



Gender and generational cohort impact on entrepreneurs' emotional intelligence and transformational leadership

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Abstract

Emotional intelligence (EI) and leadership style are topics that have attracted a growing interest in the literature. In this study, we posit that entrepreneurs' EI is an antecedent of transformational leadership (TL) while examining the moderating role of gender and generational cohort. Data were collected from 2,084 international entrepreneurs and analysed using multivariate analysis and hierarchical linear regression. The results confirm EI as an antecedent of TL and show that others' emotion appraisal (OEA) and regulation of emotions (ROE) are the most contributing subdimensions of EI to TL. Moreover, the study also reveals significant gender and generational cohort differences for EI and TL. In one of the relevant findings, our research shows that only female Gen Z entrepreneurs have lower scores than their male counterparts. Although men's EI scores are similar across generations, women's scores are significantly higher in each older generation leaving open questions for further research in the area.

Keywords Emotional intelligence · Transformational leadership · Leadership style · Entrepreneurship · Gender · Gen Z

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Introduction

Entrepreneurship undeniably contributes significantly to economic development, primarily through employment generation, innovation, and enhancing societal welfare (Acs & Audretsch, 1988; Baumol, 2002; Cohen, 2010; Thurik et al., 2023). The increasing trend in entrepreneurial activities, now encompassing over 580 million active entrepreneurs globally (Markinblog, 2023), underscores its growing importance. This surge raises a pivotal question that captivates both policymakers and academics alike: "What underlies a successful entrepreneur?" Existing scholarship has pinpointed leadership style and emotional intelligence (EI) as key determinants of entrepreneurial success. However, a detailed examination of how these factors interplay, particularly the nuanced relationship between gender, generation, EI and leadership style among entrepreneurs, remains insufficiently explored.

This paper aims to bridge this theoretical gap, emphasizing the criticality of this intersection from both an academic and pragmatic viewpoint. Effective entrepreneurship hinges on leadership that not only fosters value creation but also propels business ventures forward (Engelen et al., 2015; Yang, 2008). Leadership literature delineates various archetypal styles, including laissez-faire, transactional, transformational, autocratic, and democratic leadership (Bass et al., 1996; Eagly et al., 2003; Eagly & Johannesen-Schmidt, 2001; Nanjundeswaraswamy, 2014), with transformational leadership (TL) being particularly instrumental in driving innovation and entrepreneurial success (Diaz-Saenz, 2011; Engelen et al., 2015). Therefore, this paper hypothesizes a significant correlation between entrepreneurial success and TL style.

Concurrently, research has extensively analysed the influence of EI on entrepreneurial endeavours (e.g., Baron, 2007, 2008; Cardon et al., 2009, 2012; Delgado Garcia et al., 2015; Foo et al., 2009; Goss, 2005, 2007; Lindgren & Packendorff, 2009; Townsend et al., 2009). EI, a skill pivotal in understanding and managing emotions (Extremera et al., 2019; Libbrecht et al., 2014), is crucial for entrepreneurs who often navigate their ventures with passion and emotional drive. Its significance is particularly evident in key entrepreneurial activities like opportunity evaluation and venture establishment (Cardon & Kirk, 2015; Cardon et al., 2009; Foo, 2011; Foo et al., 2009). Entrepreneurial development is inherently an emotional journey (Cardon et al., 2012; Zakarevicius & Zuperka, 2010), making EI essential for enhancing self-efficacy, articulating entrepreneurial intentions, exerting influence, and securing funding (Biraglia & Kadile, 2017; Chen et al., 2009; Ensley et al., 2006; Murnieks et al., 2014).

This research seeks to elucidate the relationship between EI and TL in entrepreneurial contexts. Although prior studies in various fields have explored this connection (Barling et al., 2000; Bass et al., 2003; Duckett & Macfarlane, 2003; Cavazotte et al., 2012; Mandell & Pherwani, 2003; Megerian & Sosik, 1996; Singh & Modassir, 2007), and meta-analyses by Harms and Credé (2010) and Kim and Kim (2017) have indicated a positive correlation between leaders' EI and TL style, these studies have not exclusively focused on entrepreneurial leadership. This

paper, therefore, investigates the hypothesis that entrepreneurs' EI is a precursor to their TL style, with varying impacts across different EI dimensions, as supported by empirical findings from Raina and Sharma (2013) and Yitshaki (2012).

Our study recognizes the importance of contextual factors like gender and generation in this relationship. The assumption that the link between aggregate EI, its dimensions, and TL style remains consistent across different genders and generations is tenuous (Nanjundeswaraswamy, 2014). To date, systematic empirical research examining the moderating effects of gender and generational differences on this relationship is scarce, marking a significant gap in our understanding (Ettis, 2022).

Thus, this study poses three critical research questions to close this gap on the empirical literature to better understand the relationship between generational cohorts' configurations, gender, and entrepreneurship: i) Does aggregate entrepreneurs' EI influence their TL style? ii) If so, do different EI dimensions impact TL style variably? iii) Lastly, do gender or generational factors moderate the relationship between entrepreneurs' EI (both aggregate and dimensional) and their TL style?

To address these questions, data from a diverse sample of 2,084 entrepreneurs worldwide were analysed. The findings confirm that entrepreneurs' EI significantly influences their TL style, with varying degrees of impact across different EI dimensions. Additionally, gender and generational differences were found to moderate this relationship. This paper expands the current knowledge base by systematically exploring these relationships in a large entrepreneurial sample, thereby developing an instrumental theory on how entrepreneurs' EI dimensions, influenced by gender and generation, affect their TL style. Beyond its theoretical contribution, this study offers practical and policy implications by identifying crucial EI dimensions for developing transformational leadership among entrepreneurs and informing the design of more effective entrepreneurship training programs and policy interventions.

The structure of the paper is as follows: the subsequent section presents a comprehensive literature review on EI and TL, their interrelations, and several hypotheses forming the basis of our research model. This is followed by "Data" section, detailing the research methods employed for data collection and analysis. "Results" section presents the research findings, which are further discussed in "Discussion" section. Finally, "Conclusions" section summarizes the main findings and concludes the study.

Theoretical background

The literature on entrepreneurs' emotional intelligence (EI) and transformational leadership (TL) reveals a growing interest in understanding how they interact and contribute to entrepreneurial success. While EI in management is well-acknowledged for its influence on organizational performance, studies focusing specifically on entrepreneurs' EI are relatively scarce. Entrepreneurs' EI significantly impacts their managerial capabilities, as higher EI allows for a better understanding and management of one's own and others' emotions, an aspect which is crucial for entrepreneurs, especially given the dynamic changes and challenges they face. EI refers to "the ability to perceive accurately; appraise, and express emotion; the ability to access and/or

generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth” (Mayer & Salovey, 1997, p. 10). EI extends our ability to perceive, process, and appropriately use emotional information (Boren, 2010) by providing innovative ways to better understand and evaluate human behaviour (Orziemgbe et al., 2014).

Wong and Law (2002) developed four EI dimensions: Self-Emotional Appraisal (SEA), the ability of individuals to understand their own emotions; Others’ Emotional Appraisal (OEA), the ability of individuals to perceive and understand others’ emotions; Use Of Emotion (UOE), the ability of individuals to make use of their emotions to enhance performance; and Regulation Of Emotion (ROE), or, as the name suggests, the ability of individuals to regulate their emotions (Fukuda et al., 2011; Wong & Law, 2002).

Hess and Bacigalupo (2011) review of the literature concludes that the application of EI skills can improve decision-making. A significant body of entrepreneurship related EI research has examined its relationship with the entrepreneurial mindset and its characteristics. For example, the link between EI and entrepreneurial intentions and success (Caputo et al., 2019; Ingram et al., 2017; Mortan et al., 2014). Entrepreneurs with high EI are expected to be more affective, more creative, and more eager to create greater levels of engagement from co-workers, thereby promoting more innovation in their ventures, which is consistent with the relationship between intrinsic motivation as a source of creativity as well as psychological empowerment (Ahmetoglu et al., 2011). Other researchers have also shown the importance of EI for entrepreneurial education, given that leading a start-up implies living under great uncertainty (Rhee & White, 2007; Sainz & Sanz, 2023).

In terms of transformational leadership, while evidence suggests entrepreneurs are more inclined towards this style, the literature needs a comprehensive examination of the relationship between entrepreneurs’ emotional capabilities, managerial orientation, and the growth of new ventures. Moreover, the interconnectedness between EI and transformational leadership is considered necessary in entrepreneurship due to the emotional competencies required for both, particularly in how entrepreneurs perceive their feelings and emotionally motivate their followers. Burns (1978) introduced the concept of TL following a study of political leaders. The concept started to gain greater attention than other leadership styles in the 1980s (Avolio et al., 1999; Bass, 1985, 1999). Researchers have developed tools to measure, implement, and learn how to successfully develop TL style in several types of organisations (Avolio et al., 1999; Caldwell et al., 2012; Yang, 2008). By empowering others, TL drives creativity (Bai et al., 2016; Gong et al., 2009; Li et al., 2015), knowledge sharing (Dong et al., 2017; Mittal & Dhar, 2015), innovation (Chen et al., 2014; Jiang & Chen, 2018), performance (Dumdum et al., 2013), and even job autonomy (Wang & Cheng, 2010). Creativity, innovation, and knowledge sharing are essential ingredients of entrepreneurial success.

TL demands both parties influence and motivate each other to achieve a higher purpose (Sashkin & Rosenbach, 1998). Some authors (Breevaart et al., 2014; Judge & Piccolo, 2004) have studied different leadership styles to examine their validity

and impact. The most contrasted leadership styles are the opposing transformational and transactional leadership styles. The key finding is that TL style positively affects employees' performance, whereas transactional and laissez-faire have negative effects. Empirical research (e.g., Öncer, 2013; Yang, 2008) has also shown that TL enhances a firm's risk-taking ability. Transformational leaders are considered enthusiastic, eager to motivate employees, and visionaries, thereby affectively and effectively influencing the organisation through greater commitment and involvement from employees (Bass & Riggio, 2006; Burns, 1978).

The contribution of TL style to start-ups and new ventures has been the subject of several studies. Ensley et al. (2006) studied the top management team of 220 top start-ups, demonstrating that, in highly dynamic and unpredictable environments, TL style has a statistically significant and positive effect on the performance of new ventures. The long-term vision that a transformational leader brings to an organisation helps stakeholders reduce uncertainty surrounding nascent entrepreneurial projects. Moreover, the characteristics associated with TL style positively affect the growth of firms operating in rapidly changing and highly innovative environments (Ensley et al., 2006). Different studies have shown that TL is an important antecedent of promoting employees' corporate entrepreneurship (Chang et al., 2017; Chen et al., 2014; Moriano et al., 2014; Öncer, 2013). Eyal and Kark (2004) studied not-for-profit public schools, examining the influence of TL style on entrepreneurial strategies involving radical change, finding a positive impact but concluding that the relationship is complex.

The conceptual and empirical literature reviewed in the introductory section and here point to a positive relationship between TL style and entrepreneurs' actions and success. Subramaniam and Shankar (2020) point to nascent knowledge on "entrepreneurial leaders", despite the relative maturity of the leadership field, regarding the relationship between leadership and entrepreneurship. The significance of this relationship and the paucity of large-scale systematic research inspired us to examine the antecedents of entrepreneurs' TL style.

A few studies have examined the relationship between leaders' EI and TL styles, reaching contradictory conclusions, suggesting a gap in the literature, with a need for more empirical studies, like this one, directly focusing on these aspects in the entrepreneurial context. For example, Krau (2020) found a positive relationship between leaders' EI and TL style in nurses who are managers and leaders, while Cavazotte et al. (2012) in an industrial firm related it to other personal traits and found no relationship. The outcome of individual studies is affected by a variety of design issues, such as the sampling frame, sample size, response rate, etc. Meta-analysis, on the other hand, offers a more robust assessment of the relationship between leaders' EI and their TL style. We identified two recent meta-analyses: Harms and Credé (2010) and Kim and Kim (2017), both showing a significant and positive link between leaders' EI and TL style. Moreover, Kim and Kim's (2017) meta-analysis, drawing on 20 empirical studies, points to measurement discrepancies, particularly with regards to the robustness and missing constructs used to assess dimensions of EI, highlighting the need for more granular empirical research examining the link between EI dimensions and TL style.

Conceptually, elements such as empathy link EI and TL because leaders who are genuinely empathetic can sense what others need and understand their reactions (Goleman, 1998a, b), while transformational leaders use their emotions as well as the emotions of others to promote change (Dulewicz et al., 2005; Mathew & Gupta, 2015). Another link relates to vision, an important characteristic of a transformational leader (Burns, 1978), while leaders with high EI are better able to motivate and elicit enthusiasm from employees by creating shared goals and vision (Goleman, 1998a, b). Evidence suggests that the presence of EI “strengthens the relationship between the leadership behaviour of supervisors and the job satisfaction of subordinates” (Joshi et al., 2016, p. 19). Goleman et al. (2013) report that the main reason for most leaders’ success is EI rather than IQ or cognitive intelligence. We contend that these arguments equally apply to entrepreneurs, as they occupy an important leadership role, as discussed in the introductory section.

Raina and Sharma (2013) found, based on a sample of 47 entrepreneurs operating in Rajasthan, a positive link between aggregate entrepreneurs’ EI score and TL style. Moreover, they showed that the relationship between entrepreneurs’ EI and other archetypal leadership styles was not as significant, providing further support for our focus on TL. This study, although limited in terms of sample size and context (lack of geographical diversity), offers empirical support for our hypothesis that entrepreneurs’ EI is an antecedent of their TL style.

Drawing on a sample of 99 Israeli high-tech entrepreneurs and using the Assessing Emotions Scale (Schutte et al., 1998), Yitshaki (2012) examined the link between EI and its dimensions, TL style, and firm growth. The results showed that entrepreneurs’ EI impacts TL orientation, intellectual stimulation, and charismatic inspirational behaviour. Furthermore, the study identified a positive relationship between two dimensions of entrepreneurs’ EI and their TL style. This study offers limited empirical support for our hypothesis that entrepreneurs’ EI dimensions have a differential impact on their TL style. Conceptually, entrepreneurial operating environments are usually unpredictable and characterised by high uncertainty. In such environments, emotions can influence decision-making and judgement (Baron, 2008; Forgas, 1995; Hmieleski & Baron, 2009).

The conceptual and empirical evidence reviewed points to the importance of EI to entrepreneurs, despite these significant efforts, recognizes is an important knowledge gap of systematic, large-sample research examining the relationship between entrepreneurs’ ET and TL styles we aim to bridge (Liu et al., 2019).

EI and TL both influence individual behaviour through emotions and reasoning (Bass, 1985). EI in this context is understood as the ability to perceive, express, assimilate, and regulate emotions in oneself and others (Clark & Harrison, 2018). It involves skills like understanding emotions, using them to enhance decision-making, and managing emotions effectively in various situations. Studies have shown that entrepreneurs with high EI demonstrate better understanding and management of emotions, which is crucial in dealing with the dynamic challenges of entrepreneurship (Tang et al., 2021; Yitshaki, 2012). Accordingly, we propose the following hypothesis:

H1: Entrepreneurs’ emotional intelligence is positively related to entrepreneurs’ transformational leadership style.

And the two following corollaries:

H1a: Each dimension of entrepreneurs' emotional intelligence is positively related to entrepreneurs' transformational leadership style.

H1b: The magnitude of influence of each dimension of entrepreneurs' emotional intelligence on entrepreneurs' transformational leadership style is different.

The extant literature points to the influence of contextual factors such as gender, experience, generational cohort, education, and background on entrepreneurial intentions and the performance of entrepreneurial ventures (e.g., Ahmad, 2007; Sadri, 2012; Sajilan et al., 2015). In the context of this research, we contend that gender and the generational divide are two critical contingency factors likely to moderate the relationship between entrepreneurs' aggregate EI as well as their dimensions and their TL style. We review the appropriate literature in support of our hypothesis in the following two sections.

The relationship between gender and entrepreneurship is attracting greater attention (e.g., Artz, 2017; Byun & Ding, 2019; Camelo-Ordaz et al., 2016; DeTienne & Chandler, 2007; Kirkwood, 2016). The extent to which the literature suggests gender differences in entrepreneurial propensity (e.g., Avnimelech & Zelekha, 2023; Bullough et al., 2022; Kollinger-Santer & Fischlmayr, 2013). Langowitz and Minniti (2007) drawing on the behavioural economics lens, concluded that subjective perceptual variables had a crucial influence on the entrepreneurial propensity of women and accounted for much of the difference in entrepreneurial activity between the sexes. They conclude that perceptual variables may be significant universal factors influencing entrepreneurial behavior. EI is potentially one such perceptual factor, and the paucity of research examining gender and entrepreneurs' EI represents a significant gap in our knowledge.

Leaving aside propensity, another question revolves around whether women or men make better entrepreneurs. Empirical studies offer contradictory results. Some studies (e.g., Díaz-García & Jiménez-Moreno, 2010; Ferk et al., 2013; Shinnar et al., 2012) have shown that women make better entrepreneurs because of their superior managerial competencies. On the contrary, other scholars have found that men's capabilities make them overrepresented (Grilo & Thurik, 2005; Kuschel et al., 2020).

The empirical research examining EI differences between genders finds both the absence and presence of differences. Empirical studies, among others by Fischer et al. (2018) and Petrides and Furnham (2000a, b), revealed no gender differences in EI scores. Particularly notable is the study by Fischer et al. (2018), using a sample of 5000 participants, which concluded that there was no difference in female and male EI scores. They challenged the concept that emotion recognition differed between females and males. On the other hand, a meta-analysis by Joseph and Newman (2010) concluded that women's EI scores were higher than those of men. The outcome of research examining differences between dimensions of female and male EI is also inconclusive. Empirical studies have revealed gender differences in some EI dimensions. García-León and López-Zafra (2009) evaluated 431 undergraduates, and López-Zafra and Gartzia (2014) evaluated Spanish 260 undergraduates' EI competencies, determining that "emotional intelligence and gender roles predict transformational leadership". This is not only student behaviour; Landa et al. (2006) determined

that female teachers were perceived to have higher SEA and OEA than male teachers. In contrast, the opposite results were reported for the UOE dimension, with men having higher scores. Thus far, studies have failed to show a conclusive pattern between gender and EI, yielding mixed findings regarding the specific dimensions of EI for which gender differences exist (Fernández-Berrocá et al., 2012). Lack of consensus adds weight to the need for systematic research examining gender EI differences and differences between its dimensions.

The literature is all but consistent. Eagly and Johnson (1990), in a meta-analysis of papers comparing the leadership styles of women and men, found for both the presence and absence of differences, Mandell and Pherwani (2003) found differences between the EI scores of female and male leaders but no significant difference in their TL style, and Eagly et al. (2003) show that women have greater TL and managerial competencies while others have shown no gender differences (Dobbins & Platz, 1986; Tan, 2008; Zeffane, 2012). The above arguments support the assertion that gender is an important contextual factor. These suggest that how dimensions of EI affect the TL style of entrepreneurs is likely to be gender-dependent. Lack of consensus regarding EI and TL gender differences points to the need for greater empirical examination, making the inclusion of gender in our study one of its major contributions. Accordingly, we propose the following hypotheses:

H2: The link between dimensions of emotional intelligence and transformational leadership is moderated by gender.

H3: Entrepreneurs' dimensions of emotional intelligence differ significantly by gender.

H4: Entrepreneurs' transformational leadership style differs significantly by gender.

Generational cohort theory (Strauss & Howe, 1991) stipulates that individuals who experience the same temporal, historical, economic, technological, and political changes also have similar values, behaviours, preferences, and lifestyles (Hemlin et al., 2014; Parment, 2013; Spector, 2008). These unique values of each generational cohort may persist throughout people's lifetimes (Jackson et al., 2011; Smola & Sutton, 2002).

We examined four generational cohorts following the Pew Research Center guidelines: Gen Z (less than 22 years old), Millennials (22–37 years old), Gen X (38–53 years old), and Baby Boomers (54–72 years old). Gen Z members are still maturing. Workers in this cohort are eager for individual recognition, including greater monetary compensation (Twenge, 2017). The most important behavioural attribute of this cohort is empathy. Millennials, also known as Gen Y, were born after 1980. They grew up as the computer and Internet revolutions were taking hold. They make up the fastest-growing age segment of the workforce (Dimock, 2018). Their entrance into adulthood has been shaped by a global economic recession. Millennials usually make fast decisions and have extensive social networks (Parment, 2013). Gen X members have experienced both economic uncertainty and social uncertainty (Lyons et al., 2007), which has made them self-reliant and forged their entrepreneurial spirit. Yusoff and Kian (2013) found that Gen X members and Millennials share some work motivation factors, such as a focus on their own careers. Finally, Baby Boomers, sometimes referred to as the “Me” generation because of their narcissistic behaviour

and attitudes, are often ambitious, goal-oriented, loyal, and work-centric (Bristow, 2015). Baby Boomers are more likely to be college graduates, be healthier, and have higher incomes than members of previous generations (Lee & Vouchilas, 2016).

Comparing these generations, Szamosi (2006) reported that entrepreneurial spirit is most commonly found in Millennials. Previous research suggests generational differences in performance improvement (Solnet et al., 2012). Costanza et al. (2012) performed a meta-analysis to compare these four generations' different attitudes towards job satisfaction, commitment to the organisation, and intention to quit. Studies also show differences in attitudes towards work between different generations (Twenge, 2017; Schabram et al., 2023). Related to education, Wilson and Gerber (2008) postulated that understanding generational cohorts could improve learning by better aligning teaching strategies with each generation's characteristics. For example, the use of technology by digital natives (Millennials) may affect their decisions to venture into new technological and innovative industries (Strauss & Howe, 2000).

Besides the academic relevance of studying generational differences in entrepreneurship, there is considerable discussion surrounding whether younger generations are more entrepreneurially oriented than older ones. GEM (2018) reported that the most common age of entrepreneurs is approximately 40 years old all over the world. Entrepreneurs of this age are also the most successful (Azoulay et al., 2018). Although younger individuals might be expected to be more eager to become entrepreneurs because people are most eager to take risks at a younger age, the risk of becoming an entrepreneur is lower at older ages because people have better access to key resources such as contacts, experience, and money. Research (e.g., Chen et al., 2016; Mayer et al., 1999; Tsaousis & Kazi, 2013; Van Rooy et al., 2005) has shown a significant positive correlation between EI and age. Mayer et al. (1999) argued that as an ability that meets the traditional standards required for intelligence, EI should develop with age and experience. Some scholars have asserted that the link between age and EI makes sense after an extensive and active life, which provides opportunities to accumulate knowledge, skills, and experience (Day & Carroll, 2004; Kaufman et al., 2008; Mayer et al., 1999; Sturman, 2003).

Nevertheless, little research has explored entrepreneurship and generational differences. Debevec et al. (2013) studied how Millennials may be splintering into a new generational cohort where greater entrepreneurial spirit can be found. Transgenerational studies on entrepreneurship are scarce (Nordqvist & Zellweger, 2010), and mostly focus on family businesses or family offices (Welsh et al., 2013; Zellweger et al., 2012). Forster-Holt (2013) compared entrepreneurs' intentions to retire among different generational cohorts, determining that such intentions are based on subjective rather than objective factors. This finding has major implications for employees, policymakers, educators of new entrepreneurs, and others. According to Zacher and Bal (2012), knowledge regarding the influence of generations on TL is an area of research that needs more attention. Thus, it remains unclear whether the relationship between EI and TL varies by generational cohort. Accordingly, we formulate the following hypotheses:

H5: The link between dimensions of emotional intelligence and transformational leadership is moderated by the generational cohort.

H6: Entrepreneurs' emotional intelligence dimensions differ significantly by generational cohort.

H7: Entrepreneurs' transformational leadership differs significantly by generational cohort.

Data

First, a pilot survey was conducted with a group of entrepreneurial students, researchers, and professionals: To ensure the comparability of the results, the questionnaire was adapted from EIQ of Liñán and Chen (2009). Questionnaires were sent to 70 respondents, and 55 questionnaires were returned. Of these, 48 questionnaires were suitable for pilot testing. Next, we tested the reliability and validity of the questionnaire, which was subsequently administered to the respondents. The respondents were recruited from different sources. Initially, participants were purposely selected using the authors' links to several entrepreneurship organizations. Participants were recruited through announcements on online forums and LinkedIn, where details of the study were posted on entrepreneurship group pages. More than 15 million entrepreneurs in the United States and the United Kingdom have LinkedIn profiles (LinkedIn, 2017). Using online forums and LinkedIn has the major advantage of potentially recruiting large samples over a short period of time. Finally, we recruited participants using an opportunity sample of contacts. We recruited potential participants from January 2018 through November 2018. The survey was conducted using Google Forms. It was sent via email and other digital messaging tools, such as LinkedIn. Participants were told that the purpose of this research was to assess the link between entrepreneurs' EI and leadership style. They were also told that they would receive a copy of the study's results in return for their participation.

In total, 2,084 participants completed the survey. Table 1 shows the gender and generational cohort characteristics of the sample and the EI and TL scores. Most respondents were men (77.1%), 45.3% were from Gen X, and 36.3% were Millennials. Few global entrepreneurship samples could be used to check the representativeness of our sample. We compared our sample with the GEM (2018) study, the largest study on entrepreneurship in the world. The distributions by gender and age matched fairly well.

Measures

The questionnaire had two parts. The first part collected data on the demographics of respondents. The second part collected respondents' perceptions of the variables of EI and TL style (see Appendix A). All the items used to measure the variables had been validated in previous studies. The response format was a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

We measured TL using the Multifactor Leadership Questionnaire Form 6S (MLQ-6S) developed by Bass and Avolio (1992). MLQ-6S has 12 items measuring

Table 1 Frequencies, means of TL-, and dimensions of EI by gender and generational cohort

Cohort	N	TL		EITOT		SEA		OEA		ROE		UOE								
		M	F	T	M	F	T	M	F	T	M	F	T	M	F					
Gen Z	171	58	4.11	4.13	4.06	4.12	4.16	3.98	4.15	4.20	4.01	4.03	4.01	4.34	4.37	4.25	3.95	4.05	4.05	3.65
Millennial	571	187	4.13	4.13	4.12	4.11	4.13	4.05	4.19	4.19	4.18	4.04	4.03	4.09	4.30	4.33	4.20	3.92	3.99	3.73
Gen X	736	208	4.18	4.17	4.22	4.17	4.15	4.21	4.32	4.30	4.40	4.03	3.98	4.21	4.34	4.34	4.37	3.97	4.00	3.86
Boomers	128	25	4.27	4.26	4.37	4.19	4.14	4.46	4.34	4.27	4.69	4.00	3.93	4.36	4.44	4.41	4.55	4.00	3.95	4.24
Total	1606	478	4.16	4.16	4.17	4.14	4.15	4.13	4.26	4.25	4.28	4.03	4.00	4.15	4.33	4.34	4.30	3.95	4.00	3.81

N frequency, *M* male, *F* female, *T* total male and female, *TL* transformational leadership, *SEA* self-emotion appraisal, *OEA* others' emotion appraisal, *ROE* regulation of emotion, *UOE* Uses of emotion, *EITOT* mean score of the four EI dimensions

TL style. The 12 items had high reliability (Cronbach $\alpha = .85$), indicating a high level of internal consistency. We measured the four EI dimensions using the 16-item self-report tool developed by Wong and Law (2002) based on Mayer and Salovey (1997). This tool is known as the Wong-Law Emotional Intelligence Scale (WLEIS). The WLEIS is one of the most frequently used EI instruments, which are valid and reliable in different cultural settings (Shi & Wang, 2007). The EI scales had acceptable reliability. Cronbach's α ranged from .79 to .87.

Results

Figure 1 summarizes our proposed research model. The theoretical lenses used to empirically analyse the effects of entrepreneurs' EI on TL style draw on both EI and leadership style concepts. Our conceptual model includes the moderating effects of gender and generational cohort as two critical contextual factors, thereby providing a mechanism to link the dimensions of entrepreneurs' EI to entrepreneurs' TL style.

To test whether entrepreneurs' emotional intelligence is positively related to entrepreneurs' transformational leadership (H1) by first comparing the Pearson correlation coefficients for each dimension of entrepreneurs' EI with entrepreneurs' TL. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity, and homoscedasticity. The results appear in Table 2. These results provide some initial insight into this hypothesis. Table 2 reports descriptive statistics and correlations between the research variables. The highest mean is for regulation of emotion (4.33), followed by self-emotion appraisal (SEA = 4.26). The results for OEA differ from Cross and Travaglione's (2003) findings. Based on a qualitative study of Australian entrepreneurs, Cross and Travaglione (2003) found that entrepreneurs have extraordinary levels of EI and that OEA is the highest dimension of EI.

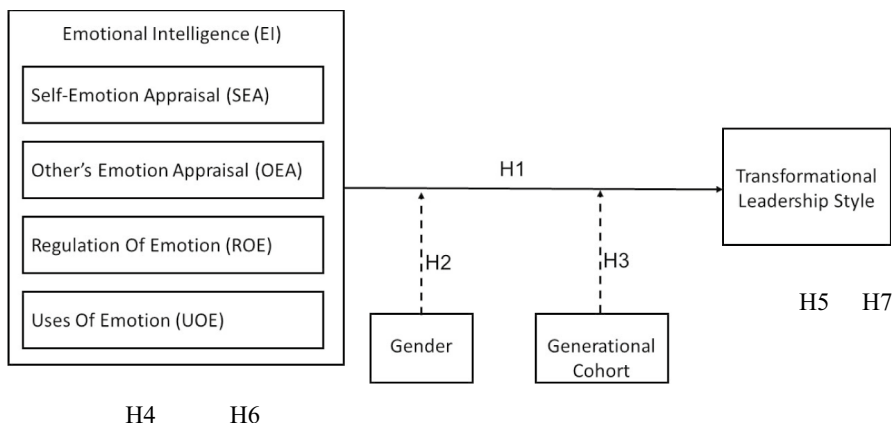


Fig. 1 Research model depicting the link between entrepreneurs' EI and TL Style moderated by gender and generational cohort

Table 2 shows a significant positive correlation between the four EI dimensions and TL. The correlation coefficients range from 0.38 (UOE) to 0.44 (ROE), with a significance level of 0.01. The results show that the total EI score is strongly correlated with TL (mean score of the four EI dimensions, EITOT = 0.60). The results of the correlation analysis indicate that all the EI dimensions are significantly correlated with TL. Therefore, we conducted hierarchical regression analysis to determine whether EI dimensions contribute incrementally to the prediction of TL while controlling for the moderating effect of gender and generational cohort. We conducted a two-stage hierarchical multiple regression analysis where TL was regressed onto gender and generational cohort in the first stage and the four EI dimensions in the second step (see Table 3). Hierarchical multiple regression is an appropriate analytical approach when seeking to evaluate the predictive capacity of proposed regression models in studies grounded in robust theoretical foundations like ours (Tabachnick & Fidell, 2007).

H1 posits a link between EI and TL. H2 and H3 posit moderating effects by gender and generational cohort on the relationship between EI and TL. The results show that gender and generational cohorts in Model 1 explain only 1% of the variance of TL. The addition of EI dimensions in Model 2 results in a significant change in R^2 (0.37), explaining 37% of the variance of TL. This result is also consistent with the significant positive correlation between EI dimensions and TL reported earlier. Therefore, H1 is supported. ROE ($B = 0.29$, $p < 0.01$) contributes the most to explaining the variance of TL, followed by OEA ($B = 0.27$, $p < 0.01$) and SEA ($B = 0.18$, $p < 0.01$). However, the results do not support H2 and H3, which posit moderation by gender and generational cohort. Thus, we conclude that although the dimensions of EI influence TL, this influence is not moderated by gender or generational cohort.

Table 2 Descriptive statistics and correlation matrix of the variables in the study

	TL	SEA	OEA	ROE	UOE	EITOT
TL	-	0.42*	0.43*	0.44*	0.38*	0.60*
SEA		-	0.36*	0.31*	0.42*	0.73*
OEA			-	0.20	0.28*	0.66*
ROE				-	0.32*	0.65*
UOE					-	0.75*
EITOT						-
M	4.16	4.26	4.03	4.33	3.95	4.14
SD	0.48	0.63	0.69	0.65	0.76	0.48
Skewness	-0.35	-0.83	-0.68	-1.09	-0.59	-0.49
Kurtosis	-0.16	0.74	0.55	1.20	0.01	0.28

N = 2084

SEA self-emotion appraisal, OEA others' emotion appraisal, ROE regulation of emotion, UOE use of emotion, EITOT mean score of the four EI dimensions, TL transformational leadership

* $p < 0.01$ (two-tailed tests)

Table 3 Summary of hierarchical regression analysis for variables predicting TL

Variables	B	R ²	Adjusted R ²	ΔR ²	ΔF	Sig.
Model 1		0.01	0.01	0.01	7	0.00
Gender	0.01					
Generation	0.08					
Model 2		0.37	0.37	0.37	204	0.00
Gender	0.01					
Generation	0.05					
SEA	0.18*					
OEA	0.27*					
ROE	0.29*					
UOE	0.14*					

SEA self-emotion appraisal, OEA others' emotion appraisal, ROE regulation of emotion, UOE use of emotion, β standardized beta coefficient

* $p < 0.01$

We conducted a multivariate analysis of variance (MANOVA) with gender and generational cohort as factors in the EI dimensions. Considering Pillai's trace criterion, Table 4 presents the MANOVA results. These results reveal a statistically significant interaction between the effects of gender and generational cohort (Pillai trace = 0.01; $F[12, 6225] = 2.23$; $p < 0.01$) on the dimensions of EI. Simple main effects analysis shows that some EI dimensions are significantly affected by entrepreneurs' gender (Pillai trace = 0.01; $F[4, 2073] = 7.02$; $p < 0.01$) and generational cohort (Pillai trace = 0.02; $F[12, 6225] = 3.96$; $p < 0.01$).

Table 4 Multivariate analysis of variance of EI

Factor	Pillai	F	P	Dep. variables	F	P	Partial η ²
Gender	0.01	7.02	0.00**	SEA	2.96	0.09	0.00
				OEA	12.45	0.00**	0.01
				ROE	0.21	0.65	0.00
				UOE	5.19	0.02*	0.00
Cohort	0.02	3.96	0.00**	SEA	14.00	0.00**	0.02
				OEA	0.94	0.42	0.00
				ROE	3.73	0.01*	0.01
				UOE	2.98	0.03*	0.00
Gender x Cohort	0.01	2.23	0.01**	SEA	5.40	0.00**	0.01
				OEA	3.67	0.01**	0.01
				ROE	2.31	0.08	0.00
				UOE	4.51	0.00**	0.01

SEA self-emotion appraisal, OEA others' emotion appraisal, ROE regulation of emotion, UOE use of emotion

*Significant at $p < 0.05$; **Significant at $p < 0.01$

The interaction effect of gender and generational cohort influences SEA, OEA, and UOE most significantly (see Table 1). To gain greater insight into this interaction effect, we plotted the relationship (see Fig. 2). Female Baby Boomer entrepreneurs have higher scores than men and women in all dimensions of EI. The greatest difference is between male and female Baby Boomers in SEA (-0.42) and OEA (-0.43). The third highest difference is between male and female Gen Z entrepreneurs in UOE (0.40).

Regarding main effects, although gender affects OEA and UOE dimensions most significantly, generational cohort affects SEA, ROE, and UOE most significantly. As Table 1 shows, women have higher scores in OEA but lower scores in UOE. Considering generational cohorts, Gen Z and Millennial entrepreneurs have lower scores in SEA than Gen X and Baby Boomer entrepreneurs. Millennials have the lowest scores in UOE (0.40). Thus, H4 and H6 are partially supported because only some dimensions of EI are influenced by gender and generational cohort.

Next, we assessed the effects of gender and generational cohort on TL using analysis of variance (ANOVA; see Table 5).

The univariate analysis results (Table 6) show no significant difference in TL scores between men and women entrepreneurs. No interaction effect between gender and generational cohort was observed. However, we observed a significant main effect of

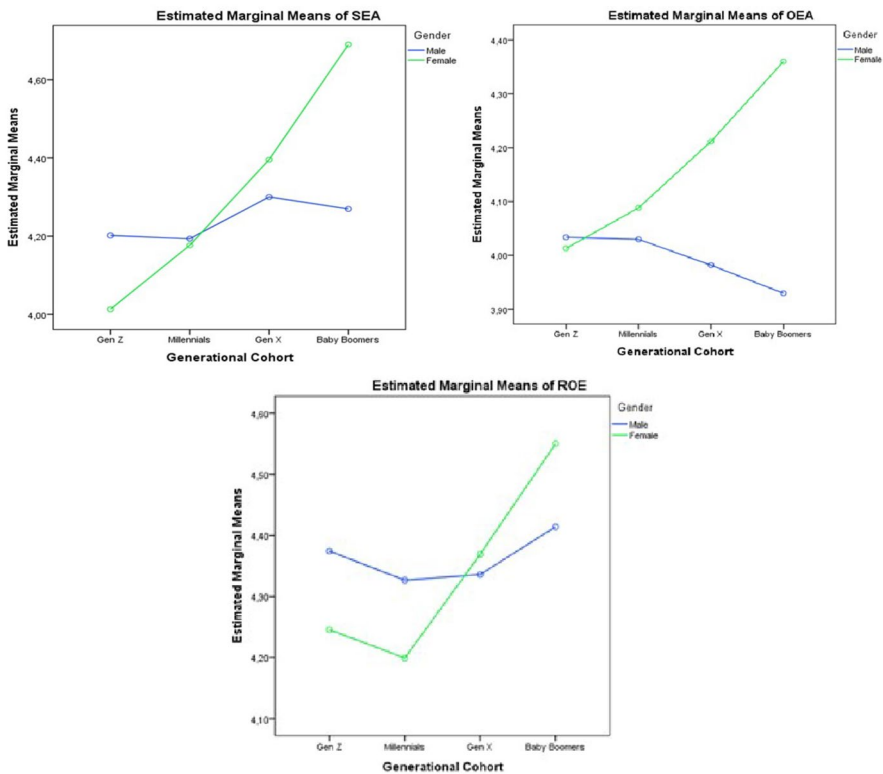


Fig. 2 Interaction effect of gender and generational cohort on EI

Table 5 ANOVA of TL vs. gender and generational cohort

Factor	Type III sum of squares	DF	Mean Square	F	P	partial η^2 =
Gender	0.09	1	0.09	0.39	0.54	0.00
Cohort	4.20	3	1.40	6.01	0.00*	0.01
Gender x Cohort	0.78	3	0.26	1.12	0.34	0.00
Error	484.04	2076	0.23			
Total	36568.17	2084				

*Significant at $p < 0.01$

entrepreneurs' generational cohort ($F[3, 2036]=6.01$; $p < 0.01$; partial $\eta^2=0.01$). The results of the post hoc Tukey's HSD test (see Table 6) indicate that the mean TL score for Baby Boomers is significantly higher than that of Gen Z members and Millennials ($p < 0.01$). Thus, H7 is supported, but H5 is not supported.

Discussion

Helping entrepreneurs gain a deeper understanding of what affects their TL style is critical. As predicted, our empirical findings reveal that entrepreneurs' EI has a positive and significant effect on TL. Two EI dimensions (others' emotion appraisal and regulation of emotion) are the most relevant EI predictors of TL style. Thus, entrepreneurs with higher scores for others' emotion appraisal and regulation of emotion are more likely to exploit these EI dimensions by applying them to a TL style. Regulation of emotion is important because it can contribute to the quality of social relationships (Côté & Miners, 2006), a greater perception

Table 6 Post hoc Tukey's HSD test for TL vs. generational cohort

Factor	(I) Cohort	(J) Cohort	Mean Diff. (I-J)	Std error	Sig.
TL	Gen Z	Millennials	-0.01	0.04	0.99
		Gen X	-0.07	0.04	0.23
		Baby Boomers	-0.16	0.05	0.01*
	Millennials	Gen Z	0.01	0.04	0.99
		Gen X	-0.06	0.02	0.08
		Baby Boomers	-0.15	0.04	0.00*
	Gen X	Gen Z	0.07	0.04	0.23
		Millennials	0.06	0.02	0.08
		Baby Boomers	-0.09	0.04	0.13
	Baby Boomers	Gen Z	0.16	0.05	0.01*
		Millennials	0.15	0.04	0.00*
		Gen X	-0.09	0.04	0.13

TL transformational leadership

*Significant at $p < 0.01$

of friendship between coworkers (Niven et al., 2012), higher levels of customer service and satisfaction, positive customer affect, and better negotiation outcomes (Côté et al., 2013). Studies have found that perceiving others' emotion appraisal accurately is directly associated with entrepreneurial activities such as the creation of collaborative spirit and cooperation (González-Padilla et al., 2023), negotiation, selection of partners, and recruitment of employees (Baron & Tang, 2008).

In addition, differences by gender and generational cohort were found for entrepreneurs' EI and TL styles. However, gender and generational cohorts were not observed to moderate the link between entrepreneurs' EI and TL style. Our study reveals that three EI dimensions (i.e., self-emotion appraisal, others' emotion appraisal, and use of emotion) vary according to gender and generational cohort. For female entrepreneurs, these EI dimensions increase with the generational cohort. This finding is consistent with previous studies that have shown that EI increases with age (e.g., Mayer et al., 2002). By contrast, male entrepreneurs in older generational cohorts have lower scores for others' emotion appraisal. This finding suggests that male entrepreneurs are less likely than female entrepreneurs to be confident in understanding others' emotions as they grow older. Moreover, the findings suggest that for both genders, ROE is low among millennials but high among the older generations.

One notable pattern detected in this study is that female Baby Boomer entrepreneurs score higher than all other men and women in all EI dimensions. We also found that Gen Z men have higher scores than Gen Z women in all EI dimensions. Millennial men have scores that are less than or equal to the scores of Gen Z men in all EI dimensions. Research has shown not only that older adults have a better understanding of emotions but also that younger adults are less effective at emotion regulation (Blanchard-Fields et al., 2007; Gross & John, 2003). As previously explained, our results reveal significantly different results with respect to the interaction effect of gender and generational cohort. In terms of gender, studies have shown that women score higher than men in EI. Again, our results partially support these findings. The results show that gender influences others' emotion appraisal and use of emotion but not the other EI dimensions. In these two EI dimensions, male entrepreneurs' scores decrease as older generational cohorts are considered.

With regards to TL style, members of Gen X, but particularly Baby Boomers, have substantially higher mean scores than members of younger generations. We also observed that TL style evolves across generations. Gen Z has a similar pattern to the Millennial generation regarding TL style and EI. The exception is female Gen Z entrepreneurs, who have low levels of TL style. Although younger generations are highly educated, tech-savvy, well-travelled, confident, independent, goal-oriented, and more open to transformative ideas (Dietrich & Srinivasan, 2007), it seems that younger entrepreneurs do not develop a TL style. Akin to the controversial assumption that digital natives are more technologically suited to working in and creating companies in digital environments or digital industries, younger generations are expected to be more eager to transform firms and industries because they have grown in a fast-changing environment.

Our results on the generational differences in entrepreneurs' TL style contrast with findings reported in the TL style meta-analysis by Eagly et al. (2003). They concluded

Table 7 Summary of hypothesis and results

Hypothesis	Results
H1: Entrepreneurs' emotional intelligence is positively related to entrepreneurs' transformational leadership style.	Hypothesis proved. Moreover, results show that two EI dimensions — others' emotion appraisal (OEA) and regulation of emotion (ROE) — are the EI dimensions that contribute most to TL.
H2: The link between dimensions of emotional intelligence and transformational leadership is moderated by gender.	Hypothesis not proved
H3: The link between dimensions of emotional intelligence and transformational leadership is moderated by the generational cohort.	Hypothesis not proved
H4: Entrepreneurs' dimensions of emotional intelligence differ significantly by gender.	Hypothesis partially supported (only OEA and UOE are affected)
H5: Entrepreneurs' transformational leadership capacity differs significantly by gender.	Hypothesis not proved.
H6: Entrepreneurs' emotional intelligence dimensions differ significantly by generational cohort.	Hypothesis partially supported (SEA, ROE, and UOE affected)
H7: Entrepreneurs' transformational leadership differs significantly by generational cohort.	Hypothesis proved.

that male leaders are less transformational than female leaders. We found that this is not the case for the younger entrepreneurial generations, specifically Gen Z and Millennials. We conclude that TL style is more clearly present in Baby Boomers than in younger generations. Today's entrepreneurs are supposed to show TL-style behaviours to compete in dynamic environments and deal with risk and uncertainty due to frequent competitive changes (Ensley et al., 2006). Interestingly, however, the younger generations have lower TL scores than the oldest generational cohort (Table 7).

Practical implications

Our study shows that entrepreneurs whose personal skills include EI will most probably obtain a competitive advantage. Entrepreneurs who can suitably manage their emotions and be aware of those of others can be expected to increase their TL style, and have better interactions with stakeholders, develop more tools to overcome the challenges facing their ventures, and ultimately achieve better entrepreneurial performance. Also, emotionally intelligent entrepreneurs may be able to anticipate and seize entrepreneurial opportunities.

Other aspects of our findings have practical implications. For example, individuals working with entrepreneurs should manage the gender and generational diversity of entrepreneurs because of the state of their EI maturity and the need to understand EI diverse environments. The implications of our conclusions will also be valuable for the development of entrepreneurs' EI and TL skills. Entrepreneurship education programmes should include training on EI and TL skills for students and teachers in what some call “edupreneurial leadership” (Muñoz-Céspedes et al., 2023; Satterwhite, 2018).

Limitations and future research

This study provides a foundation for future research on EI, leadership, and entrepreneurship. Because of the data source, further studies could reinforce this research and its results. For example, the data for this study were gathered from an online survey sent to entrepreneurs. Self-assessment reports can be reliable, but future research should consider other data collection alternatives. In the case of EI, other tools that cannot be self-reported may provide qualitative insights. Building on this quantitative study, a qualitative approach could lead to a deeper understanding of the linkages between entrepreneurs' EI and TL styles. Another potential research avenue is to explore the mechanisms that can be used to develop EI dimensions within an entrepreneurial context.

In addition, we did not study the development over time of entrepreneurs' EI and TL styles, or the link between them. Given the substantial differences between generational cohorts, longitudinal research could provide valuable insights, helping to understand entrepreneurial EI and TL style evolution. Studies have considered the impact of EI on career development, success, quitting entrepreneurship jobs, and job performance. We did not consider these variables in our research. In the future, studying these variables could help cover the whole entrepreneurial career journey.

Conclusions

Our empirical findings provide instrumental theoretical insights by clearly demonstrating how different dimensions of entrepreneurs' EI affect their TL style, enriching the entrepreneurship literature, particularly in the area of emotions in entrepreneurship by showing that entrepreneurs' Emotional Intelligence (EI) significantly influences their Transformational Leadership (TL) style as hinted by Ettis (2022). This study advances research on the link between entrepreneurs' EI and TL styles by considering the moderating effect of gender and generational cohort. Fundamentally, our study shows that entrepreneurs with high TL are emotionally intelligent entrepreneurs. Our results also reveal that gender and generational membership influence some dimensions of EI. Notably, dimensions like Others' Emotion Appraisal and Regulation of Emotion are key predictors of TL.

While differences in EI and TL styles were observed across gender and generational cohorts, these factors did not moderate the relationship between EI and TL. However, certain EI dimensions varied with gender and generational cohort. This result is consistent with the developmental psychology idea that EI is greater in women than men, and it varies with age, with younger and older adults scoring lower than middle-aged adults, except for understanding emotions (Cabello et al., 2016).

Among the results we want to highlight the Baby Boomers exhibit higher TL scores compared to younger generations, suggesting a more pronounced presence of TL in this cohort. The findings are consistent with marketing literature that shows that Baby Boomers prioritize the retail experience and value in-store service, preferring to start the purchase process with a trusted retailer who offers product advice. Conversely, Generation Y focuses on selecting a product first (Parment, 2013).

These findings are crucial for developing entrepreneurship strategies that cater to distinct generational needs, emphasizing the importance of tailored approaches in building relationships across different age groups.

The main shortcoming of our research is the reliance on self-reported data, which suggests the need for alternative data collection methods in future research. Longitudinal studies could provide deeper insights into the development of EI and TL styles over time. That will allow the observation of how EI and TL evolve over time in entrepreneurs, potentially revealing developmental patterns or shifts due to changing business environments. Better data will also let investigate how cultural backgrounds influence the development and expression of EI and TL in entrepreneurs. This could include cross-cultural comparisons or studies within multicultural societies.

The results reported here are valuable for individuals, institutions, and educational organisations that seek to promote the education and development of entrepreneurs, as well as organisations that seek to enhance their members' entrepreneurial behaviour. We hope that our findings regarding the link between EI and TL style will encourage researchers to further investigate the influence of emotions in entrepreneurship.

Appendix A. Questionnaire, figures and tables

Factor	Questions
Emotional intelligence (Wong & Law, 2002)	<p>I have a good sense of why I have certain feelings most of the time.</p> <p>I have a good understanding of my own emotions.</p> <p>I really understand what I feel.</p> <p>I always know whether or not I am happy.</p> <p>I always know my friends' emotions from their behaviour.</p> <p>I am a good observer of others' emotions.</p> <p>I am sensitive to the feelings and emotions of others.</p> <p>I have a good understanding of the emotions of people around me.</p> <p>I always set goals for myself and then try my best to achieve them.</p> <p>I always tell myself I am a competent person.</p> <p>I am a self-motivated person.</p> <p>I would always encourage myself to try my best.</p> <p>I am able to control my temper and handle difficulties rationally.</p> <p>I am quite capable of controlling my own emotions.</p> <p>I can always calm down quickly when I am very angry.</p> <p>I have good control over my own emotions.</p>
Transformational leadership (Bass & Avolio, 1992)	<p>I make others feel good to be around me.</p> <p>Others have complete faith in me.</p> <p>Others are proud to be associated with me.</p> <p>I express, with a few simple words, what we could and should do.</p> <p>I provide appealing images about what we can do.</p> <p>I help others find meaning in their work.</p> <p>I enable others to think about old problems in new ways.</p> <p>I provide others with new ways of looking at puzzling things.</p> <p>I get others to rethink ideas that they had never questioned before.</p> <p>I help others develop themselves.</p> <p>I let others know how I think they are doing.</p> <p>I give personal attention to others who seem rejected.</p>

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Data availability The State Research Agency

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