

A Systematic Review on the Association between Emotional Intelligence and Resilience

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ABSTRACT

Multiple factors promote resilience out of which emotional intelligence (EI) is a better predictor than spiritual and cognitive intelligence. The present article reviews the existing studies for exploring the strength of the relationship between EI and resilience. After a rigorous search through PsycINFO, PubMed, and google scholar, 37 articles were found eligible based on the inclusion and exclusion criterion with strong evidence of the association between EI and resilience across sample characteristics. Further EI had a significant direct effect on resilience. There is a very sporadic account of studies that measured ability EI and revealed a low correlation with resilience. The systematic reviews have explored certain research gaps and recommended suggestions for further study.

Keywords: Resilience, Emotional Intelligence, Students with School and Higher Education, At-Risk Population

Worldwide 86% of the population is reported to suffer from stress. Stress adversely affects mental and physical health resulting in depression (Khan & Khan, 2017), and unhealthy coping strategies (Workplace Stress: A Collective Challenge, 2016). World Health Organisation reported 322 and 264 million people having depression and anxiety disorder respectively (WHO, 2017). Further, the effect of stress extends to physical health like the gastrointestinal system (Okenet, 2015), blood pressure, and angina (Brotman et al., 2007). Hence, people must develop the ability to cope with stress to overcome the multiple negative outcomes. Researchers have empirically established that resilient individuals show low- levels of perceived stress (Tung et al., 2014); fewer depressive symptoms, and few behavioural problems like anxiety (Hjemdal, Aune, et al., 2007; Hjemdal, Vogel, et al., 2011) and better adjustability (Karamat & Naz, 2014). Hence, the positive impact of resilience on a person's mental and physical well-being highlights the need for exploring resilience further. Therefore, identifying and understanding facilitating factors of resilience is crucial to enhance personal quality and resources for translating into intervention program to enhance resilience among individuals.

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Empirical research enlisted several correlated factors of resilience ranging from individual to familial to social-cultural levels (Fleming & Ledogar, 2008) like general intelligence (Jowkar, 2007), spiritual intelligence (SI) (Salmabadi et al., 2016), personality (Fayombo, 2010), optimism (Himmel, 2015), parental support and healthy family relation (Bhat & Vijayalaxmi 2014), etc. However, EI is found to be one of the most effective factors of individual resilience in comparison to general intelligence (Jowkar, 2007), spiritual intelligence (SI) (Keshavarzi & Yousefi, 2012), and even personality (Kunte, 2014). A substantial association between EI and resilience was evident in almost all the studies on resilience. Nevertheless, each study alone has examined part of the overall association due to the nature of samples or participants, confined to a particular age group, academic level, working status, and community or ethnic background. A systematic analysis of studies is conducted to assess the relationship between EI and resilience to investigate the topic comprehensively and to make a reliable conclusion.

Resilience and Emotional intelligence

Resilience, "a measure of successful stress-coping ability" (Connor & Davidson, 2003, p.77), enables individuals to overcome difficult or traumatic circumstances and grow up to become healthy, educated, and successful citizens. EI has been promoted as an individual difference variable (Brackett et al., 2004) that process emotional information relevant to the recognition, construction, and regulation of emotion in oneself and others (Salovey & Mayer, 1990). There are two main conceptual entities of EI- trait EI and ability EI (Mayer et al., 2008; Petrides & Furnham, 2001). Trait EI denotes emotion-related self-perception and dispositions or emotion-related typical behaviour measured by a self-report questionnaire (Petrides, 2007), whereas ability EI is a type of intelligence concerning actual emotion-related cognitive abilities measured through a performance test, such as the Mayer- Salovey- Caruso Emotional Intelligence Test (MSCEIT; Mayer et al., 2003). Although they are two different constructs conceptually, methodologically, and empirically. Trait and ability EI are two complementary rather than oppositional constructs (Petrides, 2011; Liu et al., 2013).

Salovey et al. (1999) theorise that persons with higher EI cope better with the emotional demands of stressful encounters. EI is thus postulated to buffer the effects of aversive events through emotional self-awareness, expression, and management (Armstrong et al., 2011). Tugade & Fredrickson (2007) reported, the ability to effectively regulate one's own emotions, a core facet of EI, was found to promote individuals' resilience. EI training is becoming more common as a means of enhancing stress resilience (Brackett & Katulak, 2006). Earlier researchers have supported the direct relationship between resilience and EI in a different cultural context (e.g., Fabio & Saklofske, 2018; Fong-Hong, 2019; Garg & Rastogi, 2009; Hossein et al., 2015; Ngui & Lay, 2020) with various nature of the sample (e.g., school and college students, employees, the general public). However, no study has synthesised the findings systematically.

Therefore, it is imperative to know whether these two variables show the strength of the relationship across the studies. It is complex to synthesise the current state of resilience research in relation to EI because of the heterogeneity of measures of EI in terms of trait and ability EI and their distinct dimensions. The question is; whether distinctive forms of EI, i.e., trait and ability EI will be correlated differently with resilience irrespective of the sample variation? Hence, considering the aforementioned issues the present study intends to review the existing empirical papers systematically on the association between EI and resilience to find out the nature of the relation between the two variables across the sample characteristics and the different theoretical forms of EI. The study may support the protective model of

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resilience, upholding the EI as a strong personal protective factor of resilience. Further, the paper may add to the understanding of why some people flourish despite risk exposure. This research endeavour might allow us to depict a clear idea about the nature of studies so far and find out the research gaps in the field.

METHODOLOGY

Data Source

The present research endeavour is a systematic review exploring the relationship between EI and resilience and the importance of EI in the resilience process. Studies included irrespective of any specific geographical areas and time restrictions (up to March 2020).

Search Strategy

Google Scholar, PsycINFO, PubMed, and Sodhganga for Indian thesis were searched in this review. Articles were searched using the keywords: 'Emotional Intelligence or Emotional Competency and Resilience OR Resiliency'. Further reference sections of the selected paper were searched for related papers. The papers published in the English language only were included for review. Computer-based online internet searches were conducted through the *Search Engines* and no hand search papers were included here. A total of 132 studies were collected out of which 95 studies were excluded and finally 37 studies were selected and included based on inclusion and exclusion criteria.

Inclusion and Exclusion Criteria

The researchers initially collected all the articles that included two of the terms simultaneously in the title, i.e., EI or emotional competency and resilience or resiliency. Final research papers were selected based on inclusion and exclusion criteria. The population and sample areas of interest were not confined to any particular age, stage, or culture. The inclusion and exclusion criteria were; (i) empirical study on the relation between EI and resilience; resulting in excluding theoretical studies, experimental studies, reviews, and meta-analyses; (ii) the study measured with validated EI scale, thus any study measuring only a factor of EI (e.g., emotion regulation) were excluded; (iii) the studies measuring resilience with validated resilience scale were included; leading to exclusion of the study which evaluated resilience in terms of any stress coping or adjustment scales; (iv) paper published in English language only were included, leading to excluding the papers published in all other languages; (v) full-text articles. One paper (Armstrong et al., 2011) was selected in which resilience was not measured with any particular resilience scale. Another important study was selected in which only the abstract was available in English (Jowkar, 2007).

General Characteristics of Included Studies

Studies published online between the years 2008 and 2020 (March) were included. The online search showed that no research was available before 2008, in which two main variables, i.e. EI and resilience were present simultaneously. Brief information about the selected studies in this review is shown in table 1 to table 11. Among the 37 included studies, 32 studies were from a cross-sectional research paper, one paper from a master's dissertation, and four from doctoral theses. Thirty-five studies measured self-reported EI, one study measured ability EI (Frajo-Apor et al., 2017) and one study focused on EI with both self-reported and ability EI (Montgomery et. al., 2008). Only one study measured resilience without a validated resilience scale (Armstrong et al., 2011). To present the results systematically, we would consider separately the studies performed with various

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characteristics of samples like school children and students from higher education, employee, etc. based on the studies by self-reports and ability-measured EI.

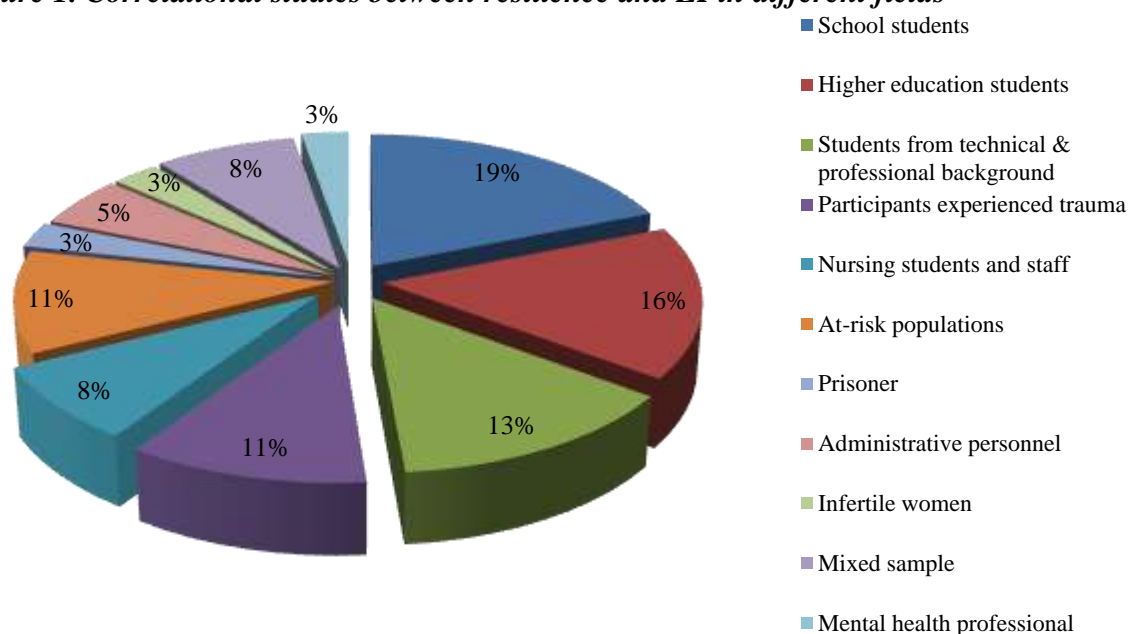
RESULTS

In the present systematic review, 37 empirical studies were finalised for inclusion. The smallest and largest sample sizes, respectively, belonged to the study by Promsri (2019) with 19 participants, and by Trigueros et al. (2020) with 1347 participants respectively.

The studies included in the final in-depth review had publication dates ranging from 2008 to 2020, all of which were quantitative cross-sectional studies from varied geographical locations and the highest number of the studies were found from Iran ($n=9$) followed by India ($n=6$), Canada ($n=3$), America ($n=3$), Italy ($n=2$), Spain ($n=2$), Malaysia ($n=2$) and China ($n=2$) and one study from each of the countries; Philippines, Poland, Austria, England, and France. Further two cross-country studies were found, one study with samples from America and Spain (Sarrionandia et al., 2018) and another one from Germany and Sri Lanka (Bulathwatta et al., 2017).

The reviews covered a diverse population, like students from school education ($n=7$), higher education ($n=6$), technical and professional background ($n=5$), participants experiencing trauma ($n=4$), nursing background ($n=3$), at-risk participants ($n=4$), Mental Health Professional ($n=1$), administrative personnel ($n=2$), women in treatment for infertility ($n=1$), Prisoners ($n=1$) and mixed nature of participants ($n=3$).

Figure 1. Correlational studies between resilience and EI in different fields



Principal Outcomes

Almost all the empirical studies with two main variables, i.e., EI and resilience turned out to be correlated significantly except the Canadian study with children with special needs where EI was measured with ability EI (Montgomery et al., 2008). Another study with Iranian higher education students reported that resilience was correlated with but not predicted by trait EI (Sogolittappéh et al., 2018). Only one study showed the converse pattern of relationship (Kobylarczyk et al., 2017), in which resilience had a direct effect on EI. The

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systematic review of the literature supported strongly the importance of EI in resilience. All the research papers were categorised based on the nature of the participants.

Studies Based on Self-Reported Trait EI

Studies with School Students

In the present review seven ($n= 7$) studies covered a total of 2909 school-going adolescents (*table 1*). In all the studies EI was measured using self-reported scale and showed that EI of the school-going student was directly correlated with resilience (e.g., Akbari & Khormaiee, 2015; Jaladdin & Masli, 2017; Ramos-Diaz et al., 2018).

Chen (2019) showed that trait EI of Chinese students affected their resilience, which was measured in terms of goal planning, help-seeking, family support, affect control, and positive thinking. He also reported that this relationship was moderated not by social support from family, but rather by support from friends. Further, it was found that for students who perceived social support from friends, their trait EI had more effect on the resilience of 'boarding school' students than 'day school' students. Some of the researchers endorsed that resilience played a significant mediator role in EI and other factors.

Ramos-Diaz et al. (2018) reported that EI in terms of emotional attention, emotional clarity, and emotional repair had a significant direct effect on the resilience of the school adolescents in Spain, and emotional clarity had the highest impact than emotional repair and emotional attention on resilience. Further, students with a high level of trait EI would possess a high level of resilience which in turn increases life satisfaction of adolescent students. A similar outcome was also reported by Jowkar (2007) in Iran, who (2007) showed that self-reported EI had a direct effect on resilience which in turn increases students' life satisfaction. Additionally, the author substantiated empirically that EI was the stronger predictor of resilience in comparison to the general intelligence of adolescence in school.

Akbari & Khormaiee (2015) found that along with the direct relation of resilience with trait EI, resilience was also found to be a mediator in the relation between EI and psychological well-being. Students with higher EI tend to be having higher resilience which in turn defined their higher level of psychological well-being. The study by Choudhry (2019) in the Indian context reported a moderate level of association between EI and resilience. Another study from India by Sharma (2014) reported that resilience was affected by some of the factors of EI i.e., Sociability, Emotion Regulation, Low impulsiveness, and Happiness.

The study by Jaladdin & Masli (2017) showed that Malaysian school adolescents from science and arts backgrounds had a medium level of resilience and EI. Further, a moderate level of relationship between EI and resilience was reported in this sample.

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Table 1. Studies on EI & resilience with school-going students

| Author & Year | Country | Nature of Sample | Tools | | key Findings |
|--------------------------|----------|---|---|--|---|
| | | | EI | Res | |
| Chen (2019) | China | 493 middle school adolescents (249 male, female 244; M-age=13.9, SD=0.71) | TEIQue-ASF; Petrides et al., 2006 | RSCA; Hu and Gan, 2008 | Social support from friends was significant in moderating the relationship between EI and resilience ($R^2 = 0.60$). This moderating effect does not depend on gender but rather on school type. |
| Choudh (2019) | India | 109 adult participants (13-17 yrs, 56male & 53 female) | SSEIT, (Schutte, 1998) | RSCA (Prince-Embury, 2006) | Gender did not make any difference in Resilience. Moderate level of correlation between EI and Resilience ($r= 0.41$) |
| Ramos-Diaz et al. (2018) | Spain | 945 adolescence (12-17yrs) (425 male, 520 female; M=14.50, SD=1.82) | Spanish adapted (Fernández-Berrocal et al., 2004)TMMS (Salovey et al. 1995) | CD-RISC 10(Connor & Davidson, 2003) | EI in terms of emotional attention, clarity, and repair, predicted resilience ($R^2= 0.38$). Emotion clarity was stronger predictor ($\beta = .407$). Resilience significantly mediated the association between EI and life satisfaction. |
| Jaladdin & Masli (2017). | Malaysia | 100 secondary students (16 yrs) 48 boys & 52 girls. | SSEIT (Ng, Wang, Kim, & Bodenhorn, 2010) | CD-RISC(Connor-Davidson, 2003) | Significant relationship between resilience and EI ($r= 0.67$) |
| Akbari & Khormai (2015) | Iran | 405 high school students (193 male & 212 female) | TEIQue-SF; Petrides, 2009 | CD-RISE (Connor & Davidson, 2003) | EI has direct effect on resilience ($\beta= 0.66$, $R^2= 0.43$). Resilience partially mediated between EI and psychological well-being |
| Sharma, (2014). | India | 300 school adolescents, (150 males & 150 Females; age 15-17) | TEIQue-AFF (Petrides, 2009) | The Resilience Scale (Wagnild and Young, 1993) | Resilience effected by EI factor; Sociability ($\beta= 0.29$), Emotion Regulation ($\beta= 0.17$), Impulsiveness (low) ($\beta= -0.14$) and Happiness ($\beta= 0.12$). |
| Jowkar, 2007 | Iran | 557 students girls (284) and boys (293) | SSEIT, Schutte, 1998 | CD-RISC(Connor-Davidson, 2003) | EI was a strong predictor of resilience than cognitive intelligence and resilience mediated between both kinds of intelligence and life satisfaction |

Studies with Higher Education Students

In the present review, six studies ($n=6$) covered a total number of 3012 participants from higher education settings (i.e. UG, PG, Ph.D.) (table 2). All the studies postulated that EI positively affects the resilience of students with higher studies, except one study by Sogolitappeh et al. (2018). They (2018) reported that EI was related to the resilience of the Iranian undergraduate students and along with SI, trait EI predicted the resilience of the students but alone EI had no significant effect. On the contrary, the Iranian study by Keshtegar & Jenaabadi (2015) reported that both intelligence, i.e., SI and EI of the university students (course; B.A, M.A, Ph. D) predicted the resilience which was measured in terms of individual merit, social merit, family cohesion, relations with friends and individual structure. EI played a strong effective factor in resilience than SI. Another Iranian study (Foumany & Salehi, 2015) with university students revealed that EI, had a direct effect on resilience as measured. Trigueros et al. (2020) revealed that EI of university students in Spain had a significant positive effect on resilience that in turn reduces exam anxiety and academic stress which is inconsistent with earlier studies. The cross-culture study by Sarrionandia et al., (2018) in Spain and America found that the effect of EI (i.e., perceived, use, understanding & management of emotion) on resilience was higher among American undergraduates than in Spain. Further, they reported that undergraduate students with a higher level of trait EI tended to be more resilient which contributes to decreasing stress or could prevent students from perceived stress in higher education and the mediator model was similar irrespective of cultural differences in Spain and America. Contrary to earlier studies with school adolescents (Ramos-Diaz et al., 2018) (Table 1), Liu et al. (2013) showed that trait EI had a direct effect on resilience but this effect, in turn, did not affect the life satisfaction of undergraduate students. Further, Liu et al. (2013) reported that resilience mediates the effect of EI on ‘effect balance’ and this mediator model was not moderated by gender.

Table 2. Studies on EI & resilience with higher education students

| Author & Year | Country | Nature of Sample | Tools | | key Findings |
|-------------------------------|-----------------|---|--|---|---|
| | | | EI | Res | |
| Trigueros et al., 2020 | Spain | 1347 university students (733 male & 614 female; aged 19-27, SD= 2.85) | TMMS-24 (Fernández-Berrocal et al, 2004) | Spanish adapted (Notario-Pacheco, et. al., 2011) CD-RISC (2003) | EI positively affected resilience ($\beta= 0.56$), in turn, Resilience negatively affected anxiety exam ($\beta= -0.48$) and academic stress ($\beta= -0.58$). |
| Sarrionandia, et al., (2018). | America & Spain | 698 (300 US & 398 Spain) undergraduate students (232 male, 466 female; age 18-45; M= 20.69, SD= 2.33) | SREIS; Brackett et al., 2006). | CD-RISC-10(2003) | Effect of EI on resilience for sample from the USA, ($\beta= 0.91$) was more strong than Spain sample from Spain ($\beta= 0.74$). Resilience mediates the relationship between EI and perceived stress irrespective of cultural differences in Spain & America. |
| Sogolitappeh et al., (2018). | Iran | 100 undergraduate (BA) students | Bar-On EQ (1997) | CD-RISC (Conner-Davidson, 2003) | Correlation between EI and resilience $r= 0.37$. Along with SI, EI predicts 54% of the variation in resilience. EI |

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|------------------------------|-------|---|---|-----------------------------------|---|
| | | | | | has no significant effect on resilience ($p=0.93$) |
| Keshtega & Jenaabadi (2015). | Iran | 354 university students (BA, MA, Ph.D.) (188 females & 166 males) 314 (17-24 yrs) 40 (above 24) | TEIQue (Petrides & Farnham, 2001) | RSA(Hjemdalet al., 2001) | Resilience correlated with EI ($r=.68$). Along with SI, EI predicted resilience factors-individual merit ($R^2= .24$); social merit ($R^2= .38$), family cohesion ($R^2= .64$), relations with friends ($R^2= .17$), individual structure ($R^2= .37$). EI factors were a stronger predictor than SI. |
| Foumany & Salehi (2015) | Iran | 250 university students 68% female & 32% male (20-25 yrs) | Shearing's Emotional Intelligence Scale, 1995 | CD-RISC (Conner & Davidson, 2003) | EI has a direct effect on Resilience ($\beta= 0.50$) |
| Liu et al. (2013) | China | 263 undergraduates (119 men, 144 women), aged 18–25 years) | WLEIS (Wong & Law, 2002) | CD-RISC (Connor & Davidson, 2003) | EI has a direct effect on resilience ($\beta= .61$). Resilience is partially mediated between trait EI and affect balance. This mediator model is not moderated by gender. |

Studies with Students from Technical & Professional Backgrounds

The correlational study between EI and resilience was extended to student of technical and professional backgrounds (*table 3*). Five studies covered student teachers, medical students, students of social work courses, and technical courses that included a total of 913 participants.

Ngui and Lay (2020) showed in their study with Malaysian student-teachers that, trait EI had a direct and indirect (through self-efficacy) effect on resilience but EI was less effective than self-efficacy in the resilience of student teachers. On the other hand, Behrozi et al. (2016) revealed that EI can promote resilience in Iranian medical students that may enhance their self-efficacy. Interestingly they further reported that the promoted resilience due to EI has not improved the mental health and academic performance of medical students in Iran. Quite similar to the study having school-going adolescents (Akbari & Khormaiee, 2015), Kinman and Grant (2011) replicated the outcomes in their study with social work trainees in the United Kingdom and showed that the trainees who were well in perceiving, appraising, expression of emotion have a better emotional understanding and regulating capability, appeared to be good in resilience which in turn promoted their psychological well-being.

Promsri (2019) conducted a correlational study selecting international students (from Bhutan, China, and Thailand) of a business programme course in Thailand and found a consistent result with a moderate correlation between EI and resilience. More precisely he reported that two of the factors of EI, i.e., self-awareness and relationship management were positively correlated with resilience.

One of the Indian-based studies by Garg and Rastogi (2009) revealed that EI of the technical student could lead them to be resilient to stress which was measured in terms of deficiency focusing, necessitating, and low skill recognition. Further, they reported that among the

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factors of the EI, altruistic behaviour had the strongest effect on the resilience factor of ‘deficiency focusing’; emotional stability had the strongest effect on the resilience factor of ‘necessitating’ and managing relations had the strongest effect on resilience factor of ‘low skill recognition’ of the students.

Table 3. Studies on EI & resilience with students from technical & professional background

| Author & Year | Country | Nature of Sample | Tools | | Key Findings |
|-----------------------|--------------------|---|--|--|--|
| | | | EI | Res | |
| Ngui & Lay (2020) | Malaysia | 200 student teachers (70.5% females & 29.5% males ; 96.5% were 25 years old) | TEIQue-SF (Cooper & Petrides, 2010) | RS (Wagnild & Young, 1993) | EI has a significant effect on resilience ($\beta = 0.188$). Self-efficacy mediates the relation between EI and resilience, but subjective well-being does not. Self-efficacy was stronger than EI affecting resilience. |
| Promsri (2019) | Thailand | 19 International students (Bhutanese, Chinese, Thailand) (female 63.2%) | Emotional intelligence questionnaire proposed by Daft (2011) | Resilience questionnaire proposed by Greenberg (2011) | Moderate correlation between EI and self-resilience ($r = 0.526$). Relationship management was related to resilience and Social awareness was not related. Self-Awareness was related to resilience and self-management was not. |
| Behrozi et al. (2016) | Iran | 314 (171 girls and 143 boys) first-grade Medical students | four factors version of Petrides and Furnham EI scale (2000) | Persian version of CD-RISC 2003, (Mohammadi, 2005) | EI had effect on resilience ($\beta = 0.73$) which had indirect effect on self-efficacy. |
| Kinman & Grant (2011) | UK | 240 trainee social work students (82% female; M-age of 33.7, SD= 9.04) | Schutte et al. (1998). | RS (Wagnild & Young, 1993). | EI was correlated with resilience ($r = 0.61$, $\beta = 0.32$) which, in turn, promotes psychological well-being. |
| Garg & Rastogi (2009) | India, Uttarakhand | 140 students (69 post-graduate & 71 research scholar, 62 male students & 78 female) | EI Scale (Hyde, Pethe & Dhar, 2002). | Stress Resiliency Profile (SRP) by Thomas and Tymon (1995) | EI students were more resilient to stress. Altruistic behaviour (resilience factor) is the strongest predictor of deficiency focus. Emotional stability is the strongest predictor of necessitating. Managing relations is the strongest predictor of low-skill recognition. |

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Studies with Participants Experienced Trauma

In the correlational studies between EI and resilience four studies, covering 871 participants where samples experienced some of the traumatic events in their life (*table 4*).

Bulathwatta et al. (2017) conducted their study with university students in two countries, i.e., Germany and Sri Lanka. They revealed that students from Germany use only resilience capability and students from Sri Lanka use resilience as well as EI to overcome their traumatic experiences. After experiencing trauma in German students, only one factor of EI, i.e., emotionality was correlated with only one factor of resilience, i.e., optimism and for Sri-Lankan students positively but spanning from low to a moderate level of correlation was reported between aspects of EI (i.e., wellbeing, self-control, emotionality, sociability) and the aspects of resilience (i.e., optimism, self-efficacy, adaptability, sensitivity, recovery, impairment).

Similarly, Kobylarczyk & Ogińska-Bulik (2017) studied school-going adolescents, who experienced various negative life events like the death of a loved one, divorce of parents, serious illness of a family member, accident or injury, etc. They tried to show EI as a mediator between resilience and personal growth and explored that resilience had a significant effect on EI which in turn promoted their personal growth. Further, they reported that all factors of resilience had a significant effect on EI implying that the school adolescents who were characterised by optimistic attitude and energy, persistence and determination in action, sense of humour and openness to new experiences, personal competencies, and tolerance of negative effect, would develop EI which in turn would help them to experience positive changes and personal growth following traumatic events.

Inconsistent with earlier studies Raskin-Li (2016) concluded that emotionally intelligent adults from the USA who experienced trauma in their childhood were higher in resilience. Participants were self-identified adult survivors of childhood trauma like sexual abuse, physical abuse, emotional abuse, parental divorce, etc. He reported that gender and duration of years of abuse (e.g. 0-5, 5-10, and 10-18) have not made any difference in regard to EI and resilience. The result was also supported by Habib (2017) in India where flood victims adults were reported with a lower level of a positive relationship between EI and resilience. He further showed that gender had no effect on the resilience of flood victims but it has a significant effect on EI in favour of females. Age, occupation, and family income made significant differences in resilience and EI.

Table 4. Studies on EI & resilience with participants who experienced trauma

| Author & Year | Country | Nature of Sample | Tools | | Key Findings |
|-------------------------------------|---------|--|--|---|---|
| | | | EI | Res | |
| Kobylarczyk & Ogińska-Bulik (2017). | Poland | 101 school adolescents (51%female) experienced traumatic events (16 to 17 yrs (M= 16.49; SD= .50). | The INTE EI Questionnaire (Schutte, et al. 2002) | SPP-18 Resiliency Measurement Scale (Ogińska-Bulik and Juczyński, 2011) | Resilience has an effect on EI ($\beta = 0.65$). EI acted as a mediator in the relationship between resiliency and personal growth. |
| Habib, U. (2017). | India | 289 floodVictims of Kashmiri | ECAS (Paiva& Kumar, 2009) | RS (Wagnild & Young (1993). | Correlation between EI and resilience was significant ($r = .301$) |

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|----------------------------|---------------------|---|----------------------------|-----------------------------|--|---|
| | | (159 male & 130 female; age 20 to 50 yrs) | | | | |
| Bulathwatta et al. (2017). | Germany & Sri Lanka | 356 (19 to 24 years) Univ. students (experienced traumatic exp.) 149 from Germany & 207 from Sri Lanka (11.80% males & 88.20% female) | TEIQue (2010). | RSCA (Prince-Embury, 2007). | German: (resilience) and emotionality significantly correlated (r= 0.36). Sri Lanka: Significant positive correlations varying from r= .45 to r= .14 between aspects of EI (wellbeing, self-control, emotionality, sociability) and the variables of resilience (optimism, self-efficacy, adaptability, sensitivity, recovery, impairment). | Optimism and (EI) significantly correlated (r= 0.36). |
| Raskin-Li, J. S. (2016). | USA | Self-identified 125 adult survivors of childhood trauma (19 to 69 yrs) (13.6% male & 83.2% females; M=32.8) | TEIQue-SF (Petrides, 2009) | RS (Wagnild, 2014) | Higher emotionally intelligent were more resilient (r = 0.53) to adverse childhood experiences in adulthood. No significant difference between the three groups (e.g. 0-5, 5-10, and 10-18 age group experience trauma) in regards to EI and resilience. | |

Studies with Nursing Students and Staff

In the present review, three studies covered 255 nursing staff and 186 nursing students (*table 5*). EI is identified as one of the prime characteristics for the nursing task as, it is needed to improve decision-making and problem-solving which are characteristics of effective nursing performance (McQueen, 2004; Moyer & Wittmann-Price, 2008).

Fong-Hong (2019) studied USA-based newly registered nurses and showed a moderate level of correlation between resilience and EI and three of its factors, i.e., well-being, self-control, and sociability. Further, he revealed that the resilience of the registered nurses transitioning in ‘critical care’ was moderately correlated with trait EI and only two of its factor, i.e., well-being and self-control but the resilience of the nurses transitioning in other care areas (like neuroscience, oncology, telemetry, etc.) were positively correlated with trait EI and its all factors. He further found no statistically significant difference in the strength of the correlation between resilience and trait EI between nurses of ‘critical care’ areas and nurses of other specialty areas.

Another study with nursing staff was found in Iran by Bagheri, et. al. (2015). He found that all the factors of EI, i.e., intra and inter- personal skills, compatibility, stress management, and general mood had a significant effect on resilience, and general mood had the highest effect on resilience. Further, the intrapersonal skill was better in comparison to interpersonal skills in predicting resilience. One of the studies was found with nursing students in the

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Philippines (Cuadra & Famadico, 2013). EI was found to be correlated significantly with resilience having a lower level of coefficient.

Table 5. Studies on EI & resilience with nursing students and staff

| Author & Year | Count | Nature of Sample | Tools | | Key Findings |
|--------------------------|-------------|--|--|--|--|
| | | | EI | Res | |
| Fong-Hong (2019) | USA | 63 newly registered nurses (59 were b/w 21 to 45 yrs, 4 were above 45 yrs ; 50 female); 13 male; 28 from critical care areas & rest from other areas | TEIQue-SF (Petrides, 2009) | (CD-RISC, Connor-Davidson, 2003) | resilience was associated with trait EI ($r = 0.47$), For critical care nurse, resilience moderately correlated with trait EI ($r = .41$) & its factor, of well-being ($r = .49$) & self-control ($r = 0.38$). For nurses in other care areas, resilience was positively correlated with trait EI ($r = .61$) & all of its factors. No statistical difference in the strength of correlation between resilience and trait EI between nurse in critical care and other specialty. |
| Bagheri et al. (2015) | Iran | 162 nursing staff | Bar-On EQ (Bar-On, 1997) | CD-RISC(Connor & Davidson , 2003) | Resilience was correlated with intrapersonal EI($r = 0.70$), interpersonal EI ($r = 0.37$), compatibility ($r = 0.62$), stress management ($r = 0.60$) & general mood ($r = 0.74$). EI predicted 62% of the variance in resilience. General mood has the highest impact on resilience |
| Cuadra&Famadi co (2013). | Philippines | 186 male nursing students (18-22 years) | Emotional Intelligence Test for students (Goleman, 1995) | Personal Resilience Assessment Tool (Kathryn Stratton, 2008) | Low correlation between EI and resilience ($r = 0.365$) |

Studies with at-risk populations

Not just for typically developed children, EI is also important for the development of resilience of at-risk populations like special populations, cancer patients, etc (table 6). Four studies (three with self-reported EI and one on ability EI) included 76 special children and 38 typically developed participants and 240 cancer patients. The intensity and pattern of the relationship between EI and resilience varied between typically developed children (TD) and special children. One of the studies by McCrimmon & Matchulliset (2016) compared the nature of the relationship between said variables among High Functioning Autism Spectrum Disorder (HFASD) and typically developed (TD) children. The studies selected the sample matched on age and gender. It was reported that children with HFASD did not differ significantly from TD children in either trait EI or resilience but the correlation was unique in both samples. Correlation between trait EI was positively related to the factors of resilience, i.e., mastery and relatedness (protective factors), and negatively related to the emotional reactivity (risk factor) for HFASD whereas for TD children trait EI was positively

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related to mastery and relatedness but this relation was not significant with emotional reactivity. Particularly EI factors of interpersonal and intrapersonal skills were found to be significantly related to mastery and relatedness for the ASD sample only. Therefore, they concluded that EI factors that promote resilience in children with HFASD were not necessarily the same as those involved in TD children.

Another Canadian study by McCrimmon et al. (2017) compared the relationship between EI and resilience selecting children with Attention Deficit Hyperactivity Disorder (ADHD), HFASD, and TD. They revealed both similar and unique correlations between ADHD, HFASD, and TD. Children with ADHD and HFASD were not significantly different from TD children either in EI or in resilience. Total EI was significantly related to ‘sense of relatedness’ for ADHD and HFASD but not for TD. Interpersonal skills of EI was negatively related to ‘Reactivity’ for only ADHD population and were positively related to both ‘Sense of mastery’ and ‘Sense of relatedness’ for HFASD only but this correlation was not found significant for TD. Moreover, intrapersonal skills of EI were related to a ‘sense of relatedness’ for HFASD and were related to a ‘sense of Mastery’ ADHD but not for TD sample.

On the other hand, Montgomery et al. (2008) studied adults with Asperger’s Disorder in Canada. He measured both Ability EI and Trait EI. He reported that trait EI was correlated positively with a ‘sense of relatedness’ (protective factor of resilience) and negatively with the ‘emotional reactivity’ (risk factor of resilience). More specifically intrapersonal EQ correlated negatively with ‘emotional reactivity’ (risk factor of resilience). Adaptability EQ correlated positively with a ‘sense of mastery’ and management factor EI correlated negatively with ‘emotional reactivity’. Interestingly ability EI was not found to be significantly correlated with resilience and its factors for adult with Asperger’s Disorder.

In the study with cancer patient in India, Kunte (2014) reported that the patients with a higher level of EI were resilient. Further, he reported that EI of the cancer patients was more important than personality for their resilience.

Table 6. Studies on EI & resilience with at-risk populations

| Author & Year | Country | Nature of Sample | Tools | | Key Findings |
|--------------------------------------|---------|--|-------------------------|----------------------------|--|
| | | | EI | Res | |
| McCrimmon, Climie, et al. (2017). | Canada | 54 male children (8–12 yrs) 18 ADHD, 18 ASD, and 18 TD controls) | EQ-i: YV (Bar-On, 2000) | RSCA (Prince-Embury, 2006) | EI of ADHD was relate to resilience factor, mastery ($r=0.68$), relatedness ($r=0.76$, & reactivity $r=-0.67$.EI of ASD was related to mastery ($r=0.72$), relatedness ($r=0.75$) and reactivity ($r=-0.51$). For TD students, Stress Management was significantly related to a Sense of Mastery. |
| McCrimmon, Matchulliset al., (2016). | Canada | 20 ASD children (8–12 yrs, $M=10.05$; $SD=1.50$; 95% male) 20 age- | EQ-i: YV (Bar-On, 2000) | RSCA((Prince-Embury, 2006) | No significant difference between the ASD and TD children in both resilience and EI. EI was significantly related to mastery ($r=0.70$), relatedness ($r=0.561$) and reactivity ($r=-0.53$) in ASD population. TD children EI was relate to only |

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| | | | | | |
|------------------------------|--------|---|---|-----------------------------|--|
| | | gender-matched TD children (M=10.11; SD= 1.59; 95% male) | | | mastery (r= 0.789), relatedness (r=0.496) |
| Kunte (2014) | India | 240 cancer patients (110 males and 130 females; age 40 to 60 yrs) | M E II, (S.K. Mangal, 2004). | RSA (Hjemdalet al., 2005). | EI was positively correlated with resilience factors, i.e., Perception of self (r= 0.635), Planned Future (r= 0.620), Social competence (r= 0.560), Family Cohesion (r= 0.543), Social Resource (r= 0.619), Structured Style (r= 0.415). EI was the most significant contributor to resilience ($\beta= 0.787$) than personality. |
| Montgomery, et. al., (2008). | Canada | 20 males participants (Asperger's Disorder), aged 16 to 21 (M =17.8 years, SD =1.20 years), | MSCEIT (Mayer et al., 2002) and The EQ-i: Short form) (Bar-On, 2005), | RSCA (Prince-Embury, 2006), | EQ correlated positively with resilience factors, Sense of Relatedness (r = .644) & negatively with the Emotional Reactivity (r= -.626). Intrapersonal EQ correlated negatively with Emotional Reactivity (r= -.651). Adaptability EQ correlated positively with a Sense of Mastery (r= .581). Stress Management correlated negatively with Emotional Reactivity (r = -.829). Ability EI was not found to be significantly correlated with resilience. |

Studies with Prisoner

In the review, one study (Maktabi et al., 2016) was found with Iranian prisoners (*table 7*), in which it was reported that their EI had a direct effect on their resiliency which in turn may help to decrease the High-Risk Behaviour (HRB) of the prisoner.

Table 7. Studies on EI & resilience with the prisoner

| Author & Year | Country | Nature of Sample | Tools | | Key Findings |
|-------------------------|---------|---|-----------------------------|----------------------------------|--|
| | | | EI | Res | |
| Maktabi et al., (2016). | Iran | 293 male prisoners chosen (19 to 62 years old; M = 34.50, SD = 11.2). | SSEIS (Schutte et al. 1998) | CD-RISC (Connor & Davidson 2003) | EI had a direct effect on resiliency $\beta= 0.27$ |

Studies with Administrative Personnel

Two studies covered 384 participants of administrative personnel, one was academic and another was a private organization (*table 8*). Ravikumar & Dhamodharan (2014) studied Indian corporate executives and reported that the trait EI was highly correlated with resilience. Further, they found that the effect of EI on resilience was strong through spiritual

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intelligence (SI) than alone, but EI had a stronger effect on the resilience of corporative executives than SI. Another study with public school principals in the USA (Bumphus, 2008) found that their EI significantly correlated with resilience, but only one factor of EI, i.e., ‘general mood’ had a moderate level of effect on the resilience of the school principals. Though along with leadership quality, EI had more strong impact on resilience than EI alone. EI was more effective for resilience than leadership quality.

Table 8. Studies on EI & resilience with administrative personnel

| Author & Year | Country | Nature of Sample | Tools | | Key Findings |
|------------------------------|---------|---|--|----------------------------|--|
| | | | EI | Res | |
| Ravikumar&Dhamodharan (2014) | India | 321 corporative executives (male 150 female 171) | Self-made Emotional Intelligence scale | Self-made Resilience scale | EI was correlated with ($r= 0.82$) and predicted resilience ($R^2 = 0.69$). EI has less effect on resilience directly rather indirectly through SI |
| Bumphus, A. T. (2008). | USA | 63 public school principals (44 female, 19 male; Age 40 – 55) | Bar-On EQ (Bar-On,, 1997) | ACR Shores, (2004) | Significant relationship was found between EI and resilience ($r= 0.77$). Only one factor, the general mood had a significant effect on resilience ($\beta= 0.42$) |

Study with Infertile Women

Farhadi (2016) studied women who were under treatment for infertility in Iran (*table 9*). He showed that the relationship between EI and resilience was low but positive. Further, along with personality, EI predicted resilience but EI had no significant effect on the resilience of the women under treatment for infertility. This study contradicted the result of Indian cancer patients (Kunte, 2014).

Table 9. Studies on EI & resilience with infertile women

| Author & Year | Country | Nature of Sample | Tools | | Key Findings |
|-----------------|---------|---|---|----------------------------------|---|
| | | | EI | Res | |
| Farhadi (2016). | Iran | 150 women treated of infertility (25 to 40 years) | Emotional intelligence scale (EIS) based on SSEIS, 1998 | CD-RISC (Connor & Davidson 2003) | EI was significantly correlated with resilience($r= .31$) but had no significant effect on resilience). |

Study with Mixed Samples like Worker, Students etc

One study was found (*table 10*) where participants were selected from different professions, like Italian workers ($n=488$) including teaching, technical sector, entrepreneurs, etc. (Magnano et al., 2016). Another study (*table 10*) covered diverse samples ($n= 414$) including completed university degree participants, paid full or part-time employment, and full-time students who performed home tasks (Armstrong et. al., 2011). Magnano et al. (2016) studied Italian workers and employees and reported that EI had a significant effect on

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resilience which in turn improves the achievement motivation of the workers. Armstrong et al. (2011) measured indirectly resilience and identified 27% of the total 414 participants were resilient as they exhibited the weakest relationship between accumulated life events and distress and they were revealed to be having higher EI in terms of Emotional self-awareness, Emotional expression, Emotional self-control and particularly, Emotional self-management which were concluded as central to psychological resilience. Armstrong et al. (2011) suggested that when coping with multiple life events, the benefits of intrapersonal EI outweigh the benefits of interpersonal EI.

The Italian study by Fabio and Saklofske (2018) comprised two categories of samples, i.e., university students and Italian workers. They showed that the correlation between EI and resilience was high for university students and moderate for employees. EI had a significant effect on resilience for both samples. Though trait EI was reported as a vital resource for resilience, the effect of personality was better than trait EI for both university students and employees in Italy.

Table 10. Studies on EI & resilience with a mixed sample like workers, student, etc

| Author & Year | Country | Nature of Sample | | Tools | | Key Findings |
|---------------------------|---------------|--|--|---|--|---|
| | | | | EI | Res | |
| Fabio & Saklofske (2018). | Italy | 186 university students (56.45% female, 43.55% male; M-age =23.18yrs) | 189 Italian workers (55.03% female, 44.97% male; M- age 43.64 yrs) | TEIQue-SF (Petrides & Furnham, 2006) | RSYA (Prince-Embury et al., 2017) | Correlation between Trait EI and resilience was high for university students (r= 0.70) and moderate for the employee (r= 0.59). EI has significant effect on resilience ($\beta = 0.47$ (for stud) $\beta = 0.42$ (for worker). But personality had a strong effect on resilience than trait EI. |
| Magnano et al., (2016). | Italy | 488 workers, Like technical sector, entrepreneurs etc. (248 males, 240 females; age 18 - 55 yrs) | Italian teaching, etc. | Italian adapted (Craparo et al., 2014) SREIT (Schutte et al., 1998) | Italian adapted (Laudadio et al., 2011) RSA (Friborg et al., 2006) | EI have direct effect ($\beta = .42$) and predicted resilience ($R^2 = .18$) Resilience mediates the relationship between EI. |
| Armstrong et al. (2011) | Paris, France | 414, (24 and 58). Completed university degree (60%). paid employment (42% full-time, 17% part-time). fulltime students (19%) or performed home duties (10%). | | SUEIT (Palmer & Stough, 2001). | Resilient measured in terms of least distressed in negative life event | EI was negatively related to life events and distress Emotional Self-Awareness, Emotional Expression, Emotional Self-Control, and particularly Emotional Self-Management appeared central to psychological resilience |

Studies based on Ability Emotional Intelligence

Study with Mental Health Professional

One of the studies (table 11) was found with the mental health foundation by Frajo-Apor et al., (2017). They evaluated the ability EI of the mental health professional and general

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control groups in relation to resilience. Unexpectedly it was reported that both-mental health professionals and general control groups possess a higher level of EI and resilience and they were not differed significantly either in EI or in resilience. Correlation analysis revealed a positive but very low level of association between resilience with total ability EI and its factors, i.e., Perceiving emotions, using emotions, Managing emotions, and Experiential, Strategic EI. Here it is mentioned that another study (*table 6*) with at-risk samples' ability EI was not found significant with resilience (Montgomery et. al., 2008).

Table 11. Studies on EI & resilience with mental health professional

| Author & Year | Country | Nature of Sample | Tools | | Key Findings |
|---------------------------|---------|--|--|--|--|
| | | | EI | Res | |
| Frajo-Apor et al. (2017). | Austria | 61 (male 17, female 44) mental health professionals (M= 41.9 , SD 9.6) & 61 without healthcare-related working conditions (male 25, female 36) control subjects (M= 39.9, SD 11.8) | German version of the Mayer-Salovey-Caruso-Emotional-Intelligence Test (MSCEIT) (Steinmayr, Schütz, Hertel, & Schröder-Abé, 2011), | German version of the Resilience Scale RS-25; Wagnild & Young, 1993) | Resilience was correlated with EI (r= 0.20) and its factors- Perceiving emotions (r= .167), Using emotions (r= .233), Understanding emotions (r=.022), Managing emotions (r= .211). Both groups showed relatively high-level of EI & resilience. They did not differ significantly from each other, either in terms of EI or resilience. |

DISCUSSION

In the present study, the selected 37 papers were reviewed systematically and categorically based on sample characteristics and almost all the studies reported a positive correlation between EI and resilience irrespective of different age, nature of the sample, and cultural context. The highest number of studies was from Iran. From the social and political perspective, Iran went through an acute horrible crisis due to war, attack, exploitation, etc. which have predominantly affected their citizens, especially the young generation or students as they might have dreams for the future. In that situation their mental strength, stableness, tolerance, and ability to bounce back, to the normal situation, i.e., resilient ability needs to be developed. It was evident that effective ability like EI predominantly affects coping, control or management of inner strength; hence research gave importance to the effective factor of human life in developing resilience.

In the review, the correlation between EI and resilience was independent irrespective of ability and trait *EI*. Here in the present review, only two studies (Frajo-Apor, et. al., 2017; Montgomery, et. al., 2008) were found where resilience was evaluated with respect to Ability EI measured by MSCEIT and only one study reported a lower level of correlation with resilience among mental health professional (Frajo-Apor et. al., 2017) and another study reported no significant correlation of ability EI with the resilience of the adolescents with Asperger Syndrome, but trait EI reported a significant effect on resilience in all the studies. It was said that if a person shows the disposition of EI, he/she must possess that ability. Perceived, understanding, management and utilising emotion of oneself and others

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make people strong against trauma or risky situation and brings awareness of the surrounding environment and enable them to control and manage the stressful surroundings which might be helpful in the resilience process. According to Mayer and colleagues (2008), EI is the ability to monitor and control their own feelings and others and use those feelings to control your thoughts and actions. So, if an individual has high EI, they will be able to overcome various problems or opposition that appears in their life. This will indirectly increase resilience in a person. Therefore, it is not surprising that there should be a relationship between resilience and EI as these two constructs interplay with each other. But more study is needed with the ability EI in relation to resilience to have a better understanding of its effect on resilience.

It was found that intrapersonal EI is more strongly related to resilience than interpersonal EI which is expected as here resilience denotes a person's own personal competence, strength, coping ability, hardiness, etc. in which person's inner power or competency like intrapersonal emotional skill should be more effective in comparison to interpersonal skill. Moreover, intrapersonal skills actualise in the form of interpersonal skills, for example, the ability to control, and manage own emotions would be helpful in managing others' emotional reactions, hence it can be said that person's intrapersonal skill would be more effective in personal resilience.

Most of the studies revealed that resilience could be beneficial as a mediator between EI and life satisfaction (Ramos-Diaz et al., 2018), psychological well-being (Akbari & Khormaiee, 2015), achievement motivation (Magnano, et. al., 2016) and stress reduction (Trigueros et al., 2020). In other words, a person with a high level of EI would possess resilience, i.e., they would be able to be stable in adversities, would be optimistic, and able to bounce back after going through a difficult situation, and these qualities would help them to be satisfied in life, have good mental health, less feeling of stress, and high motivation in life. That is why these two constructs, EI and resilience are given so much importance in positive psychology.

The systematic review showed the factors that affect or promote resilience in children with an at-risk or special population who are not necessarily similar to those involved for typically developed children. Trait EI was more important for developing and maintaining resilience for children with high-functioning autistic children than for typically developing (TD) children (McCrimmon et al., 2017). Further which factors of EI of special children were correlated to resilience factors were not found to be similar for typically developed children. So, during framing or designing a program or course, these differences should be kept in mind.

Future research

This systematic review has identified certain crucial research gaps in the evidence base of this field, where further research may be beneficial. Almost all study participants were selected from the typical population and measured their resilience with respect to EI but whether a person is resilient or not can be measured in the presence of adversity and resilience is measured in terms of their behavioural outcomes, hence further study is needed with participants at-risk or with people who have gone through risky situations, i.e. post hoc analysis might be suitable strategies like street children, suffering from liver diseases, experienced forced migration, etc. Hence qualitative or mixed-method study might be more appropriate to know students' resilience. No longitudinal study has been found on resilient measures in the review of the association and effectiveness of EI on resilience. The lack of

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longitudinal data is problematic for several reasons (Siriwardhana et. al., 2014). Some reasons are; i) it prevents the effective understanding of resilience dynamics over time, ii) it limits the identification of the temporal nature of protective or promoting factors of resilience, reducing its dynamic nature to a static concept (Kumpfer, 1999; Stewart, 2010); iii) it limits conclusions regarding causality; However, the difficulties and ethical dilemmas in conducting longitudinal studies in highly unstable and chaotic conflict or post-conflict situations had to be acknowledged in this regard. Although the current review stated that resilience did not differ whether special population or typical, even in the general population it is conceptualised that the resilience of mental health professionals would be high in comparison to general control participants but empirical research outcomes showed no difference in resilience as well as EI, even both groups were found to be high in EI and resilience. This result contradicted the general conceptual ideas of being in a better position in EI and resilience by the mental health professional. Hence more studies should be proposed for comparative analysis.

Almost all reviews suggested EI might be effective in promoting resilience for the participant of diverse backgrounds and demographic contexts, only one study showed a rival direction (Kobylarczyk et al., 2017), which found resilience has a direct effect on EI. Perception and expression of emotions, the efficiency of emotions, and emotion regulation in an unsafe and unpleasant situation act as protective factors and enhance one's resiliency. On the other hand, people with high EI have optimal emotional management and they can better handle negative emotions such as anxiety, depression, and irritability. They face fewer problems in difficulties of life and they can get rid of difficult situations more easily (Maktabi et al., 2016). Hence theoretical and empirical studies supported that EI has a significant effect on the resilience process which is needed to be evaluated in experimental settings.

There is a paucity of research interest in the ability EI with resilience. Ability EI measures actual emotional ability, i.e., a person's ability to perceive, understand, use, and manage of own and others' emotions. How does this capability help individuals to be resilient, therefore further study is needed focusing on ability EI.

One of the strengths of the present review study was its nature of comprehensiveness, as almost all studies (availability in the online database) related to the aims of the research endeavour have been covered and reviewed. Another concern is that if these two constructs are highly correlated in almost all the studies then what extent they are overlapped, whether they measure somehow the same construct?

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