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Career aspiration and related contextual variables

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ABSTRACT
This study examines the differences between male and female adolescents and their maths study on their career aspiration. The study investigates the effect of grade point average and parents’ educational level on adolescents reported career aspiration. A career aspiration scale is administered to 2717 students representing tenth and eleventh grades. The findings reveal females have higher scores on career aspiration than males. Students who study pure maths in their career path have higher score on career aspiration than those with applied maths. Results also show significant effects of parents’ educational level and grade point average on adolescents’ career aspiration. Suggestion is provided to consider contextual variables in designing interventions.

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Career aspiration; gender; math; academic achievement; parents’ educational level

Introduction

Occupational aspirations have been conceptualized within career developmental theories as a major career developmental task for adolescents when seeking careers that are compatible with their self-concepts (Patton & Creed, 2007). Vocational self-concept as proposed in Super’s vocational development theory, plays an important role in choosing careers that match individuals’ self-image and is formed by interaction between the person and the environment. View of social cognitive theory highlighted environmental factors such as opportunities, resources, barriers, financial resources, parental behaviour, and school influence. Self-concept was associated with future career projection (Holcomb-McCoy & Young, 2012). It was linked to individual’s expression of career-related goals or choice and early aspiration can be applied to predict later aspiration and, ultimately, the occupational choice that people make (Rojewski, 2005). Adolescents’ aspirations and expectations predicted adult educational attainment 8 years later (Beal & Crockett, 2010). As pointed by Gottfredson (2005) vocational development erupts into conscious awareness during adolescent stage at age 14 and older. However, many adolescents still struggle to know what their specific interests, abilities, and goals are, partly, because many of their vocationally relevant personal characteristics are not yet fully formed. Therefore, the risk at this stage of development is that adolescents may commit themselves to a choice before they really know the options accessible to them. Clearly, many students are unaware of their education and employment options. For example, students reported that their career choices were based on emotion rather than on career opportunity (Holcomb-McCoy & Young, 2012).

According to Rowan-Kenyon, Perna, and Swan (2011), large percentage of students (10.2%) did not decide on a nature of occupation and was unable to give an area of interest. Further, higher percentage of eleventh graders than ninth (13.5% vs. 7.6%) reported that they were uncertain of their occupational aspirations. In addition, a recent study conducted by Dar (2019) reported 17.83% of adolescents have shown low career aspirations, 58.33% falls in moderate level of career aspirations. This suggests that
although some adolescents maintain their aspirations and expectations for the future, for others, future-oriented cognitions are in fluctuation (Beal & Crockett, 2010). Changes occur due to the insidious effects of social pressures, family background, socio-economic status, access to opportunity structures, and school factors (Akos, Lambie, Milsom, & Gilbert, 2007; Gutman & Schoon, 2012; Sadolikar, 2016; Schoon, 2001). Adolescents as Patton and Creed (2007) suggested need to adjust their occupational aspirations from initial fantasy aspirations to tentative, and then final, expectations, as they become increasingly aware of personal and contextual barriers impeding the attainment of these aspirations.

**Contextual variables related to career aspiration**

Career aspirations are influenced by factors such as gender, socio-economic status, better academic performance, parents’ occupation and education level, and parental expectations (Adragna, 2009; Berzin, 2010; Domenico & Jones, 2006). These factors influence the norms against which adolescents compare themselves and the context within which goals are pursued. The discrepancy between the aspirations of male and female adolescents, or the lack of it, may be attributed to contextual factors (Massey, Gebhardt, & Garnefski, 2008). Cultural beliefs about gender bias individuals’ perceptions of their competence at various career-relevant tasks, controlling for actual ability. To the extent that individuals then act on gender-differentiated perceptions when making career decisions, cultural beliefs about gender channel men and women in substantially different career directions (Correll, 2001). Gender differences observed on career aspirations revealed that females had higher career aspirations compared to males (Blackhurst & Auger, 2008; Nadeem & Khalid, 2018). Further results showed that females were interested in a significantly greater number of careers and showed greater gender-role flexibility in their career aspirations than their male counterparts (Mendez & Crawford, 2002). For example, females are more likely than males to aspire to and to attain the highest status occupations, even those that are male-dominated (Adragna, 2009; Feliciano & Rumbaut, 2005). Females preferred subjects such biology, and males favoured physics and chemistry (Kang, Hense, Scheersoi, & Keinonen, 2019). Males preferred realistic careers more than females while social careers are preferred by females more than males (Migunde, Agak, & Odiwuor, 2012). Males appear to place a greater value on prestige and external rewards than do females; while females tend to be attracted more by the internal rewards (Tang, Pan, & Newmeyer, 2008). However, other researcher found no differences between males and females on career aspirations and expectations. They suggested that this reflects societal changes associated with increased gender quality (Creed, Conlon, & Zimmer-Gembeck, 2007).

In addition, academic achievement predicted educational aspirations of the secondary school adolescents (Salami, 2008). Accordingly, it could be that students who achieve well in school, have higher career aspirations than those who do not (Adragna, 2009). High-achieving females exceeded the aspirations of average-achieving females and males, and were the same as those of high-achieving males (Watson, Quatman, & Edler, 2002). Similarly, adolescents who had lower prior achievement with lower socio-economic backgrounds were more likely to have uncertainty in their career aspirations (Gutman & Schoon, 2012). Young people who believe they have the ability to achieve and who attribute their success to hard work rather than luck or fate have higher aspirations than their peers (Gutman & Akerman, 2008). Additionally, females who perceived themselves as hard working and more internally motivated were more likely to aspire to careers that are male dominated. In contrast, males’ career aspirations appeared largely unrelated to their self-perceived achievement motivation. It may be that among girls, high career aspirations are not necessarily expected, and it is the hardest working girls that are most likely to aspire to non-traditional careers for women (Mendez & Crawford, 2002). Overall, individual achievement was positively related to academic self-concept among individuals in 52 countries and career aspirations in 42 countries. The positive effect on career aspirations was mediated by self-concept in 54 countries. The findings in relation to career aspirations are thus particularly worrisome. Students who might have the necessary set of skills to pursue careers, for example, in science and
technology but they schooled with other high-achieving students are most likely to suffer in their perceived abilities and to be turned off from further post-secondary engagement in these fields (Nagengast & Marsh, 2012).

It seems that the teenager’s own aspirations are most strongly influenced by the parental aspirations. If parental aspirations are high, so are the teenager’s aspirations (Schoon & Parsons, 2002). In addition, the vocational aspirations expressed in adolescence differed between females and males, and were related to parental education and test scores in mathematics (Schoon, 2001). Educational commitment of parents to their children as measured through parental academic push showed positive effects on student career aspiration. It is thus more likely for students to internalize parental academic expectation to promote higher career aspiration (Ma & Wang, 2001). Further, parents’ level of education and socio-economic are associated with children career aspiration. Family socio-economic status is strongly linked to educational aspirations for males (Guo, Marsh, Parker, Morin, & Yeung, 2015). In instance, adolescents whose mothers are employed are likely to consider a greater number of occupations than those whose mothers are not employed (Gutman & Schoon, 2012). Adolescents from higher income families were more likely to aspire to professional jobs than those from lower income families (Ashby & Schoon, 2010). Although the socio-economic statue may reflect education resources at home, the parental science and academic push ensures commitment of the resources in students’ education (Wang & Staver, 2001).

However, for families with lower parental education levels, parent academic involvement was directly associated with higher aspirations. Therefore, low socio-economic status parents may not become involved in their children’s schooling in ways that enhance or change school behaviour or performance, but their involvement may communicate their expectations for their adolescents’ future success and upward mobility (Hill et al., 2004). Added, although there was no significant difference between the level of prestige for parent and student jobs, the trend showed children aspiring to a slightly higher-level of prestige for the students’ reported real job. This could be due to the career barriers in students’ lives acting as motivation to achieve more highly than their parents, rather than restricting them (Creed et al., 2007).

Academic proficiency and maths self-efficacy were the strongest predictors of persistence in science and engineering careers aspiration (Mau, 2003). It is likely that maths performs as a filter by limiting students’ future options. For students who experienced a low grade in maths, not only did they start out with lower expectations for their careers, but also their aspirations declined at a much more rapid pace from mid high school onwards (Shapka, Domene, & Keating, 2008). It has been emphasized by Ma and Wang (2001) the importance of academic training in mathematics to the enhancement of student career aspiration. Within this realm, researcher indicated that students who capitalize on positive educational outcomes in mathematics are more likely to aim for higher career goals.

The importance of exploring adolescents’ career aspiration is based on the argument of the high level of uncertainty in Arab world, which makes it difficult to predict the future of career paths (AlMunajjed, Sabbagh, & Insight, 2011; Heggli, Haukanes, & Tjomsland, 2013). Moreover, the gender gap between females and males in terms of academic achievement was documented within Omani context and a recommendation was provided to encourage educators and parents to set higher expectations for males (World Bank, 2013). As with primary school, girls also learn more than males in secondary school. The share of boys not learning was at least 20 percentage points greater than females (AlMunajjed et al., 2011; Steer, Ghanem, & Jalbout, 2014). Youth are an important human resource for the development and are a driving force for economic development. While youth face enormous challenges, particularly with regard to employment and livelihoods, they, nevertheless, represent the opportunity of today and tomorrow – as educationalists and innovators, entrepreneurs and investors, health professionals and scientists, politicians, and peacemakers (Dar, 2019).

Additionally, studies documented there is significant gaps regarding the populations, career constructs, and family variables examined, and these gaps prevent counselling psychologists from fully understanding the family’s influence on career development (Gutman & Schoon, 2012; Wahl & Blackhurst, 2000). As reported, investigating the concept of career aspiration may help counsellors and policy makers
in designing interventions and providing different resources to advance the educational and career expectations of children (e.g. AlMunajjed et al., 2011; Gutman & Schoon, 2012; Schoon & Polek, 2011). The value of exploring the career aspiration is based on studies’ findings that teenage career aspirations are linked to adult social status attainment (see Ashby & Schoon, 2010; Feliciano & Rumbaut, 2005; Mello, 2008). Therefore, it is required to prepare students from a wide range of racial, cultural, and socio-economic backgrounds for post-secondary options that meet the unique needs of each student as well as the needs of the job market and the national economy (Wahl & Blackhurst, 2000). Another part of aspiring children is to provide parents with information regarding available career resources and inform them of the importance of expressing interest, trust, confidence, and pride in their children (Keller & Whiston, 2008). The current study aimed at investigating career aspiration and its relationship with contextual variables. Therefore, the focus was on exploring if, there were differences between males and females in their career aspirations. Further, if there were differences between students who study pure maths and those with applied maths in their career aspirations. Additional, the study examined if there was effect of GPA and parents’ educational level on career aspirations.

**Method**

**Participants**

The sample of the study was selected based on stratified clustering method, consisting of 2717 students from tenth and eleventh grades. Students were selected from public schools within various governorates in Sultanate of Oman (five governorates), representing 1373 males and the rest 1344 were females. Based on educational system in Oman, students in grade tenth were required to choose courses related to their career path. Courses such as pure and applied maths have to be chosen in grade tenth and that will determine their career path during high school and college. Students involved in this study with pure maths related career path were 1377 and 1300 with applied maths.

**Measure**

The study applied a short version of Career Aspiration Scale (CAS) to measure students’ aspiration (O’Brien, 1996). O’Brien redefined career aspiration as the degree to which women aspire to leadership positions and continued education within their careers. The results of studies illustrated sound psychometric properties of the CAS when used with adolescent, college, and post-college sample (Gray & O’Brien, 2007; O’Brien, 1996). CAS was widely used in various cultures (Al-Bahrani, Al-Lawati, Abu Shindi, Bakkar, & Alsinyabi, 2019; Cheng & Yuen, 2012; Kim, O’Brien, & Kim, 2016; Wang & Ma, 2001). Further, the scale’s reliability and validity were assessed on a sample of adolescents within Omani context. The CAS had acceptable internal consistency (Cronbach’s α = 0.60). An exploratory factor analysis yielded a support for a nine-item version identifying single construct. The study applied a nine-item CAS on a five-point Likert-type scale. The scale reflects items such as ‘I plan on developing as an expert in my career field’, and ‘I hope to become a leader in my career field.’ Higher scores reflect more ambitious career aspirations (Al-Bahrani et al., 2019). Items reggrading personal information were included in the scale. Students were asked to identify type of maths they were taken within their career path plan and their GPA within percentage they got during the first semester as well as their parents’ educational level.

**Procedure**

The approval was obtained from the Ministry of Education. Students of tenth and eleventh grades participating in this study represented public schools of five governorates. The study scale (CAS) had been administered to the participants for 25 min.
Data analysis

Descriptive statistics and statistical analysis of an independent T-test was performed to determine if the mean of males and females and their type of maths related to career path were statistically significant different on CAS. Further, a one-way analysis of variance conducted to find the effect of the GPA and parents’ educational level on participants’ career aspiration.

Result

Table 1 shows statistically significant differences in the scores of aspiration among males (\(M = 27.83, SD = 4.42\)) and females (\(M = 29.75, SD = 4.11\)), \(t(2715) = -11.76, p = .05\). As well, the results in the table shows that participants with pure maths have higher scores (\(M = 30.05, SD = 4.01\)) than those who are taking applied maths (\(M = 27.53, SD = 4.34\)), \(t(2675) = 15.62, p = .05\).

Table 2 shows differences in means and standard deviation on CAS based on students’ GPA and their parents’ level of education. Table 3 reveals a significant effects of students’ GPA and their parents’ level of education on their scores on CAS.

Since there are significant differences among variables, post hock (LSD) was performed to determine the existence of these effects. Post hock comparisons using the LSD test yielded significant differences in all comparisons except the GPA with 49 or lower. The mean scores of participants with GPA of 90–100 had significantly stronger career aspiration than those with 49 and lower (\(M = 5.00, SD = .89\)), 50–59 (\(M = 4.96, SD = .38\)), 60–69 (\(M = 4.03, SD = 27\)), 70–79 (\(M = 2.37, SD = .23\)), and 80–89 (\(M = .98, SD = .22\)). The results also showed the career aspiration of students whose fathers had college degree was significantly stronger career aspiration than those whose parents were literate (\(M = -2.13, SD = .29\)), had degree below the high school diploma (\(M = 1.39, SD = .22\)), and had high school diploma (\(M = .83, SD = .22\)). Concerning the mother educational level, the mean score of college degree was significantly stronger than those parents are literate (\(M = 1.85, SD = .29\)), had below high school diploma (\(M = 1.31, SD = .25\)), and had higher diploma (\(M = .40, SD = .27\)). Taken together, GPA and parents’ level of education had an effect on career aspiration. Clearly, results suggested that participants with higher GPA, obtained higher career aspiration. Further, students whose fathers and mothers had higher educational level, they reported higher career aspiration.

Table 1. One-way analysis of variance of career aspiration score as a function of students’ GPA and parents’ educational level.

| Variables                  | Source       | df  | SS       | MS       | F       | Sig  |
|----------------------------|--------------|-----|----------|----------|---------|------|
| Students’ GPA              | Between groups | 5   | 6184.39  | 1236.88  | 73.68   | .000 |
|                           | Within groups | 2559 | 42960.19 | 16.79    |         |      |
|                           | Total        | 2564 | 49144.59 |          |         |      |
| Fathers’ level of education | Between groups | 3   | 1223.84  | 407.95   | 22.13   | .000 |
|                           | Within groups | 2587 | 47684.08 | 18.432   |         |      |
|                           | Total        | 2590 | 48907.92 |          |         |      |
| Mothers’ level of education | Between groups | 3   | 1098.36  | 366.12   | 19.61   | .000 |
|                           | Within groups | 2609 | 48702.55 | 18.67    |         |      |
|                           | Total        | 2612 | 49800.92 |          |         |      |

Table 2. Mean and standard deviation on CAS due to participants’ gender and maths-related career path.

| Gender   | M     | SD  | df  | T     | Sig |
|----------|-------|-----|-----|-------|-----|
| Male     | 27.83 | 4.42| 2715| -11.76| 0.00|
| Female   | 29.75 | 4.11|     |       |     |
| Maths-related career path | M     | SD  | df  | T     | Sig |
| Pure     | 30.05 | 4.01| 2675| 15.62 | 0.00|
| Applied  | 27.53 | 4.34|     |       |     |

*p < .05.
The current study yielded significant results concerning the differences between females and males in their perceived career aspiration. Females reported higher career aspiration compared to males. It is somehow consisted with previous studies reported differences in career aspiration in regard to gender (Akos et al., 2007; Adragna, 2009; Nadeem & Khalid, 2018). Nonetheless, Shapka et al. (2008) found that males and females may have similar career aspirations through their entire education, but once they are faced with the reality of seeking employment in their aspired field, females and males may react differently to opportunities or barriers, resulting in females choosing less prestigious careers. Feliciano and Rumbaut (2005) argued that males begin with lower educational and occupational expectations than females in junior high school, and are also less likely to translate high expectations into realities in early adulthood. Although, various studies linked the types of female students’ career choices and aspirations are largely gender based (e.g. Correll, 2001; Mutekwe, Modiba, & Maphosa, 2011; Nadeem & Khalid, 2018). The data as Sikora and Saha (2009) pointed indicating concerns over males lagging behind and that might be warranted.

The significant findings of this study revealed that participants with pure maths-related career plan had higher level of career aspiration than those with applied maths. This finding in accordance with prior results indicated that low maths achievers had lower occupational aspirations to begin with. For educational aspirations, high maths achievers had very high aspirations through high school and afterwards, whereas low maths achievers’ aspirations remained consistently low (Shapka et al., 2008). It goes in line with the importance of conducting academic training in mathematics to the enhancement of student career aspiration (Ma & Wang, 2001).

The present result indicated that participants whose parents have higher level of education reported higher level of career aspiration than those whose parents have lower level of education. This consistent in some parts with previous works by Hill et al. (2004) who found most of the students whose parents had university degrees expect to finish higher education courses. In other words, educational aspirations for their offspring were higher among parents with university degrees (Gil-Flores, Padilla-Carmona, & Suárez-Ortega, 2011). Some researcher found, particularly, female students benefited more from the mother’s post-secondary education than males (Mudhovozi & Chiresh, 2012).

Parents’ involvement was explored within the socio-economic concept. For example, parents from a more privileged background are more likely than less-privileged parents to aspire to a post-
secondary education for their child; however, lack of financial resources were found to be the major barriers that prevent students from aspiring for their dream careers (Gutman & Akerman, 2008; Migunde et al., 2012; Schoon & Parsons, 2002).

Results showed that participants, who have high GPA, reported higher career aspiration score comparing with those with lower GPA. This finding in support with the results documented by Salami (2008) which indicating that academic achievement predicted educational aspirations of the secondary school adolescents. One can explain this result by referring to Mendez and Crawford (2002) work. They found girls who perceived themselves as harder working and more internally motivated were more likely to aspire to careers that are male dominated. Research on academic achievement and career aspiration indicated that students who reported achieving well at school, were more careers mature and had higher self-esteem were more likely to aspire to professional status occupations than students who held skilled status aspirations, and students who held semi-professional aspirations having more careers (Patton & Creed, 2007).

Some limitations should be noted in interpreting the results. The results are limited with measure that was used. Furthermore, results cannot provide relational explanation of the differences between males and females in their scores on career aspiration scale. Despite these restrictions, the current study was conducted on a large sample covered various and distant governorates within Arab context, particularly, Omani. Therefore, one important implication should be considered is bridging the gap between females and males in their career aspiration through workshops and interventions targeted students in general, and males in particular, to be exposed to wide range to the resources relates to careers. Accordingly, parents’ level of education and their socio-economic status should be considered in designing and developing career workshops for adolescents. It is therefore, barriers' adolescents encounter in the area of career aspiration or expectations are recommended to explore within Arab context.

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**Data availability statement**

The data described in this article are openly available in the Open Science Framework at DOI:10.17605/OSF.IO/TPA6U.

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