Social Cognitive Model of Academic Engagement

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Abstract
Academic Engagement has received widespread attention in educational research due to its association with multiple positive indicators of positive academic functioning and students’ well-being. Academic engagement is a positive state of mind characterized by students’ active participation and commitment to academic activities, which are critical aspects in the learning process. However, theoretical models that integrate relevant factors and explain how these factors contribute to academic engagement are currently lacking. The Social Cognitive Career Theory (SCCT; Lent et al., 1994) proven to be an integrative and useful framework to explain several aspects of academic behavior. In this study, we examined the adequacy of the SCCT model to explain academic engagement. Three-hundred and eleven university students (64% women) aged between 17 to 48 years old participated in the study. Results from structural equation modeling provide support for the SCCT model. Academic self-efficacy had a strong positive effect on academic engagement, as well as positive affect, social support and academic goal progress, although to a lesser extent. These findings confirm the value of SCCT as a heuristic model to explain a wide range of academic behavior, including academic engagement. Practical implications are discussed and avenues for future research are suggested.

Keywords: giftedness, talented children, cognitive skills, executive functions, IQ

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Modelo Social Cognitivo de Engagement Académico

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Resumen

El engagement académico ha recibido una amplia atención en la investigación educativa debido a su asociación con múltiples indicadores positivos de funcionamiento académico y bienestar de los estudiantes. El engagement académico es un estado mental positivo caracterizado por la participación activa y el compromiso de los estudiantes con las actividades académicas, que son aspectos críticos en el proceso de aprendizaje. Sin embargo, actualmente se carece de modelos teóricos que integren los factores relevantes y expliquen cómo estos factores contribuyen al compromiso académico. La Teoría Social Cognitiva de la Carrera (SCCT; Lent et al., 1994) ha demostrado ser un marco integrador útil para explicar varios aspectos del comportamiento académico. En este estudio, examinamos la adecuación del modelo SCCT para explicar el engagement académico. Participaron en el estudio 311 estudiantes universitarios (64% mujeres) con edades comprendidas entre los 17 y los 48 años. Los resultados del modelo de ecuaciones estructurales apoyan el modelo SCCT. La autoeficacia académica tuvo un fuerte efecto positivo sobre el engagement académico, así como el afecto positivo, el apoyo social y las metas de progreso académicas, aunque en menor medida. Estos resultados confirman el valor del SCCT como modelo heurístico para explicar una amplia gama de comportamientos académicos, incluyendo el engagement académico. Se discuten las implicaciones prácticas y se sugieren vías para futuras investigaciones.

**Palabras clave:** engagement académico, Teoría Social Cognitiva de la Carrera, estudiantes universitarios, modelo de ecuaciones estructurales

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ntelligence, Positive education is based on the conviction that the educational system must provide students with the knowledge and skills to lead productive and fulfilling lives. Therefore, it points out the impossibility of developing knowledge and academic competencies without considering the character strengths and well-being of students. Thus, it is stated that education involves a double helix with intertwined strands that have equal importance, namely, academic development and well-being (Kern & Wehmeyer, 2021; Shoshani, & Slone, 2017). As such, one construct that has demonstrated a simultaneous impact on both variables is engagement.

Upadyaya and Salmela-Aro (2013) state that academic engagement is defined as a positive and satisfactory mental state, which implies active participation, and a greater commitment from the student in terms of his or her own learning process. For these authors, engagement involves three dimensions, namely: vigor (or energy), dedication, and absorption. Vigor refers to a student's will to invest effort in academic activities and have high levels of energy and mental endurance while studying, keeping a positive focus while doing so. Dedication is a sense of identification, pride, enthusiasm, and inspiration with regard to the chosen degree, as well as the perception of academic activities as meaningful and challenging. Finally, absorption involves a series of experiences characterized by concentration and the feeling that time is going by quickly (Schaufeli et al., 2002).

As stated by different publications (Richmond, 1990; Vasalampi et al., 2016), motivation and engagement are considered two critical aspects in the learning process, meaning that students who are genuinely interested, and additionally, motivated, will have greater chances of acquiring new knowledge, and therefore will tend to persevere in their studies; while uncommitted students become bored more easily, neglect their schoolwork, and are more likely to display negative emotions (Fredricks et al., 2004; Wigfield & Cambria, 2010). This is why different academic institutions use academic engagement criteria as a measurement to evaluate and improve their students' educational experiences (Brint et al., 2008; Carini et al., 2006; Kuh, 2003).

Despite the fact that engagement is considered to be a factor of relevance in the educational field (Ketonen et al., 2016), the literature lacks research incorporating an explanatory model that allows for predictions about how
certain constructs contribute to the development of engagement. However, studies carried out to date demonstrate that the only variable observed to make a systematic contribution is the belief of self-efficacy. In other words, interventions designed to improve students' beliefs of self-efficacy, constitute a precondition for increasing student academic engagement (Bresó et al., 2011; Linnenbrink, & Pintrich, 2003; Walker et al., 2006), results that have been corroborated by Halbesleben's (2010) meta-analytic study.

On the other hand, due to the absence of a specific line of investigation, a broad set of studies can be observed in the literature that analyze academic engagement in regards to perfectionism (Closson & Boutilier, 2017), anxiety (González et al., 2016); incidence of positive emotions (Datu, 2018; King et al., 2015; Ouweneel et al., 2011), burnout (Maricuţoiu & Sulea, 2019), subjective well-being (Datu & King, 2018), emotional intelligence, and behaviors of academic adaptation (Merino-Tejedor et al., 2018). To a lesser degree, there is research that analyzes the mediating role of behavioral engagement (understood as class attendance and participation in extracurricular activities) between expectations and academic performance (Chen et al., 2020), and social support and academic performance (Hershberger, & Jones, 2018). As can be observed, while a large body of research emphasizes the importance of engagement, said construct needs to be incorporated into some type of theory that allows for interplay with other variables, allowing it to be explained, new knowledge to be produced, and specific interventions to be developed, to therefore be able to extend the results to different populations.

**Social Cognitive Career Model**

The Social Cognitive Career Theory (SCCT), developed by Lent et al. (1994), has garnered much attention in educational literature as a framework for understanding diverse aspects of academic and professional development. Regardless of the behavior to predict, the core of SCCT is represented by the guidelines proposed by the Social Cognitive theory (Bandura, 1986), which has proven to be a versatile framework for studying the processes of adaptation and adjustment, highlighting the role played by cognitive, behavioral, and social variables (Brown & Lent, 2023).
As highlighted by Lent et al. (1994), those students that see themselves as competent to successfully perform a task (beliefs of self-efficacy), and anticipate positive consequences (outcome expectations), are more actively involved in achieving their goals, thereby accomplishing the progress they are seeking (progress goals). These personal and behavioral variables interact with nearby environmental factors. Particularly, a wide body of knowledge has emphasized that the support provided by one’s environment can favor the development of self-efficacy beliefs, outcome expectations, and the achievement of established goals (e.g., Lent et al., 2014; Lent et al., 2019; Mohd & Ahrari, 2020; Medugorac et al., 2020; Lent et al., 2022).

In the last few decades, SCCT has proposed the development of integrating models, which allows different explanatory frameworks to be combined within the SCCT framework itself (vocational interests, career choice, performance/persistence, satisfaction and adaptation to aspects of the career; Lent & Brown, 2006; 2013; Lent et al., 2019; Navarro et al., 2019), allowing multiple dimensions of educational behavior to be evaluated. In this context, research linked to the academic satisfaction model (Lent, 2004), have incorporated the role of positive affect, which influences the perception of support, self-efficacy beliefs, and provides a certain disposition to experience satisfaction in a specific domain (Lent, 2004; Lent & Brown, 2006). In summary, models based on SCCT are one of the most documented in literature, displaying broad empirical support in distinct populations and cultures, highlighting the active role of the subject, and how certain factors of opportunities and barriers can modulate academic behavior.

**Objective of the study**

In consideration of the empirical support enjoyed by SCCT, the relevance of academic engagement, and the lack of studies to date to incorporate both constructs, the objective of this study was to evaluate how the variables stipulated by SCCT contribute to predict academic engagement in university students in Argentina. In this regard, in this study the following hypotheses are proposed (Figure 1), auto-efficacy beliefs have a direct and indirect effect, by means of academic outcome expectations, on academic progress goals (H₁, H₂, y H₃). Likewise, it is hypothesized that self-efficacy, expectations, and goals directly affect engagement (H₄, H₅, y H₆). Concerning environmental
factors, SCCT states that the perception of support affects self-efficacy beliefs ($H_7$), progress goals ($H_8$), and outcome expectations ($H_9$; Hui et al., 2013; Lent et al., 2012; Lent et al., 2013). On the other hand, it is hypothesized that social support is directly related to engagement ($H_{10}$). Due to the influence of positive affect in forming cognitive judgments, SCCT (Lent et al., 2009; Lent et al., 2011) affirms that positive affect is directly associated with the perception of social support ($H_{11}$), and judgments of self-efficacy ($H_{12}$). Finally, it is surmised that positive affect is directly related to academic engagement ($H_{13}$).

**Methods**

**Participants**

In this study 311 university students from different degree programs participated, from public (39.5%) and private (60.5%) universities from the city of Córdoba (Argentina). The sample was made up of 199 (64%) female students, and 111 (35.7%) male students; only one participant did not provide an answer regarding their sex. The participants' ages were between 17 and 48 years old ($M = 19.80$, $DE = 4.26$). The students were enrolled in different degrees related to disciplines such as health sciences (43.1%), social sciences
(30.5%), communication and design (12.5%), management (7.4%), and basic and applied natural sciences (6.4%).

**Instruments**

Positive and Negative Affect Schedule (PANAS; Watson et al., 1988). This scale contains 20 items, 10 assess positive affective states (for example, "active," "strong," "inspired") and 10 negative affective states (for example, "guilty", "scared", and "hostile"). The participants must respond indicating with what frequency they experience each one of the affective states using a scale of five options "Very Little or Not at all" to "Often or Always". In the adaptation for Argentina (Medrano et al., 2015a), they managed to replicate the structure of two factors and indicated acceptable indexes of internal consistency (α = .83 for Negative Affect; α = .82 for Positive Affect). For this study only the Positive Affect factor was used.

Perceived Support (Lent et al., 2007). This instrument has nine items that evaluate in what ways a student's surroundings support him or her to reach his or her academic goals. The participants must express their level of agreement with each statement ("my friends encourage me to keep studying", for example), using a five-position Likert scale (strongly disagree up to strongly agree). The psychometric tests reported by Lent at al. (2007) indicate a satisfactory internal consistency (α=.84) and a unidimensional structure. In an Argentine adaptation study (Zalazar-Jaime & Cupani, 2016), the authors reported internal consistency studies (via the compound reliability coefficient ρ = .76), internal structure (via confirmatory factorial analysis), and convergent validity with the Social Support scale for children and adolescents (Malecki et al., 2003).

Academic self-efficacy. Three instruments were used to evaluate said construct. The first of them is the Social Academic Self-Efficacy Scale. This is in essence a subscale of the Social Self-Efficacy instrument for University Students (SSS-U, Olaz & Medrano, 2007). The SSS-U assesses the beliefs that students hold concerning their own interpersonal abilities, which is made up of seven items ("asking the professor questions out loud and in front of your classmates", for example). Regarding their psychometric properties, this scale presents predictive validity studies related to the academic performance of first-year university students (Medrano & Olaz, 2008) and appropriate internal consistency values (Alfa de Cronbach, α=.84). The second instrument
was the Self-Efficacy Scale for Performance (Medrano, 2009). This scale is made up of seven items and assesses the beliefs that students have regarding their own ability to pass a subject and obtain a final average grade above 4, 5, 6, 7, 8, and 10 (on the Argentina grading scale of 1-10). The participants must answer using a Likert scale with 10 response options (from 1 "I can't do it" up to 10 "I am sure I can do it"). The psychometric studies show a unidimensional structure and an optimal internal consistency ($\alpha=.94$; Medrano, 2009). The scale of Self-Efficacy for Learning (SELF-A, Zimmerman & Kitsantas, 2007), the third measure, in turn, is composed of ten items which evaluate the students' perceived ability to commit themselves autonomously to learning processes such as planning, organizing, and memorizing (for example "When you are making an effort to remember the details of a concept, can you find a way to relate them in order to remember them?"). In this study the abbreviated Argentine version of the SELF, as adapted by Bugliolo and Castagno (2005), was used. This version includes translation studies, structural analysis, and internal consistency and validity evidence with external variables with satisfactory results. The decision to use said instruments was based on the possibility of implementing various construct indicators in order to subsequently use the methodology of structural equation models.

Academic Outcome expectations (Lent et al., 2005). This scale is made up of 10 items that explore possible results arising from the grading process. In a study developed by Lent et al. (2005), the authors reported a factorial structure made of two factors: intrinsic academic expectations (related to subjective experiences like interest and satisfaction) and extrinsic academic expectations (external or tangible reinforcing consequences like money and respect from others). Participants must respond using a Likert-type scale with 10 possible answers where 0 represents "Completely disagree" and 9 is "Completely agree". The original version of this scale has internal consistency studies (alpha of Cronbach $\alpha = .90$). In an adaptation study conducted by Zalazar-Jaime and Cupani (2018), the authors reported internal consistency studies (compound reliability coefficient, $\rho = .86$), and internal structure.

Academic Goal Progress (Lent et al., 2007). This scale is made up of six items that assess students' perceived progress in regards to their academic goals. For this purpose, students have to state to what extent they have accomplished each goal that they set for themselves in different items (for example, "effectively study for exams"). The participants must respond using
a Likert scale with 5 possible answers ("I haven't progressed much" to "I have made excellent progress"). The psychometric studies reported by Lent et al., (2007) display a unidimensional structure and adequate internal consistency ($\alpha = .81$). In an adaptation study by Zalazar-Jaime and Cupani (2018), they reported internal consistency studies (compound reliability coefficient, $\rho = .89$), and internal structure.

Academic engagement. An academic engagement questionnaire, known as The Utrecht Work Engagement Scale (UWES), is a self-administered questionnaire developed initially to assess engagement in work contexts. Schaufeli y Bakker (2003) later developed a version for students (UWES-S), which was translated to Spanish by Salanova. This instrument has 17 items that allow three dimensions of engagement to be measured. 1) Vigor (6 items, e.g. "I continue doing my schoolwork even when I'm really tired"; 2) Dedication (5 items, e.g. "My studies inspire new things for me"; and 3) Absorption (6 items, e.g. "Time flies by when I'm doing my schoolwork"). Students must respond to each item using a 7-level scale, from 0 "never" to 6 "always". In an adaptation study by Medrano et al. (2015b), the authors reported satisfactory internal consistency studies (Cronbach's alpha coefficient) and internal structure.

**Procedure**

The questionnaires were administered collectively, during normal class hours under the supervision of the second author of this paper. Before conducting the survey, all necessary information about the study and its objectives was provided using clear and understandable language. The students’ free choice to participate was emphasized as well as the fact that the information obtained would be confidential and used only for research purposes, with the participants’ identities remaining anonymous at all times. Additionally, every student was provided an informed consent form where they explicitly expressed their interest in participating. Then the scales discussed in the above section were given out. This process of administering the scales lasted 25 minutes.
Results

Preparing the data

The SPSS software version 21.0 was used to prepare the data for the proposed analyses. First, the pattern of missing values was analyzed in order to estimate if this corresponded to a random distribution (Tabachnick & Fidell, 2013). The results indicated 9% missing data for the scale of vigor, 6.1% for dedication, 14.5% absorption, 13.5% positive affect, 2.3% social self-efficacy, 5.1% learning self-efficacy, 1% performance self-efficacy, 21.2% social support, 1.6% outcome expectations, and 28.9% for academic progress goals. Considering that some scales exceeded the 5% established by literature (Schafer, 1999), Little's test (1988) was applied to determine the pattern of missing cases. This analysis showed a completely random pattern (MCAR; $\chi^2=305,035$, gl=295, $p = .331$). In light of these results, the data was imputed using the median.

Atypical univariate cases were identified, by calculating Z scores for each variable (Z scores > ±3.29 were considered atypical), and multivariate via the Mahalanobis distance test ($p < 0.001$; Tabachnick & Fidell, 2013). Twenty-seven atypical univariate and 11 multivariate cases were observed. Considering that the presence of atypical cases tends to distort the results, these were excluded in order to avoid limiting the generality of the analyses since they would no longer represent a population segment under study (Hair et al., 1999).

The mean, standard deviation, skewness, and kurtosis were calculated. As criteria to evaluate the skewness and kurtosis indexes, values between ±1.00 were considered excellent, while adequate values were those below ±2.00 (George & Mallery, 2016). Regarding skewness, it was noted that the variables of social support, positive affect, self-efficacy (social, self-learning, and performance-related), vigor, dedication, and absorption displayed values between ±1.00, while the scale of goal progress had an adequate value (-1.47). Likewise, regarding kurtosis, the variables of goal progress (4.13) and social support (2.53) exhibited values above ±2.00, while the rest of the constructs had values between ±1.00. (see Table 1). As West et al. (1995) highlight, a normal univariate distribution does not necessarily imply a normal multivariate distribution. Hence, multivariate normality was verified by way
of Mardia's coefficient (1970; 1974), with a Mardia index = 10.26 being reported, a value that is below the critical value of 70 suggested by Rodríguez Ayán and Ruiz (2008), a feature that indicates that the distribution is close to normal.

Table 1
Descriptive statistics for mean (M), standard deviation (SD), asymmetry and kurtosis of the variables that make up the Social Cognitive Model of Academic Engagement

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>DS</th>
<th>Asymmetry</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Social Support</td>
<td>69.40</td>
<td>10.19</td>
<td>-0.83</td>
<td>2.53</td>
</tr>
<tr>
<td>Positive affect</td>
<td>34.86</td>
<td>6.21</td>
<td>-0.30</td>
<td>-0.09</td>
</tr>
<tr>
<td>Social Academic Self-Efficacy</td>
<td>34.60</td>
<td>11.96</td>
<td>-0.08</td>
<td>-0.67</td>
</tr>
<tr>
<td>Self-Regulation Self-Efficacy</td>
<td>77.53</td>
<td>11.56</td>
<td>-0.55</td>
<td>0.61</td>
</tr>
<tr>
<td>Performance Self-Efficacy</td>
<td>42.64</td>
<td>9.17</td>
<td>-0.07</td>
<td>-0.11</td>
</tr>
<tr>
<td>Outcome Expectations</td>
<td>84.65</td>
<td>9.92</td>
<td>-0.57</td>
<td>-0.15</td>
</tr>
<tr>
<td>Goal Progress</td>
<td>49.08</td>
<td>10.88</td>
<td>-1.47</td>
<td>4.13</td>
</tr>
<tr>
<td>Vigor</td>
<td>22.74</td>
<td>6.31</td>
<td>-0.25</td>
<td>-0.45</td>
</tr>
<tr>
<td>Dedication</td>
<td>25.59</td>
<td>3.70</td>
<td>-0.99</td>
<td>0.59</td>
</tr>
<tr>
<td>Absorption</td>
<td>21.51</td>
<td>6.48</td>
<td>-0.08</td>
<td>-0.13</td>
</tr>
</tbody>
</table>

Table 2
Bivariate correlations between variables of the Social Cognitive Model of Academic Engagement

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Perceived Social Support</td>
<td>1</td>
<td>.12*</td>
<td>.08</td>
<td>.17**</td>
<td>.12*</td>
<td>.23**</td>
<td>.07</td>
<td>.10</td>
<td>.03</td>
<td>.03</td>
</tr>
<tr>
<td>2. Positive affect</td>
<td>1</td>
<td>.35**</td>
<td>.33**</td>
<td>.31**</td>
<td>.20**</td>
<td>.14*</td>
<td>.46**</td>
<td>.48**</td>
<td>.43**</td>
<td></td>
</tr>
<tr>
<td>3. Social Academic Self-Efficacy</td>
<td>1</td>
<td>.26**</td>
<td>.38**</td>
<td>.16**</td>
<td>.14*</td>
<td>.25**</td>
<td>.32**</td>
<td>.20**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Self-Regulation Self-Efficacy</td>
<td>1</td>
<td>.28**</td>
<td>.19**</td>
<td>.27**</td>
<td>.55**</td>
<td>.45**</td>
<td>.45**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Performance Self-Efficacy</td>
<td>1</td>
<td>.22**</td>
<td>.18**</td>
<td>.20**</td>
<td>.27**</td>
<td>.19**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Outcome Expectations</td>
<td>1</td>
<td>.07</td>
<td>.18**</td>
<td>.15**</td>
<td>.17**</td>
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</table>
### Estimate and Evaluation of the Social Cognitive Model of Academic Engagement via Structural Equations

In order to explore the bivariate relationships and detect the possible existence of multicollinearity, relationship intensity was examined using the Pearson correlation coefficient $r$ (see Table 2). All of the relationships were statistically significant with moderate and intense $r$ values; however, none surpassed the critical value of .90 proposed by Tabachnick y Fidell (2013), ruling out the existence of overlap between the variables. Once the underlying statistical hypotheses were verified and after exploring the behavior of the analyzed variables, the model adjustment was calculated using the Mplus program version 7, with the estimator of Maximum Probability. To evaluate the model, the adjustment criteria suggested by Hu & Bentler (1999) were utilized: the comparative fit index (CFI), the Tucker–Lewis index (TLI), the root mean square error of approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR). The values used for goodness of fit are as follows, the CFI and TLI indexes with values between $\geq .90$ and .95 or above are considered to be acceptable to excellent fits, while for the RMSEA values of $< .08$ are expected, and finally for the SRMR $< .06$.

The results attained ($\chi^2 = 79.385, df = 26, p = .000$, CFI = .934, TLI = .886, RMSEA [90% CI] = .082 [.062, .103], SRMR = .045), were adequate in light of the criteria reported by specialized literature. As affirmed by Browne et al. (2002), the model's aptitude is strong enough to allow the standardized trajectory estimates to be reported and interpreted (see Figure 2).

<table>
<thead>
<tr>
<th></th>
<th>1</th>
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<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Goal Progress</td>
<td>1</td>
<td>.21**</td>
<td>.17**</td>
<td>.22**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>8. Vigor</td>
<td>1</td>
<td>.63**</td>
<td>.79**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>9. Dedication</td>
<td>1</td>
<td>.57**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>10. Absorption</td>
<td>1</td>
<td></td>
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Note: *$p<0.05$; **$p<0.01$. 
Just as shown in Figure 2, it was noted that six of the 13 hypothesized paths could not be corroborated, namely: positive affect on social support, social support on goal progress and academic engagement; outcome expectations on goals and engagement, and between these last two constructs. However, of particular interest for the objectives of this study, it was noted that self-efficacy beliefs were the only variable that showed a direct contribution on academic engagement, explaining 59% ($R^2 = .59$) of the variance. To fully witness the way in which a variable relates to another, indirect effects must also be considered, understood as the product of two standardized direct effects involved. To assess the statistical significance of the model's indirect effects, the Sobel test was used, which consists of dividing the products of non-standardized coefficient paths by their standard error (Edwards & Lambert, 2007).

Upon examining the effects, the relationship between the central core of SCCT is partially verified. In other words, self-efficacy beliefs directly contribute both to outcome expectations (hypothesis 1; $\beta = .29$, $p = .01$), as well as to progress goals (hypothesis 2; $\beta = .36$, $p = .01$), while no evidence was found regarding the path between outcome expectations on progress goals.
Concerning the direct relationships on engagement, it was noted that only self-efficacy beliefs demonstrated a significant contribution (hypothesis 4; $\beta = .72, p = .01$), while academic progress goals (hypothesis 5; $\beta = -.02, p > .05$), and outcome expectations (hypothesis 6; $\beta = .05, p > .05$) were unable to corroborate the expected relationship.

The direct contribution of environmental factors on academic engagement was partially corroborated. That is, only positive affect displayed a significant contribution (hypothesis 13, $\beta = .15, p = .05$), while the relationship between social support and engagement was not empirically confirmed (hypothesis 10, $\beta = -.15, p > .05$). Likewise, positive affect did not demonstrate any contribution regarding social support (hypothesis 11, $\beta = .12, p > .05$). Nevertheless, evidence was found for the influence of positive affect and social support on learning experiences. More specifically, positive affect and social support showed a positive relationship with beliefs of self-efficacy (hypothesis 12, $\beta = .54, p = .01$; and hypothesis 7, $\beta = .18, p = .01$, respectively), while social support alone contributed to establishing outcome expectations (hypothesis 9, $\beta = .16, p = .01$), not showing any contribution to establishing goals (hypothesis 8, $\beta = -.01, p > .05$).

Concerning the indirect effects, self-efficacy beliefs displayed a key role in the modulation between environmental and cognitive variables. Said construct modulated the relationships between positive affect on academic engagement ($\beta$ indirect effect = .37, $p < .01$), outcome expectations ($\beta$ indirect effect = .18, $p < .01$), and progress goals ($\beta$ indirect effect = .19, $p < .01$). Similar behavior was found in regards to social support on outcome expectations ($\beta$ indirect effect = .05, $p < .01$), progress goals ($\beta$ indirect effect = .05, $p < .01$), and academic engagement ($\beta$ indirect effect = .12, $p < .05$).

### Table 3

**Total effects, direct and indirect of the Social Cognitive model of Academic Engagement.**

<table>
<thead>
<tr>
<th>Model Variables</th>
<th>Effect Direct</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Positive Affect</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>on Social Support</em></td>
<td>.12</td>
<td>-</td>
<td>.12</td>
</tr>
<tr>
<td><em>on Self-Efficacy</em></td>
<td>.54**</td>
<td>.00</td>
<td>.54**</td>
</tr>
<tr>
<td>Model Variables</td>
<td>Effect</td>
<td>Direct</td>
<td>Indirect</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------</td>
<td>--------</td>
<td>----------</td>
</tr>
<tr>
<td>on Academic Engagement</td>
<td></td>
<td>.15*</td>
<td>.37**</td>
</tr>
<tr>
<td>on Academic Outcome Expectations</td>
<td></td>
<td>-</td>
<td>.16**</td>
</tr>
<tr>
<td>on Academic Progress Goals</td>
<td></td>
<td>-</td>
<td>.19**</td>
</tr>
</tbody>
</table>

**Social Support**

|                         |        |        |          |       |
| on Self-Efficacy      |        | .18**  |          | .18** |
| on Academic Outcome Expectations |     | .16**  | .07*     | .23** |
| on Academic Engagement |        | -.10   | .18**    | .08   |
| on Academic Progress Goals |    | -.01   | .07      | .06   |

**Self-Efficacy**

|                         |        |        |          |       |
| on Academic Outcome Expectations |     | .29**  |          | .29** |
| on Academic Progress Goals       |        | .36**  | -.02     | .34** |
| on Academic Engagement           |        | .72**  | -.02     | .70** |

**Academic Outcome Expectations**

|                         |        |        |          |       |
| on Academic Progress Goals       |        | -.05   | .00      | -.05  |
| on Academic Engagement           |        | .05    | .00      | .05   |

**Academic Progress Goals**

|                         |        |        |          |       |
| on Academic Engagement           |        | -.02   | .00      | -.02  |

** p ≤ .01; * p ≤ .05.

Upon reviewing the magnitude of the total effects, it can be seen that the variables that boast the greatest contribution on academic engagement are beliefs of self-efficacy ($\beta_{\text{total}}=.70$), and positive affect ($\beta_{\text{total}}=.52$). To determine effect sizes of the determining coefficients, Cohen's (1992) kappa coefficient $f^2$ was calculated, where according to this author, the effect sizes ($f^2$) .02, .15, and .35 are considered small, medium, and large, respectively. The constructs of social support ($f^2 = .01$), and progress goals ($f^2 = .14$) displayed a small effect size. Meanwhile, academic outcome expectations ($f^2 = .16$) showed a medium size, while beliefs of self-efficacy ($f^2 = .52$), and academic engagement ($f^2 = 1.44$) displayed a large effect size.
Discussion

Academic engagement has drawn special interest among educators and researchers due to its favorable impact on academic behavior, both in terms of performance as well as emotional well-being (Fredricks et al., 2004; Skinner et al., 2009; Upadyaya & Salmela-Aro, 2013). In fact, said construct has been the object of a large number of publications in different academic journals.

Despite its importance, there is no publication that incorporates academic engagement in a theoretical framework that would allow it to be predicted. Particularly, SCCT is one of the referential frameworks with greater empirical evidence in educational psychology, a feature that has allowed for both different academic behaviors to be explained as well as for intervention programs to be designed in order to contribute to career development. Therefore, this study's objective consisted of evaluating if said theory's specified variables contribute to predict academic engagement in Argentine university students.

The results from the social cognitive model of academic engagement indicate that the model demonstrated an adequate fit to the data. In regards to the cognitive variables, and in line with what is established in literature (Brown et al., 2008; Lent et al., 2016; Zalazar-Jaime et al., 2015; Zalazar-Jaime et al., 2017), it was noted that students who trust their interpersonal abilities to interact with professors and/or classmates, to pass exams, and to be committed autonomously to learning processes, are more likely to expect positive results (hypothesis 1), make progress on their academic goals (hypothesis 2), and experience greater levels of engagement (hypothesis 4). Therefore, it can be stated that self-efficacy beliefs are associated with higher levels of vigor, dedication, and absorption. These results are consistent with what has been reported in the literature (Bresó et al., 2011; Halbesleben, 2010; Ouweneel et al., 2011). For example, in a quasi-experimental study conducted by Bresó et al. (2011), it was observed that reinforcing self-efficacy beliefs was a precondition for increasing student engagement.

Contrary to what is expected, outcome expectations were not associated with academic goal progress (hypothesis 3). In regards to this, mixed results are seen in the literature. That is, a series of studies (e.g., Ezeofor & Lent, 2014; Lent et al., 2007; Zalazar-Jaime et al., 2015; Lent et al., 2017), have
managed to corroborate a relationship between said variables, while others (e.g., Flores-Kanter et al., 2017; Lent et al., 2005; Lent et al., 2007; Zalazar-Jaime et al., 2017) have been unable to replicate this. Most likely, the differences presented here arise due to the manner in which outcome expectations have become operational. In essence, the scale used explores the possible results of graduating from university, it is possible that establishing consequences so far in the future may not contribute to motivating students. Therefore, presenting lofty expectations may be a factor that motivates students in attaining their goals, or it may be a factor that negatively influences their perception of progress. In future studies it would be appropriate to use measures of expectations closer to the students' academic journey.

Likewise, in addition to the previously identified issues, the relationship between outcome expectations and goal progress on academic engagement could not be corroborated (hypotheses 5 and 6 respectively). These results implore a review of the type of expectations or goals that have been given to the student. In fact, the instruments used ask students to score their progress level and expectations set by the researcher, which may not necessarily be aligned with the student's own judgment.

In regards to the environmental variables, and in accordance with the literature (Lent et al., 2013; Lent et al., 2014), students who had greater beliefs in self-efficacy and expectations were those that have perceived the needed support from their environment (hypotheses 7 and 9 respectively). However, the availability of sources of support did not help in establishing goals. On this point, it could be stated that the progress or advances that students experience during their studies is a endogenous component not determined by the perception of support, but rather may be linked, primarily, to the confidence that they possess to reach certain goals. However, as Zalazar-Jaime and Cupani (2016) mention, it would be opportune to use a different measure of social support, which could filter not only the source providing support (for example, professors and classmates), but also the frequency and importance that it has for the student.

In turn, the hypothesized relationship between the perception of support and engagement could not be confirmed (hypothesis 10). While it has been observed that attention paid to messages of support wanes during higher education, the results presented here could also be due to the nature of engagement. This means that social support has been associated with topics
like academic adaptation, and emotional and behavioral difficulties (Zalazar-Jaime & Cupani, 2016), thus, the nature of these contributions may not be congruent with academic engagement. Supporting this idea, engagement in the literature has generally been associated with emotional aspects (for example, personality traits; Closson & Boutilier, 2017), and motivational ones (e.g., self-adjustment theories, van Rooij et al., 2017). However, new studies are needed that consider these indications before ruling out the arguments presented here.

When it comes to students’ tendency to experience pleasing emotional states when performing academic activities (positive affect), the specified relationship with academic engagement was verified (hypothesis 13). Both constructs, in their hypotheses, allude to a certain positive emotional state that favors execution, development, and concentration on the task (Datu & King, 2018; Upadyaya & Salmela-Aro, 2013), which allows the relationship between both of them to be explained. Likewise, and in line with what previous studies have published (Lent et al., 2012; Lent et al., 2013; Lent et al., 2014), students who enjoy higher scores in positive affect are more likely to see themselves as competent (hypothesis 12).

Despite existing evidence, the influence of positive affect on social support could not be corroborated (hypothesis 11). On this point the results in the literature are heterogenous (e.g., Lent et al., 2005; Lent et al., 2009). While the tendency to experience positive affect can provide more optimistic scores from the message of support, Lent et al. (2009) highlights that the relationship is not necessarily unidirectional. For example, in a longitudinal study, these authors found that beliefs in self-efficacy and social support predict changes in positive affect later on, emphasizing that positive affect can respond to cognitive and social variables. In general terms, it must be stated that positive affect and social support, while they did not show a direct effect on engagement, did display an indirect contribution via self-efficacy beliefs, a feature that demonstrates the significant heuristic value that said construct has in educational literature.

**Limitations and practical implications**

There are some limitations of this study that should be taken into account. First, the sample of participating students, while allowing the proposed
analyses in line with this study's objectives to be carried out, was limited in terms of additional studies (for example, differences between sexes and/or year of university study). Additionally, a large part of the sample was composed of female students. Second, the measurements of expectations and goals used in the study were likely not the most appropriate to assess said constructs. It would be important that future studies incorporate consequences focused on the short and/or medium term (outcome expectations), and learning goals. Third, different administrative measures in this study displayed a transverse nature, it would be suitable to conduct a longitudinal study with two or three timeframes in order to evaluate both unidirectional and bidirectional paths.

When it comes to contributions, the practical value of SCCT is confirmed as a referential framework, which permits other academic behaviors to be explored, besides those specified originally, such as promoting academic engagement. With the results from this study, possible forms of intervention can be mentioned for the purpose of increasing student engagement.

As Bandura (1986) points out, self-efficacy beliefs are developed based on distinct learning experiences. Therefore, it would be fitting to design academic activities which aim to increase successful experiences in students (mastery experience); for example, presenting activities that increase in difficulty. It is worth noting that, in order to adequately resolve these activities, students should have the necessary resources to confront such a challenge (e.g., availability of study material). Another strategy resides in providing positive feedback (social persuasion), which contributes, via suggestions and commentary, the objective with which students can analyze their performance. An activity that favors encouraging this source of learning consists of implementing collaborative learning techniques (see Johnson et al., 1994; Slavin, 2014), which are characterized by positive interdependence between participants, the development of social abilities, and individual and collective commitment to the task. Additionally, a result of these dynamics is the encouragement of behavioral modeling between students (vicarious learning), where they observe the strategies developed by their peers, being able to copy their behavior in order to achieve better results.

Concerning positive affect, in the study conducted by Medrano et al. (2015a), the authors noticed that the positive affect variables denominated as strong, enthusiastic, inspirational, attentive, and active were those that
displayed the highest factorial weight, a feature that suggests that the dynamics to be implemented by psychologists and educators should aspire to build upon said constructs. In other words, the design of interventions should aim to create academic activities that generate feelings in the student of being active, attentive, alert, attempting to be focused on the importance of theory and its practical application (for example, everyday case studies), and to consider the possibility of introducing learning models.

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