

## Tertiary Academic Success: A Review of Factors in the Context of Ecological Model

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**Abstract:** Working in academic settings is an important area in community psychology and tertiary academia (education after high school) is of marked significance. Success in tertiary education is consequential for subsequent life and several factors are involved in it. The aim of this review paper was to analyze these factors within the context of Ecological Model of Dalton, Elias, and Wandersman (2007). In this model, environment has interconnected layers of proximal and distal systems which comprise five ecological levels of analysis: individuals, microsystem, organizations, localities and macrosystem. Specifically, the objectives of this study were to analyze the research work done on tertiary academic success factors in the years 2012-2016 at all ecological levels of analysis. Tertiary academic success in these studies has been measured in terms of GPA, grades, percentages, retention in course, completion of degree within time and academic success scales. Analysis of the factors of tertiary academic success at all community levels is needed to cut down attrition rates, improve student retention and help achieve good GPAs. This review highlights that the individual factors have been explored to a larger extent and factors related to other ecological levels are underexplored. The review contributes to field by enhancing the understanding of factors related to tertiary academic success. It may also assist educationists taking practical steps to help students achieve this success. Further theoretical and practical implications and directions for future research are discussed.

**Keywords:** Tertiary education, academic, success, ecological model

### Introduction

Education is a most important tool in present day living to prosper and live in peace. Education enlightens mind and soul and helps grow and develop them. Success in initial years of education that is, primary and secondary classes paves the way for post secondary or tertiary educational enrollment and success. Success in tertiary education is important for wellbeing and successful life (Schomburg & Teichler, 2007).

The aim of this review paper was to analyze the factors of tertiary academic success, which have been explored by the researchers in the past five years, within the context of five levels of the Ecological Model by Dalton et al. (2007). The layers are individual, microsystem, organizations, localities and macrosystem. Notably, admissions to tertiary institutions have increased in past few years but number of people who get their degrees has not increased (Anderton, Evan, & Chivers, 2016). In 2016, 75% of the world population was adult among whom only 7% were with graduation degree (Erickson & Vonk,

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2016). Attrition rates in tertiary education over the world are high (Ackerman, Kanfer, & Beier, 2013). Therefore reducing attrition and assisting students to get high grades is a challenge and for this, identification of factors associated with tertiary academic success at all ecological levels is necessary. Past researchers have explored both quantitatively and qualitatively the factors of academic success at tertiary level, however these factors have not been explored within ecological approach. The analysis in terms of ecological levels assists to identify multiple factors related to a phenomenon (Stewart, 2007).

Further, an individual is affected by both inner factors and environmental factors, such as family, community and culture, in which he lives (Whittle, Hamilton-Giachritsis, Beech, & Collings, 2013). Therefore to study academic success, Stewart (2007) has recommended adopting an ecological approach rather than considering only individual factors.

Identifying factors of tertiary academic success at all community levels is needed to cut down attrition rates, improve student retention and help achieve good GPAs. This review may help design intervention programs which aim at improving students' performance that will eventually lead to success.

## Literature Review

Tertiary education is the third level of education, degree or diploma, that follows school and high school education (Bania & Kvernmo, 2016). Researchers have measured tertiary academic success in terms of GPA (Honick & Broadbent, 2016; Junco, 2015), grades (Glass & Westmont, 2014; Smith, 2016), percentages (Bailey & Phillips, 2016; Gašević, Dawson, Rogers, & Gasevic, 2016), retention in course (Kruzicevic et al., 2012), degree completion within time (Gašević et al., 2016) and by using academic success scales (Ainin, Naqshbandi, Moghavvemi, & Jaafar, 2015).

Several factors related to tertiary academic success have been identified in studies including gender (Anderton et al., 2016), self efficacy (Trigwell, Ashwin, & Millan, 2013), high school success (Smith & White, 2015), and less use of internet (Mishra, Draus, Goreva, Leone, & Caputo, 2014). This review paper analyzes these factors within the ecological model presented by Dalton et al. (2007). The original Ecological Model was outlined by Bronfenbrenner (1979) in which environment is described as interconnected layers of systems in human development context. To study the dynamics of community, Dalton et al. (2007) have made some advancement in Bronfenbrenner's model. Their advanced model explains environment as nested proximal and distal systems which comprise five ecological levels of analysis:

1. individuals,
2. microsystem (where one directly and personally interacts, e.g. family, peers),
3. organizations (which are formally structured and larger than microsystems, e.g. institutions),
4. localities (geographical locations, e.g. rural or urban areas), and

5. macrosystem (cultural environment within which one is raised, e.g. religion, ethnicity).

The proximal level involves face to face contacts and the distal level involves systems affecting individuals from at a distance (Dalton et al., 2007).

The aim of this review paper was to analyze the factors of tertiary academic success, which have been explored recently in the past five years (2012-2016), within the context of Ecological Model of Dalton et al. (2007), explained above. The specific objectives are:

1. To explore individual factors related with tertiary academic success,
2. To identify factors of microsystem associated with tertiary academic success,
3. To recognize organizational factors of tertiary academic success,
4. To determine localities' factors of tertiary academic success, and
5. To investigate factors of macrosystem related with tertiary academic success.

## Methodology

In this study content analysis was done of all relevant articles published during the years 2012-2016. The articles were searched on Google Scholar, Pub Med and Science Direct. The search terms used were academic success, academic achievement, tertiary education, post secondary education and university education.

## Findings and Discussion

The findings of this review are presented in Table 1 and described below.

### Factors of Tertiary Academic Success at Individual Level

#### Gender

Although there are almost equal number of men and women in tertiary education (Puddey & Mercer, 2014), very little evidence suggests that they are equally successful (Ackerman et al., 2013; Ainin et al., 2015; Ali, Haider, Munir, Khan, & Ahmed, 2013). A large body of empirical evidence suggests women to be more academically successful than men generally (Anderton et al., 2016; Arshad, Zaidi, & Mahmood, 2015; Richardson, Abraham, & Bond, 2012; Soria, Fransen, & Nackerud, 2013) and to be more A grade achievers than men (Smith & White, 2015). Smith (2016) used the data of 38,236 students taken from a British university's administrative records, who entered the university between 1998 and 2006, and found women to be more successful than men. Lancia, Petrucci, Giorgi, Dante, and Cifone (2013) in a retrospective observational study with nursing students found similar

results. Also evidence placed in a systematic review on academic success of undergraduate students supports these empirical findings (Crisp, Taggart, & Nora, 2014). However, specifically in science, technology, engineering and mathematics women appear to be less successful than men (Leslie, Cimpian, Meyer, & Freeland, 2015). Further, the attrition rates for women in science subjects are higher than men (Grunspan et al., 2016). This is perhaps due to the stereotype beliefs that women lack intelligence required for these fields (Leslie et al., 2015) and men are more knowledgeable (Grunspan et al., 2016). Also it may be because both male and female teachers and professors favour males in these disciplines by calling them more frequently in class and by responding to them more eagerly (Grunspan et al., 2016). In summary, evidence suggests that generally women tend to be more successful but specifically in science and related fields men are more successful.

### Age

Results of studies on the role of age in tertiary academic success have been inconsistent, with both positive and negative reported correlations (Anderton et al., 2016). For instance, Richardson et al. (2012) in their systematic review and metaanalysis pointed out that older students are more successful than younger in the same batch but the effect size is small. However, Ali et al. (2013) found that age was weakly and negatively related with tertiary academic success. More studies are required in this area.

### High School Result and Admission Test Scores

Admission to tertiary education is primarily based on the results of high school and/or admission test scores (Komarraju, Ramsey, & Rinella, 2013). GPA achieved in high school has been consistently found to be a moderate positive predictor of tertiary academic success (Ackerman et al., 2013; Komarraju & Nadler, 2013; Smith & White, 2015). The findings of the meta analysis by Crisp et al. (2014) also show similar results. Admission test scores are also positively related with academic success at university (Smith, 2016) but they are weak predictors of it (Komarraju & Nadler, 2013; Soria et al., 2013). The year of study is found to be a moderator of their relationship (Luqman, 2013). Luqman (2013) found a moderate positive relationship of admission test scores with first year GPA but a weak positive relationship of it with later years' GPA in medical college students. However, one study noted no relationship between them (Lancia et al., 2013). Therefore, giving admissions to students only on the basis of admission test is not desirable (Luqman, 2013).

### Self-efficacy

It is one's belief about one's abilities to attain goals by acting in an appropriate way (Goulao, 2014). There is an agreement among researchers on association of high self efficacy with tertiary academic success (Komarraju et al., 2013; Krumrei-Mancuso, Newton, Kim, & Wilcox, 2013; Trigwell et al., 2013; Yip, 2012). Some researchers have specifically focused on academic self efficacy (Honicke & Broadbent, 2016; Putwain, Sander, & Larkin, 2013; Richardson et al., 2012) which is the confidence in one's ability to successfully attain educational goals (Putwain et al., 2013).

**Table 1**

The factors of tertiary academic success within the ecological model with brief descriptions.

Ecological levels	Related factors	Description of factors
Individuals	gender	depends on academic major
	age	controversy
	high school result and admission test scores	positive factor
	self-efficacy	positive factor
	emotional intelligence	positive factor
	conscientiousness, agreeableness, openness	positive factors
	metacognition, time management	positive factors
	motivation	indirect factor (limited evidence)
	greater article and preposition use	positive factor
Microsystem	parental education	positive factor
	parent-child relationship	positive factor
	peer support	positive factor (limited evidence)
	teachers' mentoring	positive factor (limited evidence)
	socioeconomic status	controversy (limited evidence)
Organizations	institutional factors	limited evidence
	library use	positive factor (limited evidence)
Localities	rural/urban origin	unrelated factor (limited evidence)
Macro system	ethnicity	controversy
	religion	controversy
	internet use	negative factor

There has been found positive relationship between academic relationship between academic self efficacy and tertiary academic success too and the meta-analyses show that moderate effect size exists between them (Honicke & Broadbent, 2016; Putwain et al., 2013; Richardson et al., 2012). Komarraju and Nadler (2013) looked into the mechanism of the relationship. They discovered that students with low self-efficacy believe that they have low IQ and therefore cannot succeed. On the other hand, students with high self-efficacy work hard and timely evaluate their efforts to achieve good grades (Komarraju et al., 2013). Hence, the research is conclusive on the positive association of self efficacy and academic success in tertiary education.

### Emotional Intelligence

It is the ability to control emotions and handle interpersonal relationships effectively (Hanafi, Noor, et al., 2016). A large body of evidence shows that emotional intelligence is positively related with academic success at university (Perera & DiGiacomo, 2015; Pope, Roper, & Qualter, 2012; Richardson et al., 2012; Sanchez-Ruiz, Mavroveli, & Poullis, 2013) and is a positive predictor of it (Mohzan, Hassan, & Halil, 2013). Support for these findings has also been received in a systematic review of 26 studies on the relationship

between emotional intelligence and tertiary academic success (Hanafi et al., 2016). In some studies, specific dimensions of emotional intelligence were found to be positive and strong predictors of tertiary academic success, adaptability (Saklofske, Austin, Mastoras, Beaton, & Osborne, 2012), and understanding of emotion (Mohzan et al., 2013). Overall, it appears to be an important factor of tertiary educational success.

### **Personality Traits**

They play important role in academic success at tertiary level (Brown, Brown, Beale, & Gould, 2014). Meta analyses have noted that the researchers have focused on the big 5 personality traits (Richardson et al., 2012; Vedel, 2014). Among these traits conscientiousness, agreeableness and openness are good predictors of tertiary academic success (Saklofske et al., 2012; Vedel, 2014). The findings of Richardson et al. (2012) show that conscientiousness is strongly positively correlated with tertiary academic success and Vedel (2014)'s meta analysis indicates that of these three predictors conscientiousness is the strongest predictor of it. Vedel (2014) further highlighted that the relationship was moderated by academic major and it was stronger for the psychology students than for students from other academic fields. However, most of the studies included in their meta analysis used psychology students as their samples which might have affected the results (Vedel, 2014). In short, personality traits are one of the basic factors of academic success.

### **Self Regulatory Learning Strategies**

These are the methods to manage one's studies (Richardson et al., 2012). Use of self regulatory strategies is moderately positively related with tertiary academic success (Yip, 2012). Honicke and Broadbent (2016)'s meta analysis on 59 studies showed that self regulatory strategies are important mediators between self efficacy and academic success at tertiary level. Findings of a meta analysis evince that metacognition and time management are the most influential strategies (Richardson et al., 2012). Metacognition is a self-evaluation process which assists to identify strategies to learn and memorize (Gul & Shehzad, 2012). Kállay (2012) found information processing, selecting main ideas, test strategies, attitude, motivation, concentration, self-testing were moderately positively related to tertiary academic success. Moreover, the capacity to test one's knowledge and information and processing abilities such as elaboration and organization strategies were the best positive predictors and the capacity to accumulate lots of information without concentrating on the selection of main ideas was the best negative predictor (Kállay, 2012). One study noted the strong relationship of it with tertiary academic success (Hrbáčková, Hladík, & Vávrová, 2012) while other noted weak relationship (Gul & Shehzad, 2012). Metacognition has been found to mediate the relationship between academic goals and success (Mirzaei, Phang, Sulaiman, Kashefi, & Ismail, 2012). Past researchers have also found time management as one of the positive predictors of students' tertiary academic success (Al Khatib, 2014; Talib & Sansgiry, 2012; Paul, Baker, & Cochran, 2012). One evidence for indirect relationship of time management with success is also present (Olowookere et al., 2015). In a study in a Nigerian university, it was found that time management was

not related to academic success directly, however it predicted character development and character development (discipline, responsibility and diligence) predicted academic success (Olowookere et al., 2015). Briefly, it can be said that self regulatory learning strategies are powerful factors of academic success in tertiary education.

### **Motivation**

It refers to one's willingness to work hard to achieve a goal (Luqman, 2013). Motivation for study appears to be not directly related with academic success at university. For example, Luqman (2013) in a medical college found only 46% participants were with strong motivation and there was no significant correlation between motivation and academic success. However it might moderate the relationship between other variables and academic success, as in one study in Israeli university it was found to weaken the negative effect of test anxiety on success, and strengthen the positive effect of academic self concept on success (Khalaila, 2015). Shortly, motivation might be only indirect factor of tertiary academic success.

### **Use of Language**

One study found it a factor related to tertiary academic success (Pennebaker, Chung, Frazee, Lavergne, & Beaver, 2014). By the computerized text analysis of above 50,000 admission test essays from more than 25,000 entering students (Pennebaker et al., 2014) showed that greater article and preposition use was associated with higher grades and greater use of auxiliary verbs, pronouns, adverbs, conjunctions, negations, and personal narratives was associated with lower grades. More studies are needed to explore the association of language use with tertiary academic success.

Hence, research has identified several individual factors. Gender association with tertiary academic success depends on academic major, women are more successful generally but in medicine, science, technology, engineering and mathematics men are more successful (Arshad et al., 2015; Leslie et al., 2015). For age, evidence is contradictory (Anderton et al., 2016) therefore no conclusion can be drawn. High school results, self efficacy beliefs, emotional intelligence, conscientiousness, agreeableness, openness, self regulatory strategies all are strong factors of tertiary academic success (Ackerman et al., 2013; Honicke & Broadbent, 2016). Admission test score is also related to success but giving admissions to students only on the basis of admission test is not suggested (Luqman, 2013). Little evidence for indirect role of motivation is also present (Luqman, 2013).

## **Factors of Tertiary Academic Success at Microsystem Level**

### **Parents**

Research on tertiary academic success with respect to parental factors surrounds mainly two areas: parental education and parent-child relationships. Empirical evidence indicates that parental education is a strong factor associated with academic success in university (Mushtaq & Khan, 2012; Smith, 2016). Parental education level affects both per-

sistence decision and GPA in university (Crisp et al., 2014). Quality of parent-child relationships is also important for tertiary academic success (Crisp et al., 2014; Yuan, Weiser, & Fischer, 2016) and they are moderately positively related (Yuan et al., 2016). Ethnicity plays a role in this relationship as Yuan et al. (2016) found this positive relationship was stronger for Asian American students than for European American students in an American college. One reason for this difference might be that Asian families are more collectivistic than European families (Yuan et al., 2016). Succinctly, parental education and parent-child relationships are important factors related with tertiary academic success.

### **Peers**

The systematic review by Crisp et al. (2014) highlights both qualitative and quantitative evidence in support of positive role of supporting peers in tertiary academic success. Encouragement and support from friends have been found to be moderately positively related to persistence decisions of students (Crisp et al., 2014). Further, social identification with peers, although positively relates to tertiary academic success, is not a strong predictor of the latter (Wilkins, Butt, Kratochvil, & Balakrishnan, 2016). Peer role in the context of tertiary academic success needs to be further explored since very few studies drew attention to it in the last five years.

### **Teachers**

Limited evidence was found to suggest that teachers in some way influence academic success at tertiary level. It is notable that the majority of studies did not provide information regarding their role and only two studies were found in which the role of teachers was considered (Crisp et al., 2014; Mushtaq & Khan, 2012). Crisp et al. (2014) on the basis of their systematic review suggest that support in studies and mentoring from professors is an important factor for academic success in university. Moreover, one empirical study notes that guidance from professors is a good predictor of tertiary academic success (Mushtaq & Khan, 2012).

### **Socioeconomic Status**

There is mixed evidence regarding the role of socioeconomic status in tertiary academic success. Evidence suggests that socioeconomic status is not related to academic success at this level (Anderton et al., 2016; Li & Dockery, 2014). However, some researchers found a link between strong socioeconomic status and tertiary academic success (Ali et al., 2013; Crisp et al., 2014; Shah, Atta, Qureshi, & Shah, 2012) found that it a good predictor of academic success. The systematic review and meta analysis by Richardson et al. (2012) indicates that students from higher socioeconomic backgrounds are more successful but the effect size is small. One reason for the possible role of socioeconomic status might be the availability of resources that make facilities available and students themselves need not to go to job (Crisp et al., 2014). More research in this area is required to draw the conclusive role of socioeconomic status in tertiary academic success.

Hence, among the factors of microsystem, existing research suggests that students are particularly successful if their parents are educated and they have good relationship with them (Crisp et al., 2014). Some evidence suggests that support from peers, guidance from professors and high socioeconomic status are also important factors (Wilkins et al., 2016), however, these findings should be interpreted with caution due to the limited volume of research.

## **Factors of Tertiary Academic Success at Organization Level**

### **Educational Institution**

Factors such as type of instruction, system of education and matching of institutional and personal norms play important role in tertiary academic success (Aslam, Younis, Sheik, Maher, & Abbasi, 2012; Severiens, Meeuwisse, & Born, 2015; Stephens, Fryberg, Markus, Johnson, & Covarrubias, 2012). The demographics of the school studied in and of the university being currently studied in both can influence student performance (Al-Khalifa & Garcia, 2013; Li & Dockery, 2014; Puddey & Mercer, 2014). Students from less prestigious schools perform better in medical universities (Puddey & Mercer, 2014) and also in general universities (Li & Dockery, 2014) than those from more prestigious schools. Further, schooling from English Medium schools (Ali et al., 2013) and studying in a state university (Smith, 2016) are associated with success. Student-centred instruction also promotes academic success (Severiens et al., 2015). Severiens et al. (2015) in a comparative study found that students in student-centered instruction outperformed than students in lecture-based instruction. They also found differences in factors related to academic success in the two programmes; in the prior the more the effort was the more the GPA and in the latter, the more time students pay the more the GPA. Further semester system is associated with higher GPAs in comparison to annual system (Aslam et al., 2012). Important reasons for this might be fewer burdens of studies, more learning opportunities and chances to get better scores (Aslam et al., 2012). Another important factor identified by Stephens et al. (2012) in their longitudinal and experimental studies is the match of the institutional norms with personal values. According to them students who prefer to pave their paths on their own succeed academically in university environments that allow independence and students who like to work collectively are academically less successful in these environments. However, their sample was from an American university and more studies are needed to test this factor in different cultures. On the role of financial aid provided by the educational institutions in tertiary academic success, there is no agreement among researchers and hence no conclusion can be drawn on this question. There is empirical evidence that students who receive grants secure lower GPAs compared to their peers (Soria et al., 2013). On the other hand, it is noted in a systematic review that financial aid, whether need-based or non-need-based promotes academic success as it cuts down financial burden of studies (Crisp et al., 2014). Hence, characteristics of institution play important role in tertiary academic success.

## **Library**

Its use is also linked with tertiary academic success (Bowles-Terry, 2012; Mushtaq & Khan, 2012) and results in higher GPAs and higher retention rates (Soria et al., 2013). Use of different library services may bring different impact on academic success. The findings of Soria et al. (2013) support this notion, who found that database use caused 1%, electronic journals access caused .2% and book loan brought 1% increase in GPAs. Attending instruction programmes regarding the use of library services, such as database use, electronic journals' access and book loans, is also important in the regard of success (Bowles-Terry, 2012). Bowles-Terry (2012) found that students who attended library instruction had significantly higher GPAs than those who did not. They also did focus groups with 15 graduate students who had attended library instruction session and noticed that all students, whether beginning or seniors, valued library instruction programmes for academic success. Therefore, library use is an important organizational factor related to academic success.

Hence, little evidence suggests several organizational factors to be important in academic success such as, schooling from English Medium schools, schooling from less prestigious schools, studying in a state university, student-centered instruction, semester system, having match of the personal and institutional norms, library use and attending library instruction programmes (Severiens et al., 2015). Research on scholarships given by institution is limited and inconclusive (Crisp et al., 2014; Soria et al., 2013).

## **Factors of Tertiary Academic Success at Locality Level**

### **Rural/ Urban Area**

Only one study was found that specifically addressed the difference of tertiary academic success with regard to urban and rural origin (Ali et al., 2013). In the study comparing GPAs of an urban university's graduate students of urban and rural origin, Ali et al. (2013) reported that GPAs did not vary with area of origin. Hence, urban or rural origin appears unrelated to tertiary academic success. This finding is interesting since they also found strong socioeconomic status an important factor of the success. These findings may imply that current available social and financial resources are more important than urban or rural background. However, no conclusion currently be drawn from this limited evidence.

## **Factors of Tertiary Academic Success at Macrosystem Level**

### **Ethnicity**

As a factor of tertiary academic success it is worth exploring since more than 30 lac students study outside their own countries (Rienties, Beausaert, Grohnert, Niemantsverdriet, & Kommers, 2012). However, the relationship of ethnicity with academic success cannot be concluded easily (Rienties et al., 2012) since contrasting findings have been found in different studies. Researchers in American and European universities noted that native students achieve greater GPAs than foreign students (Pluut, Curşeu, & Ilies, 2015; Smith,

2016; Soria et al., 2013). An important reason of this finding might be the academic and social stress that foreign students face due to adjustment problems (Rienties et al., 2012). Another reason might be the lack of social network that minimizes facilitative resources for success (Vaughan, Sanders, Crossley, O'Neill, & Wass, 2014). In contrast to findings mentioned above, in a study among Malaysian university students, foreign students were found to be more successful than the natives (Ainin et al., 2015). Also few researchers have noted ethnicity as an unrelated factor to academic success. In a large cross-institutional comparative study at five business schools in the Netherlands, Rienties et al. (2012) found native and foreign students were similarly successful. This similarity of success was also found in a study among an American medical university students (Vaughan et al., 2014). Rienties et al. (2012) also noted that academic adjustment was the main predictor of academic success for all ethnic groups. Furthermore, sense of belongingness with institution is more positively related to foreign students' academic success than domestic students (Glass & Westmont, 2014). Due to different findings in different countries no conclusive statement on the role of ethnicity can be given.

### **Religion**

It may be a powerful source for dealing with stress of university studies and a factor related with success (Sutantoputri & Watt, 2012). The finding of a focus group, conducted with four participants, supports this idea where students reported religion a source of support against study stress (Henning et al., 2015). Contrary to this, an empirical study found no effect of religion on tertiary academic success (Sutantoputri & Watt, 2012). Researchers have also looked into the differences in academic success with respect to religious affiliation (Henning et al., 2015; Sutantoputri & Watt, 2012). Henning et al. (2015) found no differences in GPAs among students belonging to Christianity, Eastern religions and no religion. While Sutantoputri and Watt (2012) found Muslim men had less GPAs than non-Muslim and non-Christian men (Sutantoputri & Watt, 2012). On the basis of these contrasting findings no conclusion regarding the role of religion in tertiary academic success can be drawn.

### **Internet**

University students mostly use academic related sites on internet (Mishra et al., 2014) and social media sites, especially twitter and facebook (Alwagait, Shahzad, & Alim, 2015). Use of academic sites is associated with tertiary academic success and time spent on these sites moderately and positively relates with the latter (Mishra et al., 2014). Also students with higher GPAs feel that one should spend more time on internet for academic purposes (Mishra et al., 2014). However, researchers have found mixed results on use of social media sites and tertiary academic success. Social media sites may facilitate students to share ideas and collaborate with each other (Al-Khalifa & Garcia, 2013) but students perceive that use of these sites would hinder success (Alwagait et al., 2015; Ketari & Khanum, 2013). 55% of the participants in Alwagait et al. (2015)'s survey and 60% of the participants in Ketari and Khanum (2013)'s survey reported these perceptions. Results of a core-

lational study support these thoughts of students, where moderate negative relationship was found between use of these sites and academic success (Paul et al., 2012; Michikyan, Subrahmanyam, & Dennis, 2015). The results of a comparative study also show that non facebook users had higher GPAs than facebook users (Ketari & Khanum, 2013). According to Junco (2015) one reason for these results is that engagement with these sites requires more working memory resources than do other sites. On the other hand, few correlational studies noted that students' frequent use of social media was not related to their academic results (Alwagait et al., 2015). Due to the above contrasting findings, it is suggestible to explore the relationship of social media use and tertiary academic success in the context of different activities performed on the media. The results of Junco and Cotten (2012)'s study support this notion, in which high number of logins and more time spent on Facebook were related to lower GPAs but high number of sharings and checking friends' activities were related to higher GPAs. Also multitasking with facebook is found to be a good negative predictive of GPA (Junco, 2012; Junco & Cotten, 2012; Rosen, Carrier, & Cheever, 2013; Wood et al., 2012). The year of study might also play a role in the relationship since time spent on Facebook is found to negatively predict GPA only among first year students and not others (Junco, 2015).

Overall, lower GPAs are associated with more time spending on internet (Akhter, 2013; Mishra et al., 2014) and with internet addiction (Mishra et al., 2014). Alwagait et al. (2015) suggest that there should be a balance in the time passed on internet, for leisure or for academic purpose, and the time for study to achieve tertiary academic success.

Therefore, the debate on ethnicity and religion as factors of tertiary academic success is still open. Foreign students are found to be equally, more and less successful than domestic ones in different researches (Smith, 2016). Similarly, some link has been made recently between religious affiliation and tertiary academic success (Henning et al., 2015) but conclusions from the limited research cannot be drawn and further exploration is required. Existing research also suggests that less use of internet and more use of academic sites are associated with success (Mishra et al., 2014). Research is inconclusive on use of social media sites (Alwagait et al., 2015; Junco, 2015) and further research in this area is also required.

## **Limitations**

Much of the literature in this area focuses on individual factors and studies on other factors are mostly limited and inconclusive. This has led present review to draw more upon individual factors. Also certain potential factors have not been explored such as IQ and political and economical conditions of a country. Further, interaction effects of different factors on academic success have been considered to a very limited extent. For instance, except the interaction effect of gender and religious affiliation, no other has been explored. Moreover, little evidence is present on moderator variables between various factors and academic success. In addition, samples and research methods varied across studies. More importantly only few studies were with Pakistani samples therefore generalizability on Pakistani students is limited.

## **Recommendations**

Future research should focus on identifying and validating the links between factors at microsystem, organizations, localities and macrosystem levels and tertiary academic success. Interaction of different factors and the role of moderators should also be explored in depth. Work on this subject is needed in Pakistan especially since it is scarce here. Further longitudinal researches are needed in this area to understand how multiple factors combine to relate or affect tertiary academic success.

## **Conclusion and Implications**

Importance of tertiary academic success has been accepted for a successful life. This review, focused on research work done in years 2012-2016 on tertiary academic success factors, points out several factors at all ecological levels; individuals, microsystem, organizations, localities and macrosystem. At individual level gender, age, entry grades and entry test scores, self-efficacy, personality traits, self regulatory strategies and motivation are found to be important. At microsystem level parental education, parent-child relationship, peers and teachers support and socioeconomic status are related factors. At organizations level institutional factors such as public or private sector and education system and library use are notable. At localities level urban/ rural origin found not to be related to tertiary academic success. And at macrosystem the related factors are ethnicity, religion and internet. The implications of this work are both theoretical and practical. It enhances theoretical understanding of tertiary academic success factors at all ecological levels. Practically, it may assist educationists in curriculum planning by keeping in view all these factors. It may also help professionals in designing intervention programmes to cut down attrition rates, improve student retention and help achieve good GPAs.

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