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Socio-emotional competencies of Colombian high school students in face-to-face and virtual environments

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Abstract | **Introduction:** Socio-emotional competencies in face-to-face communication are an essential tool for personal and social adjustment from an early age. Online communication has become equally important, especially in adolescence. It is known that its characteristics require specific skills, but there is a lack of studies that analyse the relationship that exists between generally acquired socio-emotional skills and those necessary for online communication. Hence, this research is focused on analysing how offline socio-emotional skills predict these online competencies in girls and boys in a differentiated way. **Method:** This study included 478 Secondary Education students between 10 and 14 years of age. This is a cross-sectional study that used Path Analysis differentiated by sex, with intentional and non-probabilistic sampling. To assess socio-emotional competencies, we used the ESCQ-21 instrument for generally assessed socio-emotional competencies and the *e-COM* questionnaire to quantify online socio-emotional competencies. **Results:** The explanatory model indicates that socio-emotional competencies are partially transferred to the online environment in both sexes, especially *Perception and comprehension*. Furthermore, it is suggested that *E-self-control of impulsiveness* and *E-emotional autonomy* require specific development in that environment. **Conclusions:** It seems reasonable to include online experiences that encourage development in online spaces. The repercussions for the educational field are analysed.

Keywords: Emotional competencies, social competencies, online emotions, offline emotions, teenagers.

Competencias socioemocionales de estudiantes de secundaria colombianos en entornos presenciales y virtuales

Resumen | **Introducción:** Las competencias socioemocionales en la comunicación cara a cara son herramientas esenciales para el ajuste personal y social desde temprana edad. La comunicación en línea ha adquirido igual importancia, especialmente durante la adolescencia. Si bien se reconoce que sus características requieren habilidades específicas, hay escasez de estudios que analicen la relación existente entre las habilidades socioemocionales generalmente adquiridas y aquellas necesarias para la comunicación en línea. Por tanto, esta investigación tiene el objetivo de analizar cómo las habilidades socioemocionales fuera de línea predicen las competencias en línea entre chicas y chicos de manera diferenciada. **Método:** Este estudio incluyó a 478 estudiantes de educación secundaria con edades entre los 10 y 14 años. Este es un estudio transversal que utilizó el Path Analysis diferenciado por sexo, con muestreo intencional y no probabilístico. Para evaluar las competencias socioemocionales, se utilizó el instrumento ESCQ-21 para las competencias socioemocionales generales y

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el cuestionario *e-COM* para cuantificar las competencias socioemocionales en línea. **Resultados:** El modelo explicativo indica que las competencias socioemocionales se transfieren parcialmente al entorno en línea en ambos sexos, especialmente la *Percepción y comprensión emocional*. Además, se sugiere que el *E-autocontrol de la impulsividad y la E-autonomía emocional* requieren un desarrollo específico en ese entorno. **Conclusiones:** Parece razonable incorporar y mejorar las experiencias en línea fomentando el desarrollo de competencias socioemocionales para este contexto. Se examinan las repercusiones para el ámbito educativo.

Palabras clave: Competencias emocionales, competencias sociales, emociones en línea, emociones fuera de línea, adolescentes.

In today's digital age, the rapid expansion of online platforms and information technologies has become an integral part of our lives. This paradigm shift presents both possibilities and challenges, emphasising the need to discuss *Socio-emotional competencies*. Understanding the interaction between offline and online competencies is crucial for fostering positive social interactions and improving the well-being of teenagers in the digital age (Yudes et al., 2022). Communication through social environments that support these competencies is essential, with social networks currently playing a predominant role (Müller et al., 2020). These online spaces require specific interaction codes due to features such as immediacy, anonymity, the formation of geographically diverse communities, and the use of symbols such as images and emoticons (Coyne et al., 2017; Hollenstein & Colasante, 2020; Mantzouranis et al., 2019). Consequently, online spaces offer opportunities for self-expression and social exchange, necessitating the development of socio-emotional competencies tailored to online environments (Cebollero-Salinas et al., 2022a). Exploring the relationships between *Offline* and *Online socio-emotional competencies* is vital for understanding the virtual world's impact on teenagers' socio-emotional development.

To comprehend these relationships, it is crucial to define socio-emotional competencies. The literature incorporates the concept of "socio-emotional competencies" within the framework of emotional intelligence, characterizing them as a set of specific skills which involve perceiving, expressing, and managing emotions to facilitate personal growth (Bisquerra et al., 2007; Mayer et al., 2016; Schoon, 2021). Extensive research supports the benefits of socio-emotional competencies, as they predict academic performance (Bosancianu et al., 2013), emotional balance (Sánchez-Álvarez et al., 2020), positive emotional expressions, cognitive flexibility, prosocial behaviours, effectiveness in social relationships, and psychological resources (Han et al., 2019; Kang et al., 2022; Rhoades et al., 2011; Weissberg et al., 2015). Concurrently, the concept of *Socio-emotional e-competencies* (*e-COM*) has emerged, referring to the knowledge, skills, and attitudes necessary to understand and manage emotions in the online environment for fostering positive relationships (Cebollero-Salinas et al., 2022b; Lian et al., 2022; Mula-Falcón & Cruz-González, 2023). Previous research has highlighted the impact of e-*COM* on online behaviours, time management, and proper interaction in virtual environments (Cebollero-Salinas et al., 2022a; Rodríguez-Rodríguez et al., 2021). Specific, emotional expression and facilitation are specific factors in the online environment that enhance cyber risks such as phubbing, cyber-gossip, and multitasking but certain *e-COM* such as *Emotional e-regulation, E-self-control of impulsiveness,* and *E- emotional autonomy* is negatively associated with these risks (Cebollero-Salinas et al., 2022a; Lian et al., 2022; Mula-Falcón & Cruz González, 2023). Thus, there is a need to understand the relationships between *Offline* and *Online socio-emotional competencies* and explore their specificities.

During adolescence, individuals need to develop both *Offline* and *Online socio-emotional competencies* to achieve psychological and social adjustment (Cebollero-Salinas et al., 2022b). Interventions during this stage can have a significant impact, especially for vulnerable populations such as adolescents (Gutman & Schoon, 2016). Offline competencies serve as the foundation for online competencies, and an individual's offline competencies may be reflected in their online behaviour, as shown in studies (Cîrțiță-Buzoianu et al., 2022; Erreygers et al., 2018; Mantzouranis et al., 2019). For instance, teenagers who exhibit prosocial behaviour online are likely to do the same offline, while those who engage in bullying or show limited emotional intelligence online may behave similarly offline (Häkkinen et al., 2017; Hinduja & Patchin, 2022; Valkenburg & Peter, 2013). Research in the field suggests that a high level of *Socio-emotional competencies* and offline interaction are negatively correlated with cyberaggression and cyber-victimisation (Marín-López et al., 2020). Some studies have predicted that girls with low levels of emotional intelligence may be more likely to experience cyber-victimisation, while others have found that a regulation capacity could help reduce aggressive behaviours, especially in boys, and improve self-regulatory competencies in girls (Rey et al., 2018; Yudes et al., 2022).

Moreover, some authors such as Nasaescu et al. (2018) and Marino et al. (2020), maintain that high levels of offline socio-emotional competencies are positively associated with the use of emotions online. Conversely, the unregulated use of emotional content online may result in abusive uses of social networks and technological media in general, suggesting that emotional regulation is crucial. The discrepancies between online and offline environments are fascinating, particularly since these skills typically develop during adolescence (Chen et al., 2016). Despite these observations, there is a paucity of research in this area, and only a limited number of

studies have examined *Offline* and *Online socio-emotional competencies* concurrently.

Observing Colombian adolescents, these findings are also applicable. The socio-emotional reality of these young people engaging online is attracting increasing attention. Results from studies conducted on Colombian teenagers in the socio-emotional field are concrete and frequently associated with the limitations of emotional resources. For instance, there is a high incidence of victimisation and harassment, especially among fifth to ninth-grade students (Hernández, 2019). This makes Colombia one of the Latin American countries with the highest rates of bullying. It has also been observed that rural areas have received limited attention (Velásquez et al., 2015), where studies show that women score higher than men in terms of perceived emotional intelligence. However, in general, students are found to have limited emotional resources (Herrera et al., 2017). Furthermore, analysis of variance has identified differentiated patterns in the socio-emotional competence phenomenon of students, with a particular emphasis on the mood dimension (Romera et al., 2017).

On the other hand, studies conducted in the online context with Colombian students reveal that cyberbullying is a psychosocial phenomenon that needs to be studied and addressed (Herrera et al., 2017). Students who adhere to norms are less likely to engage in cyberbullying, indicating a higher perceived risk of punishment. There may be a cultural pattern in response to this phenomenon. Studies indicate a lack of emotional resources in Colombian adolescents between the ages of 10 and 19, making them vulnerable to mental health issues (Romera et al., 2021). However, there appears to be a deficiency in research in the socio-emotional field in Colombia in general (Perez & Bahamon-Muñeton, 2023). This hinders the determination of relevant findings that could help address the problems faced by Colombian adolescents.

Theoretical arguments suggest that *Offline socio-emotional competencies* are related to *e-COM* (*Online socio-emotional competencies*), but there is limited empirical evidence in this field especially in Colombia. This research aims to address this gap and investigate the potential differences in offline competencies and *e-COM* between genders. Adolescents live in both online and offline environments simultaneously, making it essential to understand their behaviours in order to suggest educational interventions tailored to their socialisation environments. Based on the literature review, this research aims to answer the following questions: Is there a direct and positive relationship between *Offline socio-emotional competencies* and *Online socio-emotional competencies* in Colombian students, supporting the hypothesis that offline competencies predict online competencies? To what extent do *Offline socio-emotional competencies* manifest in *Online socio-emotional competencies*, and how can these similarities or differences inform specific educational interventions tailored to the online and offline socialisation environments of adolescents?

Additionally, the study explores potential differences *in Offline competencies* and *e-COM* between the sexes. Our hypothesis predicts a direct and positive relationship between *Offline socio-emotional competencies* and *e-COM* in Colombian students. We expect that *e-COM* are an extension of offline competencies, with shared dimensions exhibiting similarity. In order to make comparisons of sex and test this hypothesis, a path model was constructed, treating socio-emotional competen-

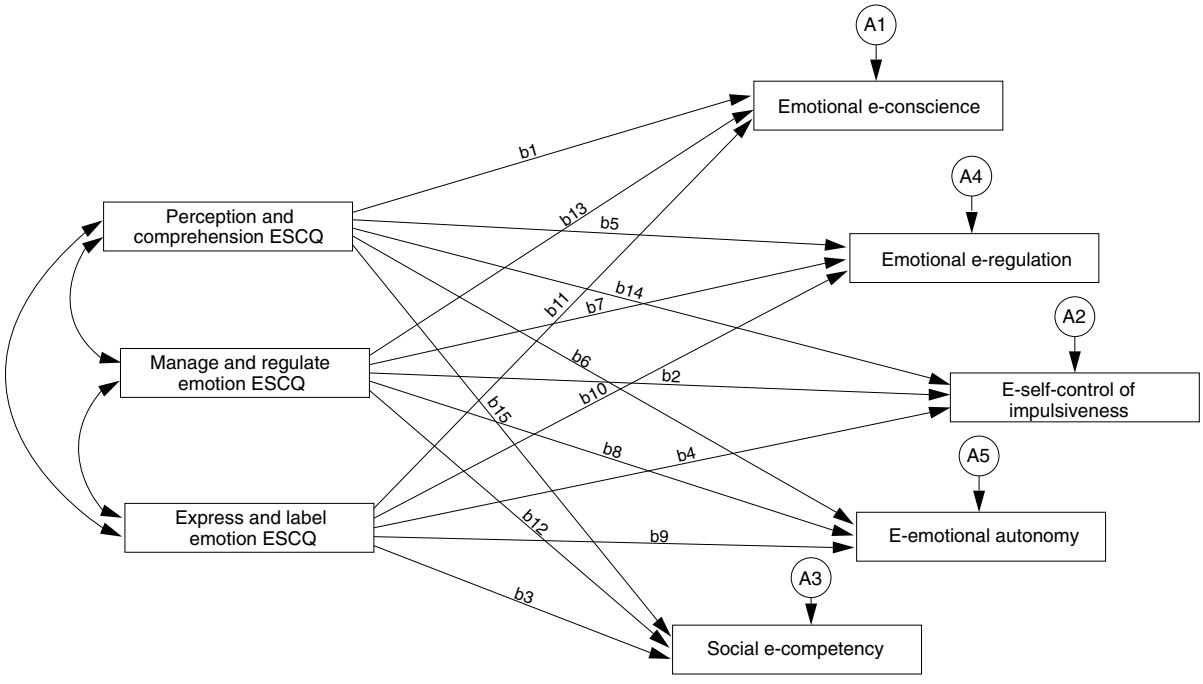

Figure 1. Theoretical model

cies as exogenous variables and *e-COM* as endogenous variables. The proposed model is depicted in Figure 1.

Method

Design and participants

This study utilised a descriptive, cross-sectional design. The sample consisted of 478 students between 10 and 14 years of age (M = 11.99, SD = 1.42). The sample included both male (59.8%) and female (40.2%) students, with a significant relationship between age and gender (χ^2 = 26.299, p < .001). As seen on Table 1, the proportion of boys (83%) is higher in the group of 14-year-olds than in the rest of the sample. All participants attended private schools in Bogotá, Colombia. The sample was selected using non-probabilistic convenience sampling, considering inclusion and exclusion criteria such as the absence of reported pathological conditions hindering participation.

Table 1. Distribution of the sample according to gender and age

Age	Boys	%	Girls	%	Total
10 years	54	50.00%	54	50.00%	108
11 years	45	54.88%	37	45.12%	82
12 years	40	51.95%	37	48.05%	77
13 years	80	61.07%	51	38.93%	131
14 years	67	83.75%	13	16.25%	80

Instruments

Emotional Skills and Competencies Questionnaire (ESCQ-21). *Offline socio-emotional competencies* were assessed using the Emotional Skills and Competencies Questionnaire (Takšić et al., 2009), employing the reduced version (*ESCQ-21*) adapted for the Spanish context by Schoeps et al. (2019) and further adapted for the Colombian context (Cardona-Isaza, 2021). The questionnaire consists of 21 items measured on a Likert-type scale ranging from 1 (never) to 6 (always). The *ESCQ-21* comprises the following subscales: *Perception and comprehension* (α = .71/.58), *Express and label emotion* (α = .77/.68), and *Manage and regulate emotion* (α = .76/.66). Higher scores indicate higher levels of *Socio-emotional competence*.

Socio-Emotional E-Competencies Questionnaire (e-COM). This questionnaire, originally developed by (Cebollero-Salinas et al., 2022b), measures *Online socio-emotional competencies*, particularly experiences in social networks. The validated Colombian version comprises 25 items across five dimensions: *Emotional e-conscience* (α = .752), *Emotional e-regulation* (α = .761), *E-self-control of impulsiveness* (α = .577), *E- emotional autonomy* (α = .786), and *Social e-competency* (α = .633). Participants responded using a 11-point Likert scale (1 = disagree, 10 = Totally agree).

Procedure

The research received all necessary permits for scientific work with adolescents from the Ethical Code of Psychologists in Colombia (2000). Meetings were held with school directors to obtain permission and schedule data collection. All participants and their legal guardians provided informed consent and assent forms. The questionnaires were administered electronically using Google Forms, with participants individually completing the tests on computers. The average completion time was approximately 20 minutes.

This study was carried out following the recommendations of the Council of the British Educational Research Association in the second edition of their Ethical Guidelines for Educational Research BERA (2019). The study was approved by the Academic Committee of the Psychology Doctoral Programme, University of Zaragoza (8/07/2022).

Data analysis

The analysis of the results was conducted in two phases. In the first phase, a descriptive analysis of the mean scores of the scales used was implemented, differentiating by sex. The aim was to explore the results and test for differences between boys and girls. To assess these differences, mean comparisons using ANOVA were employed and for all cases, the effect size was calculated using eta squared. Additionally, paired t-tests were conducted to examine whether participants reported different levels of emotional competencies and *e-COM*. Correlations were obtained among all the factor scores of the variables in both the girl's and boys' subsamples. A comparison was then made between them using Fisher's Z transformation of the correlation coefficient.

In the second phase, the hypothetical model of causal structure was tested using Path Analysis. The Path model, designed based on a review of the previous literature and represented in Figure 1, assumes the main hypothesis of this study, which posits a direct relationship between offline emotional competencies and *e-COM*. The latter is considered an extension of the former. In this model, emotional competencies act as exogenous variables, while *e-COM* serve as endogenous variables. The model was tested using IBM-SPSS software and its AMOS extension (v.26). The estimation method chosen to test the measurement model was asymptotically distribution-free (ADF), which is recommended for scales that cannot be quantitatively measured and for which multivariate normality cannot be assumed (Byrne, 2010). In this case, the Mardia coefficient (7.184, CR. 3.935) slightly exceeds the values that assume multivariate normality (5.99), with the variable "Express and label" breaking the normal distribution (kurtosis .941, CR = 2.661). The goodness of fit of the model was assessed using the χ^2 test, the χ^2/degrees of freedom ratio (DCIM/GL in Amos), RMSEA and GFI indicators, CFI, and their critical levels. Multi-group analysis was adopted to verify the hypothesis of whether the interviewees of different genders could demonstrate significant differences in influencing relationships. To differentiate between models, a series of nested models were compared, and the results are described in the results section. To contrast the differences between the groups, the models were compared by calculating the differences in χ^2 and the AIC index (Byrne, 2010) and differences in CFI ac-

cording to Dimitrov (2010). According to the latter author, differences of less than -0.01 in the CFI between a constrained and an unconstrained model ($CFI_{constr.}$ - $CFI_{unconstr.}$) indicate differences between the models, making it necessary to reject the constrained model. Conversely, positive differences indicate invariance between the models.

Results

Table 2. presents the comparison of values on the scales considered between boys and girls. Initially, it was observed that the mean values were in the medium-high range for all three scales of the *Emotional Skills and Competencies Questionnaire (ESCQ-21)*. The group scores ranged from 28.21 to 29.97, while the theoretical mean of the scale was expected to be 22.5 points. When comparing the scale values, it was found that there were no statistically significant differences between *Manage and regulate emotion* vs. *Express and label emotion* (Mean difference-d- = -.07, t = .290, p = .772). However, both scores were slightly higher than *Perception and comprehension* (d = .168, t = 8.571, p < .001, $\eta 2$ = .130 and d = 1.757, t = 8.461, p < .001, $\eta 2$ = .130). In terms of gender (Table 2), boys (M = 29.02) scored slightly higher than girls (M = 26.99) in *Perception and comprehension* and *Manage and Regulate emotions* (31.01 vs. 28.21).

Regarding *e-COM*, the sample showed significant differences, based on the type of *e-COM* considered. Adolescents reported higher competencies in *Emotional e-regulation* (M = 36.23) and *Emotional e-conscience* (M = 34.70), with significant differences observed for *Social e-competence* (M = 27.35). However, they felt less competent in *E- emotional autonomy* (M = 17.42) and *E-self-control of impulsiveness* (M = 13.94). While the differences between the five *e-COM* were not significant in all cases, differences between boys and girls were observed in the case of *E-emotional autonomy* and *Social e-competency* (p < .001). Boys showed much lower *E-emotional autonomy* (M = 15.11) compared to girls (M = 20.86), and *Social e-competency* was also lower in boys (M = 26.59) versus girls (M = 28.47).

Concerning the relationship between offline emotional competencies and *e-COM*, the correlation Table (Table 3), shows moderate-to-low relationships between the three emotional competencies *(Perception and comprehension, Manage and regulate emotion, and Express and label emotion)* and three of the five *e-COM (Emotional e-conscience, Emotional e-regulation, and Social e-competency)* (boys: r between .365 and .265; girls: r .343 - .174). In these cases, no significant differences (Fisher's Z transformation) were found when comparing the correlations between the two groups.

Table 2. ANOVA of emotional variables and sex

ESCQ-21	Gender	*N*	Mean	*SD*	*F*	*p*	$\eta 2$
Perception and comprehension	Male	286	29.02	5.54	16.707	.000	.034
	Female	192	26.99	5.82			
	Total	478	28.21	5.73			
Manage and regulate	Male	286	31.01	5.85	28.456	.000	.057
	Female	192	28.21	6.36			
	Total	478	29.89	6.21			
Express and label	Male	286	30.14	6.02	.738	.391	.002
	Female	192	29.71	5.75			
	Total	478	29.97	5.91			
e-COM	**Gender**	***N***	**Mean**	***SD***	***F***	***p***	$\eta 2$
Emotional e-conscience	Male	286	34.77	10.42	.055	.815	.000
	Female	192	34.61	8.90			
	Total	478	34.70	9.83			
Emotional e-regulation	Male	286	35.61	10.84	1.190	.276	.002
	Female	192	37.14	10.53			
	Total	478	36.23	10.73			
E-self-control of impulsiveness	Male	286	13.62	7.64	.554	.457	.001
	Female	192	14.42	7.10			
	Total	478	13.94	7.43			
E- emotional autonomy	Male	286	15.11	10.41	26.695	.000	.053
	Female	192	20.86	11.35			
	Total	478	17.42	11.15			
Social e-competency	Male	286	26.59	9.56	4.590	.033	.010
	Female	192	28.47	8.84			
	Total	478	27.35	9.31			

Table 3. Correlations between the e-COM and ESCQ-21 and the emotional competencies themselves

	Perception and Comprehension	Manage and regulate	Express and label	Emotional e-conscience	Emotional e-regulation	E-self-control of impulsiveness	E- emotional autonomy	Social e-competency
Perception and Comprehension	1.000	.713**	.632**	.325**	.343**	.097	.011	.316**
Manage and regulate	.680**	1.000	.469**	.315**	.343**	.054	-.017	.174*
Express and label	.684**	.505**	1.000	.288**	.212**	.207**	.054	.323**
Emotional e-conscience	.365**	.266**	.324**	1.000	.412**	.127	.088	.327**
Emotional e-regulation	.345**	.341**	.265**	.349**	1.000	-.040	-.048	.229**
E-self-control of impulsiveness	.017	-.073	.039	.071	-.098	1.000	.366**	.244**
E- emotional autonomy	-.018	-.126*	.039	-.017	-.085	.512**	1.000	.200**
Social e-competency	.298**	.259**	.268**	.459**	.394**	.212**	.163**	1.000

Note: Girls N = 192; Boys = 286 * $p < .05$; ** $p < .01$.

E-self-control of impulsiveness only showed a significant correlation with *Express and label emotion* in girls (r = .207), and *E- emotional autonomy.* Furthermore*, E- emotional autonomy* was only related to *Manage and regulate emotion* in boys, with an inverse relationship (r = -.126). The remaining correlations between the *e-COM* and the emotional competencies themselves are summarised on Table 3.

Regarding the results of the path analysis, the initial model (Model 1) showed a poor fit, as indicated on Table 4. Several non-significant regression weights were present in the model, and modification indices suggested establishing covariances between the estimation errors of the endogenous variables, consistent with the relationships between these variables already established on Table 4. Therefore, a new model (Model 2) was tested with covariances between these variables. Specifically, four relationships were fixed: A1-A3, A1-A4, A2-A5, and A3-A4. This new model showed a good fit, assuming several equality constraints between the groups. The Structural Covariance Model 2 showed a better fit than the model assuming all restrictions ($\Delta\chi^2$ = 17.136, *Ddf* = 5, p = .004; ΔCFI = -.04) and did not worsen the fit compared to the model assuming only invariance in the regression weights (structural weights) ($\Delta\chi^2$ = 5.304, *Ddf* = 6, p = .505; ΔCFI = .002). Therefore, in a third phase of analysis, the Structural Covariance model was taken as a reference, and the relationships between non-significant variables were set to zero, resulting in the model represented in Figure 2. This model demonstrated optimal fit (χ^2 = 62.773; *df* = 37; p = .005; χ^2/df = 1.697, TLI = .872, GFI = .915; RMSEA = .038), with all significant relationships. Although the possibility of different relationships between boys and girls was considered for this model, none of these options improved the model fit (Table 4, Model 2 – With covariances between endogenous variable errors and setting to 3 non-significant relations). Therefore, it is assumed that the differences in regression weights for boys and girls are not statistically different. Thus, the AIC index value reaches its lowest value (132.773) in the *No sig + structural cov model*, which assumes equal regression weights for boys and girls, when the regression weights are set to zero in both groups and the regression weights are not statistically significant. Comparisons between models using $\Delta\chi^2$ does not support differences between groups either, as when models can be compared, larger differences are not statistically significant (e.g., $\Delta\chi^2$ No Sig + Structural cov- Free b3 = .579, *df.* = 1, p = .447). The comparison on Free b8, with the same degrees of freedom, shows that the latter model increases the value of (χ^2 + 9.916). Similarly, comparisons using CFI produce positive values in all cases (values of the models with free parameters less than .915, which would be the constrained model for comparison).

The results of the model indicate that not all *e-COM* have the same relationship with socio-emotional competencies offline. The model explains a greater percentage of the variance in *Emotional e-conscience* (19.5% in girls and 14.5% in boys) and *Emotional e-regulation* (17% in girls and 16.5% in boys), and to a lesser extent, *Social e-competency* (15.4% in girls and 13.9% in boys). For *E-emotional autonomy*, the percentage of explained variance significantly decreases, reaching 1.1% for girls and 1.5% for boys. Finally, none of the variables are related to *E-self-control of impulsiveness.* The predictors are also not the same and do not have the same relevance. *Perception and comprehension* are related to three *e-COM*: *Emotional e-conscience* (γgirls = .303; γboys = .263), *E- emotional autonomy* (γgirls = .245; γboys = .244), and *Social e-competency* (γgirls = .228; γboys = .219). *Express and label emotion,* on the other hand, is related to three other *e-COM*, but with slightly lower weights, contributing to *Emotional e-conscience* (γgirls = .170; γboys = .144), *E- emotional autonomy* (γgirls = .103; γboys = .124), and

Table 4. Fit of the valued path models

Model	CMIN	DF	*p*	CMI N/DF	TLI	CFI	RMSEA	AIC
Model 1 – Without Covariances between endogenous variable errors								
Structural weights	173.364	35	0	4.953	.272	.545	.091	247.364
Structural covariances	182.372	41	0	4.448	.365	.535	.085	244.372
Structural residuals	208.726	46	0	4.538	.349	.465	.086	260.726
Model 2 – With covariances among endogenous variable errors								
Unconstrained	40.831	12	<.0001	3.403	.558	.905	.071	160.831
Structural weights	49.596	27	.005	1.837	.846	.926	.042	139.596
Structural covariances	54.901	33	.010	1.664	.878	.928	.037	132.901
Structural residuals	72.037	38	.001	1.896	.835	.888	.043	140.037
Model 2 – With covariances between endogenous variable errors and setting to 3 non-significant relations								
No sig + structural cov	62.773	37	.005	1.697	.872	.915	.038	132.773
Free b1	62.628	36	.004	1.74	.864	.912	.039	134.628
Free b3	62.193	36	.004	1.728	.866	.914	.039	134.193
Free b15	62.73	36	.004	1.742	.863	.912	.039	134.730
Free b5	62.728	36	.004	1.742	.863	.912	.039	134.728
Free b7	62.747	36	.004	1.743	.863	.912	.040	134.747
Free b8	72.689	37	<.0001	1.965	.822	.883	.045	142.689
Free b9	62.511	36	.004	1.736	.864	.913	.039	134.511

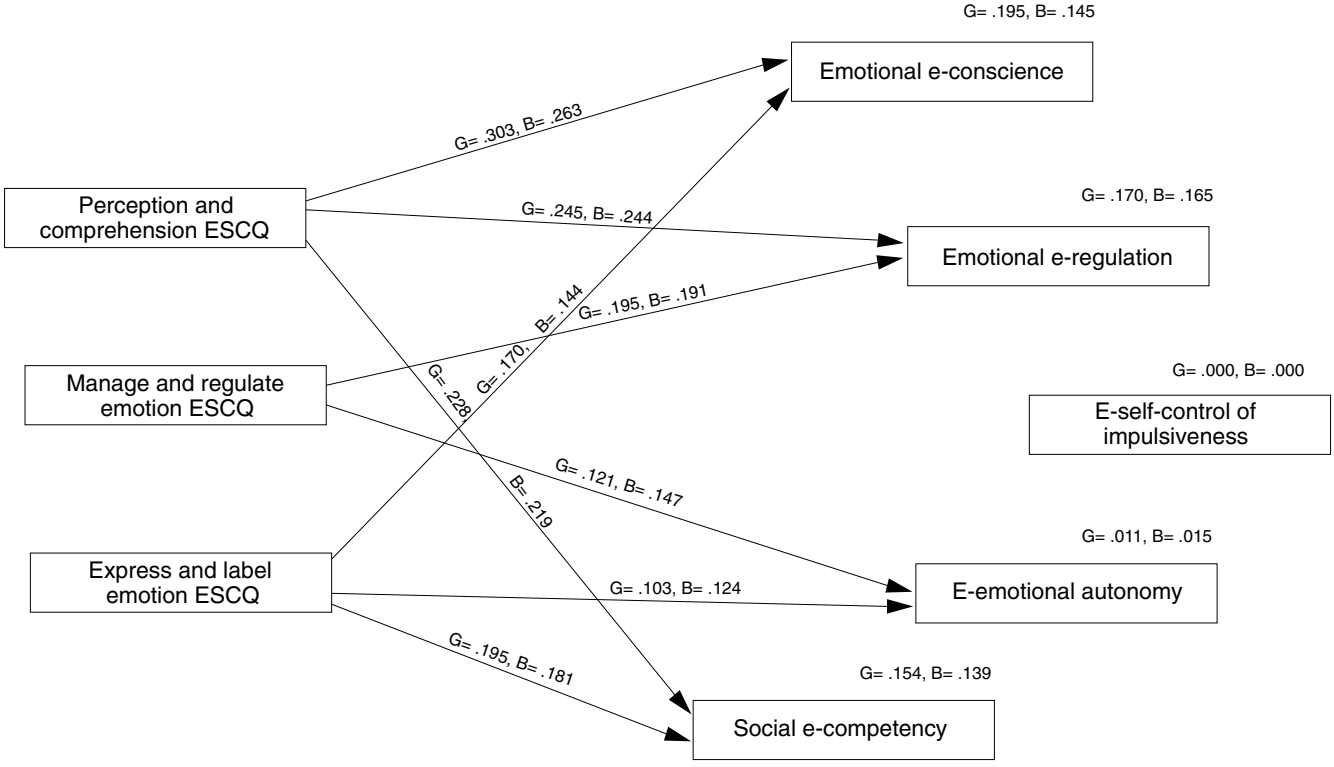

Figure 2. Path Model Analyses by sex
Note: G = Girls; B = Boys

Social e-Competency (γgirls = .195; γboys = .181). Finally, *Manage and regulate emotion* is only related to *Emotional e-regulation* (γgirls = .195; γboys = .191) and *E- emotional autonomy* (γgirls = .121; γboys = .147), with equally lower weights. These relationships are visually represented in Figure 2.

Discussion

The main objective of this research was to investigate the extent to which *Offline socio-emotional competencies* predict *Online socio-emotional competencies* with a sex-differentiated approach. Additionally, the study explores potential differences in *Socio-emotional competencies offline* and *e-COM* between sexes in Colombian students, achieved through a comparative group model and path analysis. The data revealed that the path analysis yielded good fit indices, indicating that some offline-developed skills transfer partially to the online environment. In contrast, others do not achieve this transference, with no differences between girls and boys. These analyses were conducted similarly by other researchers (Cîrțiță-Buzoianu et al., 2022; Erreygers et al., 2018).

It is observed that certain socio-emotional competencies share equivalence in both environments, highlighting correspondences between offline emotional *Perception and Comprehension* and *e-COM*, such as *Emotional e-conscience*, *E-emotional autonomy*, and *E-social competency*.

Findings indicate that this offline socio-emotional competency is naturally transferred to the virtual context. For instance, in their relation to *Emotional e-conscience*, which facilitates the interpretation of digital expressions, such as tones of voice, enriching online communication (Karibeeran & Mohanty, 2019; Spinrad & Eisenberg, 2019). *E-emotional autonomy* and *Social e-competency* show greater development, maturity, and self-efficacy in the online environment, supporting the idea that these competencies are built on foundations established in face-to-face interactions (Schunk et al., 2022).

The *Socio-emotional competence* of *Expressing and label* also reveals relationships with *e-COM* such as *Emotional e-conscience*, *E-emotional autonomy*, and *Social e-competency*. This suggests that adolescents have developed the ability to effectively communicate their emotional states in the virtual world, fostering richer and more meaningful connections in online social interactions (Bekalu et al., 2019; Ifinedo, 2016).

It is important to understand that during adolescence, the emotional conscience expands to include more complex emotions and nuances, while emotional regulation and social competency are refined, enabling teenagers to manage stress, resolve conflicts, and thus engage in sophisticated interactions (Trigueros et al., 2020).

The socio-emotional competence of *Manage and Regulate* reveals a specific link with *Emotional e-regulation* and *E-emotional autonomy*. Adolescents' recognition of complex emotions helps them develop empathy, coping mechanisms, and resilience for managing emotions online (McRae et al., 2012). Through peer interactions, teenagers also improve communication, teamwork, and conflict-resolution skills, enhancing their social competence (Schunk et al., 2022). In conclusion, it appears that young people have become better at transferring their social and emotional skills from in-person to online interactions, supporting our main hypothesis (Mantzouranis et al., 2019; Nesi et al., 2018).

As mentioned, some *e-COM* have not been related to offline contexts, such as *E-self-control of impulsiveness* and *E-emotional autonomy*. These findings agree with studies such as Dredge and Schreurs (2020); Marín et al. (2022); and Pérez de Albéniz-Garrote et al. (2021), which suggest that specific systems regulating impulsive behaviours have not yet fully developed at this stage of life. Therefore, adolescents may be more prone to impulsive behaviours and struggle with controlling them, which can translate to online interactions lacking these repertoires. Although these competencies can manifest in offline spaces, they may not be reproduced in the same way as in face-to-face interactions. It appears that online spaces are designed as a kind of intermittent reinforcement programme that requires immediate rewards (Van Velthoven et al., 2018), making it even more difficult to achieve equivalence. Specific intervention strategies will be needed to increase experiences supporting these competencies in the online context.

Concerning the overall scores for *Socio-emotional competency* levels, differences were found in some of the subscales, particularly in *Perception and comprehension*, which showed higher scores. These scores can be attributed to the fact that primary-level skills have been acquired, and participants have sufficient proficiency at these ages (Franco et al., 2017; Shek & Leung, 2016; Schoeps et al., 2017; Yudes et al., 2022). The other subscales obtained moderate-to-high scores, indicating that participants possess these repertoires and apply them in face-to-face relationships. As for *e-COM*, significant values favoured *Emotional e-conscience*, *Emotional e-regulation*, and *Social e-competency*, indicating the utilisation of these competencies in interactions with social networks. The same trend was not observed for *E- self-control of impulsiveness* and *E-emotional autonomy*, which showed overall low scores. One possible justification for this is that the concepts of autonomy and self-control are closely related to age and the search for identity. For example, younger individuals have less time for free online interaction, which is more supervised by adults (Çelik & Çalık, 2022).

Despite the extensive evidence of social media use and online communication among adolescents, it is evident that they lack the tools to cope with these interactions. Therefore, researchers in the field (Cîrțiță-Buzoianu et al., 2022; Erreygers et al., 2018) have emphasised the need for further research on the relationships between socio-emotional competencies online and offline especially in Colombian adolescents. In this regard, this study makes a valuable contribution to understanding this correspondence. In conclusion, the group comparison analyses in Colombian students show non-significant differences in socio-emotional competence between sexes and is consistent with existing general literature (Aguilar-Luzón et al., 2012; D'Amico & Geraci,

2022; Ruiz & Carranza, 2018). This may be attributed to cultural factors in Colombia, influencing gender-specific socialisation and emotional development (Velásquez et al., 2015).

Although this study shows promise in many aspects, there are still limitations that need to be addressed, particularly related to the methodological design, sample types used, and conceptual equivalences in measurement instruments. The use of cross-sectional designs, while useful for generating predictions and demonstrating construct equivalence based on theory, cannot support long-term and causal relationships. It is recommended to use random samples and conduct longitudinal studies for better control over participant characteristics that could not be detected in this study and therefore, these results are valid for this sample.

Methodological limitations related to the general model of socio-emotional competencies may not align with the *e-COM* model, potentially omitting setting-specific competencies. Other limitations may arise from the *e-COM* assessment tool, as its cultural and age group adaptation falls short of values in the Spanish study. Additionally, the absence of questionnaire administration counterbalancing could introduce participant fatigue, potentially impacting one instrument more than another, thereby constraining psychometric properties.

It has been noted too that these have not been granted conceptual equivalence due to the constraint of finding appropriate instruments for online measurement. Consequently, the closest available instrument in an offline environment has been employed. Similarly, the sufficiency of content validity in the *E- -self-control of impulsiveness* items may need scrutiny, as some dimensions may not be easily measured online.

Despite its limitations, this research represents a notable advance for future projects aimed at socio-emotional competencies both in the online and offline spheres of the Colombian context. It shows promise as a preventative measure against adverse effects linked to virtual interactions, such as cyberbullying and harmful online practices (Hernández, 2019; Herrera et al., 2017). Leveraging existing resources for in-person interventions can accelerate the development of online tools that support these skills. Based on the study's insights, improving unrelated online experiences over offline competencies appears warranted, recognising the nuanced nature of online interactions (Cebollero-Salinas et al., 2022c; Orejudo et al., 2022). In short, Colombian educational institutions must promote socio-emotional competence from the beginning, involving families to generalise the acquired skills, with age being a critical factor (Elboj et al., 2023).

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