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Social and emotional competencies in Portuguese incarcerated males: psychometric properties of the SEC-Q questionnaire and their relation to health risk behaviors

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Abstract

This study departs from the acknowledged absence of validated measures to assess social and emotional competencies in incarcerated individuals. This is a critical gap given that most available programs aimed at fostering prosocial behavior and reducing antisocial behaviors are theoretically based on enhancing these competencies. This study assessed the psychometric properties of the Social and Emotional Competencies Questionnaire (SEC-Q) in a sample of 219 Portuguese incarcerated males (M age = 37.21 years, SD = 10.61), and to explore the impact of the SEC-Q dimensions on health risk behaviors in this population. The study used confirmatory factor analysis (CFA) to examine the factor structure of the SEC-Q. The four-factor model *fitted well to the data* (SB $\chi^2 = 267.75$; df = 120; Robust CFI = 0.99; Robust RMSEA = 0.06), and, as expected, it includes four dimensions: self-awareness, self-management and motivation, social awareness and prosocial behavior, and decision-making. The four dimensions showed *appropriate* internal consistency (*Cronbach's alpha* = 74–81; *McDonald's omega* = 75–82). Additionally, social and emotional competencies were related to higher self-control (r_s = 0.45, $p < .01$) and lower health risk behaviors ($r_s = -0.25$, $p < .01$), supporting convergent and divergent validity. Findings from the negative binomial regression suggest that higher social awareness and prosocial behavior is related to less health risk behaviors among incarcerated males. This study is a pivotal step to promote an affordable and valid measure to assess social and emotional competencies among Portuguese justice-involved males. SEC-Q can be an important complementary measure for evaluating the effectiveness of interventions aimed at preventing criminal recidivism.

Keywords Social and emotional competencies · Incarceration · Confirmatory factor analysis · Health risk behavior

Introduction

Social and emotional competencies, defined as intra- and interpersonal skills that enable individuals to effectively understand, navigate, and respond to the social and emotional aspects of their lives (Collie, 2020), are foundational to achieving a successful and fulfilling life. These competencies are critical for managing emotions, achieving personal and collective goals, displaying empathy, engaging in prosocial relationships, and making responsible decisions (Collaborative for Academic, Social and Emotional Learning (CASEL), 2021).

A robust body of research has established a strong association between high levels of social and emotional competencies and a range of positive outcomes. These include reduced antisocial behaviors among students (Zych et al., 2018a), lower substance use (Rodriguez-Ruiz et al., 2021), decreased levels of burnout in adults (Oliveira et al., 2023), and enhanced relationship satisfaction and subjective well-being in adults (Mónaco et al., 2021).

The significance of social and emotional competencies is further highlighted in educational interventions aimed at promoting health, reducing substance abuse, violence, and

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risky behaviors (Payton et al., 2000). Notably, a comprehensive review by Durlak et al. (2022) of over 500 school-based social and emotional learning (SEL) programs worldwide (i.e., programs that target knowledge, attitudes, and skills related to social and emotional competences) (Durlak et al., 2022) - found that these intervention programs effectively decrease conduct problems, highlighting the importance of fostering SEL competencies from an early age.

According to Durlak et al. (2015) social and emotional competencies included *self-awareness* that consists of being aware of own emotional states, values, and objectives, understanding complex relations between thoughts, feelings, and actions; *self-management* that involves motivation and management of own emotional states to pursue goals; *social awareness* that involves empathy and understanding of others, including values and diverse social contexts; *relationship skills* that include good communication, prosocial behavior towards others and being able to respect social norms; and *responsible decision-making* that includes an ability to consider different options and choose those that are respectful towards self and others.

Although CASEL´s model of social and emotional competencies is probably the most popular worldwide, the number of instruments that measure these social and emotional competencies in a relatively short questionnaire is low (for a review see Martinez-Yarza et al., 2023). Among these assessment tools, Zych et al. (2018b) designed and validated an instrument called *Social and Emotional Competencies Questionnaire* (SEC-Q) to measure social and emotional competencies, according to the CASEL´s model. SEC-Q showed very good psychometric properties, including convergent validity, factorial validity, and internal consistency, in samples of Spanish adolescents and young adults (Zych et al., 2018b). It has also been successfully validated in Chilean young adults (Figueroa-Varela & Rodriguez Vera, 2023), Polish adolescents (Twardowska-Staszek & Zych, 2023), and Portuguese general population adults (Lobo, 2020). SEC-Q has also shown good psychometric properties with Spanish teachers (Llorent et al., 2020), Peruvian teachers (Valdez et al., 2022), Latvian adolescents (Cāzere-Pakalna & Svence, 2020), Mexican adolescents (Jimenez-Arriaga et al., 2023), and university students from Egypt (Abdelaal et al., 2019).

Although programs focused on promoting social and emotional competencies are likely to increase prosocial behavior and decrease antisocial behaviors in students (Durlak et al., 2022), little is known about social and emotional competencies of adults with serious behavior problems, such as those involved with justice (e.g., Basto-Pereira et al., 2018; Tolou-Shams et al., 2019). In particular, there remains a notable gap in applying and measuring these competencies among incarcerated individuals. The unique challenges and environmental factors within prisons, along with the specificities of justice-involved males, justify the development and validation of current measures to evaluate social and emotional competencies for this specific context (Basto-Pereira et al., 2018; Crewe et al., 2014). Therefore, this paper aims to bridge this critical gap by contributing to the validation of measures appropriate for incarcerated populations.

The validation of precise measures for social and emotional competencies is essential to tailoring and applying SEL interventions in prison settings effectively. By establishing a reliable and valid tool, this research seeks to enable the implementation and efficacy examination of interventions that could significantly enhance reintegration outcomes and mitigate recidivism rates among incarcerated individuals. This effort is particularly crucial given the established potential of SEL interventions to improve prosocial behavior and diminish antisocial pathways, as suggested by Durlak et al. (2022) and Lipsey (2009) findings. Such advancements are particularly relevant within the Portuguese correctional system, where the high likelihood of reoffending — approximately 60% among incarcerated individuals (SPACE Report I 2020, Council of Europe Annual Penal Statistics) — highlight the urgent need for evidence-based strategies to support successful reentry into society.

The current study

Social and emotional competencies are crucial to improve wellbeing and decrease problematic behaviors in general population (Durlak et al., 2022). It is desirable to study these competencies in vulnerable individuals such as incarcerated people, especially considering the impact these social and emotional competences have on psychological functioning (Mónaco et al., 2021; Oliveira et al., 2023; Zych et al., 2018a). Thus, the first objective of this study was to explore the psychometric properties of the Social and Emotional Competencies Questionnaire (SEC-Q) in a sample of incarcerated males in terms of factor validity, convergent, and divergent validity (with self-control and health risk behaviors), as well as in terms of reliability. The selection of a male sample was based on the notable prevalence of males in the global prison population, constituting 93% according to the United Nations Office on Drugs and Crime (2021). This gender distribution mirrors the situation in Portugal in 2022, where 93% of the prison population is also comprised of males (PORDATA, 2023). The SEC-Q, once specifically tailored for incarcerated individuals, will facilitate bridging the current gap in validated assessment tools for this population.

Second, we aimed to explore how variations in social and emotional competencies impact engagement in health risk behaviors. Particularly, we aimed to explore the association between different social and emotional competencies and different health risk behaviors (HRBs), such as drug and alcohol misuse, self-harm, and unprotected sex which are especially prevalent among male inmates (e.g., Fazel et al., 2017; Moazen et al., 2018). Therefore, identifying relevant dynamic factors for intervention related to these behaviors is especially relevant.

Method

Participants and procedures

Two hundred and nineteen justice-involved males (M_{age} = 37.21 years, SD = 10.61) were evaluated for this study, in six of the eight prisons in the large metropolitan area of Lisbon, Portugal. Most of the participants were currently serving prison sentences (95.9%, n = 210), and a small percentage of participants (4.1%, n = 9) were on remand. On average, detainees had 8.73 years of education (SD = 3.11). A detailed description of the sociodemographic characteristics can be found in Table 1.

The data from this study are part of the cross-sectional research project *"Assessment for Effective Interventions: Reducing the Risk of Criminal Recidivism and Social Marginalization"*. To conduct this study, the Spanish version of the SEC–Q was adapted to the European Portuguese language. In line with Hernández et al.'s (2020) recommendations to ensure equivalence in content and the quality of the translation/adaptation process, the following steps were followed: (a) request the author's permission to translate and adapt the SEC–Q, (b) conduct an independent translation by two experts, (c) conduct a back-translation process with a third expert, and (d) carefully analyze the items and instructions translated and discuss any disparity between independent experts.

Table 1 Sociodemographic characteristics

Characteristics	M	SD
Age	37.21	10.61
Scholarity	8.73	3.11
	n	%
Minority Group		
No	169	79.72%
Yes	43	20.28%
Nationality		
Portuguese	188	86.64%
Non-Portuguese	29	13.36%
Marital Status		
Single	133	60.73%
Living together	34	15.53%
Married	22	10.05%
Divorced/Separated	29	13.24%
Widowed	1	0.46%
Offspring		
No	75	34.25%
Yes	144	65.75%

This study was authorized by the General Direction of Prison and Probation Services from the Ministry of Justice (GDPPS–MJ) to be conducted during 2022 in six prisons in the metropolitan area of Lisbon– the biggest metropolitan area of Portugal (in Carregueira, Caxias, Linhó, Lisboa, Montijo and Sintra). This research project was submitted and approved by the Ethics Committee of Ispa - Instituto Universitário (I/029/01/2020). The study adhered to stringent ethical standards, ensuring compliance with data protection laws.

GDPPS–MJ allowed us to assess up to a maximum of 10% of people detained in each prison facility. Each individual received their first invitation to participate in this study through the prison psychologist; this was done in a random manner. The data collection was done with small groups of participants who were invited to take part during the intervals for sports and other activities in the prison courtyards. Before the questionnaires were administered to participants, the aims of the project, the guarantee of confidentiality, and the voluntary nature of their participation were explained by a research team member who supervised the data collection process. The participants had the right to withdraw at any time, and the process was kept confidential. Informed consent was separated from the collected data to allow for de-identification. Data collection dates, methodology, and participant selection were coordinated with prison services and/or senior prison authorities (e.g., prison director; assistant prison director). The exclusion criteria included all the factors that could have an impact on participants' ability to respond to this questionnaire (e.g., severe psychopathology, not understanding Portuguese, not being able to read or write).

Instruments

Social and Emotional Competencies Questionnaire (SEC–Q)

This instrument is a multidimensional self-report measure that evaluates social and emotional competencies. It was developed and validated for the Spanish population by Zych et al. (2018b), demonstrating promising psychometric proprieties. In the last five years, SEC-Q was translated and validated in several countries, as previously aforementioned. In Portugal, the SEC–Q was validated for the general population by Lobo (2020). The SEC–Q has 16 items divided into four subscales: (a) Self-Awareness– defined as

the ability to focus on and comprehend one's own emotions, objectives, and values, while also recognizing the interconnection among one's thoughts, feelings, and actions (four items; e.g., "I know how to label my emotions"), (b) Self-Management and Motivation– defined as skillful regulation of one's emotions and behaviors to promote motivation and the attainment of personal objectives (three items; e.g., "I pursue my objectives despite the difficulties"), (c) Social-Awareness and Prosocial Behavior– defined as the ability to grasp the perspectives of others, as well as recognize various social contexts and norms (six items; e.g., "I pay attention to the needs of others") and (d) Decision-Making - defined as the capacity to entail thoughtful consideration of various options, bearing in mind the well-being of oneself and others (three items; e.g., "I make decisions analyzing carefully possible consequences"). Participants rate their level of agreement with each item using a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). Higher scores in each dimension represent higher levels of competence within that specific dimension. Previous research has offered support for the 16-item version of the SEC-Q in two community samples with good reliability indicators (Zych et al., 2018b; Lobo, 2020).

Brief self-control scale

This is a self-report unidimensional measure that aims to evaluate dispositional self-control, defined as the capacity of the self to modify or control one's inner responses, stop unwelcome behaviors before they start, and resist the impulse to act on them (Tangney et al., 2004), through 13 items (e.g., "I am good at resisting temptation", "I wish I had more self-discipline" [reverse scored]; Tangney et al., 2004). Respondents rate the degree to which each item/statement characterizes them on a 5-point Likert scale (1 = *not at all like me* to 5 = *very much like me*). The original version, developed in the United States, showed good psychometric proprieties among incarcerated males (Tangney et al., 2004). In Portugal, the Brief Self-Control Scale, when administered to forensic (e.g., Pechorro et al., 2021) and non-forensic samples (Cruz et al., 2013), showed appropriate psychometric properties. In the current study, this instrument showed acceptable levels of internal consistency ($\alpha = 0.69$, $\Omega = 0.64$).

Health risk behavior checklist

This checklist is a self-report measure that examines a broad list of health risk behaviors, including (1) drug use, (2) alcohol abuse, (3) smoking, (4) early smoking initiation, (5) self-injurious behavior, (6) attempted suicide, (7) sexual intercourse without a condom, (8) early sexual intercourse, (9) violent behavior, (10) carrying weapons, (11) inadequate meals, (12) not eating breakfast, (13) abuse of sugars, (14) failure to use a seat belt, and (15) failure to brush teeth (Pinto & Maia, 2015). Each question represents a different health risk behavior. The response style for almost all the items is yes/no or a 5-point Likert scale (0 = *never* to 4 = *very often*). A risky behavior is considered present with an affirmative response for yes/no items or a response of *sometimes*, *often*, or *very often*, in the case of health risk behaviors rated on a Likert scale. The exceptions were early smoking, alcohol and drug initiation, and early sexual intercourse; these risk behaviors were considered present if the participant had these experiences in a younger age (< 16 years).

It is possible to assess each health risk behavior individually, as an independent risk factor (e.g., "Do you smoke now?", "Have you ever used street drugs, such as marijuana, cocaine, heroin, methamphetamines, or ecstasy?"), or to create a global index of health risk behaviors by summing up the number of risk factors identified. This checklist was developed and tested in forensic and non-forensic populations by Pinto and Maia (2013). It was later added to the American Psychological Association's PsycTests database (Pinto & Maia, 2015).

Analytic strategy

Analyses were conducted using IBM SPSS Statistics (Version 28) and *R* software (R Core Team, 2015). To assess the factor structure of the SEC–Q in a sample of Portuguese detainees, the data analyses were performed using the *Lavaan* structural equation modeling program (Rosseel, 2012) installed in the R software (Version 0.6–17). Factor validity was assessed using confirmatory factor analysis (CFA). The CFA was conducted with robust estimation methods using polychoric correlations. The estimator used for conducting CFA was WLSMV (Weighted Least Square Mean and Variance Adjusted), due to its robustness and its assumption of non-normality, as it deals with ordinal variables (Gana & Broc, 2019). The WLSMV estimator utilized DWLS (Diagonally Weighted Least Squares) to estimate the model parameters (Rosseel, 2012). The assumptions for the CFA using the WLSMV were tested and fulfilled (e.g., items have an ordinal nature; the model is derived from a well-known and explicitly specified theoretical framework) (Rosseel, 2012).

The following indices were calculated and examined, in accordance with Gana and Broc's (2019) and Hu and Bentler's (1999) recommendations: (a) comparative fit index (CFI; $0.90 \leq CFI \leq 0.94$ is a good fit, and CFI ≥. 95 is a very good fit), (b) Tucker–Lewis Index (TLI; $0.90 \leq TLI \leq 0.94$ is a good fit, and TLI ≥. 95 is a very good fit), (c) Root-Mean-Square Error of Approximation (RMSEA;

$0.06 \leq RMSEA \leq 0.08$ is a good fit, and $RMSEA \leq 0.05$ is a very good fit and), (d) Satorra–Bentler χ^2 scaled test and its level of significance, and (e) standardized root-mean-square residual ($SRMR \leq 0.08$ is a good fit).

The remaining analyses were conducted in SPSS (version 28). Divergent and convergent validity between the SEC–Q subscales and health risk behaviors and self-control were tested using Spearman's correlation. We adhered to the recommendations set forth by Evers et al. (2013), considering a correlation coefficient of at least 0.30 as satisfactory. Pearson correlations were not used as some variables under examination (e.g., the Self-control), did not meet the assumption of normal distribution. Accordingly, the assumptions of Spearman's correlation were verified (e.g., all the variables are ordinal or interval in nature and exhibit monotonic relationships). Additionally, we calculated the Average Variance Extracted (AVE) (accepted threshold ≥ 0.50; Brown, 2015). Reliability was tested with McDonald's Ω, Cronbach's α, and Compositive Reliability (CP) with values > 0.70 as satisfactory (Brown, 2015; Goodboy & Martin, 2020). To explore item and dimension sensitivity, we computed detailed univariate statistics (e.g., means, medians, percentiles, skewness, kurtosis).

Lastly, we examined the role of social and emotional competencies in explaining health risk behaviors, controlling for potential cofounding variables for forensic populations (i.e., age, education, and minority group). Given that the outcome is overdispersed (the outcome variance is greater than the mean) and counts the variety of health risk behaviors experienced, a negative-binomial regression was employed to account for the inherent nature of this outcome. The assumptions to perform the negative binomial regression (e.g., absence of multicollinearity, independence of observations, the count nature of the outcome variable) were evaluated and satisfied.

Results

Confirmatory factor analysis

We conducted a CFA to examine the suitability of the SEC–Q theoretical structure in a forensic sample (Lobo, 2020; Zych et al., 2018b). The SEC–Q four-factor conceptual model initially proposed by Zych et al. (2018b) showed a good fit for this sample (SB $\chi^2 = 267.75$; df = 120; SBχ^2/df = 2.73; Robust CFI = 0.99; Robust TLI = 0.99; Robust RMSEA = 0.06; SRMR = 0.06). Standardized factor loadings between items and dimensions were ≥ 0.40 for all cases (Gana & Broc, 2019), ranging between $\lambda = 0.59$ and $\lambda = 0.91$ (see Fig. 1). In addition, the $\chi^2_{sb}/df \leq 5$ suggested an appropriate fit between the empirical data and the proposed factor structure (West et al., 2012).

Regarding the Average Variance Extracted, our findings revealed that all the dimensions exceeded the threshold of 0.50 (Brown, 2015): self-awareness AVE = 0.60, self-management AVE = 0.62, decision-making AVE = 0.69, and social awareness AVE = 0.55.

SEC-Q item and dimension descriptive statistics

Participants' responses to each item ranged between 0 and 4. The total scale displays a mean value of 3.24 ($SD = 0.56$), and the scores ranged between 2.64, in the 10th percentile and 3.88, in the 90th percentile. All the subscales showed a negative skewness and a positive kurtosis. For each

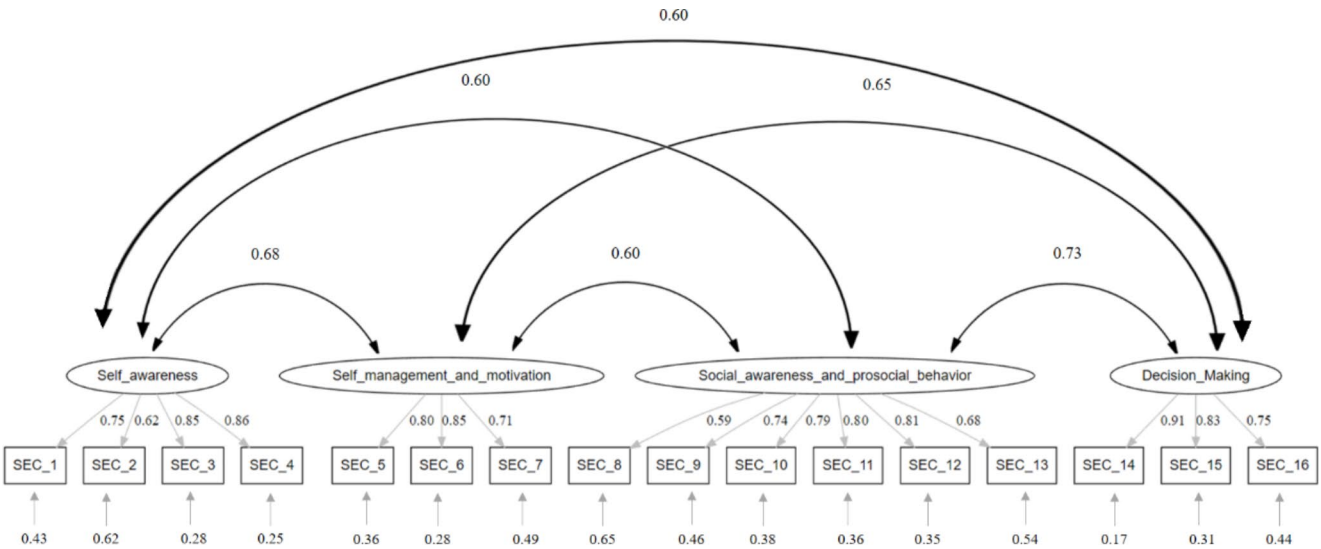

Fig. 1 Confirmatory factor analysis: standardized coefficients for the four-factor model of the SEC–Q. *Note*. SEC = social and emotional competences and item number

Table 2 Descriptive statistics of the SEC–Q

Items/Dimensions	M	SD	Mdn	Min	Max		Skewness		Kurtosis	
						α/Ω	Statistic	SE	Statistic	SE
SEC 1			3.00	.00	4.00		-1.18	0.17	1.54	0.33
SEC 2			3.00	.00	4.00		-1.43	0.16	1.97	0.33
SEC 3			4.00	.00	4.00		-1.61	0.16	2.86	0.33
SEC 4			4.00	.00	4.00		-1.80	0.17	4.07	0.33
SEC Self awareness	3.28	.72	3.25	.00	4.00	.81/.81	-1.62	0.17	4.35	0.33
SEC 5			4.00	.00	4.00		-1.45	0.16	1.95	0.33
SEC 6			4.00	.00	4.00		-2.14	0.17	4.60	0.33
SEC 7			4.00	.00	4.00		-2.42	0.17	6.30	0.33
SEC Self management and motivation	3.45	.71	3.67	.00	4.00	.74/.75	-2.11	0.17	5.86	0.33
SEC 8			3.00	.00	4.00		-0.66	0.17	0.01	0.33
SEC 9			3.00	.00	4.00		-0.90	0.17	0.70	0.33
SEC 10			3.00	.00	4.00		-1.05	0.17	1.14	0.33
SEC 11			4.00	.00	4.00		-1.51	0.17	2.55	0.33
SEC 12			4.00	.00	4.00		-1.54	0.16	2.98	0.33
SEC 13			4.00	.00	4.00		-1.60	0.17	3.72	0.33
SEC Social-awareness and prosocial behavior	3.21	.62	3.33	.00	4.00	.80/.80	-1.11	0.17	3.14	0.33
SEC 14			3.00	.00	4.00		-0.89	0.17	0.64	0.33
SEC 15			3.00	.00	4.00		-1.07	0.16	0.80	0.33
SEC 16			3.00	.00	4.00		-0.98	0.16	0.84	0.33
SEC Decision Making	3.06	.83	3.00	.00	4.00	.81/.82	-1.10	0.17	1.83	0.33
SEC Total	3.24	.56	3.31	.00	4.00	.90/.89	-1.85	0.17	7.72	0.34

SE Standard Error, *M* mean, *SD* standard deviation, *Mdn* Median, *Min* Minimum, *Max* maximum, *SEC* social and emotional competences + item number

Table 3 Percentiles for each dimension of the SEC–Q

	Percentiles								
	10	20	30	40	50	60	70	80	90
SEC Self-awareness	2.50	2.75	3.00	3.25	3.25	3.50	3.75	4.00	4.00
SEC Self-management and motivation	2.67	3.00	3.33	3.33	3.67	3.67	4.00	4.00	4.00
SEC Social awareness and prosocial behavior	2.50	2.67	2.83	3.00	3.33	3.50	3.67	3.83	4.00
SEC Decision Making	2.00	2.33	2.67	3.00	3.00	3.33	3.67	4.00	4.00
SEC Total	2.64	2.81	3.00	3.19	3.31	3.44	3.56	3.69	3.88

SEC social and emotional competencies scale

subscale, the mean values ranged between 3.06 (Decision-Making) and 3.45 (Self-Management and Motivation). Detailed univariate statistics for SEC–Q items and dimensions are provided in Table 2, and percentiles are displayed in Table 3.

Reliability

All subscales and SEC–Q total displayed acceptable levels of reliability, according to Cronbach's α and McDonald's Ω coefficients. The SEC–Q total showed an excellent level of reliability, while the remaining dimensions displayed levels of internal consistency ranging between satisfactory to good (see Table 3). In addition, the Composite Reliability scores were robust for all the assessed dimensions, with values above the recommended threshold (> 0.70; Brown, 2015), namely CR = 0.86 for self-awareness, CR = 0.83 for self-management, CR = 0.88 for social awareness, and CR = 0.87 for decision-making.

Convergent and divergent validity

Regarding convergent and divergent validity, Spearman correlations between SEC–Q total score and scores on the Self-control dimension showed a positive association with a moderate effect size (r_s = 0.45, p <.001). All subscales of SEC–Q were also associated with the self-control dimension, ranging between r_s = 0.23, p <.001, for the Self-Management and Motivation subscale to r_s = 0.41, p <.001, for the Decision-Making subscale. Social and emotional competencies are theoretically expected to be inversely associated with health risk behaviors. All the SEC–Q dimensions, except for the Self-Awareness subscale, displayed negative and statistically significant correlations with this index; the

effect sizes ranged between r_s=–0.17, p<.001, for Self-Management and Motivation and r_s = − 0.25, p<.001, for SEC–Q total. Within the SEC–Q subscales, correlations were positive, ranging between r_s= 0.39, p<.001 (for the correlation between Self-Management and Motivation and Decision-Making), and r_s= 0.50, p<.001 (for the correlation between Self-Management and Motivation and Social-Awareness and Prosocial Behavior). A detailed description of this correlation matrix is given in Table 4.

Relationship between SEC-Q dimensions and health risk behaviors: negative binomial regression

Results from a negative binomial regression that examined the relationship between SEC-Q dimensions and health risk behaviors are presented in Table S1 (supplementary file). Results showed that younger age (Incident Rate Ratio (IRR) = 0.99, p<.001), lower education level (IRR = 0.98, p=.03) and lower social awareness and prosocial behavior (IRR = 0.85, p=.01) predicted a greater number of health risk behaviors. The remaining variables were not statistically significant. The model fit was evaluated, yielding a Log-likelihood of -560.94, a Bayesian Information Criterion (BIC) of 1163.518, and an Akaike's Information Criterion (AIC) of 1137.89.

Discussion

The aim of this study was to assess the psychometric properties of the SEC-Q in a sample of Portuguese male inmates, and to examine the associations between social and emotional competences and health risk behaviors within this context. Regarding the first objective of this study, the SEC-Q has shown promising psychometric properties in this Portuguese sample of male inmates. A four-factor structure found in the original study (Zych et al., 2018b), and in validation studies with other samples (Figueroa-Varela & Rodríguez Vera, 2023; Lobo, 2020) was confirmed in the current study. Subscales of the questionnaire include all the components of social and emotional competencies suggested by CASEL (2012) such as self-awareness, self-management, social awareness, relationship skills and responsible decision-making. Reliability coefficients such as McDonald´s omega and Cronbach´s alphas were also satisfactory for each subscale and the total questionnaire. Additionally, correlation analyses showed good divergent and convergent validity. The dimensions of the SEC-Q exhibited positive associations with self-control, a construct that is theoretically expected to be related to each dimension. Conversely, negative associations were observed between all dimensions of the SEC-Q (exception being the self-awareness dimension) and health risk behaviors.

Concerning our second objective, the correlations indicate a significant link between a low level of social and emotional competencies and an increased propensity for engaging in health-risk behaviors. In the multivariate model, adjusted for sociodemographic characteristic, most dimensions of SEC-Q were not associated with health risk behaviors. However, one dimension - social awareness and prosocial behavior– was significantly associated with health risk behaviors suggesting that it can be an important dimension. Lower levels of social awareness and prosocial behavior appear to increase the likelihood of engaging in health risk behaviors. These findings seem to suggest that individuals with stronger social awareness and more prosocial behaviors may be better equipped to make healthier choices due to their understanding of the broader consequences of their actions for them and for others. Social awareness and prosocial behavior include the ability to understand the perspectives of others and be empathic, as well as to recognize various social contexts and norms (Durlak et al., 2015). Thus, it is plausible that individuals exhibiting greater social awareness and prosocial behavior experience a strengthening of social bonds and an enhancement of social support networks, which in turn contribute to the reduction of health risk behaviors (Spohr et al., 2016). This association underscores the importance of interpersonal connections and community support in mitigating behaviors that compromise health by reinforcing positive health behaviors and promoting resilience against stressors that might otherwise lead to health risk behavior (e.g., substance abuse).

Additionally, prosocial behaviors are intimately related to self-control, particularly because they involve actions intended to benefit others, sometimes at a personal cost. This facet of prosocial behavior is related to the ability to manage one's impulses, delay gratification, and prioritize long-term benefits over immediate rewards. Such self-regulatory

Table 4 Spearman correlations between SEC–Q dimensions, self-control and health risk behaviors

	Self-Control	Health Risk Behavior	SA	SMM	SAPB	DM
SEC Total	0.45**	− 0.25**				
Self-awareness (SA)	0.27**	− 0.03	---			
Self-management and motivation (SMM)	0.23**	− 0.17*	0.39**	---		
Social awareness and prosocial behavior (SAPB)	0.41**	− 0.24**	0.39**	0.50**	---	
Decision Making (DM)	0.37**	− 0.18*	0.39**	0.38**	0.46**	---

* p<.05; ** p<.001

capacities are crucial, not only for engaging in prosocial actions but also for driving individual choices related to health risk behaviors, with higher self-control being associated with engaging in less health risk behaviors (e.g., Friehe & Schildberg-Hörisch, 2017). Lastly, social awareness and prosocial behavior may buffer the negative effects of stressors on psychological well-being, as affiliative behaviors serve as important resources for managing stress (Raposa et al., 2016). These types of resources and adaptive coping mechanisms can then reduce the likelihood of engaging in health risk behaviors.

Thus, our findings suggest that fostering social awareness and prosocial behavior might be a promising avenue for promoting healthier decision-making and reducing the prevalence of health-risk behaviors, especially among incarcerated males.

Limitations and future research

This study has some important strengths such as a broad sample of incarcerated males, the use of a well-known instrument with a relatively low number of items, and the use of other instruments to describe the relation between social and emotional competencies and other constructs. Nevertheless, it also has some limitations. This study is limited by its exclusive focus on incarcerated males and the lack of of a pilot study to ensure the scale's applicability due to logistic reasons. Other potential limitation of this study is its exclusive focus on prisons from the main metropolitan area of Lisbon. This narrow geographic scope may restrict the generalizability of the findings to a broader population of people incarcerated in different regions. Consequently, the findings may not represent the experiences, behaviors, or outcomes applicable to all incarcerated individuals, particularly incarcerated females.

In addition, it is important to note that this study did not assess criterion validity and test-retest reliability. To enhance the robustness and generalizability of findings, future research endeavors should consider further exploring the factor and construct structure of the SEC-Q within different forensic samples (e.g., incarcerated females, other justice-involved populations) and examine its criterion validity and test-retest reliability.

Finally, other limitations included the restricted sample size and potential biases associated with volunteer participation among this specific population and its relationship with the levels of prosocial behavior. Therefore, there is a need to continuously increase the representativity of research in this field and simultaneously to find appropriate ways to maximize justice-involved male adherence to these types of studies, in order to mitigate these limitations.

Practical implications

The current study has some important implications for policy and practice. This study represents an important foundational exploration of social and emotional competencies among incarcerated individuals, offering initial psychometric evidence of these competencies within this population. Furthermore, it facilitates the initiation of further research aimed at examining the significance of these competencies in the context of incarceration. Additionally, this investigation provides a valid tool for evaluating the effectiveness of interventions designed to enhance these competencies, assessing their relevance and potential to improve outcomes for incarcerated individuals.

Future studies should also explore other associations between social and emotional competencies and other relevant factors among incarcerated people (e.g., mental health issues, interpersonal problems, adherence to intervention programs violent behavior while incarcerated). Since social and emotional competencies are considered key to life success, the current study highlights the need to further conduct research and practice focused on social and emotional competencies in incarcerated people, considering their reentry in society and the need for the justice measures to effectively promote a resocialization process.

Conclusions

This study serves as one of the first investigations into the social and emotional competencies among incarcerated individuals, providing psychometric evidence within this population. Whereas this research marks a significant step toward filling the critical void in validated tools for assessing these competencies in correctional settings, further studies are necessary to confirm these findings (e.g., criterion-related validity, test-retest reliability) and refine the SEC-Q as an assessment measure for forensic populations.

By contributing to the adaptation and validation of the SEC-Q for incarcerated individuals, this study supports future research aimed at examining and bolstering these essential human competencies, which are particularly important among incarcerated individuals, not only to enhance individual outcomes but also to contribute to broader societal benefits, including reduced recidivism and facilitated reintegration into the community.

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Data availability Data presented in this study is available on request from the corresponding author. The data is not publicly available due to privacy and ethical restrictions.

Declarations

Institutional review board All subjects gave their informed consent for inclusion before they participated in the study. All data was obtained in a confidential form and data are not externally accessible. The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the ISPA Ethics Committee.

Informed consent Informed consent was obtained from all subjects involved in the study.

Conflict of interest The authors declare no conflicts of interest or competing interests to disclose.

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