death, that we're not interested in him (…) for me (…) the Olympic games when someone has died are like a lack of respect and to say that I don't care he has died, so I think it's very wrong

In cases like this group of 6th grade of primary education, in which students have participated in many DLGs and therefore have read many classics, they sometimes make references to other classics they have

previously read. In this particular case, three years earlier they had read The Odyssey, with some characters such as Ulysses, so it is easy for them to connect both texts.

> As we have seen when we read The Odyssey, in 3rd grade, we have seen he [Ulysses] is very intelligent. In here, in The Iliad, he should be more intelligent. If he [Agamenon] tells someone to go back by offering him gifts and this, Ulises should tell him something, right?

Following a Discourse Structure: 'Second, Gifts are Useless because He's Going to Die'

In some interactions, elements of discourse order and structure have been seen when constructing judgements and arguments, as can be appreciated in the following example regarding the debate on slavery: "I disagree because women aren't objects like currency. On the other hand, the gifts are worthless because he's going to die".

When providing a list of arguments and opinions, they are used to following a structured set of ideas: "(…) on the other hand I think that Aquiles doesn't have to be so so resentful and could do it for his mother".

When showing disagreemen twith Aquiles, a student structured his main arguments in two, as can be seen in the following quote.

> In this paragraph they made a dinner for Aquiles so he would fight in the war. On the one hand I don't agree with women, with the thing about women, that he can choose whomever he wants, and on the other hand I think Aquiles could help his homeland

Grammar-related Skills

Last, grammar-related skills have been identified. The most recurring ones are connectives, which have been found throughout the whole transcriptions. Connectives such as "moreover", "for example", "first", "although", "however", "therefore" and so on are found all over the transcriptions.

To a lesser extent, derived words have been found, such as "resentful", "surely", "valuable", among others. From the derived words, a few

nominalizations have been found, such as “the elder”, “the recruit”, “disagreement” or “present”.

Discussion and Conclusions

As literature in the field of educational linguistics points out, it is necessary for students to master academic language and literacy skills and be familiar with the school’s discourse in order to achieve academic success and, therefore, to have more opportunities to succeed outside school (Cummins, 1979; Cummins, 2008; Snow & Uccelli, 2009; Uccelli et al., 2015a). Nevertheless, not all children have the same opportunities for developing school-relevant language and literacy skills, and it has been found that children from low SES backgrounds have less interactions with the texts and discourses which contribute to their acquisition of such skills (Snow et al., 1998; Fang et al., 2006; Uccelli et al., 2015a, 2015b).

Fortunately, Dialogic Literary Gatherings are breaking down the barriers those children often face. In DLGs, students from diverse SES backgrounds, ages, cultures and nationalities enjoy high-quality interactions with their peers while reading and commenting age-appropriate universal classics of literature. This constant exposure to rich literary texts and debates which are relevant not only for succeeding at school, but also in professional and social life, contributes to students’ use of several school-relevant language and literacy skills reported by a number of scholars in the field.

Results from this exploratory study show that some school-relevant language and literacy skills reported by a number of scholars in the field emerge in a DLG with a group of 11 to 13 year old students from three different nationalities. In these gatherings students are used to constantly express ideas, feelings and thoughts, relating them to the texts and their own lives. Moreover, the egalitarian dialogue DLGs are grounded in makes students always look for arguments to support their claims with.

Research shows that in order to develop school-relevant language and literacy skills, students need a great exposure to academic and cognitively challenging texts (Fang et al., 2006; Lawrence et al., 2010; Uccelli et al., 2015b). The language and issues universal classics of literature contain and which appear throughout the DLGs contribute to their emergence. Indeed,

results of this study show that when explaining their ideas regarding the books, children use connectives all over the debate. In Uccelli et al.'s (2015a, 2015b) concept of CALS, connectives are described as an important skill in school-relevant language. CALS also refers to other skills such as nominalizations and other morphologically derived words, which have also appeared in our results. Another important language skill to which Uccelli et al. (2015a, 2015b) and other scholars in the field give importance is the discourse structure. When expressing their ideas, students in the DLGs use structured arguments and reasoning linked with several connectives.

In a society in which language and social interaction play an increasing central role in our lives, where communicative skills become more and more complex, children need to be able to make judgements and arguments, not only for academic success, but also for professional, personal and social success. From the moment in which students start DLGs, they know that if they want to talk and explain why they have chosen a certain paragraph, they need to prove reasoning and arguments to support their explanations. The DLGs observed allow researchers to see how used they are to using arguments and constructing judgements and values, as almost half of the interactions made by students contained either arguments or judgements or both.

Moreover, DLGs train students to develop a critical mind (Fang et al., 2006) as they often relate the readings and their classmates' opinions with present and daily situations they see and experience, often showing disagreement with the text or with society.

One of the study's limitations is that it does not determine whether it is the classic texts, the egalitarian dialogues, or both, which propel the emergence of school-relevant language skills. Further research is needed in order to deepen on the elements which favor the emergence of such skills. Moreover, the study has not focused on finding the relationship between the emergence of academic language skills in DLGs and academic success. More evidence would be needed to find a direct relationship with the development of school-relevant language and literacy skills in DLGs and good academic outcomes. Another limitation is that the study has not compared the emergence of such skills in DLGs implemented in different

school contexts and groups. More research with a bigger sample would be needed so that results in this study can be generalized to a wider population.

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Effectiveness of a Program Based on A Multi-Sensory Strategy in Developing Visual Perception of Primary School Learners with Learning Disabilities: A Contextual Study of Arabic Learners

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Effectiveness of a Program Based on A Multi-Sensory Strategy in Developing Visual Perception of Primary School Learners with Learning Disabilities: A Contextual Study of Arabic Learners

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Abstract

The current study aims to assess the effectiveness of a program based on a multi-sensory strategy in developing of visual perception for primary school learners with learning disabilities. The study employed the quasi-experimental method on the experimental group of learners. A training program based on multi-sensory strategy was employed on a group of third and fourth graders (n = 30) who were exposed to draw upon their sensorimotor memories and familiarities to recognize the mentally stimulating texts. The other group of 30 learners i.e. the control group was exposed to the regular reading comprehension instructions. Pre-to-post test differences were examined in terms of the learners' visual perception to evaluate the teaching's effectiveness. The results illustrates that there is a difference in the level of visual perception skills of the learners of both groups. And the differences were in favor of multi-sensory strategy. The findings of this study suggest that it is constructive for learners to connect their sensorimotor experiences to the text/or the reading materials they are exposed to.

Keywords: multi-sensory, visual perception, learning disabilities

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Efectividad de un Programa de Estrategia Multisensorial para Desarrollar la Percepción Visual del Alumnado de Primaria con Discapacidades de Aprendizaje: Un Estudio Contextual del Alumnado Árabe

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Resumen

El presente estudio tiene como objetivo evaluar la efectividad de un programa de estrategia multisensorial en el desarrollo de la percepción visual para alumnos con discapacidad. El estudio empleó el método cuasi-experimental en el grupo experimental. Se empleó un programa de capacitación basado en una estrategia multisensorial en un grupo de alumnos de tercer y cuarto grado (n = 30) que fueron expuestos a recurrir a sus recuerdos sensoriales y familiaridades para reconocer los textos que estimulan mentalmente. El grupo control de 30 estudiantes,fue expuesto a las instrucciones regulares de comprensión de lectura. Se examinaron las diferencias entre los exámenes anteriores y posteriores en términos de la percepción visual de los alumnos para evaluar la efectividad de la enseñanza. Los resultados ilustran que existe una diferencia en el nivel de las habilidades de percepción visual de los alumnos de ambos grupos. Y las diferencias fueron a favor de la estrategia multisensorial. Los hallazgos de este estudio sugieren que es constructivo para los estudiantes conectar sus experiencias sensoriomotoras con el texto o los materiales de lectura a los que están expuestos.

Palabras clave: Percepción visual, multisensorial, problemas de aprendizaje.

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Learning difficulty is considered as one of the most important fields of education. Special education focused on other forms of disabilities as well (mental, auditory, visual and motor). This has led to the emergence of specialists in various learning disabilities. The manifestations of learning difficulties have been observed in the academic, emotional and behavioral aspects. Therefore, the parents, teachers and researchers involved in the field of special education have found that the nature of these difficulties were do diverse in their nature which require appropriate strategies and methods of appropriate therapeutic intervention to overcome or mitigate these difficulties (Mohammed, 2013).

There are many terms and definitions in the literature available to describe children or adults with learning difficulties. In the United States there are three very convincing definitions provided for people with learning difficulties by various organizations: Individual with Disabilities Education Act (IDEA, 1997), National Joint Committee on Learning Disabilities (NJCLD, 1997) and Inter-Agency Committee for People with Learning Disabilities. The definition of the Interagency Committee on Learning Disabilities (ICLD, 1987) share most of the factors in the line of other two, including several other common factors like the weakness of the central nervous system, the imbalance in the growth pattern of psychological treatment, the difficulty in achieving educational task goals. There is contradiction between what has been accomplished and against the objectives set forth except mental retardation and emotional disturbances or any disturbances in hearing, sight or environment (Isa, Ishak, Rahman, Saat & Ismail, 2017).

Often learning difficulties appear clearly in the absence of training and practice subjects' curriculum, in which the learners tend to face difficulty in retention and face attention deficit. They tend to find differences in information resources, which result in failure in achieving desired educational goals. Learners who are aided for their learning difficulties are expected to fail, especially when exposed to a difficult task without providing successful educational experiences or therapeutic intervention appropriate to overcome the difficulty (Kandari, 2017; Allan & Ahmed, 2012). Therefore, training the learners with learning difficulties at the beginning of interventions is

important which helps the professionals related to the field of special education, to identify the manifestations of their difficulties. In addition to follow scientific methods and the search for new strategies that contribute to alleviating these difficulties (academic or developmental), interest in improving visual perception is one of the most important areas that have contributed significantly to the mitigation of many other learning difficulties (Abdo, 2016).

The visual perception is not just to see objects clearly when looking into something static, dynamic or even more complex, but it also includes vision. Looking at multiple stimuli which change with time and process helps the learners interpret the meaning and relevance of these stimuli. This process plays the role of a link to the brain which interprets or gives meaning to this information (Kurtz, 2006). So visual perception is the reception of sensory and cognitive functions from visual stimuli and cognitive components of visual knowledge are: visual attention, memory, and distinguish conceptions and visual distinction of perception subject (stability of shape, shape and ground) and place cognition (Garje, Vishnu, Rashmi, Arpita & Maninder, 2015). In addition to this, the visual perception grows by relying on senses where the child sees the objects, distinguishes it and then determines its location in the cognitive operations which is to enter information from the environment through the senses and simple and straightforward definition of perception is seen as methods explain Incoming Information. Thus, the senses are modes of perception and sensations are the raw material that makes them perception (Hamid, 2007).

A lot of strategies and techniques have been found relying on the senses to improve visual perception. Hussein and Bajdaa (2016) confirms that we can teach learners with learning difficulties using the curriculum based on the multiplicity of senses or the so - called VAKT style wherein hearing, seeing, touching and movement applied as strategy to help the learners remember how to write words. This strategy is based on the Vernald method, also known as the visual, auditory, kinesthetic-tactile (VAKT) which refers to learning by using the senses primarily in education and teaching learners with learning difficulties (Karam & Kaoud, 2015).

Many studies have proved the effectiveness of this method (Abdulhadi, 2009). Therefore, when we talk about the visual perception development for learners with learning difficulties, we need to talk about

modern teaching strategies based on the nature of the age. The primary school learners tend to use most of their senses to identify environmental stimuli around them, and try to explain these stimuli (Abu Faadi, 2009).

Special Education in Saudi Arabia: A Brief Overview

During the early 60s, there was no governmental support for the learners with learning disabilities in Saudi Arabia; the learners were entirely dependent on their parents for support (Alajmi, 2006). The services started with braille training for the adult blind people, but young cases/samples were simply ignored and other visual impairment cases were not taken care of (Zayat, 1998; Alwabli, 1996; Afeafe, 2000; Almousa, 1999). From 1960 to 1971, special education in Saudi Arabia expanded from its limited scope to provide special educational needs to both males and females with visual as well as hearing impairment which resulted in substantial increase in the number of special schools. It was in 1971, that the Intellectual Education Institute was set up by the Ministry of Education to address the problems of intellectual disabilities so the curriculum was mainly driven by the aim to develop social, behavioral and daily life skills (Alwabli, 1996). This institute provided residential facilities for the learners enrolled in and focused on improving their communication skills and social behaviour.

Until 1990 there was no provision for resource rooms in public schools, as there was limited exposure to the world of special cases, but there was a significant increase in the number of special schools. In 2000, Inclusive education was promoted and special educational classrooms were provided in the public schools to bring the special cases in the mainstream for their overall development (Ministry of Education of Saudi Arabia, 2002). The Department of Special Education opened special education schools within public schools for learners with mild to moderate intellectual disabilities, mild to moderate autism disorders and hearing impairments (Almousa, 2010; Znkor, 2014). The learners have received special education services through these special classrooms as educational placement. At present, 746 special schools for learners with mild to moderate disabilities including intellectual disabilities and others are running successfully. Various programs have been implemented (316 programs for deaf learners and 171 programs for learners

with visual impairments; Ministry of Education of Saudi Arabia, 2012) as interventions in order to improve the skills of special cases and mostly the learners with severe disabilities have been taken care of all these years. Since other categories of disabilities such as Behavioral and Emotional Disorders (BED) as well as Attention Deficit and Hyperactivity Disorder (ADHD) as these seem to be disorders rather than a type of disability, have not been dealt so well over these years.

Learning difficulties have been acknowledged very late in terms of providing extra care to such cases. Early identification and intervention services have not been mandated well in Saudi Arabia which is supposed to be a desirable step for grouping such learners as per the best suited modality for their effective learning (IDEA Partnership, 2007). Therefore, in the two decades, the field of special education has been diversified in Saudi Arabia. A need to establish professional development programs to prepare teachers and other school staff for inclusive classrooms is highly required and such contextual studies on the data from the learners from Arab region, especially of Saudi Arabia, can definitely prove to be very effective and handy for the professionals. In most cases, using different kinds of professional development methods such as the professional learning community will effectively improve the skills of teachers in their schools. The present study aims to bridge the gap between the professional requirements and the aspiring educators in this area, and provide them with the best suited effective programs which the teacher or educator can improvise depending upon the learners' needs.

Research Problem

Learning difficulty causes a big gap between the academic performance and expected performance of a learner as information retention, integration and retrieval through teaching strategies are educational tools to translate the curriculum into reality; the most important elements of its constituent, as well as they relate closely to the goals and content. Its role is to determine the role of both teacher and learner in the educational process, and to identify the methods and appropriate activities to be used. The need to develop these strategies has emerged by adopting a trend based on the development of teaching strategies and diversity, focusing on the active and

positive role of learners' participation in the educational situation (Allan and Ahmed, 2012). Visual perception problems have received considerable attention as it leads to other developmental problems (ADHD, Autism, CAPD etc.), and shows learners who suffer from learning difficulties, one or more aspects of visual perception difficulties. It can be identified not only through the standardized tests, but also through direct observation of the visual behavior, as many of these problems can be dealt by following the appropriate treatment and training methods (Saqr, 2011).

A good number of empirical studies have focused on the role of visual perception in the process of educational learning (Pieters, Desoete,Roeyers, Vanderswalmen &Waelvelde, 2012; Abu Faadi, 2009; Garje, et al., 2015). Various studies prescribed effective programs in improving not only the visual perception but also the other senses of learners with learning difficulties (Mahmoud & Al nahdi, 2014; Badami, Mahmoudi, Baluch, 2016; Safaei, Bafrooeeb&Yarmohammadian, 2014). The results of these studies showed significant improvement in the skills of visual perception of pupils with learning difficulties. While other studies focused on using multiple senses as strategy to improve some skills of learners with learning difficulties; the findings emphasized on the effectiveness of multi-sensory strategy (Abdo, 2016; Hussein &Bajdaa 2016; Mayers, 2017; Albualez, 2006).

The present study aims to determine the effectiveness of a program based on a multi - sensory strategy in the development of visual perception of primary school learners with learning difficulties. Therefore the current study seeks to answer the question: Can a program based on a multi - sensory strategy of improving the visual perception of the primary school learners with learning difficulties?

Research Questions

The current study aims to address the following research questions:

a. Is there a difference in the level of visual perception among learners with learning disabilities following different teaching strategies (multi – sensory strategy /normal way)?

b. Is there a significant difference between the mean score of the experimental group of primary school learners with learning difficulties in their pre and post conduct of the program?
c. Is there a significant difference between the mean score of the experimental and control groups of primary school learners with learning difficulties in the pre and post-test after a month of the application of the program?

Hypotheses

a. There is no difference in visual perception at the level of statistical significance ($\alpha = 0.05$) among the pupils with learning disabilities in different teaching strategies (multi-sensory/normal way).
b. The statistical significance between the mean scores of the experimental group of primary school learners with learning difficulties in the two measurements (pre and post) of visual perception.
c. There is no statistically significant difference between the mean scores of the experimental group of primary school learners with learning difficulties in the two measurements (pre-test and post-test) visual perception after the passage of one month from the application of the program.

Importance of the Study

The importance of the study lies in the importance of the sample (Arabic speaking) to determine further course of studies and the recent trends in special education. It is a Multi - sensory strategy that helps us to identify the ways in which they can raise the awareness of learners dependent on the optimal employment of the senses. Improved visual perception among the learners with learning disabilities contribute to overcoming many of the problems, especially if this is done through multi - strategy senses. It would assist curricula designers by showing the importance and the crucial roles it plays in incorporating into the curriculum.

The importance of the study can be further determined as follows:The theoretical importance is to introduce the concept of multi - sensory

strategy and visual perception in line with the educational diversity of learning strategies. It is expected that this study will serve as an important scientific addition in the field of learning difficulties. The area of learning difficulties requires effort and intensive research to identify its characteristics and thus meet its academic and psychological needs. This study will further strengthen the effective use of multi-sensory strategy in dealing with various learning difficulties among the Arab learners.

The applied importance is to provide teachers with descriptive procedures related to the multi - sensory strategy. Moreover, this study identifies the strategy and its implementation to enhance the performance of pupils as well as the teachers in successful achievement of their course objectives. Planners take into account the application of multi - sensory strategy in the new editions of the school curriculum. It is anticipated that this study will help in the development of learning resources for learners especially those with learning disabilities such as teachers' guide etc. Furthermore, this study will help in improvising the existing training courses organized for teachers in the field

Objectives of the Study

The present study aims to identify the effectiveness of a program based on a multi - sensory strategy in the development of visual perception of primary school learners with learning difficulties. It also intends to measure the differences between the control and experimental groups so as to checks its effectiveness and prescribe recommendations for the various stakeholders like teachers and parents.

Limitations of the Study

The present study is limited to the sample of the kingdom of Saudi Arabia. The survey was conducted in 2017. The study sample comprised of primary school learners with learning disabilities.

Determinants of Study

The results of the study can be generalized in light of the findings based on the application ofthe programand the extent of circulation to a similar sample to ensure the reliability of the results.

Definition of the Technical Terms

a. *Estrategy of multi - sensory*: Itis a strategy that focuses on the use of different senses in teaching processes to resolve educational problems (Khatib, 2009).
b. *Visual perception***:** Is the ability to interpret the information and the surrounding visual light effects and the ability of the eye and the associated nerve centers to perceive the visuals through a series of processes that begin to convert the photon energy from the visible or reflected object to a neural signal in the retinal receptor level. The brain interprets it in a way that generates a personal sense of shapes, colors, size, movement and lustre (Suleiman, 2003).
c. *Learning Disabilities*: The cases of disorders in one or more of the basic psychological processes that include understanding and use of language (written or spoken), which can be observed in hearing, thinking, reading, spelling and arithmetic disorders. This is believed to be caused due to the injury of the brain functional aspects (brain injury or minimal brain dysfunction) and not caused by mental disability, be it related to audio or visual or other disabilities. Another definition of learning disabilities is that children, who suffer from the disorder in one or more of the basic psychological processes involved in understanding or using spoken or written language, may be seen in the weakness of listening ability, thinking, speaking, writing, misspelling or calculations for that matter (Abdo, 2016).

Review of Literature

There is a causal link between attention deficit and reading problems. Therefore, improvement in the attention skill does have positive impact on learners' reading skills as well (Franceschini, Gori, Ruffino, Pedrolli, &Facoetti, 2012). In the case of dyslexia, phonological awareness impairment is mostly common in developmental dyslexia but the dyslexic cases also have selective visual impairment that can cause reading difficulties (Snowling, 2000). The immediate concern here is that learners with reading difficulties lead to various issues like increase in dropout rate, delinquency or even suicide

cases (Denton & Al Otaiba, 2011; Benassi, Simonelli, Giovagnoli & Bolzani, 2011). The Individuals with Disabilities Education Act (IDEA, 1997) prescribed that learners with disabilities should have access to evidence-based instruction that is aligned with the grade level standards and make progress in the general education setting. Therefore, the educators have the responsibility to find intervention strategies and programs that have proven to be successful in an academic setting. As Kauffman (1996) states, "……special education is more urgent, more intensive, more relentless, more precisely delivered, more highly structured and direct, and more carefully monitored for procedural fidelity and effects" (p. 206, as cited in Vaughn & Wanzek, 2014). Researchers suggest that if the instructions are delivered in below average decoding skills and the content is delivered through different modalities, then the learners can cope with the standards of general educational curriculum with less effort. In order to become a fluent reader, a person is required to identify the words, understand its meaning from the text to complete the reading process and prove to have the desired skill. Mostly the learners with reading difficulties have weak phonemic awareness (Hines, 2009), and decoding words' meaning in the context maker the reader a fluent one (Magpuri-Lavell, Paige, Williams, Akins & Cameron, 2014). Multi-sensory strategy proves to be relevant in this situation wherein it bridges the gap. By teaching through a multi-sensory approach, the special educator instructs learners simultaneously through visual, auditory, and kinesthetic strategies to improve their memory and learning of new decoding skills (Todd, Campbell, Meyer & Horner, 2008; Boliek, Keintz, Norrix & Obrzut, 2010).

In learning disabilities cases the brain functions differently in terms of receiving and processing of the information or so to speak they have a different system of perceptual understanding of the things. These differences are reflected in their reading, writing, math, reasoning, listening and speaking skills. Problems in visual perception include, missing subtle differences in shapes, skipping words, misperceiving depth or distance, skipping lines, revering letters or numbers, or lack of eye-hand coordination. Problems in visual perception grossly affect fine motor skills, reading skills and numerical abilities. There are various studies focused on the variables i.e. weakness of visual perception when the learners with learning difficulties are

compared with normal cases (Bellocchi, Muneaux, Huau, Lévêque, Jover & Ducrot, 2017; Pieters et al, 2012). It was found in this study that 30 out of 106 leaners had difficulties in visual perception and motor skills. The 29% cases show that the situation is alarming and needed serious attention. However, research studies suggest that multi-sensory strategy for learners with learning disabilities has been found to be more effective than the other intervention programs related to the improvement in visual perception of special learners. The study of Alfassi, Weiss & Hefziba (2009) aimed to investigate the extent of difference in some cognitive characteristics of the visual ability in a sample of primary school learners with learning difficulties in writing and the ordinary learners. A selected sample consisting of 30 learners from the fifth grade who appeared to have learning difficulties were tested on visual perception which included visual discrimination, optical closure, perception of the relationship between the form and its components, visual integration and spatial relations, and visual information. The results of the study suggested a considerable difference between the learners with learning difficulties and the learners without any learning difficulties.

Garje et al (2015) studied the visual perception and integration of kinetic visual among the children with learning difficulties. The results pointed to the weakness of the cognitive visual aspects that influenced the academic efficiency, and the results confirmed that the early treatment of visual recognition provides long - term care of the learners. There are studies that dealt with improving visual perception for people with learning difficulties using a variety of programs that included activities related to various senses. Mahmoud &Alnahdi (2014) aimed to verify the effectiveness of remedial computer assisted education in the development of some visual recognition skills for pupils with learning difficulties in the second grade. In addition, the study applied by scale training program revealed significant improvement in the level of visual perception in the experimental group.

Badami, Rokhsareh, Mahmoudi, Sahar, Baluch and Bahman (2016) identified the effectiveness of the visual perception as a strategy to improve reading skill amongst the learners. The results showed that the cognitive vision exercises improved cognitive skills, visual and reading skills for children with dyslexia. Safaei et al (2014) established the effectiveness of a program based on visual perception to improve reading skill between the second graders with learning difficulties. Abdo (2016) used a multi - sensory

approach to treat writing difficulties in the third grade pupils. The result was in favor of the experimental group because of the application of the program; the program based on writing patterns by using a multi - sensory has a clear impact in the treatment of writing difficulties in the third grade learners. Abdo (2016) aimed to identify the effectiveness of the multi - sensory approach in overcoming learning difficulties (especially reading and writing). The result was in favor of experimental group that shows the effectiveness of the strategy.

In order to identify the effectiveness multi - sensory learning program for the treatment of some spelling difficulties among female learners with learning difficulties, Hussein & Bajdaa (2016) indicated that the statistics was in favor of the experimental group. In a similar study Albualez (2006) used multiple sense strategy to improve memory of children with difficulties in their learning and the results indicated significant improvement. Previous studies addressed some programs to improve visual perception (Mahmoud et al, 2014; Badami et al, 2016; Safaei et al, 2014). They used in these studies a variety of programs such as therapeutic computer - aided instruction based on cognitive skills and sports vision. Another group of studies has confirmed the effectiveness of multi- sensory strategy in improving some aspects of the deficiencies of the learners with learning difficulties(Mohammed, 2015; Abdo, 2016; Hussein et al 2016; Albualez, 2006).

Methodology

In this study quasi- experimental approach is followed to reveal the effectiveness of a program based on a multi-sensory strategy in the development of visual perception of primary school learners with learning difficulties.

Study Samples

The samples for the study are all learners with learning difficulties in special schools for the second semester of the year 2017/2018. Members of the study were deliberately selected from the learners of the primary stage of learning disabilities. Two groups were formed; the first group: experimental

group consisted of 30 individuals who have been taught with the strategy of multi - sensory, the second group: control group consisted of 30 individuals have been taught in the traditional way.

Tools

Multi - sensory strategy

The multi-sensory strategy ensured the development of visual perception among learners with learning difficulties in Saudi Arabia. In the first stage i.e. the foundation building strategy, number of total sessions, the duration of each session and the respective objective of each session were determined. Keeping in mind the current level of learners' performance participating in this study, required stability and flexibility in the application of the daily program was maintained so that necessary amendments could be carried out if found necessary. Researchers involved in this activity were required to make use of the materials and be available with the learners during the practice sessions as well as be involved in exchange of dialogue with the learners. The program should not be too tiring for the learners so that appropriate rest periods can be maintained for the effective implementation of the program. The program included three major parts: the first one focused on paper flyer, the second one focused on the articles from day-to-day life and the third one focused on articles identification. Each part was further distributed into two sessions (each one was of 40 mins). In the first part of the program, the learners were expected to infer the factual information from a given/narrated text and also expected to identify the related words used in the text. In the second part, the learners were made to identify the articles from the day-to-day life using their multiple senses. They were expected to infer the details related to shape, size, color, materials and its components etc. of the images or articles (visual stimuli) displayed. Based on their experience from the activities carried out in the first two parts, the learners were exposed to different articles where they had to do similar activities so as to enforce their previous learning and retention ability. (see Appendix 1).

Study procedures

The researcher conducted an initial exploratory study to ascertain the desired duration of the suitable training program for learners in terms of the activities and the tools allocated for each session and time. Pre-measurement was done to ensure parity between the control and the experimental groups in order to ensure that the improvement in the variables of the study is caused due to the training program (see Appendix 1).

First, all necessary official approvals were taken to maintain the ethical standards for the present study. The study sample was randomly distributed into two groups - experimental, and the control. After selecting the study sample, test of visual perception on a pre-study sample (control and experimental groups) was conducted. The teaching strategy was conducted as per use of multiple-senses on the experimental group. After the completion of program, appropriate statistical analysis was conducted of the collected data. Finally, interpretation of the results was discussed and recommendations were made based on the results of the study.

Statistical treatment

The use of statistical analysis was conducted using the SPSS program. SMA, Standard deviation and Test "T" ' was conducted to calculate the significance of differences between the groups. The size of the effect was calculated by using ETA square (H 2). The T test was conducted to identify the significance of differences between the mean scores of the experimental group for pre-test and post-test measurements. The T test was conducted to learn about the significance of differences between the averages of the experimental and control groups.

Results and Discussion

There is no difference in visual perception amongst pupils with learning disabilities in different teaching strategy (the traditional way, multi - sensory strategy). To answer this question, the arithmetic averages and standard deviations of visual perception in the pre and post measurements of the two

groups are calculated (the traditional way and multi - sensory strategy). The following table 1 below illustrates the results:

Table 1

Averages and standard deviations of the experimental and the control groups in pre-test and post-test measurements and averages with standard errors in the post-measurement

Groups	Pre-testmeasurement		Post-test measurement		Average	
	Average	Variance	Standard Deviation	Variance	Standard Deviation	Variance error
Thetraditionalmethod	1.4	0.101	1.72 0	0.06	1.721	0.011
Multi-sensorystrategy	1.418	0.116	1.815	0.07	1.813	0.011

The table 1 shows that the mean of the experimental group (multi - sensory strategy) in post-test is 1.815, while the average of the control group (traditional method) is 1.720.

To check whether there is a difference between averages in the post-test effect of teaching method (multi- sensory strategy), is statistically significant, common single analysis of variance (ANCOVA) is conducted. The following table 2 below shows that:

Table 2.
The results of ANCOVA of the variable groups (traditional, multi - sensory strategy)

Groups	Pre-testmeasurement		Post-test measurement		Average	
	Standard Deviation	Variance	Standard Deviation	Variance	Standard Deviation	Variance error
Experimental group (Multi-sensory strategy)	1.418	0.116	1.815	0.068	1.813	0.011

* The level of significance = 0.05 α

Table 2 shows that there is no statistically significant differences at the significance level (= 0.05 α). In the average measurement of the two groups control (traditional method) and experimental (multi - sensory strategy), the value of "f" is 35.538 in terms of statistical significance 0.00. Table 1 shows that the differences between the averages of the experimental group (multi-sensory strategy) and control group (traditional method) was 0.09. The result implied that the multi-sensory strategy was more effective than the traditional method of instruction.

Perhaps the reason for this is due to the quality of mental growth as determined by the growth and the accumulation of mental contents and mental functions, such as cognition, learning, problem solving, thinking, etc. The contents of the mental processes depend on the results of mental phenomena that is the so - called knowledge; this is what can be described as the contents of the child's mind. Effective perception recognizes the outside world through the senses and requires cognitive ability that gradually enhances through the child's senses. Multiple senses reinforce the data stored in the brain. However, among the other mental processes, the most crucial one is the recognition ability that should also be achieved during the first two years of life. Therefore, the use of multiple senses in teaching strategy helps the child to develop this ability in the growing child as well.

There is no statistical significance between the mean scores of the experimental group of primary school learners with learning difficulties in the two measurements; pre and post study in terms of visual perception. The

post-test result was in favor of the experimental group. To answer this, the averages and standard deviations account in the two measurements (pre and post) in the visual perception is evaluated and table 3 illustrates this.

Table 3
Averages and standard deviations in the two measurements: pre and post in the visual perception

Groups	Pre-testmeasurement		Post-test measurement		Average	
	Standard Deviation	Variance	Standard Deviation	Variance	Standard Deviation	Variance error
Experimental group(Multi-sensory strategy)	1.418	0.116	1.815	0.068	1.813	0.011

Table 3 shows the differences between the mean scores of the experimental group of primary school learners with learning difficulties in the two measurements (pre and post) in their visual perception. The result is in favor of post-test with 1.815, while the average of the pre-measurement was appeared to be 1.418.

The reason for this may be due to the visual growth aspect when in no specific time the learners realize the continuity of size and shape. It is the corrective action carried out by the brain to help the learners perceive distant objects of the same size that can be seen from a close distance. The results showed related differences in visual perception between the two measurements (pre and post) of the group received training using a particular strategy.

There are no statistically significant differences between the mean scores of the experimental group of primary school learners with learning difficulties in the two measurements (Pre-test and the Post-test) of visual perception after the duration of one month from the application of the program. To answer this question, the test application (Paired sample T-Test) to detect differences between the averages among the members of the experimental group in the development of visual perception is as a result of the strategy of multiple senses. This is illustrated in table 4 below:

Table 4

Test results of Paired sample T Test to detect differences between the averages among the members of the experimental group in their visual perception after multiple senses strategy

Variable	Measurement	Variance	Standard Deviation	Values "t"	Statistical significance
Visual perception	Post-test	1.81	0.07	0.067	0.947
	Pre-test	1.82	0.07		

Table 4 shows that there are no significant differences at the significance level (= 0.05 α) between the averages of the members of the experimental group due to the strategy of multiple senses in the two measurements (pre and post), which did not reach the values of "t" at the statistical significance level of 0.05 α. Perhaps the reason for this is due to the impact of the strategy of the multiple senses after a period, applied to members of the experimental group and therefore any differences did not appear on the post-measurement.

During the program, most of the participants provided positive feedback and showed signs that they were fully aware of the visual stimulus. All thirty participants identified the visuals presented from their multi-sensory experience. The attention level of the learners' increased substantially as these stimuli produced a greater impact on their learning (they were found laughing and excited while responding to various stimuli). Multi-sensory experience has been found to be effective in enhancing the learners' memory (Matos, Rocha, Cabral &Bessa, 2015), reading ability (Horchak, Giger, Cabral &Pochwatko, 2014; Taghvayi, Sh. Vaziri& Kashani, 2012; Wassenburg, De Koning & van der Schoot, 2015), numerical ability (Malekian, 2013). Though this study explored and tested nature of visual perceptions, this has further implication on developing other skills of the learners as well. The current practices in the area of reading comprehension proved that mental simulation training improves general reading comprehension and this study demonstrates how the learners connect their sensory-motor experiences to the visuals displayed for their various activities. The results of this study claim that visual perceptions are developed through multi-sensory experience but it is yet to be

explored further why third grade children responded more effectively than the fourth graders (Koning, Bos, Wassenburg&Schoot, 2017). Matos et al (2013) suggested that multi-sensory learning experience is found to be more effective than the audio-visual experience. In this study, the responses of the learners suggest that the multi-sensory program has significantly improved the visual perceptions of the learners.

Recommendations

The teachers specialized in special education need to use modern strategies in teaching wherein the learners are stimulated to use all the senses in various activities. It is necessary to take into account the mental age differences amongst the learners before implementing any particular teaching strategy. Moreover, the resource materials used for teaching purpose should conform to the mental age as well as the teaching strategy to be applied as the special learners do need distinctive care and attention. Specialized committees should be formed to ensure that the families are well aware of the structure of the programs so that their active involvement and encouragement could yield better results. Further studies should be carried out using a larger sample so that the other subtle gaps could also be addressed properly.

Conclusion

The results of the study indicate that there is a difference in skills of visual perception among the learners with learning disabilities in different teaching strategy (multi-sensory strategy/traditional method), and the differences were in favor of multi - sensory strategy. There is a difference between the average scores of the experimental group of primary school learners with learning difficulties in the two measurements (pre and post) in the visual perception and the differences in favor of post-study data. There are statistically significant differences between the mean scores of the experimental group of primary school learners with learning difficulties in the two measurements (pre and post) of visual perception after the duration of one month from the application of the program.

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Appendices

Appendix 1. Multi-sensory program

Multi-sensory program

A training program includes sessions that include distractions and exercises that attract learners' attention visually. The program included the following sessions;

First session: Paper Flyer: The session consisted of two training sessions (each session = 40 minutes); the activities and training of visual perception were presented.

Second Session: Article from day-today life: The session consisted of two training sessions (each session = 40 minutes); the activities and training of visual perception were presented.

Third Session: Article identification: The session consisted of two training sessions (each session = 40 minutes); the activities and training of visual perception were presented.

First Session:

Paper Flyer

Activity

Firas saw a paper fly and said, “Dad! I want a flyer like this”.
Father said, "Come, let us make one. Firas! We need thread, paper and glue for this”.

His father cut the paper and Firas made the tail of the plane and colored it with beautiful colors. He told Firas to tie the flyer with the thread and release it in the air.

Firas said, "Father! You did it so well".
Firas asked, "How do we make a flyer ride?"
Father said, "With the help of science and we can do whatever we want".

Training on visual perception

1. WhatdidFirassee?
2. WhatdidFirasask?
3. WhatdidFirasbring?
4. Who made the tail of the plane?
5. What Firas tied the flyer with?
6. How can we make the flyer fly like a real plane?

Read the word below and circle around the matching word from the activity.

Tail	wail	sail	tail
Science	waince	mince	science
Want	went	rent	want

Read

Talal, Noman and Firas went to the stadium. Talal brought a kite and Firas brought a football. The boys played a lot. After the game, Talal collected the waste in a bag.

Read every two words and note that deleting any word leads to a new word:

ba:b	duba:b	(Door flies)
Firas	ra:s	(Name head)
nɔ̂ra'	nɔ̂ra	(We see)
kitab	ta:b	(Book repentance)
Nizar	za:r	(Name visited)
Sa:fɔ̂raa	sa:raa	(Travel walk)

Second Session:

Prompt: There is material around us everywhere.

Article around me:

Everything around me I feel is a substance e.g. my body etc. Materials I breathe, see, hear, feel, smell, and taste are different forms of substance.

1. Forms are displayed through different images among learners.

   Materials vary in their components:

   Different forms are displayed through different images/objects among learners:

   a. The cup consists of pottery
   b. The sharpener is made of metal
   c. The ruler is composed of wood material
   d. The game consists of a plastic material
   e. The air inside the balloon consists of gases

   What are the benefits of the images/objects displayed?

2. What are the characteristics of displayed materials?

   Answer: Materials are displayed and its features are asked to identify (e.g. shape, size, color, components etc.)

3. Different forms are displayed through different images among the learners to let them identify the articles.

   Activity: Each article occupies its own place (place)

   Props for the activity: a cup filled with water, a cup of water to the middle, a stone, and a thread. I put the stone in the cup so as to raise

the water level to the middle of the glass. Can you do this without the water pouring out of it? How does it happen? Why does it happen?
The size of the material is the space or place to occupy; each material has a space of its own. The materials of large size occupy large space, and so do the small materials occupy small space.

Third Session:

Look at the pictures, and notice:

1. Articles: Which one contains more wood; the wood reservoir or the chair?


Which is heavier: the chair or the wood reservoir?

2. Different shapes are displayed through different images among the learners.


The cabinet contains more wood, so the cabinet is heavier than the chair.

3. Which bottle in the picture has more water?

(a)

(b)

Which is heavier? Why?

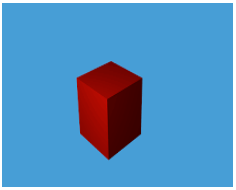
4. Display corrupted formats through different images among the learners.

Glass contains more water than the bowl?

Body mass: The amount of material in it. It is known that all materials have common characteristics i.e the space occupied by them.

Identify the articles around and compare the objects in terms of their mass. What are the common characteristics of the objects?

Different forms are displayed through different images among learners.



a. It has a spherical shape.
B. It has red color.
C. It's a block
D. It has a rough feel.
e. It's a space.
f. It is composed of wood

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Psychology in Crisis

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Review

Hughes, B. M. (2018). *Psychology in Crisis*. London: Macmillan International Higher Education.

Brian Hughes has many years of expertise in researching psychological stress and writes widely on psychological science and empirical research. His most recent book, *Psychology in Crisis,* provides students and researchers with a tool for scrutinizing psychological research methods and results, and the style of writing and length of the book makes it accessible and concise for lay readers. By examining various problems and crises in the field, Hughes aims to address the question of whether or not psychology is a reproducible science, concluding with recommendations for how the field can improve.

Chapters 1 and 2 address the characteristics of psychology that make it particularly vulnerable to false results, and places psychology in the context of the current 'post-truth' climate. Hughes explains the importance of the Open Science Collaboration's (2015) unsuccessful attempt to replicate widely-cited psychological studies: the pinnacle of the replication crisis in the field. Hughes describes psychology as 'theoretically sectarian' (Hughes, 2018, p. 31), and how historical differences in theory have evolved into the six major paradigms of psychology: biological psychology, behaviourism, cognitive psychology, social psychology, psychoanalysis and humanistic psychology. Both theoretical conflicts and methodological conflicts are succinctly explained.

The following two chapters include various examples that highlight the difficulties of measuring abstract concepts in psychology, from Intelligence Quotient to life stress. Issues regarding reliability and validity are discussed; in particular, the conflation of different variables shows the reader how the discipline is particularly susceptible to producing

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unreproducible findings and defining unclear concepts. A concise account of the benefits and traps of statistical testing, especially Null Hypothesis Significance Testing, assists Hughes with a robust commentary on psychologists' blatant manipulation of samples and data sets to gain significant p-values. Although potentially lacking some redeeming information—for example, more examples of appropriate use of statistics in psychology—the section sums up the statistical crisis in psychology thoroughly, and tackles the difficult questions that the field has often sidelined.

In chapter 5 Hughes describes the sampling crisis using various examples to demonstrate how WEIRD sampling (samples made up of participants that fit into the Western, Educated, Rich and Democratic grouping) has neglected important cultural differences and nuances in psychological phenomena. Hughes explains how the drawbacks to convenience sampling add to the predicaments in psychology, and uses examples of how unconvincing sampling has far-reaching implications beyond research replicability. The real-world implications of exaggeration in psychology (particularly in neuroscience) are addressed in chapter 6 with examples relating to inaccurate claims in brain-imaging studies, and the controversial 'Pacing, graded Activity and Cognitive behaviour therapy: a randomised Evaluation' trial on Chronic Fatigue Syndrome (White et al. 2011). Non-equivalent control groups, lack of blinding and adjustment of assessment criteria revealed that the effectiveness of the intervention for treating Chronic Fatigue Syndrome was exaggerated—perhaps one of the most striking examples of poor research in the book.

Hughes concludes the book explaining how the crises in psychology are maintained by the culture of the field, and that some political groups are benefitting from the crises. In the author's perspective, selective publishing, a substandard peer-review system and dishonest co-authorship amongst other things reinforce the problems in psychology. Hughes describes a 'crisis of incorrigibility' in psychology (p. 146), and highlights the need for more data-sharing, re-structuring the peer-review system and exercising due scepticism of findings where appropriate. In *Psychology in Crisis*, Hughes grapples with the most fundamental problems of the field, that are deep within a research culture that is in need of restructure. The author does not skirt around difficult questions and his critical assessment of research is

exemplar, making this book pertinent and long overdue reading for researchers, students and anyone interested in or associated with psychology's journey to recovery.

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