



Abstract mindset favors well-being and reduces risk behaviors for adolescents in relative scarcity

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KEYWORDS

Adolescent health
Thinking style
Subjective well-being
Health-risk behaviors
Economic scarcity

ABSTRACT

Previous research has shown that when people perceive themselves to be experiencing financial scarcity, their thinking style becomes more concrete. Construal level theory points out that thinking in a more concrete way implies focusing more on the short-term consequences of behaviors and is associated with contextual difficulties, less self-control, and increased engagement in risk behaviors. The aim of this study was to understand the factors that affect subjective well-being and engagement in risk behaviors in adolescents with high perceived relative economic scarcity. A total of 463 students (aged 12 to 18), 264 females, from public schools in Madrid (Spain) responded to the study questionnaire. Adolescents with higher perceived relative economic scarcity presented a more concrete thinking style and lower subjective well-being and reported more past risk behaviors and greater intentions to engage in risk behaviors in the future. Participants with a more concrete thinking style and high perceived relative economic scarcity presented the lowest subjective well-being and most risk behaviors, compared to those with a more abstract thinking style and high perceived relative economic scarcity, and either thinking style and low perceived relative economic scarcity. School-based interventions should be developed for vulnerable adolescents, especially those with high perceived relative economic scarcity, focusing on promoting a more abstract thinking style, to reduce engagement in risk behaviors and increase subjective well-being. Results highlight the vulnerability (lower subjective well-being and higher risk behaviors) for adolescents who feel in a situation of high perceived relative economic scarcity compared to peers. However, results also indicate that an abstract thinking style can serve as a protective factor, suggesting a new intervention approach in adolescent health.

La abstracción favorece el bienestar subjetivo y reduce las conductas de riesgo en adolescentes con escasez económica relativa

PALABRAS CLAVE

Salud adolescente
Estilo de pensamiento
Bienestar subjetivo
Conductas de riesgo
Escasez económica

RESUMEN

Investigaciones previas muestran que cuando las personas se perciben en escasez económica su estilo de pensamiento se vuelve más concreto. La teoría del nivel de constructo señala que pensar en concreto implica centrarse más en las consecuencias a corto plazo de los comportamientos y se asocia con atender más a las dificultades del contexto, menor autocontrol y mayores comportamientos de riesgo. Este estudio plantea comprender los factores que afectan al bienestar subjetivo y a los comportamientos de riesgo en adolescentes con alta percepción de escasez económica relativa. Respondieron al cuestionario 463 alumnos (12-18 años), 264 mujeres, de colegios públicos madrileños (España). Los adolescentes con mayor percepción de escasez económica relativa presentaron un estilo más concreto, menor bienestar subjetivo y reportaron más comportamientos de riesgo en el pasado y más intención futura. Los participantes con un estilo de pensamiento más concreto y percepción de escasez económica relativa alta presentaron el menor bienestar subjetivo y conductas de riesgo más frecuentes, en comparación con aquellos con un estilo más abstracto y percepción de escasez económica relativa alta, y con cualquier estilo de pensamiento y percepción de escasez económica relativa baja. Se deberían desarrollar intervenciones escolares para adolescentes vulnerables, especialmente con percepción de escasez económica relativa alta, centrándose en promover un estilo más abstracto, para reducir sus comportamientos de riesgo y aumentar su bienestar subjetivo. Los resultados destacan la vulnerabilidad (menor bienestar subjetivo y más riesgo) de los adolescentes con alta percepción de escasez económica relativa frente a sus iguales. Sin embargo, los resultados también indican que un estilo de pensamiento abstracto puede servir como factor protector, sugiriendo un nuevo enfoque de intervención para promover la salud de los adolescentes.

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Cite this article as: Caballero, A., Laforêt, B., & Carrera, P. (2024). Abstract mindset favors well-being and reduces risk behaviors for adolescents in relative scarcity. *Psychology, Society & Education*, 16(1), 1-9. <https://doi.org/10.21071/psyce.v16i1.16182>

Received: 20 June 2023. First review: 5 December 2023. Accepted: 17 February 2024.

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ISSN 1989-709X | © 2024. Psy, Soc & Educ.



In the wake of the COVID-19 pandemic, with a growing economic crisis, young people are facing numerous obstacles to achieve many of their goals. Adolescents are at a particularly vulnerable point in their lives, as they are making key choices and decisions about themselves and their future and are now facing an increasingly uncertain and competitive context, where those who perceive themselves to be in a worse economic situation than their peers are at a greater disadvantage when trying to achieve their goals.

Satisfaction with life depends, in part, on the objective level of income a person has, but also on the subjective perception of whether one's income is adequate to satisfy one's needs and social comparisons with relevant groups. Diener et al. (2018) pointed out the importance of personal perception when they defined the nature of subjective well-being (SWB). How people subjectively perceive their financial situation matters, for instance, findings in research on economic inequality show their influence on perceived ingroup wealth (Sánchez-Rodríguez et al., 2019), cooperation (Nishi et al., 2015), socioeconomic status (De Botton, 2004), status anxiety (Melita et al., 2021), and, importantly for the present research, well-being (Cheung & Lucas, 2016; Ferrer-i-Carbonell, 2005) and risk behaviors (Payne et al., 2017).

The importance of a subjective perception of a scarcity of resources has also been highlighted by Mullainathan and Shafir (2014) when defining the concept of economic scarcity, indicating that it depends not only on objective resources, but also on social comparison processes: the extent to which we perceive that we have more or less resources than other people in our environment. Although subjective income and relative subjective income are different concepts, they present similar consequences in some outcomes such as life satisfaction, positive affect, or meaning in life (e.g., Gilbert et al., 2013). Importantly, previous studies have shown that perceiving oneself to be in a situation of economic scarcity promotes tunnel thinking that tends to lead to an attentional neglect in the future consequences of one's present actions, explaining the often counterproductive decision making by people experiencing situations of poverty (Shah et al., 2012).

Recent research has shown that when people perceive themselves to be in situations of economic scarcity, their thinking style or construal level becomes more concrete (Aguilar et al., 2020; Caballero et al., 2023). Construal level theory (CLT; Trope & Liberman, 2003, 2010) points out that thinking in a more concrete way implies focusing more on the short-term consequences of behaviors, the context, and the means to achieve goals. On the contrary, a more abstract style is characterized by attending to long-term goals and the ultimate outcome of actions. Before CLT, Action Identification theory (AIT; Vallacher & Wegner, 1989, 2012) also indicated that attending to the context and the difficulties in achieving one's goals promotes representing or identifying these actions at a lower level while thinking about *how* to perform them. However, identifying actions with a higher-level offers a broader and more general vision, making it easier to understand *why*

the action is performed and the associated implications. Both AIT and CLT assert a comparative perspective that implies that people represent behaviors and events along a continuum that goes from a concrete pole to an abstract pole, where the level of representation changes within people and between situations. Further, both theories allow for the level of mental representation or construal level to be modified, it does not constitute a trait in the strict sense.

Some of the consequences of thinking with a more concrete thinking style are presenting less self-control (Fujita & Han, 2009; Fujita et al., 2020), engaging in more risk behaviors (Aguilar et al., 2020; Carrera et al., 2018), focusing more on difficulties (Carrera et al., 2022), and reporting lower subjective well-being (Aguilar et al., 2020; Carrera et al., 2023). Fortunately, these negative consequences associated with a more concrete thinking style appear to be reversible through getting people to think in a more abstract style. In this line, research shows that, an induced or dispositional, more abstract thinking style increases the intention to perform desirable but costly behaviors (Carrera et al., 2020), reduces risk behaviors (Caballero et al., 2023), and increases SWB (Aguilar et al., 2020; Carrera et al., 2023).

In sum, relative economic scarcity focuses people on short-term difficulties, and this concrete mindset is associated with lower SWB and greater risk behaviors.

Perceiving lower SWB and carrying out more risk behaviors are conditions that affect people's psychological and physical health. These are of particular importance in adolescents, who are in a vulnerable stage of their life as they begin to transition from childhood into adulthood. Importantly, public health agencies have found that health decisions made in adolescence have a great impact on the rest of one's life, often extending to the next generation (World Health Organization, 2014), where many of the behaviors related to adult premature death (e.g., smoking, alcohol use) are first adopted in adolescence (United Nations Children's Fund, 2018). In a review of SWB research, Diener et al. (2018) found that increased SWB is associated with multiple beneficial outcomes, which can aid adolescents in their transition to adulthood, such as enhanced productivity, creativity, resilience, prosociality, self-efficacy, and more supportive social relationships.

Based on this previous body of research, we will focus on a sample of Spanish adolescents (12 to 18 years old) to explore whether perceiving oneself in high relative economic scarcity is associated with: a more concrete thinking style (hypothesis 1), lower SWB (hypothesis 2), higher frequency of past risk behaviors (hypothesis 3), and greater intention of future risk behaviors (hypothesis 4). Further, given that thinking with a more concrete thinking style promotes an increased focus on contextual difficulties and neglects focus on the long-term consequences of behaviors, we expect that young people who perceive themselves to be in greater relative economic scarcity, and have a more concrete thinking style, will present lower SWB (hypothesis 5) and a higher frequency of past and future risk behaviors (hypothesis 6).

Method

Participants

The sample comprised 463 participants, between 12 and 18 years old (264 females; $M_{age} = 14.37$; $SD = 1.59$) from three public schools located within Madrid (Spain) between 2021 and 2022.

Measures

Participants completed the following scales and questions:

Perceived Relative Economic Scarcity (PRES). Participants were asked to indicate to what extent they agreed with the item “I think that my economic situation is good when I compare it with those of my schoolmates” (1 = *Strongly disagree*; 7 = *Strongly agree*). Higher scores mean that participants perceived that their economic situation was better than that of their schoolmates.

Construal Level or Thinking Style (CL). Construal level was measured through the *Behavioral Identification Form* (BIF; Vallacher & Wegner, 1989). Participants were presented with 25 actions and asked to choose between two options. One option describes the action in concrete terms (low level) whereas the other option describes the action in abstract terms (high level). For example, participants are asked to choose whether “Locking a door” is better defined as “Securing the house” (high-level or abstract) or “Putting the key in the lock” (low-level or concrete). The number of high level descriptions (scored as 1) served as a measure of thinking style: higher scores mean higher abstraction. Cronbach’s alpha was acceptable ($\alpha = .76$).

Subjective Well-being (SWB). Subjective well-being was assessed with the *Satisfaction with Life Scale* (SWLS), the 5-item scale developed by Diener et al. (1985) we used the Spanish version validated by Atienza et al. (2000; e.g., “I am satisfied with my life”; “The conditions of my life are excellent”). Responses were measured on a 7-point scale ranging from 1 = *Strongly disagree* to 7 = *Strongly agree*. Internal consistency was good ($\alpha = .84$).

Risk behaviors. Participants reported the frequency of their past behavior (the previous six months) and their future behavioral intentions (the following year), on the following risk behaviors: binge drinking, condomless sex (unsafe sex), skipped breakfast, sleep debt (sleeping less than 8 hours per day for leisure). Responses ranged on a 7-point Likert scale from 1 = *Not at all* to 7 = *Very much*.

Demographics. Finally, participants reported demographic data about age and gender.

Procedure

All participating schools approved the procedure and researchers administered the questionnaires during regular classes. The study was integrated in a larger survey that included other measures unrelated to the hypotheses raised in the present research. Students were guaranteed anonymity and

confidentiality, and participation was voluntary. In accordance with Spanish law, participants 16 years or older signed the consent form for themselves, whereas for participants under 16, the consent form was signed by either a parent or a legal guardian. The procedure fulfilled all ethical standards required in psychological research and approval for this study was given by the Institutional Ethical Committee in June, 2019.

Data analysis

To explore the study objectives, analyses were conducted using IBM SPSS Statistics, Version 28.0. Descriptive statistics were used to report our sample characteristics. Based on previous research, we expected that differences in the influence of PRES on the outcome variables would be in a specific direction. For that reason, we conducted a series of *t* tests (one tail) to explore: the influence of PRES (low vs. high) on construal level, SWB, past and future risk behaviors and multi risk indexes; and the influence of each mindset (concrete versus abstract) on past and future behaviors and multi risk indexes. Finally, to explore the combined effect of PRES and construal level together, first, we calculated hierarchical regressions with CL and PRES on SWB and risk behaviors; second, we conducted post-hoc comparisons and planned contrasts (high PRES-concrete mindset vs. other conditions as a whole) to explore their influence on SWB, and past and future risk behaviors.

Significant levels were considered those less than .05 while partially significant or quasi-significant were considered those between $.1 < p > .05$ (Olsson-Collentine et al., 2019).

Results

Influence of low and high PRES on construal level, SWB, and risk behaviors

To compare participants with low versus high PRES, we divided the whole sample in two groups: Those who scored 5 or more in the PRES item were classified as having low relative economic scarcity (LRES, $n = 161$); those who scored 3 or less were classified as having high relative economic scarcity (HRES, $n = 175$) because they perceived that their economic situation was not good when they compared it with those of their schoolmates. Because participants answered on a 7-point scale, we considered that identifying as level 4 on the scale meant that they neither agreed nor disagreed with the item. A sensitivity analysis conducted in G*Power (Faul et al., 2009) specifying a *t* test for independent groups with a significance criterion of $\alpha = .05$ revealed that this sample could detect a small effect ($d = .27$) with 80% power.

Table 1 shows that participants that perceived themselves in greater PRES presented lower construal level (i.e., a more concrete mindset) and lower level of SWB. These results supported hypotheses 1 and 2 respectively.

The influence of PRES was examined on each risk action separately and using a multi-risk index. The risk behaviors were evaluated independently because they were very different from

each other; this diversity explains the low Cronbach's alphas found (for past behaviors $\alpha = .47$ and for future intentions $\alpha = .45$). It is very different to perform a single risk behavior with some frequency than several of them. For this reason, following previous research that has used the sum of actions (e.g., Moya & Alcañiz-Colomer, 2023), we decided to add up their frequencies to obtain a multi-risk index that shows the global frequency of risk: a greater cumulative frequency of different risk behaviors will indicate a greater propensity to perform risk behaviors. Table 2 shows the results.

Supporting hypotheses 3 and 4, the results showed that adolescents who perceived higher relative economic scarcity reported the highest frequencies of past behaviors and future behavioral intentions in the risk behaviors tested, separately and in the multi-risk behavioral indexes. Even with low frequencies, the gap between the two perceived economic levels was relevant. We note that for behavioral intentions, the differences in unsafe sex were not significant, and only tendentially in binge drinking.

Combined influence of PRES and construal level on SWB and risk behaviors (past behaviors and future intentions)

We carried out several hierarchical regressions to evaluate the relevance of CL and PRES in their prediction of SWB and risk behaviors. First, a sensitivity analysis in G*Power (Faul et al., 2009) specifying a linear multiple regression (fixed model, R^2 increase) test with a significance criterion of $\alpha = 0.05$

revealed that this sample could detect a small effect ($f^2 = 0.02$) with 80% power.

Regarding SWB, in the first step CL predicted significantly SWB ($\beta = .15$, $SE = .01$, $p = .001$), $R_c^2 = .021$, $p = .001$; when PRES was included in the second step, both predictors were significant: CL ($\beta = .14$, $SE = .01$, $p = .003$), PRES ($\beta = .12$, $SE = .034$, $p = .016$), $R_c^2 = .032$, $p = .016$.

When we used the multi-risk past behavior index as the dependent variable, results were similar. In the first step, CL significantly predicted past risk behavior ($\beta = -.2$, $SE = .05$, $p < .01$), $R_c^2 = .037$, $p < .001$; when PRES was included in the second step, both predictors were significant: CL ($\beta = -.18$, $SE = .05$, $p < .001$), PRES ($\beta = -.16$, $SE = .13$, $p < .001$), $R_c^2 = .061$, $p < .001$.

Finally, we calculated regression on multi-risk behavioral intention index. In the first step, CL significantly predicted past risk behavior ($\beta = -.24$, $SE = .05$, $p < .001$), $R_c^2 = .055$, $p < .001$; when PRES was included in the second step, both predictors were significant: CL ($\beta = -.23$, $SE = .05$, $p < .001$), PRES ($\beta = -.1$, $SE = .12$, $p < .027$), $R_c^2 = .064$, $p < .027$. These results support the relevant role that CL and PRES play in the prediction of SWB and risk behaviors.

To better explore the combined influence of CL and PRES on risk behaviors and SWB we conducted a series of t tests and planned comparisons. Thinking style must be considered from a comparative perspective, as is the case with other psychological constructs such as locus of control or self-monitoring (see Vallacher & Wegner, 1989, 2010); although they are evaluated numerically on a continuous scale, their meaning is best under-

Table 1

Means for low and high PRES in construal level and SWB

	$M_{\text{lowPRES}} (SD)$	$M_{\text{highPRES}} (SD)$	$t(330)$	d
Construal level	17.39 (4.08)	16.35 (4.45)	2.19*	.24
SWB	3.95 (1.25)	3.66 (1.26)	2.09*	.23

* $p < .05$.

Table 2

Past behaviors and future behavioral intentions for low and high PRES

Behavior	$M_{\text{lowPRES}} (SD)$	$M_{\text{highPRES}} (SD)$	$t(333)$	d
Past behavior				
Skipped breakfast	2.77 (2.32)	3.42 (2.31)	-2.58**	.28
Sleep < 8h	3.74 (2.12)	4.25 (1.99)	-2.29*	.25
Unsafe sex	1.34 (1.25)	1.6 (1.58)	-1.68*	.18
Binge drinking	1.58 (1.45)	1.85 (1.64)	-1.62*	.18
Multi-risk past behavior index	9.4 (4.56)	11.1 (4.72)	-3.33***	.37
Future behavioral intentions				
Skipped breakfast	2.44 (2.16)	2.97 (2.22)	-2.21*	.24
Sleep < 8h	2.71 (1.9)	3.11 (1.87)	1.95*	.21
Unsafe sex	1.6 (1.39)	1.7 (1.6)	0.58	.06
Binge drinking	1.53 (1.32)	1.86 (1.6)	1.42 ⁺	.16
Multi-risk behavioral intention index	8.4 (4.22)	9.66 (4.64)	2.58**	.28

⁺ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$.

stood discretely and dichotomously (see MacCallum et al., 2002). For this reason, we decided to split the whole sample by the median in the thinking style scale (BIF) creating a dummy variable (*relatively more abstract style* versus *relatively more concrete style*). We note that Iacobucci et al. (2015) points out that splitting a variable by the median is an acceptable strategy when variables do not present a high multicollinearity (the correlations between thinking style and DVs were low with SWB $r = .16$, past behavior $r = .20$, and future behavior $r = .24$), the scale is more than 3 or 4 points (the BIF scale ranges from 0 to 25), and the size of the sample is large ($N = 463$). Thus, we split the whole sample into two groups using the median (17) in BIF scores. Participants with scores equal or lower than the median were considered part of the relatively more concrete group ($n_{\text{conc}} = 244$); and participants who scored higher than the Median were considered as the relatively more abstract group ($n_{\text{abst}} = 219$). A sensitivity analysis conducted in G*Power (Faul et al., 2009) specifying a t test for independent groups with a significance criterion of $\alpha = .05$ revealed that this sample could detect a small effect ($d = .23$) with 80% power.

First, results revealed that the relatively more abstract group presented the lowest levels of past and future risk behaviors (see Table 3).

Next, to explore the simultaneous influence of PRES and construal level, we constructed a new dummy variable (PRES-CL) with four levels: high PRES and concrete mindset (coded as 1, $n = 99$), low PRES and concrete mindset (coded as 2, $n = 72$), high PRES and abstract mindset (coded as 3, $n = 76$), and low PRES and abstract mindset (coded as 4, $n = 89$). We expected a cumulative effect of PRES and thinking style on SWB and risk behaviors: the higher PRES and more concrete the construal level, the less SWB and more risk behaviors.

We note that a significant interaction between PRES and construal level was not expected; however, we expected a 1 versus 3 planned pattern where the differences are focused on the comparison between the high PRES-concrete group and the other three groups: our hypothesis points out that when people are perceiving high relative economic scarcity and present a more concrete style of thinking, they present the lowest SWB and most risk behaviors.

Following this reasoning, we calculated post-hoc (Bonferroni test) and planned comparisons. Planned comparisons is a method considered acceptable when there is an a priori hypothesis as we had (see Richter, 2016; Rosnow & Rosenthal, 1989) and that has been successfully used in previous recent research

Table 3

Differences between the concrete and abstract groups in past behaviors and future behavioral intentions

Behavior	$M_{\text{concrete}} (SD)$	$M_{\text{abstract}} (SD)$	$t(460)$	d
Past behavior				
Skipped breakfast	3.43 (2.38)	2.77 (2.19)	3.07***	.29
Sleep debt	4.16 (1.94)	3.75 (2.05)	2.22*	.21
Unsafe sex	1.52 (1.48)	1.31 (1.12)	1.71*	.16
Binge drinking	1.84 (1.64)	1.6 (1.36)	1.75*	.16
Multi-risk past behavior index	10.96 (4.71)	9.37 (4.21)	3.54***	.33
Future Behavioral Intention				
Skipped breakfast	2.92 (2.21)	2.45 (2.1)	2.33**	.22
Sleep debt	3.13 (1.87)	2.63 (1.72)	3.01***	.28
Unsafe sex	1.76 (1.64)	1.41 (1.09)	2.63**	.25
Binge drinking	1.88 (1.55)	1.58 (1.29)	2.27*	.21
Multi-risk behavioral intention index	9.70 (4.57)	8.07 (3.8)	4.11***	.37

* $p < .05$; ** $p < .01$; *** $p < .001$.

Table 4

Means (SD) in SWB. Post-hoc comparisons and a planned contrast (high PRES-concrete mindset vs. other conditions as a whole) for SWB

$M(SD)$	Subjective well-being	Planned contrast $t(328)$
$M_{\text{highRFS-concrete}}$	3.55 (1.19) _a	2.29*
$M_{\text{lowRFS-concrete}}$	3.74 (1.36) _{ab}	
$M_{\text{highRFS-abstract}}$	3.81 (1.33) _{ab}	
$M_{\text{lowRFS-abstract}}$	4.12 (1.15) _b	

Note. Means that do not share the same subscripts differ at $p < .05$.

* $p < .05$.

(e.g., Caballero et al., 2023; Carrera et al., 2022; Sommet et al., 2018; Villar et al., 2022).

Regarding SWB, the 1 versus 3 contrast showed that adolescents with high PRES that presented a more concrete mindset reported the lowest level of SWB (see Table 4). The abstract mindset seems to reduce the differences in SWB between high and low PRES groups. Results supported hypothesis 5.

Then, we repeated the post-hoc (Bonferroni test) and planned comparisons (high PRES-concrete mindset vs. other conditions as a whole) on past behaviors, future intentions, and *multi-risk indexes*. Results are shown in table 5.

As predicted, adolescents in the high PRES group who presented a more concrete mindset reported the highest frequencies of past risk behaviors and the greatest future intention to repeat the risk behaviors, comparing it with the other groups as a whole (1 versus 3 planned contrast). Results supported hypothesis 6.

It is worthy to highlight that regarding the multi-risk indexes, in the high PRES group, adolescents who were able to maintain a more abstract mindset reported similar future intentions that those adolescents in the low PRES group. Regarding SWB and past risk behaviors, results bordered on significance showing a similar tendency.

Discussion

The current study aimed to understand the factors that affect SWB and risk behavior engagement in adolescents who perceive themselves in a situation of economic scarcity. Adolescence represents an especially crucial stage of a person's life course, as they are beginning to gain independence, construct their own identity, and develop habits and behaviors which will

affect them and their health throughout their adulthood. This topic is given special relevance considering the recent increase in economic inequality seen with the COVID-19 pandemic and the current economic crisis.

The results of our study are in line with previous research, which has found that experiencing a situation of objective economic scarcity generates both a more concrete thinking style (Aguilar et al. 2020; Caballero et al., 2023) and lower SWB (Carrera et al., 2023). Similarly, we found that the adolescents, who felt that their economic situation was worse off than their schoolmates, reported the most concrete thinking style and lowest overall SWB.

A more concrete thinking style (as opposed to a more abstract one) has also been associated with behavioral problems of self-control (Fujita & Han, 2009; Fujita et al., 2020). This is consistent with our findings, as the risk behaviors studied can be seen as situations where self-control is required, as they force a choice between an enticing stimulus in the immediate (e.g., staying up late to play video games) with a more distant goal (e.g., being alert for class the next day). Our results showed that students who reported feeling in a worse comparative economic situation and presented a more concrete style of thinking engaged in more unhealthy habits; where they reported greater engagement in all past risk behaviors and greater future intentions to skip breakfast and sleep less than eight hours, than those who perceived themselves in a better economic position.

Supporting previous research, our results showed that both CL and PRES are relevant predictors of SWB and risk behaviors. Of special interest in our current study was examining the cumulative influence of thinking style and PRES, specifically to investigate whether adolescents who reported higher PRES and had a more concrete thinking style presented a greater vulnerability

Table 5

Post-hoc comparisons and planned contrast (high PRES-concrete mindset vs. others) in past behaviors and future behavioral intentions among the PRES-CL groups

Behaviors	$M_{\text{highPRES-concrete}} (SD)$	$M_{\text{lowPRES-concrete}} (SD)$	$M_{\text{highPRES-abstract}} (SD)$	$M_{\text{lowPRES-abstract}} (SD)$	Planned contrast <i>Ivs.3</i> $t (330)$
Frequency of behavior in the last six months					
Skipped breakfast	3.74 (2.35) _a	3.03 (2.49) _{ab}	3.01 (2.22) _{ab}	2.56 (2.16) _b	-3.15**
Sleep debt	4.39 (1.87) _a	4.10 (2.12) _{ab}	4.07 (2.14) _{ab}	3.44 (2.09) _b	-2.14*
Unsafe sex	1.70 (1.75) _a	1.46 (1.44) _a	1.47 (1.33) _a	1.24 (1.06) _a	-1.81 ⁺
Binge drinking	2.02 (1.84) _a	1.74 (1.61) _{ab}	1.63 (1.32) _{ab}	1.45 (1.30) _b	-2.23*
Multi-risk past behavior index	11.85 (4.95) _a	10.32 (4.80) _{ab}	10.12 (4.23) _{ab}	8.66 (4.24) _b	-3.91***
Intention to engage in behavior in the next year					
Skipped breakfast	3.25 (2.24) _a	2.51 (2.17) _{ab}	2.61 (2.14) _{ab}	2.38 (2.17) _b	-2.87**
Sleep debt	3.35 (1.88) _a	2.92 (1.98) _{ab}	2.80 (1.84) _{ab}	2.55 (1.83) _b	-2.66**
Unsafe sex	1.91 (1.84) _a	1.79 (1.66) _a	1.43 (1.18) _a	1.45 (1.11) _a	-1.95*
Binge drinking	1.98 (1.72) _a	1.88 (1.56) _{ab}	1.69 (1.43) _{ab}	1.42 (1.07) _b	-1.79 ⁺
Multi-risk behavioral intention index	10.52 (4.96) _a	9.11 (4.57) _{ab}	8.54 (3.95) _b	7.82 (3.84) _b	-3.82***

Note. Means in the same row that do not share the same subscripts differ at $p < .05$ in the contrast analysis.

⁺ $p = .1$; * $p < .05$; ** $p < .01$; *** $p < .001$.

than adolescents with either lower PRES or higher PRES but presented a more abstract thinking style. Our results showed this combined effect of perceiving that you are in a worse economic situation than your peers and having a more concrete thinking style resulted in the highest vulnerability. As expected, this group, compared to the other three groups as a whole, reported the lowest SWB and the highest frequency of past and future risk behaviors. Only unsafe sex in the past and binge drinking in the future were not significantly different, but the comparisons did show the expected pattern, with the highest frequency reported by the higher PRES and more concrete thinking style group.

Consistent with other studies (Aguilar et al., 2020; Caballero et al., 2023), the results also provide continued evidence towards the importance of promotion of an abstract mindset, especially within those experiencing perceived economic scarcity. As our results show, for adolescents perceiving a worse comparative economic situation, those with a more abstract mindset report similar multi risk indexes and SWB as those who perceive themselves as economically better off. In this sense, the ability to maintain an abstract mindset in a situation of economic scarcity functions as a protective factor for both SWB and health behaviors.

Implications for education

While acknowledging the need for structural and organizational solutions to combat poverty, we urge that work needs to be done developing strategies to work immediately to address the pressing needs of adolescents in perceived economic scarcity, especially given the current COVID-19 and economic crises which have dramatically affected increased inequalities within many countries. Precisely, schools provide an ideal context where solutions and interventions can be implemented as, apart from giving academic instruction they provide a critical space for youth, to develop socially, learn life skills and habits related to their long-term life goals. Specifically, we believe that the results of our study encourage the development of interventions which promote a more abstract thinking style which could benefit students experiencing perceived economic scarcity, serving as a protective factor for their SWB and against risk factors. There are already numerous studies with tested interventions promoting abstraction in thinking style to promote more healthier behaviors, such as reducing tobacco consumption (Chiou et al., 2012), increasing physical exercise (Sweeney & Freitas, 2014), and which focus on increasing performance of desirable but demanding behaviors (Carrera et al., 2020), as well as on environmental behaviors such as recycling (White et al., 2011). These types of interventions could be adapted to school contexts and used to reduce engagement in risk behaviors and increase SWB especially in adolescents that perceive themselves to be in greater financial scarcity.

Limitations

This study has some known limitations. First, the present research is cross-sectional, and therefore the conclusions

found should be further explored using an experimental research design, manipulating, for example, thinking style in adolescents to test outcomes on SWB and risk behaviors. Second, the sample of this study is relevant, however it is small and was only collected in one region (Madrid, Spain), which can limit the generalizability of the findings. Measures should be improved, for instance, PRES was evaluated using only a single item. Given the importance of SWB and risk behaviors on adolescent health, these limitations should be overcome in future studies.

Conclusions

The data of this current study highlight the vulnerability generated in adolescents who perceive themselves to have more economic scarcity compared to their peers, evidenced by a more concrete thinking style, lower SWB, and a higher engagement in both past and future unhealthy behaviors. Promisingly, for those in a situation of perceived economic scarcity, a more abstract thinking style mitigated the negative effects of economic scarcity. Thus, promoting a more abstract thinking style in adolescents perceiving themselves to be comparatively economically worse off than their schoolmates may lead to an increase in SWB and reduce engagement in risk behaviors.

Author contributions

Conceptualization: A.C., B.L., P.C.
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 Project administration: A.C., P.C.
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 Supervision: A.C., P.C.
 Visualization: A.C., B.L., P.C.
 Writing – original draft: A.C., B.L., P.C.
 Writing – review & editing: A.C., B.L., P.C.

Funding

This research was funded by the Ministry of Science and Innovation in Spain FEDER, UE [PGC2018-093821-B-I00] & MCIN /AEI /10.13039/501100011033 / FEDER, UE [PID2022-137614NB-I00], Caballero and Carrera PIs. This funding source had no role in the design of this study, data collection, management, analysis, and interpretation of data, writing of the manuscript, and the decision to submit the manuscript for publication.

Declaration of interests

The authors declare that there is no conflict of interest.

Data availability statement

The data that support the findings of this study are openly available in [OSF] at [https://osf.io/sd5u9/?view_only=d-44407bcbaff49fe911bc506ceb852f1]

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Psychology, Society & Education

vol. 16, no. 1, p. 1 - 9, 2024

Universidad de Córdoba,

ISSN: 2171-2085

DOI: <https://doi.org/10.21071/psye.v16i1.16182>