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CORRELATIONAL STUDY: EXPERIENTIAL AVOIDANCE, INSOMNIA AND RUMINATION IN ADOLESCENTS

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Abstract. The main objective of the study was to analyze the relationship of the variables experiential avoidance, ruminant response style and insomnia according to sex, age and academic level. It is a cross-sectional correlational observational study, with a non-clinical sample in an adolescent population, selected by non-probabilistic sampling. The instruments used were the AAQ-II, the RRS and the ISI, which measure experiential avoidance, ruminant response style, and insomnia, respectively. The results show a positive linear correlation between the administered questionnaires (AAQ-II, RRS and ISI), the highest being between AAQ-II and RRS (0.648). In addition, significant differences have been found as a function of sex for experiential avoidance (sig. 0.001, assuming different variances) and for rumination (sig. 0.090, assuming equal variances). There could be an association between these three variables, in addition to reciprocal feeding in adolescents.

Keywords: acceptance and commitment therapy, experiential avoidance, insomnia, rumination, adolescents.

ESTUDIO CORRELACIONAL: EVITACIÓN EXPERIENCIAL, INSOMNIO Y RUMIACIÓN EN ADOLESCENTES

Resumen. El objetivo principal del estudio fue analizar la relación de las variables evitación experiencial, estilo de respuesta rumiativo e insomnio en función del sexo, edad y nivel académico. Se trata de un estudio observacional correlacional transversal, con una muestra no clínica en población adolescente, seleccionados mediante muestreo no probabilístico. Los instrumentos utilizados han sido el AAQ-II, el RRS y el ISI, que miden evitación experiencial, estilo de respuesta rumiativo e insomnio, respectivamente. Los resultados muestran una correlación lineal positiva entre los cuestionarios administrados (AAQ-II, RRS e ISI), siendo la más alta entre AAQ-II y RRS (0,648). Además, se han encontrado diferencias significativas en función del sexo para la evitación experiencial (sig. 0,001, asumiendo varianzas diferentes) y para la rumiación (sig. 0.090, se asumen varianzas iguales). Podría existir una asociación entre estas tres variables, además de una alimentación recíproca en adolescentes.

Palabras clave: terapia de aceptación y compromiso, evitación experiencial, insomnio, rumiación, adolescentes.

Introduction

Within the history of behavior therapy there are three distinguishable moments, which refer to first, second, and third generation therapies, depending on what characterizes each of them. The first generation is situated in the 1950s, and involved the establishment of scientific principles, given mainly by the psychology of learning. The second generation is situated around 1970, with cognitive-behavioral therapy (CBT); psychological science was added to information processing (Pérez, 2006). The third generation is situated from the 1990s onwards; they are known as contextual therapies. In scientific terms, this movement was initially identified as clinical behavior analysis, emphasizing its behavioral character based on functional analysis and radical behaviorism, and with particular interest in verbal behavior (Kohlenberg, Kohlenberg, Kanter and Parker, 2002).

Specifically, "third wave" or "cognitive-behavioral contextual therapies," a term coined by Hayes, refers to an expansion or prolongation of previous developments and studies. This can be seen, for example, in the inclusion of traditional CBT procedures within the new therapeutic approaches, although it is true that there are two main differences: the purposes and mechanisms of change are aimed at increasing behavioral repertoires, and not at reducing or changing anything; and interventions that have not received good experimental support are no longer used. Furthermore, it is added that it is accepted to integrate any technique that allows altering the context of an internal content. They focus mainly on the context and function of psychological events (thoughts, sensations, or emotions) rather than on the content, validity, intensity or frequency, as was the case in the first and second generation. Therefore, they do not focus on changing the content of internal experiences, but on modifying their function, by modifying the context in which they take place. Third-wave approaches aim to create skill sets that can be used in other situations, thus eliminating the syndromic approach and replacing it with new learning. Finally, another aspect to consider is that the therapist is required to explore the same principles that will be worked with the patient, and not only the patient, as in the previous stages (Maero, 2013).

A comprehensive review of studies of first- and second-generation therapies confirms that there is little empirical support for the role of cognitive change as causal in the symptomatic improvements achieved in CBT. Three empirical anomalies have been identified in terms of the research literature: there is a paucity of data indicating that changes in cognitive mediators cause symptomatic change; analyses of treatment components have not demonstrated that cognitive interventions add significant value to therapy; and CBT treatments have been associated with rapid symptomatic improvement prior to the introduction of specific cognitive interventions (Hayes, 2004).

Third generation therapies are Acceptance and Commitment Therapy (ACT) (Hayes, Strosahl, & Wilson, 1999); Functional Analytic Psychotherapy (FAP) (Kohlenberg Tsai, 2008); Dialectical Behavior Therapy, (DBT) (Linehan, 1993); Integrative Couples Therapy (ICT) (Jacobson et al., 2000); Behavioral Activation (BA) (Jacobson, Martell, & Dimidjian, 2001); Mindfulness-Based Therapy (MBT) (Segal, Williams, & Teasdale, 2002); Person-Based Cognitive Therapy for Psychosis (Chadwick, 2009) (see Perez, 2014).

Acceptance and Commitment Therapy (ACT), developed by Steven Hayes, is the best known and most developed of all third generation therapies. It has its conceptual basis in Relational Frame Theory (RFT), a psychological theory of language and human cognition (Hayes, Bames-Holmes, & Wilson, 2012). RFT focuses on the influence of language and cognition, conceived as relational learning (Ramnerö & Törneke, 2008). It argues that in the process of language, objects and events are learned to be related based

on socially established symbols or cues until the abstraction of the contextual cue that relates them is produced (Hayes, Barnes-Holmes, Roche, 2001). Both RFT and ACT have growing empirical evidence (Ruiz, 2010), as well as a variety of extensions, from substance use (Luciano, Páez-Blarrina and Valdivia-Salas, 2010) to chess improvement (Ruiz and Luciano, 2009).

Moreover, ACT is framed in a functional philosophical position. Thus, psychological events (understood as any behavior emitted by the individual, including thinking, feeling, remembering...) are only understood in relation to their context, and are conceptualized as the set of ongoing interactions between the organism and its current and historical context (Hayes, 2004). In functional contextualism, psychological events, both public and private, are analyzed as if they were an indivisible whole, taking into account the present circumstances and those determined by their history; the role of context is taken as the center of the analysis and understanding of the nature and function of any psychological event; emphasis is placed on a pragmatic criterion of truth, i.e., that which works for the person and is useful for producing change will be taken as true; and specific scientific objectives are established, which will make it possible to assess what is useful and what has worked (Bligan and Hayes, 1996; Hayes, 2004).

From experimental studies around RFT and its conception about how behavior works, ACT proposes a dimensional and transdiagnostic system of psychopathology in which a series of processes common to most psychological problems are established, which has been called "experiential avoidance" or more recently "psychological inflexibility" (Hayes et al., 1996; Luciano, 2016).

Experiential avoidance can be defined as the tendency to avoid or escape from particular private events such as bodily sensations, emotions, thoughts, memories, behavioral predispositions, etc. and attempts to modify the form or frequency of those events and the context that provokes them (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996), even when doing so is ineffective, costly or unnecessary (Hayes & Lillis, 2012). This is a pattern that underlies numerous distinct diagnoses in traditional classification systems, such as addictions, impulse control disorders, eating disorders, affective disorders, anxiety disorders, psychotic symptoms, post-traumatic stress disorder, and chronic illness (Hayes, Masuda, Bissett, Luoma, & Guerrero, 2004; Ruiz, 2010). Avoidance- and control-directed actions are negatively reinforced movements, lighten the painful experience, as well as positively reinforced, since they conform to cultural rules that state that control is the solution to the problem. However, these behaviors are the real problem and cause a rebound effect, bringing back the discomfort, and sometimes even more intense and widespread (Campbell-Sills, Barlow, Brown, & Hofmann, 2006).

On the other hand, six processes are described within ACT. All of them have the ultimate goal of addressing the function of the disturbing internal processes (not altering the content) and thus generating flexibility in the regulation of behavior. In other words, to break with the behavioral rigidity of experiential avoidance disorder (EAD), which is given by psychological inflexibility (Wilson & Luciano, 2002; Hayes & Strosahl, 2004). Values clarification and the practice of cognitive defusion, or discriminating and becoming aware of thoughts and sensations or memories that supervene in the here and now are the two central aspects (Törneke, Luciano, Barnes-Holmes, & Bond, 2015). Values would be global directions chosen, desired, verbally constructed, which cannot be attained as objects, but can be chosen moment to moment from behavior (Paez, Gutierrez, Valdivia, & Luciano, 2006). To understand defusion it is necessary to know what fusion is. Thus, fusion occurs when the person becomes entangled in the thoughts and functions of words, and is controlled by them. This "fused" way of functioning leads to narrow, inflexible, and insensitive behavioral repertoires. Therefore, defusion involves creating

non-literal contexts and entails acceptance, openness, and awareness of private events to be at the service of actions based on the person's own values (Hayes, 2004). The other processes would be acceptance of private events; the level of contact with the present moment "here and now" doing what matters; self as context, which understands the self as a process that is present, as opposed to the contained self; and, finally, action committed to present values. Functional analysis will indicate the characteristics of the inflexibility pattern of experiential avoidance, and the therapeutic goal will focus on facilitating cognitive flexibility with private events while the person orients his or her life toward what truly matters (Luciano & Valdivia, 2006).

Psychological flexibility is the therapeutic alternative to be pursued by ACT. It is defined as the ability to contact fully with the present moment, to be aware and to be able to appreciate with distance the thoughts and sensations one has, and to persist or change behavior, when doing so places the person in a direction with values (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Therefore, the main therapeutic objective in ACT is to make the reaction to discomfort more flexible, because resistance limits life, and focusing on the control of discomfort, letting go, or merging with it, means losing the valuable direction (Luciano & Valdivia, 2006).

Several studies have demonstrated the positive effect of ACT on various mental disorders. For example, training in pain acceptance increases pain tolerance (Dahl, Wilson, & Nilsson, 2004); in chronic illness, acceptance of difficult thoughts and feelings as well as willingness to move on are good predictors of adequate disease self-management (Gregg, 2004).

Thus, insomnia has also been investigated, and it appears that experiential avoidance may be a risk factor for insomnia (Zakiei et al., 2017). Furthermore, research shows that emotional disorders and sleep disorders are related (Spoormaker and van den Bout, 2005). Thus, they deduce that experiential avoidance may be associated with insomnia. Avoiding internal thoughts and experiences increases physiological arousal and negative emotions, leading to insomnia (Fledderus, Oude Voshaar, Ten Klooster, & Bohlmeijer, 2012). Zakiei, Khazaie, Reshadat, Rezaei, and Komasi (2020) reaffirmed in their research that difficulties in emotion regulation were greater in patients with insomnia. Likewise, it has been found that ACT can also be effective in controlling insomnia (Khazaie and Zakiei, 2019; Päivi et al., 2019; Zakiei and Khazaie, 2019; Dalrymple et al., 2010). ACT increases the patient's desire for a good sleep experience by making changes in the relationship with attitudes and thoughts in the context of the person with their sleep problem, with a view to improving sleep quality (Khazaie and Zakiei, 2019).

On the other hand, there are studies that have related experiential avoidance and rumination (Aldao, Nolen-Hoeksema, & Schweizer, 2010). Rumination is the response style by which people focus on repetitive thoughts, their causes or consequences, instead of considering problem-solving strategies that would help reduce such private events (Nolen-Hoeksema, 1991). Pérez Álvarez (2014) adds that rumination is the behavior of repeatedly analyzing about the same fact, without these being enlightening of the situation, but rather as a pattern of avoidance. Rumination is presented as a form of cognitive perseveration (Aldao, Nolen-Hoeksema and Schweizer, 2010). Maladaptive emotional regulation strategies are believed to aggravate this ruminative response style, having important implications in numerous mental and physical disorders, thus termed "transdiagnostic" processes (Harvey, Watkins, Mansell, & Shafran, 2004; Kring & Sloan, 2009). On the other hand, results from relational studies have found significant relationships between experiential avoidance and rumination, along with depression and

anxiety, in non-clinical populations (college students) (Cribb, Moulds, & Carter, 2006; Moulds, Kandris, Starr, & Wong, 2006).

Adolescents present difficulties, especially, in controlling their reactions and impulses when experiencing intense emotions. Therefore, on many occasions they lack tools to cope with the demands of social interactions and the search for a life path (Madil, Quintero, & Maero, 2017). In the adolescent population, an excess of experiential avoidance behaviors to mitigate short-term pain is noted, as well as an excessive fusion with thoughts, which makes it difficult for adolescents to commit to values and a life path (Murrell, Coyne, & Wilson, 2004). On the other hand, a particular relationship between rumination and depressive and anxious disorders has been shown (Cova, Rincón & Melipillán, 2007). Thus, several epidemiological studies point out sex and age as critical factors, indicating that women are twice as likely as men to present rumination and depression and, in turn, a greater tendency to ruminate in response to emotional distress in adolescence and adulthood has been reported (Nolen-Hoeksema and Watkins, 2011). Finally, several studies have found a high prevalence of insomnia in both healthy children and children with psychiatric comorbidity, such as anxiety, depression, and autism spectrum disorders (Chesson, Anderson, & Littner, 1999; Roberts, Roberts, Roberts, Chan, 2006). A meta-analysis by Dewald, Meijer, Oort, Kerkhof and Bögels (2010) concluded that insufficient sleep, poor sleep quality, and sleepiness are common problems in children and adolescents and are related to learning, memory and school performance.

The present study will expand the knowledge of experiential avoidance as a possible diagnostic functional dimension to be used. More specifically, it will allow a better understanding of experiential avoidance patterns and their relationship with insomnia and ruminative response style, as well as between insomnia and rumination. To know how these variables are presented in the adolescent population and how they are associated with each other taking into account age, sex, and academic year. Since experiential avoidance is at the basis of numerous diagnoses, it is a risk factor for insomnia and has been found to be related to ruminative thinking; and at the same time, a relationship has been found between insomnia and emotional disorders, and rumination with depression and anxiety, exploring the association of these three variables and how they may influence age, sex and, academic year will offer a greater understanding of the influence of these variables in adolescents, since they are a population at risk for suffering from emotional problems, with a view to being able to establish lines of intervention in these areas in the future.

The aim of this study was to analyze the relationship between the variables experiential avoidance, rumination, and insomnia as a function of age, sex, and academic level in young people between 12 and 17 years of age, in order to achieve a better understanding, to know how they are presented and if there are associations between these variables. For this purpose, a demographic data questionnaire was administered; the AAQ-II to measure experiential avoidance; the RRS to evaluate ruminative thinking; and the ISI for insomnia.

The hypotheses proposed are the following: (1) the greater the experiential avoidance, the greater the insomnia; (2) the greater the experiential avoidance, the greater the rumination; (3) the greater the rumination, the greater the insomnia; (4) significant differences in experiential avoidance, rumination, and insomnia scores with respect to sex, age, and academic year; and, (5) the greater the age and higher the academic level, the higher the scores in experiential avoidance, rumination, and insomnia.

Method

Design

Cross-sectional correlational observational study with a nonclinical sample.

Participants

A non-probabilistic sample of 103 students from the 1st, 2nd, 3rd, and 4th years of E.S.O. who voluntarily participated in the research was included, of which 58 were female (56.3%) and 45 male (43.7%). The ages ranged from 12 to 17 years with a total mean age of 13.87. The sample was drawn from the Colegio y Escuela Hogar Cristo Rey Alcalá La Real (Jaén), enrolled in the 2019-2020 academic year.

The inclusion criteria were: (1) consent to participate in the study; (2) be in school in the academic years 1-4 of E.S.O., and (3) be in the age range of 12-18 years. Exclusion criteria were: (1) having audiovisual deficits, (2) having any psychiatric disorder or medical pathology that prevented correct participation.

Instruments

Acceptance and Action Questionnaire - II (AAQ-II) (Bond et al., 2011). The Spanish adaptation of Ruiz, Langer, Luciano, Cangas, and Beltrán (2013) has been used. It is a general measure of experiential avoidance or psychological inflexibility. It consists of 7 items on a 7-point Likert-type scale, with 1 being *never true* and 7 *always true*. The items reflect unwillingness to experience unwanted emotions or thoughts and lack of ability to be in the present moment and behave accordingly when experiencing unwanted psychological events. The instrument presents a unifactorial solution with good internal consistency (Cronbach's $\alpha = .88$), good convergent, divergent, and discriminant validity.

Ruminative Responses Scale (RRS) by Nolen-Hoeksema et al. (1990; cited in Nolen-Hoeksema and Morrow, 1991). The Spanish adaptation of Hervás (2008) has been used. It evaluates the presence of a ruminative response style: reproaches and reflection. It is composed of 22 items with a 4-point Likert-type response scale, being 1 *almost never* and 4 *almost always*. Adequate reliability was proven through the retest, being the internal consistency higher than in the original test ($\alpha = 0,93$) for the global scale (Hervás, 2008).

Insomnia severity index (ISI) (Morin, 1998; Bastien, Vallières and Morin, 2001). The Spanish version adapted for youth and adults was used (Fernandez-Mendoza et al., 2012). It is a brief, simple, and self-administered questionnaire. It consists of 5 items that are evaluated on a 5-point Likert-type scale, where 0 is *nothing* and 4 is *a lot*, obtaining a score from 0 to 28. The first item evaluates the severity of insomnia; the second, sleep satisfaction; the third item, interference with daytime functioning; and the fourth and fifth, the perception of the sleep problem and the level of concern about sleep, respectively. The Spanish version of the ISI shows adequate internal consistency indices (Cronbach's $\alpha = 0.82$). Confirmatory factor analysis showed that a three-factor structure provides a better fit to the data. Reliability and validity were confirmed for assessing the subjective severity of insomnia in the Spanish-speaking population (Fernandez-Mendoza et al., 2012).

Procedure

First, the AAQ-II, RRS, and ISI instruments were prepared, together with the informed consent form and a demographic data questionnaire, in paper format for administration.

All the instruments were administered at the Colegio y Escuela Hogar Cristo Rey Alcalá La Real during the academic year 2020-2021, specifically in the month of January. To gain access to the sample, it was necessary to contact the director of the center to explain in detail the purpose and objectives of the study, and to obtain his or her consent. The time for administering the questionnaires was determined in advance. All participants gave their consent to voluntarily collaborate in the study. A detailed explanation of how to complete the questionnaires was provided to the participants and the anonymity of the responses was guaranteed. The order of administration of the instruments was demographic data questionnaire, AAQ-II, RRS, and ISI, with an approximate duration of 20 minutes for the total class.

Finally, the questionnaires were collected and the data and scores were duly corrected and annotated. The pertinent statistical analysis was then performed.

Data analysis

Statistical analyses were performed using the IBM SPSS version 22.0 statistical package.

To begin with, a descriptive analysis was performed, expressing the qualitative variables by means of a frequency distribution and the quantitative variables by means of frequency distribution, arithmetic mean, variance, and standard deviation. We continued analyzing the possible association between the study variables by calculating bivariate Pearson correlation coefficients: experiential avoidance with ruminative thinking and with insomnia, respectively; and, on the other hand, ruminative thinking with insomnia. The Student's t-test for independent samples was used to compare whether there are significant differences for the sex variable (with two levels, male and female) and according to the questionnaire administered (AAQ-II, RRS and ISI). Finally, to analyze the other two variables, age (with six levels, 12, 13, 14, 15, 16, and 17 years) and grade (with four levels, 1st, 2nd, 3rd, and 4th year of E.S.O.) we chose the one-factor ANOVA for independent samples.

Since we have not found significant differences between any of the variables analyzed in the ANOVA, it does not make sense to perform a more exhaustive analysis using post hoc tests to find out exactly between which two levels there are significant differences.

Results

Of the total study sample, 103 participants, 43.7% were male and 56.3% female with an age range of 12 to 17 years, with an average age of 13.87. Regarding academic level, 22.3% were in the 1st year of E.S.O., 26.2% in the 2nd year of E.S.O., 29.1% in the 3rd year of E.S.O., and 22.3% in the 4th year of E.S.O. (See Table 1).

Table 1
Demographic variables of the study sample

	Frequency	Percentage
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Sex	Man	45	43,7
	Woman	58	56,3
	Total	103	
Academic Level	1ST E.S.O.		22,3
	2ND E.S.O.		26,2
	3RD E.S.O.		29,1
	4TH E.S.O.		22,3
	Total	103	
Age	12	18	17,5
	13	23	22,3
	14	27	26,2
	15	27	26,2
	16	5	4,9
	17	3	2,9
	Total:	103	
	Media:	13,87	

Standard deviation: 1,28

Variance: 1,64

There is a positive linear relationship between the scores on all the questionnaires, i.e., if they score high on one questionnaire they will score high on the other. Comparing the correlations, the highest is between the AAQ-II questionnaire and RRS (0.648), then between ISI and RRS (0.386), and finally AAQ-II and ISI (0.297). (See Table 2)

Table 2

Pearson correlation between AAQ-II and RRS, AAQ-II and ISI, and RRS and ISI.

	AAQ-II and RRS	RRS and ISI	AAQ-II and ISI
Pearson correlation	0,648	0,386	0,297
Sig. (bilateral)	0	0	0,002
N	103	103	103

Note: * Correlation is significant at the 0.01 level (bilateral)

From the t-test for independent samples for the sex variable (with two levels, male and female), we obtain that in the AAQ-II questionnaire; there are significant differences in the sex variable, which means that men and women score differently in experiential avoidance. The variances are assumed to be different since the significance is less than 0.05 in Levene's test, and the null hypothesis is rejected. Again, we found significant differences between men and women in terms of mean scores in RRS (ruminative thinking). Equal variances are assumed since in Levene's test the significance is 0.09, greater than 0.05, and the null hypothesis is rejected. Finally, in the ISI questionnaire (sleep problems) no significant sex differences were observed in the mean scores. Equal variances are assumed (Levene's test significance 0.368, greater than 0.05, so the null hypothesis is accepted) and we see that the significance of the T-test is 0.101, so in this case, being greater than 0.05, the null hypothesis is accepted. (See Table 3)

Table 3
T-test for independent samples for the sex variable according to questionnaire.

		Levene test for equality of variances					T-test for equality of means			
		F	Sig.	t	gl	Sig. (bilat.)	Diff. of averages	Standard error of the diff.	95% confidence interval for the diff.	
									Inf.	Sup.
AAQ-II	Assumes equal var.	12,298	0,001	-2,273	101	0,025	-4,03142	1,77395	-7,55045	-0,51238
	Equal var. are not assumed			-2,363	100,630	0,020	-4,03142	1,70570	-7,41522	-0,64762
RRS	Assumes equal var.	2,926	0,090	-3,852	101	0,000	-9,27280	2,40740	-14,04844	-4,49715
	Equal var. are not assumed			-3,951	100,714	0,000	-9,27280	2,34675	-13,92828	-4,61731
ISI	Assumes equal var.	0,818	0,368	-1,656	101	0,101	-1,62337	0,98002	-3,56747	0,32073
	Equal var. are not assumed			-1,626	87,157	0,108	-1,62337	0,99833	-3,60761	0,36086

The one-factor ANOVA for independent samples to analyze the variable age (with six levels, 12, 13, 14, 15, 16, and 17 years) and grade (with 4 levels, 1st, 2nd, 3rd, and 4th year of E.S.O.) did not find significant differences for either variable in any of the questionnaires (AAQ-II, RRS, and ISI).

Discussion and conclusions

It is stated that people with difficulties in emotional regulation assume avoidance as a pattern of conflict resolution; they are not flexible with their private events, so they experience many negative emotions that lead to rumination (Saxena, Dubey and Pandey, 2011). Therefore, efforts to suppress the arousal they feel leads them to insomnia and poor sleep quality. Moreover, in the results of the research conducted by Zakiei, Khazaue, Reshadar, Rezaei, Komasi (2020) it was obtained that experiential avoidance was higher in patients with insomnia compared to non-clinical population, thus concluding that experiential avoidance plays a role in predicting sleep disorders. Studies show that efforts directed at the avoidance of private experiences cause an increase in mental arousal and, therefore, rumination, thus decreasing the quality of sleep. It has been shown that when a person with insomnia tries to control their thoughts and feelings, their insomnia is aggravated (Dalrymple et al., 2010).

ACT has been applied for different disorders in the adolescent population group. For example, in the study conducted by Wicksel, Melin, and Lekander in 2009 (in Mandil et al., 2017) they apply ACT to 32 adolescents with chronic pain and show better results than a control group receiving pharmacological treatment, among others. Regarding anxious disorders, significant improvements are found regarding quality of life and symptomatology, as well as in the management of daily life in anxious young people treated with ACT (Mandil et al., 2017). Hayes, Boyd, and Sewell (2011) show in a study that adolescents with depressive mood disorders who are treated with ACT, present statistically significant results both at the end of treatment, as well as in the long term.

Thus, after the relevant data analysis of the scores presented by the study sample, the correlations of the hypotheses raised are confirmed: experiential avoidance correlates positively with insomnia and rumination, respectively, and likewise, positive correlations between rumination and insomnia. On the other hand, significant sex differences were found for experiential avoidance and rumination scores, but not for insomnia. We could say, then, that the established objectives have been achieved, although we should take into account the study limitations that may have influenced the results.

Among the limitations of the study are mainly the sample size, which requires replications to improve the transfer of findings; the non-clinical sample, which could lead to more representative scores of our variables in a clinical sample; and, not having made a comparison with higher courses such as High School or Vocational Training, since there are greater academic demands and older age could influence the association of the variables. It should be taken into account that this was a cross-sectional study, so it would be important to examine the effects of the experiential avoidance, rumination, and insomnia variables in longitudinal studies. It should be noted that extreme caution should be exercised when generalizing the results of the present study, since it was carried out in a single school in Alcalá la Real.

For future lines of research, a correlational observational study could be carried out, also with a non-clinical sample, but with a larger sample size, and extending the range of age and academic level to observe more precisely how age and academic level may be

influencing our variables. It would also be interesting to be able to conduct research with the same approach, but in a clinical sample, without the need for a very large sample size. Thus, we would have a better understanding of how the variables of experiential avoidance, rumination, and insomnia interact in adolescence when they present a clinical diagnosis.

In conclusion, it is possible that these three variables have a reciprocal feedback between them, so that, if an adolescent has a tendency to avoidance of unpleasant or upsetting private events, he or she more readily has rumination-oriented thoughts, which leads to greater insomnia, and this in turn reinforces experiential avoidance and rumination.

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