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Exploring the effect of altruism on social entrepreneurship characteristics: the mediating role of social intelligence

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The study aims to investigate whether social intelligence had a mediating role in the relationship between altruism and social entrepreneurship characteristics of pre-service teachers. The participants of the research consisted of 385 pre-service teachers studying in four higher education institutions in the Eastern Black Sea region of Türkiye in the fall semester of the 2023–2024 academic year. The research data were collected by using altruism scale, Tromsø social intelligence scale, and social entrepreneurship characteristics of pre-service teachers scale. The study, which was designed in correlational survey model, employed structural equation analysis to test the mediating role of social intelligence in the relationship between altruism and social entrepreneurship characteristics. Sub-dimensions of social entrepreneurship characteristics of pre-service teachers scale had a significant and positive relationship with sub-dimensions of altruism scale, and Tromsø social intelligence scale. The structural equation model tested to determine the mediating role of social intelligence in the relationship between altruism and social entrepreneurship characteristics of pre-service teachers was found to be statistically significant and met compliance criteria.

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Introduction

Social entrepreneurship is a field of study that involves individuals seeking to provide social benefit by developing innovative and sustainable solutions to social problems in society (Nigam et al. 2014). The distinctive characteristics of social entrepreneurs are crucial for elucidating the manner in which individuals' aspiration for social benefit is operationalized within the business domain. In contrast to an economic venture, social entrepreneurship places a premium on social objectives and draws upon a range of individual attributes throughout the process. Bornstein (2007) and Dees (1998) identify innovation, vision, sensitivity to social problems and risk-taking tendencies as the most prominent characteristics of social entrepreneurs. Social entrepreneurship is also associated with characteristics such as environmental awareness, empathy and sensitivity to the needs of others (Light 2011; Mair and Marti 2006). Consequently, social entrepreneurs who stand out with their leadership qualities in society are able to produce long-lasting solutions to the problems faced by society through their unique suggestions and practices (Peredo and McLean 2006).

Some characteristics of social entrepreneurs distinguish them from others (Fowler 2000), two of which are social intelligence and altruism. On the one hand, social intelligence, which helps the individual establish successful social relations, have social sensitivity, produce solutions to problems and be known as the source of persuasion and empathy skills (Albrecht 2006) is important for social entrepreneurs who have a high level of sensitivity to social problems. In particular, social entrepreneurs are able to propose innovative solutions to social issues due to their capacity to comprehend the emotions and thoughts of others. For example, individuals who are successful in their chosen field can demonstrate social intelligence in their ability to bridge communities and lead empathetically (Mair et al. 2012). On the other hand, altruism has been argued to be an effective factor on social entrepreneurship characteristics (Işık et al. 2017; Tan et al. 2005; Yeşilkaya and Yıldız, 2018). Altruism is a supporting characteristic of community work and social entrepreneurship (Batson 1991). In this context, altruism can be defined as a characteristic that supports the nature and sustainability of social entrepreneurship (Van Lange et al. 2013). Social entrepreneurs display altruistic behaviours, as they act with the aim of helping others without any interest in solving problems (Onatır 2008; Smith et al. 2012).

Bilateral relationships between aforementioned variables identified in previous research (e.g., Çakanel 2018; Prabha and Mittal 2019; Tan et al. 2005) may indicate that there may be a significant relationship between social intelligence, altruism and social entrepreneurship characteristics. It was observed that those variables were examined separately on different samples such as health workers (Kanellakis et al. 2018; Larin et al. 2011), private sector and public employees (Hemingway 2005; Mohamed 2020), and higher education students (Gusseinova 2015; Saxena and Panigrahi 2009). However, this study addresses the gap in research that examines those variables together and their effects on pre-service teachers. As a matter of fact, teaching is a profession which requires social and emotional competencies (Selvi 2010; Smith and Whitley 2023). Altruism (Angriani 2021), social intelligence (Birknerová et al. 2013) and social entrepreneurship (Aydogmus 2019) are considered as the characteristics that contribute to social competencies of teachers. Teachers are expected to provide students with the educational services necessary for their development, while also setting an example for the individuals around them, guiding society when necessary, and contributing to social problems by producing solutions (Garner 2017; Datnow 2020). Therefore, teachers are required to be sensitive to social problems and to be solution-oriented, that is, socially entrepreneurial individuals (Shalom et al. 2007; Santos et al. 2012). Pre-service teachers are also expected to have social entrepreneurship characteristics as pre-service teachers together with social intelligence and altruistic behaviours.

The mediating role of social intelligence between social entrepreneurship characteristics and altruistic behaviours may indicate that altruistic individuals are more likely to possess social entrepreneurship characteristics when they effectively interact and collaborate with others. This relationship emphasises the idea that social intelligence not only promotes individual success contributed by social entrepreneurship characteristics, but also contributes to the collective social capital of communities, increasing their capacity for social innovation and problem solving. Based on the gap in relevant literature, this study investigated whether social intelligence had a mediating role in the relationship between altruism and social entrepreneurship characteristics of pre-service teachers. Findings of the study on the mediating role of social intelligence in the relationship between altruism and social entrepreneurship characteristics among pre-service teachers would have several theoretical and practical contributions. First, the study would not only underscore the significance of interpersonal skills in promoting social innovation but also expand our understanding of social capital theory. Furthermore, it would facilitate a more profound understanding of the underlying mechanisms that shape social capital in educational and entrepreneurial contexts. This would be achieved by illustrating how social intelligence can augment the efficacy of altruistic actions within the framework of social entrepreneurship characteristics. Findings of the study would propose a framework for pre-service teachers, teacher educators, higher education administrators or policymakers to develop policies and practices based on the model between the variables. Besides generic contributions, the findings would also provide crucial insights into how teacher education programmes can be enhanced through the incorporation of strategies that foster the development of these qualities. Additionally, the study would help the cultivation of social entrepreneurship characteristics among future teachers by fostering heightened awareness and sensitivity to social issues among pre-service educators. To achieve aforementioned contributions, first, pre-service teachers' status regarding altruism, social intelligence and social entrepreneurship characteristics was determined, then those variables were investigated in terms of the interactions among them. For this purpose, the following research questions were investigated:

(1) What are the pre-service teachers' perceptions of altruism, social intelligence, and social entrepreneurship characteristics?
(2) What is the relationship between pre-service teachers' perceptions of altruism, social intelligence, and social entrepreneurship characteristics?
(3) Does social intelligence have a mediating effect on the relationship between altruism and social entrepreneurship characteristics?

Literature review

Social entrepreneurship characteristics through the lenses of social capital theory. Social entrepreneurship is an activity that prioritises the creation of social value for underserved, underdeveloped and underprivileged groups through the adoption of novel approaches to the resolution of social issues (Nigam et al. 2014). Social entrepreneurship characteristics are regarded as a potential source of growth, particularly in developing economies (Pathak and Mukherjee 2021). In this context, social capital

theory provides an important framework for understanding the impact of social entrepreneurship characteristics, emphasising the resources that individuals obtain through social relations (Putnam 2000; Bourdieu 1986). The social entrepreneurship model is based on the development of innovative solutions to social problems, and thus requires relationships between individuals based on trust, cooperation and mutual benefit (Dees, 1998). The characteristics of social entrepreneurs reveals influence on social change and create cooperation networks strengthened by social capital, which is constituted especially by elements such as trust and mutual support (Coleman 1988; Dacin et al. 2010). In this framework, social capital is of critical importance in the creation of social benefits, with social entrepreneurship regarded as an element of the social structure rather than an individual endeavour (Granovetter 1985; Lin 2001).

Social entrepreneurship is a complex and multifaceted field of study that has given rise to a variety of theoretical frameworks designed to elucidate its underlying dynamics and observed effects (Baron and Markman 2003). These theories can be analysed according to a number of basic frameworks, which include the processes, motivations and outcomes associated with social entrepreneurship. *The Behavioural Theory* of Social Entrepreneurship posits that social entrepreneurial individuals are not solely driven by profit maximisation; rather, they are also motivated by a combination of altruistic intentions and a desire to create social value. In light of the assumption that social entrepreneurs frequently adopt novel approaches to addressing social challenges, this theory underscores the significance of elucidating the behavioural and cognitive elements that inform the genesis and functionality of social enterprises (Ebrashi 2013). The Institutional Theory provides insights into social entrepreneurship activities by examining the effects of organisations on entrepreneurial activities. This theory posits that social entrepreneurship is shaped by the regulatory, normative, and cultural contexts in which it operates (Williams and Kosta 2019). T*he Network Theory* posits that social entrepreneurship arises from interactions between a multitude of stakeholders, including governmental organisations, non-profit entities and private sector actors. In accordance with the tenets of the theory, social entrepreneurs establish connections between disparate groups and frequently serve as intermediaries to facilitate innovation and collective action (Dufays and Huybrechts 2014). *Bricolage Theory* offers insights into the ways in which social entrepreneurs employ existing resources to address social issues. The theory emphasises the capacity for social entrepreneurs to respond innovatively to social issues by adapting to constraints and utilising available resources (Domenico et al. 2010). Lastly, Social *Capital Theory* underscores the significance of interpersonal connections and social networks in fostering social entrepreneurship. The argument put forth by social capital theory is that social capital, defined as the networks, norms, and trust that enable collective action, plays an important role in the success of social enterprises. It posits that social entrepreneurs utilise their social capital to establish partnerships, mobilise resources and create sustainable social impact, thereby enhancing the efficacy of their ventures (Gedajlovic et al. 2013). It is proposed that social relationships constitute a vital resource that enables collective action for mutual benefit. With respect to teacher education, the cultivation of social capital can augment the capacity of pre-service teachers to engage in social entrepreneurship activities.

Social entrepreneurship characteristics. The definition of social entrepreneurship has been a challenging task for many academics (Kee 2017). The majority of definitions are situated within the context of social problems, goals and contexts (Silva et al. 2023). For example, Wu et al. (2020) define social entrepreneurship in terms of three key characteristics: 'social change, social benefit, and social impact'. Thus, the defining characteristics of social entrepreneurship can be identified as risk-taking, innovation, resilience and a strong motivation to create social benefit (Dees 1998). Social entrepreneurship can therefore be considered as a field that brings together the characteristics of innovative, resilient and co-operation-oriented individuals with a focus on creating social benefit (Hibbert et al. 2002). Therefore social entrepreneurship characteristics underscores the importance of instilling a sense of social responsibility in pre-service teachers, particularly within the context of teacher education, and encouraging them to contribute constructively to society and to pursue a dual trajectory of academic achievement and value creation.

Social entrepreneurship characteristics has a different position when compared to other types of entrepreneurships (Certo and Miller 2008; Dorado 2006; Spear 2006). The main reason for this position is the recognition of entrepreneurial opportunities (Mair and Marti 2006; Shane and Venkataraman 2000), while social entrepreneurship is also considered as creating value within the community (Dees 2007). Social entrepreneurship characteristics also aims to solve social problems with an entrepreneurial perspective, including systematic, innovative, sustainable methods and labour discipline (Anggahegari et al. 2021; Conway Dato-on and Kalakay 2016; Ellis et al. 2023; García-Jurado et al. 2021).

Social entrepreneurs possess certain personal attributes that contribute to the success of their ventures. Sharir and Lerner (2006) identify the entrepreneurial characteristics that facilitate the success of a social enterprise as the entrepreneur's social network, commitment, management experience, and the ability to integrate vision and build strategic alliances. Conversely, social entrepreneurship characteristics represent a highly effective means of fostering innovative ideas and engaging individuals in a meaningful manner. It is particularly efficacious in instilling confidence in young people to realize their capacity to effect social and economic change (Salamzadeh et al. 2017).

One of the main areas in which social entrepreneurs serve is education (London and Morfopoulos 2010). Therefore, teachers, who are one of the most important actors of the education system, have great responsibilities regarding social entrepreneurship activities. Social entrepreneurship characteristics of teachers are considered as social assistance services, designing learning products to be beneficial, and adult education (Konaklı and Göğüş 2013). Social entrepreneur teachers have some characteristics such as self-motivation, determination, leadership, risk taking, communicating their vision, inspiration, effective use of resources (Shaw and Carter 2007; Tan et al. 2005). Teachers, who are responsible for the sustainable development of society, are expected to be individuals who can perceive the fields needed to be improved and transfer them into opportunities. Therefore, it is substantial to inform pre-service teachers about the importance of social entrepreneurship characteristics in the teacher training process and help them learn about social entrepreneurial characteristics.

Social intelligence. Social intelligence concept was introduced in 1920 when Thorndike classified intelligence as mechanical intelligence, social intelligence, and abstract intelligence (Njoroge and Yazdanifard 2014). Thorndike (1920) defines social intelligence as "the ability to … act wisely in human relations" (p. 228). Vernon (1933) stated that it includes the ability to get along with people, comfort in human relations, knowledge of social issues, understanding the characteristics of others, as well as sensitivity to stimuli from others or a group. Gardner (1983, 1993) explained the concept of interpersonal intelligence as the capacity of an

individual to distinguish and respond to other people's moods, habits, motives and other desires appropriately. Kaukiainen et al. (1999) notes that social intelligence is a concept that includes prosocial behaviours. Howe (2017) states that moral and prosocial behaviours are related to empathy, emotionality and social intelligence. In order for prosocial behaviours to emerge, the needs of individuals in the society must be recognized in advance. In this process, where social awareness and social relations are needed, social intelligence plays a key role.

The extant literature indicates that social intelligence is a significant predictor of social cohesion at the individual level. Additionally, it is posited that social intelligence enhances communication and cooperation in team dynamics (Albrecht 2006). In this context, social intelligence is regarded as a crucial competence that enhances the quality of social interactions and reinforces social bonds (Marlowe 1986). Consequently, social intelligence is a valuable asset for individuals engaged in specific professions (Armstrong, 2009), including the teaching profession. Considering the role of pre-service teachers as the future teachers in shaping the society, it seems important that they can adapt to the changing cultural structure of the society with moral and social norms. Yermentaeyeva et al. (2014) claims that social intelligence is important in terms of pedagogical competences such as communication, behaviour regulation at school, and gaining the ability to understand others and their own behaviour.

Altruism. Altruism, one of the types of prosocial behaviour in which people act with the aim of helping each other, was first used by Comte in the mid-1800s. Comte explains altruism as a basic condition for reaching the ideal society and as a behaviour, tendency, or desire to live without considering one's own safety and interests (Gerrig and Zimbardo, 2012; Seglow and Scott 2007). Boehm (1979) defines altruism as knowingly and sincerely helping others without expecting anything in return. Chou (1996) defines altruism as a behaviour performed willingly and voluntarily for the benefit of others, without motivated by the expectation of an external warning, reward or punishment. Scott et al. (1999) identify altruism as commitment and personal growth. Collectively, these definitions elucidate altruism as a foundational human value, situated at the convergence of selflessness, voluntary action, and the potential for individual growth and development. The concept of altruism is also of significant importance within the field of social psychology. This is due to the fact that altruism is founded upon the capacity for empathy and the strength of social bonds. These emotions are closely related to individuals' tendency to help others (Batson 1991). Conversely, Dees (1998) emphasised the significance of altruism in the context of social entrepreneurship, noting that individuals with social entrepreneurship characteristics seek to address social issues and drive social change through actions guided by a non-profit mindset. Altruism, therefore, plays a pivotal role in fostering social solidarity and strengthening social relations.

Altruism is a basic element that constitutes the teaching profession (Berg et al. 2023; Hoyle and John 1995) and it is one of the most widely accepted criteria describing the teacher (Karadeniz 2007). Therefore, teachers' altruistic behaviours are important in their professional success. Additionally, the concept of altruism as a prosocial behaviour can contribute to meeting the needs of individuals (Ritzenhöfer et al. 2017). Accordingly, it is a necessity for pre-service teachers to be able to recognize the needs of the society and to have the qualifications to respond to those needs.

Interplay between social entrepreneurship characteristics, social intelligence and altruism. The interplay between social intelligence, altruism and social entrepreneurship characteristics can be effectively examined within the framework of social capital theory. Social capital theory underscores the pivotal role of social relationships and trust in enabling collective action for mutual benefit. This is also a crucial consideration in teacher education, as fostering and nurturing these attributes can enhance the capacity of pre-service teachers to engage in social entrepreneurial activities.

Social entrepreneurship characteristics is grounded in altruistic motivations rather than the pursuit of material gain (Martin and Osberg 2007). Altruism represents a highly efficacious source of intrinsic motivation for individuals to engage in social entrepreneurial behaviours (Işık et al. 2017). A substantial body of research on social entrepreneurship has identified altruism as a key characteristic of social entrepreneurs (Bates et al. 2023; Konaklı and Göğüş 2013; Martin and Osberg 2007). In this context, it can be argued that the characteristics that lead to social entrepreneurship characteristics are spiritual in nature, such as the creation of social value, rather than being driven by the pursuit of economic gain (Vannebo and Grande 2018; Yeşilkaya and Yıldız 2018).

The extant literature on social entrepreneurship characteristics indicates that social intelligence is positively correlated with social entrepreneurial characteristics of individuals (e.g., Çakanel 2018; Karimi and Ataei 2023; Marecki 2014; Parlak 2013). Similarly, social intelligence, which encompasses social skills and social awareness, has been found to have a positive correlation with altruism (Hwang 2010; Prabha and Mittal 2019). It can therefore be posited that social intelligence represents an interaction between altruism and social entrepreneurship characteristics (Guler 2008; Mair and Marti 2006). A considerable number of entrepreneurial activities are designed with the intention of providing social benefits to society. In this regard, entrepreneurs bear responsibility not only for the quality of the products and services they offer, but also for the impact these have on people, society, nature and the environment. In line with this sense of responsibility, social entrepreneurs also engage in altruistic behaviours (Skeja et al. 2023).

In the context of teacher education, the development of pre-service teachers' social intelligence can facilitate their interaction with the communities in which they are placed while performing their professional responsibilities. It can be reasonably argued that effective teacher education programmes can be implemented to improve the social intelligence of pre-service teachers. This will prepare them to utilise their altruism motivation and social capital more effectively in order to gain social entrepreneurship characteristics. Indeed, the concept of social capital is of great importance in the context of teacher education, where the development of social capital can facilitate the capacity of potential teachers to engage in social entrepreneurial actions. In light of the aforementioned, this study is theoretically supported by a robust framework for understanding the interplay between altruism, social intelligence, and social entrepreneurship characteristics in the context of teacher education, which is based on the tenets of social capital theory. Teachers bear the responsibility of training qualified human capital in order to facilitate social development. By fostering altruistic values and enhancing social intelligence, teacher education programmes can equip future educators with the necessary skills and resources to engage in social entrepreneurship. Consequently, the task of raising human capital in the most effective manner is one of the most significant responsibilities of teachers. It is therefore essential that teachers are equipped with certain social characteristics in order to fulfil this role effectively. In light of this idea, the relationship between social intelligence, altruism, and social entrepreneurship characteristics needs to be explored in the context of pre-service

teachers. Therefore, this study examined the impact of altruism on social entrepreneurship characteristics of pre-service teachers through social intelligence.

Method

Research model. This quantitative research was designed in correlational survey model and examined the relationship between pre-service teachers' perceptions of altruism, social intelligence and social entrepreneurship characteristics. A model examining the mediating role of social intelligence in the relationship between altruism and social entrepreneurship characteristics of participants was tested. As indicated in the purpose, this cross-sectional research identified the pre-service teachers' aforementioned characteristics and their interactions with each other.

Participants. The participants of the research consist of 385 pre-service teachers studying in four higher education institutions in the Eastern Black Sea region of Türkiye in the fall semester of the 2023–2024 academic year. To conduct the research, ethical approval was obtained from Recep Tayyip Erdogan University Ethics Committee numbered 143. The population of the study consisted of 6733 pre-service teachers. Cluster random sampling method was employed to select the participants for practical reasons (Fraenkel et al. 2012). 4 out of 8 universities were randomly selected as clusters and pre-service teachers were included in the sample by adopting random and voluntary participation from each of them. Nicolaou and Masoner (2013) determined the appropriate sample size as 382 in structural equation modelling with 28 degrees of freedom. Based on their study, data collection instruments were distributed to 425 pre-service teachers who were selected through random sampling method. 385 scales were used for data analysis after removing the incorrectly and incompletely filled scales from the 421 returned scales. Table 1 includes information about the participants.

As demonstrated in Table 1, 72 of the pre-service teachers participating in the study were female (18.7%) and 313 (81.3%) were male. In addition, 115 (29.9%) of the pre-service teachers were in the 1st grade, 95 (%24.7) of them were in the 2nd grade, 81 (%21) of them were in the 3rd grade, and 94 (%24.4) were in the 4th grade. Their study majors were listed as guidance and psychological counselling, primary school teaching, social studies education, Turkish language teaching, pre-school education, science education, mathematics education and art education.

Table 1 Information about the participants.

Variable	*Groups*	*n*	*%*
Gender	Female	72	18,7
	Male	313	81,3
Majors	Science Education	14	3,6
	Mathematics Education	11	2,9
	Pre-school Education	15	3,9
	Guidance and Psychological Counselling	143	37,1
	Art Education	10	2,6
	Primary School Teaching	100	26,0
	Social Studies Education	48	12,5
	Turkish Language Teaching	44	11,4
Grades	1st Grade	115	29,9
	2nd Grade	95	24,7
	3rd Grade	81	21,0
	4th Grade	94	24,4

Data collection instruments. The research data were collected by using three scales. Altruism Scale was developed by London and Bower (1968) and adapted to Turkish by Akbaba (1994). Tromsø Social Intelligence Scale was developed by Silvera et al. (2001) and adapted to Turkish by Dogan and Cetin (2009). Social entrepreneurship characteristics of Pre-service Teachers Scale was developed by Konaklı and Göğüş (2013). The information about the scales was presented below:

Altruism scale. The Altruism Scale has a four-dimensional structure consisting of 20 items. The scale was prepared in a five-point Likert type with statements ranging from 'much higher' to 'much lower'. The altruism scale consists of four dimensions: 'family', 'sociability', 'helpfulness' and 'responsibility'. A total score is obtained by summing the scores marked on a five-point Likert-type scale. The highest score that can be obtained from the scale is 100 and the lowest score is 20. A high score indicates high level of altruism, and a low score indicates low level of altruism. The Cronbach's alpha internal consistency coefficient for the total score of the altruism scale was 0.85, the two-half test reliability coefficient was 0.90, and the test-retest reliability coefficient for the whole scale was 0.92. In the current study, the Cronbach Alpha reliability coefficient of the altruism scale was found as 0.82.

Tromsø social intelligence scale. Tromsø Social Intelligence Scale has a three-dimensional structure consisting of 21 items. The scale was prepared in a five-point Likert type, with statements ranging from 'strongly disagree' to 'strongly agree'. The total variance explained by the scale was 45% and the total Cronbach Alpha value was 0.83. The first dimension, called 'social information process' consists of 8 items. The Cronbach Alpha value of this dimension was calculated as 0.77. The second dimension of the scale, consisting of 6 items, was named 'social skills'. The Cronbach Alpha value of this dimension was found to be 0.84. The third dimension of the scale was named 'social awareness' and consisted of 7 items. The Cronbach Alpha value of this dimension was calculated as 0.83.

Social entrepreneurship characteristics of pre-service teachers scale. Social entrepreneurship characteristics of pre-service teachers scale has a three-dimensional structure consisting of 21 items. The scale was prepared in a five-point Likert type, which includes statements ranging from 'strongly disagree' to 'strongly agree'. The total variance explained by the scale was 41% and the total Cronbach Alpha value was 0.86. The first dimension called 'risk taking' consists of 7 items. The Cronbach Alpha value of this dimension was calculated as 0.72. The second dimension of the scale, consisting of 8 items, was named 'self-confidence'. The Cronbach Alpha value of this dimension was found to be 0.77. The third dimension of the scale was named 'personal creativity' and consisted of 6 items. The Cronbach Alpha value of this dimension was calculated as 0.70. In the current study, the Cronbach Alpha reliability coefficient of the social entrepreneurship characteristics of pre-service teachers scale was found as 0.87.

Data analysis. The online questionnaire form was sent to the pre-service teachers studying at higher education institutions through email based on voluntary participation. The average time required for participants to answer all questionnaires is 15 min. Online questionnaire form was sent to 425 pre-service teachers. After removing outliers, data analysis conducted with forms collected from 385 pre-service teachers.

Normality assumptions were tested in data analysis process. First, the skewness-kurtosis values and the Q-Q graph were

Table 2 Pre-service teachers' perceptions of altruism, social intelligence, and social entrepreneurship characteristics.

Variables		Min.	Max.	Mean	Std. Error	Std. Deviation	Level
Altruism	Family	1,80	5,00	3,69	0,03077	0,60378	High
	Sociability	1,00	5,00	3,12	0,04683	0,91893	Medium
	Helpfulness	1,20	5,00	3,48	0,03658	0,71776	High
	Responsibility	2,40	5,00	3,67	0,02646	0,51910	High
	Total	2,10	4,80	3,49	0,02548	0,49995	High
Social Intelligence	Social Information Process	2,50	4,75	3,72	0,02053	0,40277	High
	Social Skills	2,17	4,17	3,09	0,01700	0,33365	Medium
	Social Awareness	1,14	4,86	2,37	0,02924	0,57366	Low
	Total	2,43	4,48	3,09	0,01398	0,27427	Medium
Social Entrepreneurship Characteristics	Self-Confidence	1,75	5,00	3,74	0,02843	0,55789	High
	Personal Creativity	1,67	5,00	3,95	0,02732	0,53606	High
	Risk Taking	2,43	4,57	3,39	0,01798	0,35282	High
	Total	2,00	5,00	3,82	0,02341	0,45931	High

Table 3 Pearson Product-Moment Correlation results on the relationship between altruism, social intelligence, and social entrepreneurship characteristics.

	1	2	3	4	5	6	7	8	9	10	11	12	13
Family (1)	1												
Sociability (2)	0,327**	1											
Helpfulness (3)	0,353**	0,443**	1										
Responsibility (4)	0,224**	0,355**	0,367**	1									
Total Score of Altruism (5)	0,637**	0,809**	0,764**	0,622**	1								
Social Information Process (6)	0,106*	0,238**	0,223**	0,252**	0,287**	1							
Social Skills (7)	0,084	0,243**	0,120*	0,130*	0,214**	0,307**	1						
Social Awareness (8)	-0,176**	-0,228**	-0,138**	-0,112*	-0,236**	-0,144**	0,150**	1					
Total Score of Social Intelligence (9)	-0,034	0,059	0,070	0,109*	0,070	0,566**	0,624**	0,669**	1				
Self-confidence (10)	0,121*	0,478**	0,288**	0,348**	0,450**	0,410**	0,339**	-0,285**	0,148**	1			
Personal Creativity (11)	0,181**	0,383**	0,307**	0,340**	0,429**	0,297**	0,153**	-0,175**	0,097	0,430**	1		
Risk Taking (12)	0,117*	0,122*	0,159**	0,098	0,174**	0,562**	0,509**	0,288**	0,692**	0,251**	0,253**	1	
Total Score of Social entrepreneurship characteristics (13)	0,151**	0,477**	0,352**	0,422**	0,500**	0,437**	0,267**	-0,288**	0,136**	0,865**	0,658**	0,246**	1

examined. Morgan et al. (2004) notes that a kurtosis-skewness value between −1 and +1 indicates normal distribution. It was observed that the skewness-kurtosis values of altruism (−0.43 to −0.56), social intelligence (−0.87 to 0.86) and social entrepreneurship characteristics (−0.54 to −0.14) were in acceptable limits. Then, the scattering of the data in the Q-Q graph also supported the assumption of normality. The existence of multicollinearity problem was examined with correlation values. The correlation values between the variables lower than 0.85 indicates that there is no multicollinearity problem (Pallant 2005). Mean values of the data were examined and the range of 1.00–1.80 was indicated as 'very low', 1.81–2.60 as 'low', 2.61–3.40 as 'medium', 3.41–4.20 as 'high' and 4.21–5.00 as 'very high'. For the correlation analysis, the range of 0.00–0.30 was accepted as 'low', 0.31–0.70 as 'moderate' and 0.71–1.00 as 'high'. A parametric structural equation model entails a commitment to operational definitions of theoretical variables and the specification of expected functional forms for causative effects (Kline 2023, p. 100). In order to determine the intervening role of social intelligence in the relationship between altruism and social entrepreneurship characteristics of pre-service teachers, structural equality model with direct effect and correlated causes is tested. SPSS 25.0 and AMOS 24.0 were utilized for analysis.

Results

To address the first research question, the results on pre-service teachers' perceptions of altruism, social intelligence and social entrepreneurship characteristics were shown in Table 2.

Table 2 showed that altruism perceptions of the pre-service teachers were at medium level (M = 3.12) in the sociability dimension whilst family (M = 3.69), helpfulness (M = 3.48), responsibility (M = 3.67) dimensions appeared to be at high level. Total score of the scale indicated that pre-service teachers' perceptions of altruism were at high level (M = 3.49). It was found that the pre-service teachers' perceptions of social intelligence were frequently at medium level (M = 3.09). In addition, it was observed that the social information process dimension was at high level (M = 3.72), the social skills was at medium level (M = 3.09), and the social awareness was at low level (M = 2.37). Lastly, pre-service teachers' perceptions of social entrepreneurship characteristics were found to be at high level (M = 3.82). Self-confidence (M = 3.74), personal creativity (M = 3.95) and risk-taking (M = 3.39) dimensions were also observed to be at high level.

To address the second research question, correlation analysis was conducted to reveal the relationship between pre-service teachers' perceptions of altruism, social intelligence and social entrepreneurship characteristics. Results were displayed in Table 3.

Table 3 indicated that family dimension had a low but significant correlation with responsibility ($r = 0.224$, $p < 0.01$), social information process ($r = 0.106$, $p < 0.01$), social awareness ($r = 0.176$, $p < 0.01$), self-confidence ($r = 0.121$, $p < 0.01$), personal creativity ($r = 0.181$, $p < 0.01$), risk taking ($r = 0.117$, $p < 0.01$) and social entrepreneurship characteristics ($r = 0.151$, $p < 0.01$). A moderate and significant correlation was found between the family dimension and the sociability ($r = 0.327$, $p < 0.01$), helpfulness ($r = 0.353$, $p < 0.01$), altruism ($r = 0.637$, $p < 0.01$).

As exhibited in Table 3, sociability dimension had a low but significant correlation with social information process ($r = 0.238$, $p < 0.01$), social skills ($r = 0.243$, $p < 0.01$), social awareness ($r = 0.176$, $p < 0.01$) and risk taking ($r = 0.117$, $p < 0.01$). A moderate and significant correlation was found between sociability dimension and helpfulness ($r = 0.443$, $p < 0.01$), responsibility ($r = 0.355$, $p < 0.01$), self-confidence ($r = 0.478$, $p < 0.01$), personal creativity ($r = 0.383$, $p < 0.01$) and social entrepreneurship characteristics ($r = 0.477$, $p < 0.01$). There was a high and significant correlation between sociability dimension and altruism ($r = 0.809$, $p < 0.01$).

Table 3 showed that helpfulness dimension was found to have a low but significant correlation with social knowledge process ($r = 0.223$, $p < 0.01$), social skills ($r = 0.120$, $p < 0.05$), social awareness ($r = -0.138$, $p < 0.01$), and self-confidence ($r = 0.288$, $p < 0.01$). A moderate and significant correlation was found between helpfulness dimension and responsibility ($r = 0.367$, $p < 0.01$), personal creativity ($r = 0.307$, $p < 0.01$), social entrepreneurship characteristics ($r = 0.352$, $p < 0.01$). A high and significant correlation was found between helpfulness dimension and altruism ($r = 0.764$, $p < 0.01$).

As indicated Table 3, responsibility dimension was found to have a low but significant correlation with social knowledge process ($r = 0.252$, $p < 0.01$), social skills ($r = 0.130$ $p < 0.05$), social awareness ($r = -0.112$, $p < 0.01$), and social intelligence ($r = 0.109$ $p < 0.05$). There was a moderate and significant correlation between responsibility dimension and self-confidence ($r = 0.348$, $p < 0.01$), personal creativity ($r = 0.340$, $p < 0.01$) and social entrepreneurship characteristics of pre-service teachers ($r = 0.422$, $p < 0.01$). A high and significant correlation was found between responsibility and altruism ($r = 0.622$, $p < 0.01$).

Table 3 presented that altruism was found to have a low but significant correlation with social information process ($r = 0.287$, $p < 0.01$), social skills ($r = 0.214$, $p < 0.01$), social awareness ($r = -0.236$, $p < 0.01$) and risk taking ($r = 0.174$, $p < 0.01$). It was observed that a moderate and significant correlation was found between altruism and self-confidence ($r = 0.450$, $p < 0.01$), personal creativity ($r = 0.429$, $p < 0.01$), social entrepreneurship characteristics perceptions ($r = 0.500$, $p < 0.01$). However, altruism was not significantly correlated with social intelligence ($r = 0.070$, $p > 0.01$).

It was revealed in Table 3 that social intelligence had a low but significant correlation with social entrepreneurship characteristics ($r = 0.136$, $p < 0.01$) and self-confidence ($r = 0.148$, $p < 0.01$). Social intelligence had a moderate and significant correlation with risk taking ($r = 0.692$, $p < 0.01$). Correlation between the social information process dimension and personal creativity ($r = 0.297$, $p < 0.01$), social awareness ($r = -0.144$, $p < 0.01$) was low but significant; however, it had a moderate and significant correlation with social entrepreneurship characteristics ($r = 0.437$, $p < 0.01$), self-confidence ($r = 0.410$, $p < 0.01$), risk-taking ($r = 0.562$, $p < 0.01$), social intelligence ($r = 0.566$, $p < 0.01$) and social skill ($r = 0.307$, $p < 0.01$).

As indicated in Table 3, social skill dimension had a low but significant correlation with social entrepreneurship characteristics ($r = 0.267$, $p < 0.01$), personal creativity ($r = 0.153$, $p < 0.01$) and social awareness ($r = 0.150$, $p < 0.01$). Social skills had moderately and significantly correlated with social intelligence ($r = 0.624$, $p < 0.01$), self-confidence ($r = 0.339$, $p < 0.01$), risk-taking ($r = 0.509$, $p < 0.01$) and social entrepreneurship characteristics ($r = 0.267$, $p < 0.01$). A low but significant correlation was found between social awareness dimension and self-confidence ($r = -0.285$, $p < 0.01$), personal creativity ($r = -0.175$, $p < 0.01$), risk taking ($r = 0.288$, $p < 0.01$) and social entrepreneurship characteristics ($r = -0.288$, $p < 0.01$). However, social awareness dimension had a moderate and significant relationship with social intelligence ($r = 0.669$, $p < 0.01$).

Table 3 showed that social intelligence dimension had a low but significant correlation with self-confidence ($r = 0.148$, $p < 0.01$) and social entrepreneurship characteristics ($r = 0.136$, $p < 0.01$); however, there was a moderate (but close to high) and significant correlation between social intelligence and risk-taking ($r = 0.692$, $p < 0.01$). Self-confidence dimension had a low but significant correlation with risk-taking ($r = 0.251$, $p < 0.01$), a moderate and significant correlation with personal creativity ($r = 0.430$, $p < 0.01$), and a high and significant correlation with social entrepreneurship characteristics ($r = 0.865$, $p < 0.01$). Personal creativity dimension had a low but significant correlation with risk taking ($r = 0.253$, $p < 0.01$) whereas a moderate and significant correlation with social entrepreneurship characteristics ($r = 0.658$, $p < 0.01$). Last, risk-taking dimension was significantly correlated with social entrepreneurship characteristics, yet at a low level ($r = 0.246$, $p < 0.01$).

To address the third research question, regression analysis was conducted to understand how the variables predicted each other before testing the model. Regression weights were presented in Table 4.

Before analyzing the data, assumptions of normal distribution, multicollinearity and linearity were tested. Accordingly, skewness ($-0.355 <$ skewness < 682) and kurtosis ($-0.502 <$ kurtosis < 0.902) values are seen to be between ± 1 (George and Mallery 2010). VIF (variance inflation factor) value was calculated to test the multicollinearity assumption. A VIF value of 10 and above indicates that there is a multicollinearity between the data (Neter et al. 1996). The VIF values ($1.25 < \text{VIF} < 6.96$) obtained from the current study indicated that there was no multicollinearity between the data.

Table 4 showed that altruism significantly and positively predicted social intelligence ($\beta = 0.661$; $p < 0.005$) and social entrepreneurship characteristics ($\beta = 0.272$; $p < 0.05$). Additionally, social intelligence significantly and positively predicted social entrepreneurship characteristics ($\beta = 0.673$; $p < 0.005$). The variables with the highest regression weights regarding altruism were sociability ($\beta = 0.747$; $p < 0.005$), social intelligence ($\beta = 0.661$; $p < 0.005$), helpfulness ($\beta = 0.583$; $p < 0.005$), responsibility ($\beta = 0.547$; $p < 0.005$), family ($\beta = 0.373$; $p < 0.005$) and social entrepreneurship characteristics ($\beta = 0.272$; $p < 0.005$). Considering social entrepreneurship characteristics, the variables with the highest regression weights were found as self-confidence ($\beta = 0.864$; $p < 0.005$), risk taking ($\beta = 0.607$; $p < 0.005$) and personal creativity ($\beta = 0.523$; $p < 0.005$). Considering social intelligence, the variables with the highest regression weights were social entrepreneurship characteristics ($\beta = 0.673$; $p < 0.005$), social information process ($\beta = 0.569$; $p < 0.005$), social skills ($\beta = 0.446$; $p < 0.005$) and social awareness ($\beta = -0.362$; $p < 0.005$). Based on the analysis, a structural equation model to show the mediating effect of social intelligence in relationship between altruism and social entrepreneurship characteristics was presented in Fig. 1.

Structural equation model analysis was used to test the mediating effect of social intelligence in relationship between altruism and social entrepreneurship characteristics. In the model altruism as exogenous latent variable associated with responsibility,

Table 4 Regression weights between variables.

Relationships between variables			Regression Weights				S.R.W. Estimate
			Estimate	S.E	C.R.	P	
Social Intelligence	←	Altruism	1069	0,217	4917	***	0,661
Social Entrepreneurship Characteristics	←	Social Intelligence	0618	0,150	4110	***	0,673
Social Entrepreneurship Characteristics	←	Altruism	0404	0,190	2124	0,034	0,272
Family	←	Altruism	1000				0,375
Social	←	Altruism	3029	0,506	5989	***	0,747
Helpfulness	←	Altruism	1847	0,292	6326	***	0,583
Responsibility	←	Altruism	1253	0,224	5603	***	0,547
Personal Creativity	←	Social entrepreneurship characteristics	1000				0,523
Self-confidence	←	Social entrepreneurship characteristics	2291	0,243	9435	***	0,864
Risk taking	←	Social entrepreneurship characteristics	1630	0,194	8412	***	0,607
Social Knowledge Process	←	Social Intelligence	1000				0,569
Social Skills	←	Social Intelligence	0,488	0,077	6300	***	0,446
Social Awareness	←	Social Intelligence	-0,794	0,149	−5324	***	−0,362

S.R.W. Standardized Regression Weights; *S.E.* Estimation of Error, *C.R.* Critical Ratio.
***$p < 0.001$.

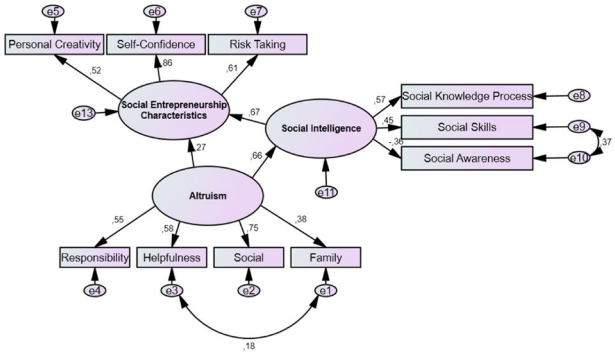

Fig. 1 Structural Model. Structural equation model to determine the mediating effect of social intelligence in relationship between altruism and social entrepreneurship characteristics ($x^2 = 82{,}46$; df = 30; $p < 0.001$).

helpfulness, social, and family components. As endogenous latent variables social intelligence includes social knowledge process, social skills, and social awareness while social entrepreneurship characteristics associated with observed variables as personal creativity, self-confidence, and risk taking.

The structural equation model tested to determine the mediating role of social intelligence in the relationship between altruism and social entrepreneurship characteristics of pre-service teachers was found to be statistically significant and met compliance criteria.

In addition to the structural equation model, the fit values were examined, which was demonstrated in Table 5.

As indicated in Table 5, the structural equation model prepared for the mediating effect of social intelligence in the relationship between altruism and social entrepreneurship characteristics was found to be statistically significant and met the fit criteria.

In order to test the structural equation model that includes mediating variables, there must be significant relationships between exogenic and endogenic variables (Baron and Kenny 1986). In this context, in order to test the significance of the direct and indirect effects of the observed and latent variables in the model, the bootstrapping process was conducted, and the number of repeated samplings was determined as 1000 (MacKinnon et al. 2004). Researchers should be encouraged to use bootstrapping to test for mediating effects of variables (Preacher and Hayes 2008). Once the mediation effect of the indirect effect has been identified, it is suggested to further classify the effect as either complete (full) or partial mediation, according to the significance of the direct effect (c') of X on Y. If c' is deemed to be insignificant, then it can be concluded that M fully mediates the effect of X on Y (Baron and Kenny 1986). Since it was understood that the altruism did not have a direct and significant effect on the social entrepreneurship characteristics ($\beta = 0.27$; $p > 0.05$), the social intelligence was determined as the complete (full) mediator variable. The coefficients of the direct and indirect effects determined with the 95% confidence interval were presented in Table 6.

The direct and indirect coefficients and significance of the variables in the model were examined by Bootstrapping method, and it was found that the indirect path coefficient ($\beta = 0.70$, CI = 95%, LB = 0.55, UB = 0.81) providing the understanding of the mediator role was found to be significant. It can be interpreted that social intelligence had a mediating role in the relationship between altruism and social entrepreneurship characteristics.

Discussion and implications

Theoretical implications. The study reveals that the social intelligence has a mediating role in the relationship between social entrepreneurship characteristics and altruism, which adds to social capital theory in terms of teacher education. Silwal et al. (2022) underscore the significance of social capital theory in entrepreneurship development, emphasizing that the establishment of social networks is a pivotal factor in achieving entrepreneurial success. In their discussion of the role of social capital in translating altruistic intentions into social entrepreneurship outcomes, Tan et al. (2005) define social capital as the features of social organization that facilitate coordination and cooperation for mutual benefit. On the other hand, social intelligence is a crucial factor in the effective navigation of these processes and the leveraging of social capital. This suggests that social intelligence plays a mediating role in the relationship between altruism and social entrepreneurship, enabling individuals to understand and engage with their social environments more effectively. Jannesari et al. (2022) examine the interaction between social power, a form of social capital, and social intelligence in influencing entrepreneurial intentions. Findings indicate that individuals with higher social intelligence are better positioned to utilize their social power, which can enhance their capacity to engage in social entrepreneurship. Athayde (2012) emphasizes the influence of social capital and human capital on the success of entrepreneurial

Table 5 Fit values of structural equation model tested.

	Obtained Values	Good fit	Acceptable fit	Reference
(x^2/sd)	2.75	≤3	≤4–5	(Carmines and McIver, 1981)
RMSEA	0.06	≤0.05	0.06–0.08	(Browne and Cudeck (1992))
SRMR	0.04	≤0.05	0.06–0.08	(Hu and Bentler, 1999)
CFI	0.93	≥0.95	0.90–0.94	(McDonald and Marsh, 1990)
TLI	0.90	≥0.95	0.90–0.94	(Bentler and Bonett, 1980)
GFI	0.96	≥0.95	0.90–0.94	(Joreskog and Sorbom, 1984)
AGFI	0.92	≥0.90	0.80–0.89	(Joreskog and Sorbom, 1984)

Table 6 Bootstrapping for the model.

Model Paths	Average effects at 95% confidence interval		
Direct Effect	**Coefficient**	**Lower Bound**	**Upper Bound**
Altruism →Social Intelligence	0.66**	0.52	0.83
Social Intelligence → Social Entrepreneurship Characteristics	0.67**	0.40	1.010
Altruism → Social Entrepreneurship Characteristics	0.27	−0.061	0.57
Indirect Effect			
Altruism → Social Intelligence→ Social Entrepreneurship Characteristics	0.70**	0.55	0.81

**p < 0.01

endeavours. The study demonstrates that social intelligence enhances an individual's capacity to leverage their networks for assistance and collaboration. This supports the notion that social intelligence mediates the relationship between altruism and social entrepreneurship by enabling individuals to leverage their social resources effectively. In the context of teacher education, the fostering of social intelligence among pre-service teachers can empower them to engage meaningfully with their communities, which is crucial for the cultivation of relationships that are vital for successful social entrepreneurship.

This study adds new findings to the research on altruism to teacher education context. Teachers have important responsibilities in terms of being a role model for their students and guiding the society. The motivation source in the academic and social relations of the teachers is benevolence, which can be explained by their altruistic behaviours. For this reason, gaining altruistic behaviours in teacher education is the basis for the training of social entrepreneur teachers. To increase the number of helpful, empathetic, and democratic individuals to in the society, it is important that the observed behaviours of teachers include prosociality and altruism. Pre-service teachers who exhibit altruistic behaviours are expected to be individuals who are self-confident and have a high sense of self-efficacy, to respond to the needs, and to have a high awareness of creating new values. In choosing the teaching profession, pre-service teachers also have altruistic motivations (Alexander et al. 1994), which is supported by this study demonstrating that pre-service teachers had high level of altruism perceptions.

This study extends the research on social entrepreneurship to teacher education. Social needs, one of the most important indicators used in determining the competencies of teachers, show that modern education structures need social entrepreneurial teachers. Responsibility (Mair and Noboa 2005), family life (Aldrich and Cliff 2003), discovering opportunities (Zahra et al. 2009) and being altruistic (Braga et al. 2014) including pro-active behaviours in helping others (Jain, 2009) are among the elements that compose social entrepreneurship characteristics (Irawan et al. 2019). This study revealed high level of social entrepreneurship characteristics of pre-service teachers, which may be interpreted that social entrepreneur pre-service teachers can be identified as the individuals who can achieve their goals, have self-confidence and self-efficacy, are successful in classroom management, and can create value and ideas (Austin et al. 2006; Smith et al. 2008) in the classroom by using various teaching strategies (Tschannen-Moran, et al. 1998).

This study broadens the research on social intelligence to teacher education. Recognition of the needs of students and society while determining teacher competencies may require teachers and pre-service teachers with high social intelligence, which was found at medium level for the pre-service teachers in this study. Goleman (2006) emphasizes social awareness and social facility in the concept of social intelligence by expanding the concept of emotional intelligence which focuses on inner feelings. Those two concepts, which are frequently needed in the teaching process, include prosocial behaviours such as empathy, compatibility, social cognition, and influencing. Similarly, the motivation required for displaying altruistic behaviours can be provided through interpersonal social relations (Eisenberg and Fabes 1998; Ritzenhöfer et al. 2017). As revealed in this study, the significant relationship between altruism and social intelligence of pre-service teachers and the significant prediction of altruism on social intelligence may indicate that altruistic characteristics are the basis of prosocial behaviours such as social awareness, empathy, influencing and developing social relations (Hwang 2010). In this respect, three prosocial behaviours that affect the social intelligence of pre-service teachers emerge (Silvera et al. 2001) which are social information processing, social awareness and social skills (Baron and Markman 2000; Johannisson 2016; Mandyoli et al. 2016). The processing of social information, the development of social skills and social awareness also highlight the social entrepreneurship characteristics of pre-service teachers. Based on the findings of current research, it can be stated that the social intelligence of pre-service teachers will be effective in showing social entrepreneurial characteristics of individuals that will help respond to social needs.

Practical implications. In order to equip pre-service teachers with the requisite social entrepreneurship characteristics and altruistic and socially intelligent practices, it is essential to

implement a series of educational initiatives. One of these practices is to integrate these variables as interdisciplinary issues in teacher training programmes. In other words, pre-service teachers' awareness of concepts such as social intelligence, altruism, and social entrepreneurship characteristics can be increased through the incorporation of these topics into professional knowledge and field education courses. The cultivation of altruistic values and enhancement of social intelligence in teacher education programmes can facilitate the preparation of future educators to leverage their social capital effectively, which in turn enables them to engage in meaningful social entrepreneurship initiatives that address pressing educational and community challenges.

Another potential strategy for enhancing the social entrepreneurship competencies of pre-service teachers is through the incorporation of volunteering activities. In particular, encouraging pre-service teachers to engage in volunteering activities as an extracurricular or as a discrete course will enhance their awareness of altruism. This will facilitate the growth of social intelligence and social entrepreneurship characteristics, either directly or indirectly through the enhancement of social intelligence. Initiatives that promote altruistic behaviours within the context of community service can be expanded within the initial teacher education process to train social entrepreneurial teachers who will respond to the needs of society and students.

The development of policies and courses to enhance social competence may be informed by an examination of the characteristics associated with social entrepreneurship characteristics, altruism, and social intelligence. An understanding of the interrelationships among these variables could provide a foundation for the creation of a teacher development model that benefits both current and future educators. In this teacher development model, pre-service teachers could be equipped with social entrepreneurship characteristics and altruistic values and behaviours through social intelligence by integrating them into formal curriculum such as field and pedagogical courses and extracurricular activities such as community services.

Limitations and future directions. This study concluded that the social entrepreneurial characteristics of pre-service teachers were related to their altruistic behaviours and social intelligence. Those characteristics will contribute to the social competence of pre-service teachers as future teachers. However, the current study has some limitations. First, the data were obtained through self-reported instruments; thus, raising a question in terms of objectivity of respondents. Therefore, future research can be conducted by varying data collection instruments such as interviews to understand causality between the variables through more objective lenses. The results could be elaborated with qualitative approaches. The utilization of a qualitative research methodology in future studies may facilitate the attainment of a comprehensive understanding of the subject matter. Secondly, the sample consisted of a relatively small number of pre-service teachers, which affects generalizability of the results. Future research may be conducted on an expanded number of participants from different backgrounds and universities. Last, participants of this study were only pre-service teachers. Further research could be conducted with different stakeholders such as teacher educators. It is postulated that the altruistic and social entrepreneurial behaviours of teacher educators engaged in teacher training at faculties of education will undoubtedly influence the personality traits of pre-service teachers. Consequently, a similar investigation could be conducted with teacher educators in faculties of education in future research.

Data availability

The datasets of the current study are available upon reasonable request from the corresponding author.

Data availability

For inquiries regarding access to the datasets analyzed in the current research, please do not hesitate to reach out to the corresponding author.

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References

Akbaba S (1994) The effect of group counseling on altruism, a social psychological concept. Dissertation. Ataturk University
Albrecht K (2006) Social intelligence: The new science of success. Jossey-Bass
Aldrich H, Cliff J (2003) The pervasive effects of family on entrepreneurship: Toward a family embeddedness perspective. J Bus Venturing 18(5):573–596. https://doi.org/10.1016/S0883-9026(03)00011-9
Alexander D, Chant D, Cox B (1994) What motivates people to become teachers? Aust J Teacher Educ 19(2). https://doi.org/10.14221/ajte.1994v19n2.4
Anggahegari P, Yudoko G, Rudito B, Mulyaningsih HD, Ramadani V (2021) Female social entrepreneurship in Indonesia: a critical literature review. Int J Entrepreneurship Small Bus 43(3):315–331. https://doi.org/10.1504/IJESB.2021.115877
Angriani D (2021) The effect of organizational culture and altruism on social competency of science teachers. J Educ Sci 5(4):678–686. https://doi.org/10.31258/jes.5.4.p.678-686
Armstrong T (2009) Multiple intelligences in the classroom. ASCD, Alexandria
Athayde R (2012) The impact of enterprise education on attitudes to enterprise in young people: an evaluation study. Educ+Train 54(8/9):709–726. https://doi.org/10.1108/00400911211274846
Austin J, Gutierrez R, Ogliastri E, Reficco, E (eds.) (2006) Effective management of social enterprises: Lessons from businesses and civil society in Iberoamerica. Harvard University Press
Aydogmus M (2019) Investigation of the effect of social entrepreneurship on professional attitude and self-efficacy perception: A research on prospective teachers. Stud High Educ 46(7):1462–1476. https://doi.org/10.1080/03075079.2019.1673719
Baron RA, Markman GD (2000) Beyond social capital: How social skills can enhance entrepreneurs' success. Acad Manag Perspect 14(1):106–116. https://doi.org/10.1108/IRJMS-07-2023-0059
Baron RA, Markman GD (2003) Beyond social capital: The role of entrepreneurs' social competence in their financial success. J Bus Venturing 18(1):41–60. https://doi.org/10.1016/S0883-9026(00)00069-0
Baron RM, Kenny DA (1986) The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. J Personal Soc Psychol 51(6):1173–1182. https://psycnet.apa.org/doi/10.1037/0022-3514.51.6.1173
Bates G, Fisher R, Turner K, Machirori TL, Rixon A (2023) Raising the social status of teachers: Teachers as social entrepreneurs. The Australian Educational Researcher. https://doi.org/10.1007/s13384-023-00646-4
Batson CD (1991) The altruism question: Toward a social-psychological answer. Lawrence Erlbaum Associates, Inc
Bentler PM, Bonett DG (1980) Significance tests and goodness of fit in the analysis of covariance structures. Psychological Bull 88(3):588–606. https://doi.org/10.1037/0033-2909.88.3.588
Berg DA, Skaalvik EM, Asil M, Hill MF, Uthus M, Tangen TN, Smith JK (2023) Teacher self-efficacy and reasons for choosing initial teacher education programmes in Norway and New Zealand. Teaching and teacher education, 125. https://doi.org/10.1016/j.tate.2023.104041
Birknerová Z, Frankovský M, Zbihlejová L (2013) Social intelligence in the context of personality traits of teachers. Am Int J Contemp Res 3(7):11–17
Boehm C (1979) Some problems with altruism in the search for moral universals. Behav Sci 24(1):15–24. https://psycnet.apa.org/doi/10.1002/bs.3830240104
Bornstein D (2007) How to change the world: Social entrepreneurs and the power of new ideas. Oxford University Press
Bourdieu P (1986) The forms of capital. In Richardson J. G. (Ed.), Handbook of theory and research of the sociology of education (pp. 241–258). Greenwood Press
Braga JC, Proença T, Ferreira MR (2014) Motivations for social entrepreneurship–Evidences from Portugal. Tékhne 12:11–21. https://doi.org/10.1016/j.tekhne.2015.01.002

Browne MW, Cudeck R (1992) Alternative ways of assessing model fit. Sociol Methods Res 21(2):230–258. https://doi.org/10.1177/0049124192021002005
Çakanel Z (2018) The relationship between emotional intelligence, social intelligence and social entrepreneurship. Dissertation, Pamukkale University
Carmines EG, McIver JP (1981) Analyzing models with unobserved variables: Analysis of covariance structures. In: Bohrnstedt G W, Borgatta E F (ed) Social measurement: Current issues, Sage Publications, California, pp 65-115
Certo ST, Miller T (2008) Social entrepreneurship: Key issues and concepts. Bus Horiz 51(4):267–271. https://doi.org/10.1016/j.bushor.2008.02.009
Chou KL (1996) The Rushton, Chrisjohn and Fekken self-report altruism scale: A Chinese translation. Personal Individ Diff 21:297–298. https://doi.org/10.1016/0191-8869(96)00040-2
Coleman JS (1988) Social capital in the creation of human capital. Am J Socio 94:S95–S120. https://doi.org/10.1086/228943
Conway Dato-on M, Kalakay J (2016) The winding road of social entrepreneurship definitions: A systematic literature review. Soc Enterp J 12(2):131–160. https://doi.org/10.1108/SEJ-06-2015-0016
Dacin PA, Dacin MT, Matear M (2010) Social entrepreneurship: Why we don't need a new theory and how we move forward from here. Acad Manag Perspect 24(3):37–57. https://doi.org/10.5465/amp.24.3.37
Datnow A (2020) The role of teachers in educational reform: A 20-year perspective. J Educ Change 21(3):431–441. https://link.springer.com/article/10.1007/s10833-020-09372-5
Dees JG (1998) The meaning of social entrepreneurship. Stanford University. https://web.stanford.edu/class/e145/2007_fall/materials/dees_SE.pdf
Dees JG (2007) Taking social entrepreneurship seriously. Society 44(3):24–31. https://doi.org/10.1007/BF02819936
Dogan T, Cetin B (2009) The validity, reliability and factorial structure of the Turkish version of the Tromso social intelligence scale. Educ Sci: Theory Pr 9(2):709–720
Domenico MD, Haugh H, Tracey P (2010) Social bricolage: theorizing social value creation in social enterprises. Entrepreneurship Theory Pr 34(4):681–703. https://doi.org/10.1111/j.1540-6520.2010.00370.x
Dorado S (2006) Social entrepreneurial ventures: Different values so different processes of creation, No? J Dev Entrepreneurship 11(4):319–343. https://doi.org/10.1142/S1084946706000453
Dufays F, Huybrechts B (2014) Connecting the dots for social value: a review on social networks and social entrepreneurship. J Soc Entrepreneurship 5(2):214–237. https://doi.org/10.1080/19420676.2014.918052
Ebrashi RE (2013) Social entrepreneurship theory and sustainable social impact. Soc Responsib J 9(2):188–209. https://doi.org/10.1108/srj-07-2011-0013
Eisenberg N, Fabes RA (1998) Prosocial development. In: Damon W Eisenberg N (ed) Handbook of child psychology, vol 3. Wiley, New Jersey, p 701–778
Ellis V, Correia C, Turvey K, Childs A, Andon N, Harrison C, Jones J, Hayati N (2023) Redefinition/redirection and incremental change: A systematic review of innovation in teacher education research. Teach Teach Educ 121:1–12. https://doi.org/10.1016/j.tate.2022.103918
Fowler A (2000) NGDOs as a moment in history: beyond aid to social entrepreneurship or civic innovation? Third World Q 21(4):637–654. https://doi.org/10.1080/713701063
Fraenkel JR, Wallen NE, Hyun HH (2012) How to design and evaluate research in education (8th ed.). New York, NY: McGraw-Hill
García-Jurado A, Pérez-Barea JJ, Nova R (2021) A new approach to social entrepreneurship: A systematic review and meta-analysis. Sustainability 13(5):1–16. https://doi.org/10.3390/su13052754
Gardner H (1983) Frames of mind: The theory of multiple intelligences. Basic Books, New York
Gardner H (1993) Multiple intelligences: The theory in practice. Basic Books, New York
Garner PW (2017) The role of teachers' social-emotional competence in their beliefs about peer victimization. J Appl Sch Psychol 33(4):288–308. https://psycnet.apa.org/doi/10.1080/15377903.2017.1292976
Gedajlovic É, Honig B, Moore CB, Payne GT, Wright M (2013) Social capital and entrepreneurship: a schema and research agenda. Entrepreneurship Theory Pr 37(3):455–478. https://doi.org/10.1111/etap.12042
George D, Mallery P (2010) SPSS for windows step by step: A simple guide and reference, 17.0 update. Pearson, Boston
Gerrig RJ, Zimbardo PG (2012) Introduction to psychology, psychology and life (trans: Sart G). Nobel Academic Publishing, İstanbul
Goleman D (2006) Social intelligence: The New Science of Human Relationships. Bantam
Granovetter M (1985) Economic action and social structure. Am J Socio 91(3):481–510
Güler BK (2008) Analysis of factors determining social entrepreneurship. Dissertation, Dokuz Eylül University
Gusseinova D (2015) Case of social entrepreneurship and a case study analysis. Dissertation, Dokuz Eylül University
Hemingway CA (2005) Personal values as a catalyst for corporate social entrepreneurship. J Bus Ethics 60(3):233–249. https://doi.org/10.1007/s10551-005-0132-5
Hibbert SA, Hogg G, Quinn T (2002) Consumer response to social entrepreneurship: The case of the Big Issue in Scotland. Int J Nonprofit Voluntary Sect Mark 7(3):288–301. https://doi.org/10.1002/nvsm.186
Howe D (2017) Empathy, social intelligence and relationship-based social work. Zesz Pr Socjalnej 22(1):1–12. https://doi.org/10.4467/24496138ZPS.17.001.6536
Hoyle E, John PD (1995) Professional knowledge and professional practice. Cassell, London
Hu LT, Bentler PM (1999) Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Struct Equ Modeling: A Multidiscip J 6(1):1–55. https://doi.org/10.1080/10705519909540118
Hwang YC (2010) Discovering proximal social intelligence for quality decision support. In: Ting H et al. (ed) Mining and analyzing social networks. Springer, New York, p 125-137
Irawan A, Suryanto S, Mashud M (2019) The dimensions of social entrepreneurship. J Econ Bus Political Res 4(8):91–100. https://doi.org/10.25204/iktisad.516571
Işık C, Aydın E (2017) The effect of personal values on social entrepreneurship tendency: A research on tourism students. J Entrepreneurship Innov Manag 6(2):131–154. https://dergipark.org.tr/en/download/article-file/978078
Jain TK (2009) Discovering social entrepreneurship. Asia Pac Bus Rev 5(1):21–34. https://doi.org/10.1177/097324700900500103
Jannesari M, Zolfagharian M, Torkzadeh S (2022) Effect of social power, cultural intelligence, and socioeconomic status on students' international entrepreneurial intention. Psychol Res Behav Manag ume 15:1397–1410. https://doi.org/10.2147/prbm.s360901
Johannisson B (2016) Limits to and prospects of entrepreneurship education in the academic context. Entrepreneurship Regional Dev: Int J 28(5-6):403–423. https://doi.org/10.1080/08985626.2016.1177982
Joreskog KG, Sorbom D (1984) Lisrel VI: Analysis of linear structural relations by the method of maximum likelihood. National Educational Resources, Chicago
Kanellakis K, Karakasidou E, Koutsoukis NS (2018) The role of occupational stress and emotional intelligence in working health-care and medical environments. Psychology 9(06):1516. https://doi.org/10.4236/psych.2018.96091
Karadeniz G (2007) Examining the differences between the altruistic behaviours of senior students of the special education teaching department and teachers who graduated from the special education teaching department. In:17th National Special Education Congress, Izmir, p 15-17
Karimi H, Ataei P (2023) The effect of entrepreneurship ecosystem on the entrepreneurial skills of agriculture students: The mediating role of social intelligence and emotional intelligence. Curr Psychol 42(27):23250–23264. https://doi.org/10.1007/s12144-022-03479-z
Kaukiainen A, Björkqvist K, Lagerspetz K, Österman K, Salmivalli C, Rothberg S, Ahlbom A (1999) The relationships between social intelligence, empathy, and three types of aggression. Aggressive Behav: J Int Soc Res Aggression 25(2):81–89. 10.1002/(SICI)1098-2337(1999)25:2%3C81::AID-AB1%3E3.0.CO;2-M
Kee DM (2017) Defining social entrepreneurship: A Schumpeterian non-solution. Int J Entrepreneurship Small Bus 31(3):416–433. https://doi.org/10.1504/IJESB.2017.084843
Kline RB (2023) Principles and practice of structural equation modeling. Guilford publications
Konaklı T, Göğüş N (2013) Preservice teachers social entrepreneurship qualifications scale validity and reliability study. Gazi Univ J Gazi Educ Fac 33(2):373–391
Larin HM, Benson G, Martin L, Wessel J, Williams R, Ploeg J (2011) Examining change in emotional-social intelligence, caring, and leadership in health professions students. J Allied Health 40(2):96–102. https://doi.org/10.14434/josotl.v14i1.3897
Light PC (2011) The search for social entrepreneurship. Strategic Direction 27(6)
Lin N (2001) Social capital: A theory of social structure and action. Cambridge University Press
London M, Morfopoulos RG (2010) Social entrepreneurship. Routledge, London
London P, Bower RK (1968) Altruism, extraversion, and mental illness. J Soc Psychol 76(1):19–30. https://doi.org/10.1080/00224545.1968.9919819
MacKinnon DP, Lockwood CM, Williams J (2004) Confidence limits for the indirect effect: Distribution of the product and resampling methods. Multivar Behavioural Res 39(1):99–128. 10.1207%2Fs15327906mbr3901_4
Mair J, Battilana J, Cardenas J (2012) Organizing for society: A typology of social entrepreneuring models. J Bus Ethics 111(3):353–373
Mair J, Marti I (2006) Social entrepreneurship research: A source of explanation, prediction, and delight. J World Bus 41(1):36–44. https://doi.org/10.1016/j.jwb.2005.09.002

Mair J, Noboa E (2005) How intentions to create a social venture are formed - A case study. IESE Business School Working Paper No. 593. https://doi.org/10.2139/ssrn.875589
Mandyoli B, Iwu CG, Magoda Z (2016) Determining the nexus between social entrepreneurship and the employability of graduates. Socioeconomica 5(10):279–298. https://doi.org/10.12803/SJSECO.51009
Marecki J (2014) The importance of social intelligence for entrepreneurial leaders. http://essay.utwente.nl/65265/
Marlowe HA (1986) Social intelligence: Evidence for multidimensionality and construct independence. J Educ Psychol 78(1):52–58. https://doi.org/10.1037/0022-0663.78.1.52
Martin RL, Osberg S (2007) Social entrepreneurship: The case for definition. Stanf Soc Innov Rev 5(2):28–39
McDonald RP, Marsh HW (1990) Choosing a multivariate model: Noncentrality and goodness of fit. Psychol Bull 107(2):247–255. https://doi.org/10.1037/0033-2909.107.2.247
Mohamed ESA (2020) The impact of social intelligence and employees' collective self-efficacy on service provider's performance in the Egyptian governmental hospitals. Int J Disruptive Innov Gov 1(1):58–80. https://doi.org/10.1108/IJDIG-07-2020-0003
Morgan GA, Leech NL, Gloeckner GW, Barrett KC (2004) SPSS for introductory statistics: Use and interpretation. Lawrence Erlbaum Associates, New Jersey
Neter J, Wasserman W, Kutner MH (1996) Applied linear regression models. Irwin, R. Inc, Illionis
Nicolaou AI, Masoner MM (2013) Sample size requirements in structural equation models under standard conditions. Int J Acc Inf Syst 14(4):256–274. https://doi.org/10.1016/j.accinf.2013.11.001
Nigam S, Narang A, Narang Y (2014) Delineating social entrepreneurship from related terminologies. J Entrepreneurship, Bus Econ 2(1):1–20. https://doi.org/10.1108/K-03-2024-0794
Njoroge CN, Yazdanifard R (2014) The impact of social and emotional intelligence on employee motivation in a multigenerational workplace. Glob J Manag Bus Res 14(3):31–36. https://globaljournals.org/GJMBR_Volume14/5-The-Impact-of-Social-and-Emotional-Intelligence.pdf
Onatır M (2008) The relationship between teachers' altruistic behaviors and value preference of teachers. Dissertation, Yeditepe University
Pallant J (2005) SPSS survival manual: A step by step guide to data analysis using SPSS. Allen & Unwin
Parlak K (2013) Girişimci kişilik özelliklerine sahip olmak ile kendini ve başkalarını tanıma (içsel ve sosyal) zekaları arasındaki ilişkinin incelenmesi, İstanbul Sabahattin Zaim Üniversitesi. Sos Bilimler Derg 3:55–64. https://openaccess.izu.edu.tr/xmlui/handle/20.500.12436/109
Pathak S, Mukherjee S (2021) Entrepreneurial ecosystem and social entrepreneurship: case studies of community-based craft from Kutch, India. J Enterprising Communities: People Places Glob Econ 15(3):350–374. https://doi.org/10.1108/JEC-06-2020-0112
Peredo AM, McLean M (2006) Social entrepreneurship: A critical review of the concept. J World Bus 41(1):56–65. https://doi.org/10.1016/j.jwb.2005.10.007
Prabha S, Mittal U (2019) Social intelligence as related to aggression, altruism and compassion. IAHRW Int J Soc Sci Rev 7(6):1864–1867. https://iahrw.org/our-services/journals/iahrw-international-journal-of-social-sciences-review/
Preacher KJ, Hayes AF (2008) Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. Behav Res Methods 40(3):879–891. https://doi.org/10.3758/BRM.40.3.879
Putnam RD (2000) Bowling alone: The collapse and revival of American community. Simon and Schuster
Ritzenhöfer L, Brosi P, Spörrle M, Welpe I (2017) Leader pride and gratitude differentially impact follower trust. J Manag Psychol 32(6):445–459. https://psycnet.apa.org/doi/10.1108/JMP-08-2016-0235
Salamzadeh A, Arasti Z, Elyasi GM (2017) Creation of ICT-based social start-ups in Iran: A multiple case study. J Enterprising Cult 25(01):97–122. https://doi.org/10.1142/S0218495817500042
Santos P, Guedes A, Fonseca M (2012) The role of teaching institutions to prepare and promote social entrepreneurs. J Entrepreneurship Perspect 1(1):161–167. http://www.acrn.eu/resources/Journals/JoE012012/Santos_Paula_SE_Teaching.pdf
Saxena S, Panigrahi S (2009) Social intelligence of high and low achieves undergraduate students. J Educ Stud 7(2):31–34. https://doi.org/10.9790/7388-0110104
Scott C, Cox S, Dinham S (1999) The occupational motivation, satisfaction and health of English school teachers. Educ Psychol 19(3):287–308. https://doi.org/10.1080/0144341990190304
Seglow J, Scott N (2007) Altruism. Open University Press, New York
Selvi K (2010) Teachers' competencies. Cult Int J Philos Cult Axiolog 7(1):167–175. https://doi.org/10.5840/cultura20107133
Shalom YB, Bloch E, Glaser Y (2007) Educators as social entrepreneurs: a different approach to teacher training. Int J Learn 14(7):155–161. https://doi.org/10.18848/1447-9494/CGP/v14i07/45402
Shane S, Venkataraman S (2000) The promise of entrepreneurship as a field of research. Acad Manag Rev 25(1):217–226. https://doi.org/10.2307/259271
Sharir M, Lerner M (2006) Gauging the success of social ventures initiated by individual social entrepreneurs. J World Bus 41(1):6–20. https://doi.org/10.1016/j.jwb.2005.09.004
Shaw E, Carter S (2007) Social entrepreneurship, theoretical antecedents and empirical analysis of entrepreneurial processes and outcomes. J Small Bus Enterp Dev 14(3):418–434. https://doi.org/10.1108/14626000710773529
Silva R, Rodrigues M, Franco M, Oliveira C, Sousa N (2023) How do social responsibility and social entrepreneurship generate value creation in pandemics? J Enterprising Communities: People Places Glob Econ 17(2):305–333. https://doi.org/10.1108/JEC-07-2021-0108
Silvera D, Martinussen M, Dahl TI (2001) The Tromsø social intelligence scale, a self-report measure of social intelligence. Scand J Psychol 42(4):313–319. https://doi.org/10.1111/1467-9450.00242
Silwal Y, Poudel S, Dahal K, Thapaliya S, Sah B (2022) Theoretical foundations for entrepreneurship development program. Nepal J Multidiscip Res 5(5):109–118. https://doi.org/10.3126/njmr.v5i5.51809
Skeja A, Sadiku-Dushi N, Keskin G (2023) Altruism and female entrepreneurship: Evidence from the Turkish community in Kosovo. J Enterprising Communities: People Places Glob Econ 17(6):1275–1292. https://doi.org/10.1108/jec-06-2022-0090
Smith BR, Barr TF, Barbosa SD, Kickul JR (2008) Social entrepreneurship: A grounded learning approach to social value creation. J Enterprising Cult 16(04):339–362. https://doi.org/10.1142/S0218495808000235
Smith JD, Whitley J (2023) Teaching with acceptance and commitment: Building teachers' social-emotional competencies for teaching effectiveness. Educ Forum 87(1):90–104. https://doi.org/10.1080/00131725.2022.2053620
Smith WK, Besharov ML, Wessels AK, Chertok M (2012) A paradoxical leadership model for social entrepreneurs: Challenges, leadership skills, and pedagogical tools for managing social and commercial demands. Acad Manag Learn Educ 11(3):463–478. https://doi.org/10.5465/amle.2011.0021
Spear R (2006) Social entrepreneurship: a different model? Int J Soc Econ 33(5/6):399–410. https://doi.org/10.1108/03068290610660670
Tan WL, Williams J, Tan TM (2005) Defining the 'social'in 'social entrepreneurship': Altruism and entrepreneurship. Int Entrepreneurship Manag J 1(3):353–365. https://doi.org/10.1007/s11365-005-2600-x
Thorndike EL (1920) Intelligence and its uses. Harper's Mag 140:227–235. https://harpers.org/archive/1920/01/intelligence-and-its-uses/
Tschannen-Moran M, Hoy AW, Hoy WK (1998) Teacher efficacy: Its meaning and measure. Rev Educ Res 68(2):202–248. https://doi.org/10.3102/00346543068002202
Van Lange PA, Joireman J, Parks CD, Van Dijk E (2013) The psychology of social dilemmas: A review. Organ Behav Hum Decis Process 120(2):125–141. https://doi.org/10.1016/j.obhdp.2012.11.003
Vannebo BI, Grande J (2018) Social entrepreneurship and embedded ties-a comparative case study of social entrepreneurship in Norway. Int J Entrepreneurship Small Bus 33(3):417–448. https://doi.org/10.1504/IJESB.2018.10011174
Vernon PE (1933) Some characteristics of the good judge of personality. J Soc Psychol 4(1):42–57. https://doi.org/10.1504/IJESB.2018.10011174
Williams C, Kosta B (2019) Evaluating institutional theories of informal sector entrepreneurship: some lessons from Albania. J Developmental Entrepreneurship 24(02):1950009. https://doi.org/10.1142/s1084946719500092
Wu YJ, Wu T, Sharpe JA (2020) Consensus on the definition of social entrepreneurship: a content analysis approach. Manag Decis 58(12):2593–2619. https://doi.org/10.1108/md-11-2016-0791
Yermentaeyeva A, Aurenova MD, Uaidullakyzy E, Ayapbergenova A, Muldabekova K (2014) Social intelligence as a condition for the development of communicative competence of the future teachers. Procedia-Soc Behav Sci 116:4758–4763. https://doi.org/10.1016/j.sbspro.2014.01.1021
Yeşilkaya M, Yıldız T (2018) A research to examine social innovation tendency on the axis of altruistic behaviour. J Entrepreneurship Innov Mark Res 2(4):81–97. https://doi.org/10.31006/gipad.421324
Zahra SA, Gedajlovic E, Neubaum DO, Shulman J (2009) A typology of social entrepreneurs: Motives, search processes and ethical challenges. J Bus Venturing 24(5):519–532. https://doi.org/10.1016/j.jbusvent.2008.04.007
Zahra SA, Gedajlovic E, Neubaum DO, Shulman JM (2009) A typology of social entrepreneurs: Motives, search processes and ethical challenges. J Bus Venturing 24(5):519–532. https://doi.org/10.1016/j.jbusvent.2008.04.007

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Author contributions

IK—Conceptualization, Methodology (data collection, data analysis), Writing (original draft, review & editing), Funding acquisition. SC—Conceptualization, Methodology (data collection), Writing (editing). All authors read and accepted the final version of the manuscript.

Competing interests

The authors declare no competing interests.

Ethical approval

Ethics committee approval dated 24.11.2020 and numbered 2020/123 was obtained from this study's Recep Tayyip Erdogan University, Social and Human Sciences Ethics Committee. All procedures performed in studies involving human participants were by the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed consent

Informed consent was obtained from all respondents prior to the surveys. The participants were informed about the aims of the research and how their responses would be used anonymously. They were also informed about their right to withdraw from the research at any point. They were asked to participate in the research by approving consent form.

Additional information

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