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Predictors of anxiety and depression among newly diagnosed people living with HIV: A longitudinal study.

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Declaration of Conflicting Interests

The Authors declare that there is no conflict of interest.

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Abstract

This longitudinal study examined whether past resilience and internalized stigma predicted anxiety and depression among newly diagnosed Spanish-speaking people living with HIV (PLWH). We also analyzed whether coping strategies mediated this relationship. Data were collected at two time points from 119 PLWH. Approximately a third of participants had scores indicative of anxiety symptoms, the same result was found for depressive symptoms. Structural equations modeling revealed that 61% of the variance of anxiety and 48% of the variance of depression 8 months after diagnosis was explained by the proposed model, which yielded a good fit to data. Anxiety and depressive symptoms were significantly and negatively predicted by positive thinking, thinking avoidance, and past resilience, and positively predicted by self-blame. Additionally, anxiety was positively predicted by internalized stigma. Past resilience negatively predicted internalized stigma, self-blame, and thinking avoidance and it positively predicted positive thinking. Internalized stigma positively predicted self-blame. Moreover, internalized stigma had a significant indirect effect on anxiety symptoms through self-blame, and past resilience had significant indirect effects on anxiety symptoms and depressive symptoms through internalized stigma and coping. The results point to the need for clinicians and policy makers to conduct systematic assessments and implement interventions to reduce internalized stigma and train people living with HIV to identify and use certain coping behaviors.

Keywords: HIV/AIDS, anxiety, depression, resilience, stigma, coping

Introduction

Anxiety and depression are two highly prevalent mental health problems among people living with HIV (PLWH; Heywood & Lyons, 2016; Willie et al., 2016). Although reactions to testing positive vary widely from patient to patient (Hult, Maurer, & Moskowitz, 2009; Moskowitz, Wrubel, Hult, Maurer, & Acree, 2013), a HIV-positive diagnosis still constitutes a stressor for many that threatens both their physical and mental health (Blashill, Perry, & Safren, 2011). PLWH face many uncertainties in relation to their health (including HIV-associated co-morbid conditions and side effects of antiretroviral therapy) and psychosocial challenges (including interpersonal relationships, financial status, and stigmatization and discrimination; Buseh, Kelber, Hewitt, Stevens, & Park, 2006; Gakhar, Kamali, & Holodniy, 2013). PLWH endure stigma and discrimination to a very high degree (Fife & Wright, 2000; Holzemer et al., 2009), which constitutes an additional source of stress making them more prone to psychological distress. Distress, in turn, disrupts psychological functioning and can contribute to disease progression, including reduced CD4 cell counts and higher viral load (Chida & Vedhara, 2009; Ironson et al., 2005).

In adulthood, traumatic events are usually isolated and of relatively brief duration (e.g., death of a loved one, the receipt of a positive HIV diagnosis) and so the individual typically experiences the traumatic event in the context of otherwise normal life circumstances (Bonanno, 2004, 2005). In fact, diagnoses constitute a crucial point for studying post-trauma mental health, since it “is generally the point at which the cascade of stressors associated with chronic illness begins to build” (Moskowitz, 2010, p. 465). The period immediately following the receipt of an HIV diagnosis is characterized by increases in symptoms of depression and anxiety (Moskowitz, 2010). With regard to this, there is broad consensus that it is far more prudent to promote

positive outcomes rather than take care of already developed disorders (Luthar, 2006). Given the high prevalence of anxiety and depression among PLWH (Miners et al., 2014), early identification of their predictors would allow health care professionals implement preventive interventions. Thus, the ultimate objective of this study is to help health caregivers effectively screen newly diagnosed individuals and detect those at risk of developing anxiety or depressive symptoms so that preventive actions can be taken.

This study addresses this subject by studying these two outcomes and their possible predictors in a sample of Spanish-speaking newly diagnosed PLWH. The longitudinal perspective is an important approach in this study as it allows the study of temporal relationships that provide with stronger evidence than concurrent data (León & Montero, 2015).

The Cognitive Theory of Stress and Coping and the variables of this study

The Cognitive Theory of Stress and Coping (Lazarus & Folkman, 1984) and its later revision (Folkman, 1997, 2008) provide a useful framework. This is an appraisal-based model in which the onset of a stressful event generates a primary appraisal of its personal significance and a secondary appraisal of options for coping. Depending on the outcomes of both appraisals, the stressful event will be viewed as a harm, threat, or challenge, and then coping responses will be initiated to meet the demands of the situation. These appraisals are influenced by various personal factors such as goals, beliefs and psychological traits or dispositions, and also by situational factors such as the demands and resources of the situation.

Of the variables which have been associated with anxiety and depression in PLWH, this study focuses on resilience, internalized stigma, and coping strategies due to their key role in mental health prediction and their interrelatedness. These variables can be conceptualized as different elements within the Cognitive Theory of Stress and Coping model. Resilience can be

viewed as a personal disposition, while stigma constitutes a stressor and coping refers to the responses initiated to meet the situational demands. These three variables will now be introduced separately so as to define them, discuss their relationship with anxiety and depression, and their relationship with each other.

Resilience

Resilience, as it is usually defined, reflects the personal consciousness of a phenomenon—the fact that the person has effectively coped with and overcome stressful situations in the past (Luthar, 2006). This perception of past use of effective coping strategies also predicts their use in the future. Due to these characteristics, resilience is often considered as a psychological trait that predicts the use of coping responses in the midst of chronic stress, as a recent meta-analysis on its relationship with mental health indicated (Hu, Zhang, & Wang, 2015). Indeed, research has shown that self-reported resilience is associated with coping strategies and is also inversely related to anxiety and depression (Seligman & Csikszentmihalyi, 2000). More specifically, evidence in the context of cancer and HIV shows that perceived resilience can predict coping behaviors (Kang & Suh, 2015; Molina et al., 2014; Pellowski, Kalichman, Matthews, & Adler, 2013), and resilience has also been found to be associated with higher HIV medication adherence and lower viral load (Dale et al., 2014). Furthermore, resilience can influence the degree to which HIV social stigma is internalized (Brouard & Wills, 2006). Thus, assessing individuals' perceptions of their own past resilience can be useful in understanding and predicting PLWH's adaptation to HIV infection. In view of all this, we expect perceived past resilience to be inversely related to anxiety and depressive symptoms, possibly through the internalization of HIV stigma and through coping strategies.

HIV internalized stigma

Social stigma is another variable central to HIV infection, an important stressor that is closely related to anxiety and depression, as a recent meta-analysis found (Rueda et al., 2012). Although there are various dimensions of HIV stigma (e.g.., enacted, anticipated, and internalized; Earnshaw & Chaudoir, 2009), it is internalized stigma, defined as the devaluation and discrediting of oneself based on one's HIV status (Earnshaw, Bogart, Dovidio, & Williams, 2013), the one which has been claimed to have the most severe consequences in terms of quality of life and mental and physical health (Murphy, Garrido-Hernansaiz, Mulcahy, & Hevey, 2018; Phillips, Moneyham, & Tavakoli, 2011; Singh, Kumar, Mukhopadhyay, & Singh, 2014). Internalization of HIV stigma, as mentioned before, depends on how resilient the person is (Brouard & Wills, 2006) and internalized stigma has indeed been consistently related to higher anxiety and depressive symptoms and lower quality of life in different populations (Heywood & Lyons, 2016; Murphy et al., 2018; Willie et al., 2016), including PLWH in Spain (Fuster-Ruizdeapodaca, Molero, Holgado, & Mayordomo, 2014; Hernansaiz-Garrido & Alonso-Tapia, 2017).

Furthermore, the influence that stigma has on health seems to partially take place through the alteration of coping behaviors (Hatzenbuehler, Phelan, & Link, 2013). For instance, a study found that the impact of HIV stigma (specially internalized stigma) on depression was moderated by the degree of mastery (Rueda et al., 2012). Similarly, the use of avoidant coping strategies mediated the relationship between stigma and well-being in a study conducted with Spanish PLWH (Sanjuán, Molero, Fuster, & Nouvilas, 2012), and prospective studies have reported that individuals with higher stigma tended to engage in higher rates of maladaptive coping strategies (Hatzenbuehler et al., 2013). In view of this, we expect internalized stigma to predict the use of coping strategies and have a positive association with anxiety and depression.

Coping strategies

Finally, coping is defined as "a constant change of cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus & Folkman, 1984, p. 141). In other words, coping is "a cognitive or behavioral response to something appraised as stressful" (Moskowitz, Hult, Bussolari, & Acree, 2009, p. 121). As a response, it implies the use of different strategies (e.g., positive thinking, rumination, self-blaming, help-seeking, etc.) that can be more or less effective. However, coping is a complex process as the type of strategies used depend both on personality dispositions and environmental demands (Folkman & Moskowitz, 2004). Coping responses have often been organized in higher order classifications that allow for more manageable dimensions, and the distinction between approach coping and avoidance coping, which is characterized by engagement with or disengagement from the stressor, stands out in the HIV literature (Moskowitz et al., 2009). Despite the advantages of higher order classifications (e.g., efficient analysis and discussion of findings), lower order classifications are more useful to inform what strategies work with HIV-related stress, and so researchers are advised to use them (Moskowitz et al., 2009).

Regarding the relationship of coping with anxiety and depression, literature has found that approach coping is generally related to better psychological outcomes, while avoidance coping is related to worse psychological outcomes (Moskowitz et al., 2009; Roesch & Weiner, 2001). For instance, a study with U.S. immigrant women reported lower levels of depressed mood for women who reported lower levels of avoidance coping (Gurung, Taylor, Kemeny, & Myers, 2004). Reports on Spanish adult PLWH have provided similar results, with approach coping being associated with better well-being, better immune function and more positive affect, and

avoidance coping being related to worse well-being, more negative affect and less perceived social support (Carrobles Isabel, Remor Bitencourt, & Rodríguez Alzamora, 2003; Sanjuán et al., 2012).

Looking at specific coping strategies, a meta-analysis found that responses such as direct action, fighting spirit, positive reappraisal, and seeking social support were significantly associated with lower negative affect (which included anxiety and depression). On the other hand, strategies such as self-blame, emotional venting, behavioral disengagement, escape/avoidance, rumination, and social isolation were associated with higher negative affect (Moskowitz et al., 2009). Again, studies with Spanish PLWH have yielded similar findings: trying to solve the problem and help seeking were related to lower psychological distress (anxiety and depressive symptoms), while passive behaviors, rumination and generally cognitive coping strategies not directed at finding a solution were related to higher distress (Carrobles Isabel et al., 2003). We thus expect that strategies like problem solving, positive thinking, and help seeking will be associated with lower levels of anxiety and depressive symptoms, while strategies such as isolation, self-blame, rumination, emotional expression, and thinking avoidance will be related to higher levels.

The present study

Few studies have simultaneously examined risk and protective factors (e.g., internalized stigma and perceived resilience; Emlet, 2006), and reports have usually focused solely on depressive symptoms, ignoring anxiety (Heywood & Lyons, 2016). The present study examines de role of perceived past resilience and internalized stigma in anxiety and depressive symptoms over time and whether these associations are mediated by coping behaviors in a sample of newly diagnosed PLWH.

We hypothesize that higher perceived past resilience will be associated with a lower degree of HIV social stigma internalization, and that both will predict the use of more effective coping strategies and, therefore, less anxiety and depressive symptoms.

Methods

Participants

Study eligibility criteria included a minimum age of 18 years, having been diagnosed as HIV seropositive in the past 100 days, and ability to read and write in Spanish.

Instruments for initial assessment (T0)

Demographic characteristics included age, gender, sexual orientation, country of origin, relationship status, educational level, employment status, time since diagnosis, mode of transmission (sexual intercourse, injection drugs, blood transfusion/mother-to-child, other/I don't know) and relation to an HIV-related group, association, or non-profit organization (yes/no).

Perceived past health-related resilience was measured with a four-item subscale of the Situated Subjective Resilience Questionnaire for Adults (SSRQA; Alonso-Tapia, Garrido-Hernansaiz, Rodríguez-Rey, Ruiz Díaz, & Nieto, 2018) which assesses perceived past resilience in the face of stress due to past health problems (e.g., "When I have had an important health issue, I have had a hard time overcoming the distress that it caused me"). Participants were instructed to rate items on a 5-point Likert scale (1 = *Strongly disagree*, 5 = *Strongly agree*) based on their recalled experiences prior to diagnosis. The original study indicated that the subscale showed acceptable reliability ($\alpha = .72$), as well as provided evidence for the factorial validity, convergent validity, and discriminant validity of the measure.

Internalized stigma was assessed with the HIV Internalized Stigma Scale (HIV-ISS; Hernansaiz-Garrido & Alonso-Tapia, 2017), a self-report instrument in Spanish that evaluates

the level of internalized stigma related to HIV during the last month. It consists of 10 items with a 5-point response scale (1 = *Never or hardly ever*; 5 = *All or almost all the time*). The original study indicated good reliability in terms of internal consistency (α = .94) and test-retest reliability (ICC = .79), as well as evidence of good factorial validity, criterion-related validity, and sensitivity.

Instruments for final assessment (T1)

Coping strategies were evaluated with the Situated Coping Questionnaire for Adults – HIV Short Form (SCQA-HIV-SF; Garrido-Hernansaiz, Alonso-Tapia, & Martín-Fernández, 2019). It is an instrument in Spanish that assesses the use of eight coping strategies (problem solving, positive thinking, help seeking, isolation, self-blame, rumination, emotional expression, and thinking avoidance) in the context of three types of stressful situations relevant to HIV infection (personal relationships, health, and finances). Respondents rated items on a 5-point Likert scale (1 = *Never*; 5 = *Almost always*) to assess the degree to which each coping strategy was used in the previous six months. Reliability of the coping strategies' scores was shown to be good in the original study (McDonald's ω ranging from .90–.97), which also provided evidence of good factorial and criterion-related validity.

Anxiety and depressive symptoms were measured with the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983), a self-report measure comprised of 14 items with two 7-item subscales, one for anxiety (HADS-A) and one for depression (HADS-D). Items are rated on a 4-point Likert-type scale (0 to 3). It has been especially recommended for PLWH due to the absence of somatic items (Savard, Laberge, Gauthier, Ivers, & Bergeron, 1998), and it has been validated in a variety of outpatient samples in Spain, including PLWH (Herrero et al., 2003; Luciano, Barrada, Aguado, Osma, & García-Campayo, 2014; Quintana et

al., 2003; Vallejo, Rivera, Esteve-Vives, & Rodríguez-Muñoz, 2012). The scores of the Spanish version (Tejero, Guimerá, Farré, & Peri, 1986) have shown adequate psychometric properties (i.e., reliability, validity) in different Spanish populations and the scale has been considered a good screening instrument to assess anxiety and depression (Herrero et al., 2003; Luciano et al., 2014; Terol-Cantero, Cabrera-Perona, & Martín-Aragón, 2015).

Procedures

Approval for this study was obtained from the institutional review board at the second author's university (CEI60-1059). Data were collected between October 2014 and November 2016. Recruitment strategies utilized both direct referrals and online social networks. Regarding the first, staff at an outpatient health care center in Madrid (Spain) specializing in sexually transmitted infections referred newly-diagnosed PLWH to the study (N = 92). With regard to the latter, some studies have shown that social media can work as good and cost-effective recruitment methods for hard-to-reach populations with medical conditions such as PLWH, including Spanish speakers (Martinez et al., 2014; Topolovec-Vranic & Natarajan, 2016; Yuan, Bare, Johnson, & Saberi, 2014). Thus, several local and national HIV associations and groups from Spanish-speaking countries advertised the study on their online social networks (n = 72, of which 19 were not considered eligible as their reported time since diagnosis was over 100 days), which resulted in a final sample of 145 participants.

Participants provided their informed consent for participation after receiving information on the study and their rights as participants (confidentiality, etc.). Participants recruited through the health-care center completed this first assessment (T0) using pen-and-paper questionnaires in a private room after a medical appointment. Those recruited online completed the questionnaires

online at a time and place of their choosing. At this first assessment, participants were first instructed to reply to questions regarding their pre-diagnosis experiences of health-related resilience. After that, they were instructed to focus on the present and then replied the items concerning internalized stigma. Six months later (T1), participants were contacted again by phone or email and were asked to complete the second set of questionnaires on an online platform. Two subsequent reminders were carried out (again, by phone or email) after two and four weeks. At this second assessment, participants were instructed to reply to the coping scales thinking of the past month in their lives and then focus on the present time in order to complete the anxiety and depression scales.

Although relevant data could have been gathered by asking the participants to complete the four measures (perceived past resilience, internalized stigma, coping, and anxiety and depressive symptoms) at both assessments, we chose to divide the assessments to reduce the participant response burden, which has been found to be important with participants who are potentially in the midst of a life crisis (Folkman & Moskowitz, 2004; Moskowitz et al., 2009). Thus, an effort was made to reduce the number of assessment tools used at each assessment.

Eighty-seven of participants referred by the health-care center completed the T1 assessment (attrition rate = 5%) and 32 of those recruited online did (attrition rate = 38%), composing a final sample of 119 participants (global attrition rate = 18%).

Data analysis

The psychometric properties of the instruments were studied in our sample, and descriptive statistics were used for the sample and the study variables. Reliability was examined in terms of internal consistency by means of Cronbach’s alpha for all measures except the coping scales. Since these are multidimensional, the tau-equivalence assumption is violated and thus

Cronbach's alpha will under-estimate the internal consistency (Graham, 2006; McDonald, 1999) – therefore, the internal consistency of the coping scales was estimated via McDonald's omega, which has been found to be a more appropriate estimate in this case (Alonso-Tapia, Rodríguez-Rey, Garrido-Hernansaiz, Ruiz, & Nieto, 2016; Graham, 2006). Bivariate correlations between the study variables were obtained and mean differences in the main variables were studied according to the recruitment method (health-care center or online) through independent samples *t*-tests.

Structural equation modeling (SEM) was used to examine the relationships among anxiety symptoms, depressive symptoms, and their predictors. This type of analysis accounts for multiple relationships among variables, for measurement error, and allows testing of directional relationships (Kline, 2015). Depending on several factors such as the number of indicators per latent variable, the required sample size can vary from small to large (Wolf, Harrington, Clark, & Miller, 2013). For this study, we deemed a final sample size of 100 participants as sufficient, as later analyses indicated.

Weighted Least Squares Means and Variance Adjusted estimation procedure (WLSMV) was used, which is a robust estimator adequate for ordinal variables often used in applied research (Li, 2016). WLSMV has been found to possess strong convergence properties and to provide a good recovery of population parameters even when the model is large and the sample size is small (Li, 2016; Moshagen & Musch, 2014). The standardized factor scores of the observed variables in the models were obtained and used in the estimation of the variable scores.

An initial model (see Figure 1) was tested with anxiety and depressive symptoms as outcome measures and T0 variables (internalized stigma and perceived past health-related resilience—hereafter "past resilience") and the eight coping strategies (as their assessment at T1

referred to their use during the previous month) as predictors. Coping strategies were also hypothesized to be predicted by the T0 variables (internalized stigma and past resilience) and internalized stigma was likewise hypothesized to be predicted by past resilience. The tested model was subjected to empirical respecification (i.e., non-significant predictors were removed; Kline, 2015) with the aim of arriving at a parsimonious solution that can be useful to health-care professionals. The chi-square statistic, the ratio χ^2/df, the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the Tucker-Lewis index (TLI) were used to assess model fit. Recommended criteria were followed (p for $\chi^2 > .05$; $\chi^2/df < 3$; RMSEA < .08; CFI, TLI > .90; Hair, Black, Babin, & Anderson, 2010). Analyses were performed using MPlus 7 (Muthén & Muthén, 2010) for the SEM and SPSS 23 for the rest.

[INSERT FIGURE 1]

Results

Demographic Characteristics

The sample was composed of 119 PLWH, all fluent in Spanish, with a mean age of 32.73 years (*SD* = 8.25), 116 being males (98%), two females, and one reporting gender as "other". A mean of 38.78 days had passed since diagnosis (*SD* = 20.43) at T0. Regarding region of origin, 57.1% of the participants were from Spain, 8.4% from Venezuela, 5.9% from Mexico, 4.2% from Argentina, 4.2% from Peru, 4.2% from Brazil, 11.8% from other Latin American countries (i.e., Colombia, Ecuador, Cuba, Chile, El Salvador, Paraguay, Dominican Republic), and the rest (4.2%) from other countries (e.g., Italy). As for sexual orientation, 87% reported being homosexual, 11% bisexual, and 2% heterosexual. Over half of the sample had an undergraduate degree (55%), with an additional 14% holding a postgraduate degree. Slightly over a quarter (28%) had a secondary education and very few (3%) had only a primary education. The majority

of the participants were single (76%) and a small proportion of them were married or living with their partner (13%) or divorced/separated (11%). Three quarters of the participants were employed at the time (75%), an additional 13% was unemployed, and the rest (12%) were in different conditions (e.g., student, medical leave). Almost one in five participants were connected with a HIV-related group, association, or non-profit organization (18%). Finally, most participants (93%) reported sexual intercourse as the mode of transmission and the rest stated either "other" or reported that they did not know.

Descriptive Statistics

Table 1 presents the reliability and descriptive statistics of the variables in the study. Reliability was shown to be good for all measures used. Using the optimal cut-offs to screen for anxiety and depressive disorders found by Herrero et al. in a Spanish sample of outpatients including PLWH (Herrero et al., 2003), 31.93% (n = 38) of participants had scores indicative of anxiety (≥ 8), and 31.93% (n = 38) had scores indicative of depression (≥ 5).

[INSERT TABLE 1]

The effect of recruitment site on the study variables was examined. Participants recruited though the health-care center showed greater past resilience (M = 14.38, SD = 3.85) than those recruited online (M = 12.44, SD = 3.80; $t(117) = -2.45$, $p = .02$). They also showed less anxiety (M = 5.62, SD = 3.37) and depressive symptoms (M = 2.94, SD = 2.46) than their online counterparts (M = 8.41, SD = 4.24, $t(117) = 3.72$, $p < .001$ for anxiety, and M = 5.50, SD = 3.93, $t(40.26) = 3.45$, $p = .001$, for depression). Lastly, concerning coping strategies, participants from the health-care center tended to ruminate (M = 8.55, SD = 2.68) less, blame themselves (M = 8.06, SD = 3.38) less, and seek more help (M = 9.10, SD = 2.68) than those recruited online (M = 9.84, SD = 2.58, $t(117) = 2.36$, $p = .02$ for rumination; M = 9.78, SD = 3.75, $t(117) = 2.40$, p =

.02 for self-blame; and $M = 7.94$, $SD = 2.38$, $t(117) = -2.17$, $p = .03$ for help-seeking). No differences emerged for internalized stigma and the rest of coping strategies ($p > .05$ in all cases). Correlations between the study variables appear in Table 2.

[INSERT TABLE 2]

SEM

The initial model was estimated and the fit indices, included in Table 3, suggested a well-fitted model which predicted 64% and 48% of the variance of anxiety and depressive symptoms at T1, respectively (both $p < .001$). Model trimming was performed as follows: firstly, only proximal predictors of anxiety and depressive symptoms that were significant were retained. Thus self-blame, positive thinking, and thinking avoidance were kept along with past resilience as predictors of both anxiety and depressive symptoms. Also, the direct path from internalized stigma to anxiety was likewise retained. Secondly, predictors of coping strategies that were not significant were taken out of the model, which is what happened to the paths from internalized stigma to self-blame and positive thinking.

Table 3 shows the fit indices of this refined model, which were virtually equal to those of the initial model with a slight improvement on TLI. Figure 2 shows the standardized regression weights of this final model, which predicted 61% of the variance of anxiety symptoms and 48% of the variance of depressive symptoms at T1 (both $p < .001$). Positive thinking, thinking avoidance, and past resilience significantly and negatively predicted anxiety and depressive symptoms, and self-blame significantly and positively predicted them. Additionally, internalized stigma positively predicted anxiety. Past resilience negatively predicted self-blame and thinking avoidance and it positively predicted positive thinking. Internalized stigma positively predicted self-blame. Lastly, past resilience significantly and negatively predicted internalized stigma.

There was a significant correlation between self-blame and thinking avoidance ($r = .36$; $p < .001$).

Internalized stigma, aside from the direct effect on anxiety symptoms, had a significant indirect effect through self-blame (.11, $p < .05$). Past resilience also had significant indirect effects on anxiety symptoms (–.22, $p < .01$) and depressive symptoms (–.15, $p < .05$) through internalized stigma and coping.

[INSERT TABLE 3 & FIGURE 2]

Discussion

This study sought to predict anxiety and depressive symptoms in a sample of newly diagnosed PLWH. The means of anxiety and depression reported by participants were similar to those reported in PLWH (Savard et al., 1998; Wouters, Booysen, Ponnet, & Baron Van Loon, 2012). As findings showed, past resilience predicted internalized stigma, and coping variables acted as mediators between these and anxiety and depressive symptoms, thus supporting our initial hypothesis.

More than half the variance in anxiety and almost half the variance in depression was explained by the model, an important result denoting that both anxiety and depressive symptoms can be predicted and might be susceptible of change through intervention on the predictors. Of the potential coping predictors, only three of them were significant: self-blame, positive thinking, and thinking avoidance. This fact supports the preferential use of lower order coping classifications (Moskowitz et al., 2009) as only some of the strategies were informative.

Higher anxiety and depressive symptoms were found among those who had used more self-blame and less positive thinking and thinking avoidance in the past month. These findings partially support previous research (Moskowitz et al., 2009): positive thinking and self-blame

worked as expected, but unlike previous studies thinking avoidance was unexpectedly inversely related to anxiety and depression in the present sample. These results support the idea that coping strategies are not inherently adaptive or maladaptive, but that they can be either depending on the specific circumstance (DeGenova, Patton, Jurich, & MacDermid, 1994; Moskowitz et al., 2009). Indeed, the use of strategies that may be less effective or even maladaptive in more normative contexts might promote successful adaptation for individuals exposed to potentially traumatic situations (Bonanno, 2005; Westphal & Bonanno, 2007). In this sense, thinking avoidance could be an effective strategy if used soon after HIV diagnosis (that is, in the short term), since it may help prevent excessive rumination and fixation on the matter at hand. Future research is needed to examine whether the positive effect will be maintained over time.

Lastly, help-seeking, emotional expression, social isolation, problem solving, and rumination did not demonstrate a relationship with anxiety or depression, which was also unexpected (Carrobles Isabel et al., 2003; Moskowitz et al., 2009). This finding could be due to the fact that all the variables were included in the model at the same time and thus the variance they share is better explained by positive thinking, thinking avoidance, and self-blame. The newly-diagnosed nature of the sample might also provide a partial explanation for these findings. Additionally, as noted by Moskowitz et al. (2009), there is little consistency in which strategies are measured across studies and how they are measured, and these differences could also be behind the discrepancy between our findings and previous research.

Higher rates of internalized stigma were directly and indirectly related to higher rates of anxiety symptoms. Similarly, higher rates of perceived past health-related resilience were directly and indirectly associated with less anxiety and depressive symptoms. These associations are in line with extant literature (Gloria & Steinhardt, 2016; Heywood & Lyons, 2016) and add

information concerning the indirect effects of internalized stigma and resilience on mental health through other variables, such as coping strategies. Indeed, higher rates of internalized stigma were associated with higher use of self-blame, which is congruent with evidence showing that stigma alters coping behaviors (Hatzenbuehler et al., 2013; Rueda et al., 2012). Higher rates of past resilience were associated with higher use of positive thinking and lower use of self-blame and thinking avoidance, which is also in line with previous findings (Kang & Suh, 2015; Molina et al., 2014; Pellowski et al., 2013). Lastly, past resilience was strongly associated with internalized HIV stigma, also congruent with previous suggestions (Brouard & Wills, 2006).

These results highlight the relevance of assessing perceived past resilience, HIV stigma internalization, and the use of coping strategies, all of which might later translate in higher or lower anxiety and depression, in accordance with the framework of the revised Cognitive Theory of Stress and Coping (Folkman, 1997, 2008; Lazarus & Folkman, 1984). Specifically, our findings point to the role that perceived resilience can play in anxiety, thus suggesting a possible avenue for early detection of individuals at risk who could benefit from a psychological intervention.

This study comes with certain limitations. The mode of data collection and the self-report nature of instruments may have resulted in a biased sample and responses. Indeed, differences emerged with regard to several study variables between the participants recruited through the health-care center and those recruited online. The former seemed to be doing better, since they reported greater resilience and lower anxiety and depression, as well as less rumination and self-blame and more help-seeking. This particular health-care center in Madrid, therefore, could be acting as a protection factor, helping patients bounce back after HIV diagnosis. These differences could have impacted the study findings and their generalizability.

Also, as the sample was largely composed by male homosexual PLWH from Spain and Latin America, results should not be generalized to other populations (i.e., other genders, sexual orientations or countries) without further replication. Specifically, health care providers need to consider the possibility that different cultural backgrounds may modify the findings presented in this study. Cultural differences may emerge among different Spanish-speaking countries and should be taken into account by health care providers and investigated in research. In addition, as our sample was mostly composed of sexual minority men, results are likely most applicable to Spanish-speaking men who have sex with men, with limited generalizability to heterosexual men until further research examines this matter. These results should not be generalized to women or other genders either without prior replication of the findings in appropriate samples. In order to overcome these limitations, we recommend the use of bigger subsamples that allow to test for model invariance within the SEM framework.

Moreover, this is the first study, to our knowledge, to examine longitudinal relations between internalized stigma, perceived past health-related resilience, coping, anxiety symptoms, and depressive symptoms in newly diagnosed PLWH, and so such relationships have to be considered tentative. Further research is needed to replicate these findings in different, bigger samples so as to avoid capitalization on chance (Kline, 2015). Furthermore, the data in the present study did not allow for adjustment for baseline levels of anxiety and depressive symptoms, so that temporal shifts in in these outcomes could not be studied, an important limitation that future studies should aim to overcome. Finally, future research should also aim for longer term follow-ups with PLWH and include more assessments to avoid retrospective measurement (i.e., resilience or coping behaviors).

Our findings have implications for the promotion of mental health in Spanish-speaking, newly diagnosed PLWH. As our results showed, perceived past health-related resilience and internalized stigma measured soon after diagnosis predicted anxiety and depressive symptoms. Health caregivers should systematically assess these variables following HIV diagnosis in order to identify those individuals who are at risk of psychological maladjustment. By doing so, the risk of suffering post-diagnosis distress may be minimized.

As our study showed, internalized stigma and coping are central elements that could influence the development of anxiety and depressive symptoms. Interventions aimed at preventing mental health issues among newly diagnosed PLWH could benefit from reducing internalized stigma and self-blame and increasing positive thinking and thinking avoidance.

By modifying the use of coping behaviors that a person uses to face adversities, psychological distress might be prevented. Specifically, intervention programs should aim to decrease the use of self-blame and fostering the use of positive thinking and thinking avoidance, which may build a sense of control, encouraging PLWH to be proactive and take control of their situation (Rueda et al., 2012). A possible way of implementing this coping intervention is by providing coping training, which has been shown to be more effective in PLWH than actively receiving information or being on a waiting list (Chesney, Chambers, Taylor, Johnson, & Folkman, 2003; Steinhardt & Dolbier, 2008). Furthermore, some authors suggest that early interventions after HIV diagnosis may help achieve good psychological outcomes (Rodkjaer et al., 2014), as the use of certain coping strategies may be promoted from the beginning. As mentioned before, the effectiveness of a given coping strategy might vary depending on the specific adverse context, so flexibility in the use of different coping strategies should also be

promoted and professionals should explain to PLWH which strategies are most appropriate for each circumstance and moment.

Internalized stigma may affect anxiety symptoms directly to some extent, but it also may have an influence on coping behaviors, specifically on self-blame. Thus, reducing internalized stigma could be another way of promoting mental health. To decrease internalized stigma levels, interventions should address and challenge the specific beliefs that the person has. Support groups and NGOs are known to help PLWH deal with stigma in a multidimensional way (Paudel & Baral, 2015) and having a connection with them is related to better quality of life (Fuster-Ruizdeapodaca et al., 2014); consequently, they may constitute a highly successful means to this end. In fact, a quasi-experimental study conducted in Spain showed that PLWH can be successfully taught to deal with stigma, which not only reduces internalized stigma, but also increases the use of approach coping strategies and improves self-esteem and quality of life (Fuster-Ruizdeapodaca, Molero, & Ubillos, 2016). Health care providers can also help to reduce internalized stigma and they can do so in the natural course of a medical appointment with a broad reach; thus, they should be given strategies to help PLWH to question their stigmatizing beliefs.

In conclusion, anxiety and depression are present in a high proportion of people in the aftermath of HIV diagnosis. These outcomes may be susceptible to change by increasing the differential use of coping strategies. Internalized stigma seems to have a negative effect on anxiety and depression and stigma reduction interventions are key. Although replication and extension of this work are necessary, this study constitutes a first step into the intricate relationships between anxiety, depression, and their predictors, leading to results that can be useful both in research and clinical contexts concerned with PLWH's mental health.

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Table 1.

Descriptive and reliability statistics for the study variables.

Measure	α	Possible Range	Mean	*SD*
Past resilience	.76	4 – 20	13.86	3.92
Internalized stigma	.90	10 – 50	28.01	9.95
Anxiety	.85	0 – 21	6.37	3.81
Depression	.78	0 – 21	3.63	3.12
Coping strategies	ω	Possible Range	Mean	*SD*
Problem solving	.93	3 – 15	11.33	2.56
Positive thinking	.96	3 – 15	11.69	2.71
Help seeking	.92	3 – 15	8.79	2.65
Isolation	.96	3 – 15	7.54	3.02
Self-blame	.98	3 – 15	8.52	3.55
Rumination	.94	3 – 15	8.90	2.70
Emotional expression	.93	3 – 15	7.21	2.50
Thinking avoidance	.94	3 – 15	9.29	2.74

Table 2.

Bivariate correlations between the study variables.

	1	2	3	4	5	6	7	8	9	10	11	12
1. Past resilience		-.37***	-.45***	-.36***	-.03	.30**	.07	-.26**	-.37***	-.44***	-.24*	-.35***
2. Internalized stigma			.43***	.30**	-.04	-.24**	-.08	.29**	.42***	.46***	.05	.41***
3. Anxiety				.64***	.08	-.48***	-.15	.44***	.57***	.51***	.27**	.13
4. Depression					.03	-.44***	-.13	.36***	.43***	.32***	.24**	.06
5. Problem solving						.25**	.03	.05	.09	.20*	.14	.15
6. Positive thinking							.17	-.44***	-.34***	-.36***	-.21*	-.08
7. Help seeking								-.27**	-.24*	-.18	.08	.05
8. Isolation									.60***	.57***	.40***	.33***
9. Self-blame										.73***	.29**	.51***
10. Rumination											.29**	.56***
11. Emotional expression												.10
12. Thinking avoidance												

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

Table 3.

Model fit indices for anxiety and depression prediction.

Model	% of explained variance	χ^2	*df*	χ^2/df	*p*	RMSEA	CFI	TLI
Initial solution	Anxiety: 64%; Depression: 48%	316.88	270	1.17	.03	.04	.97	.96
Final solution	Anxiety: 61%; Depression: 48%	236.04	194	1.22	.02	.04	.97	.97

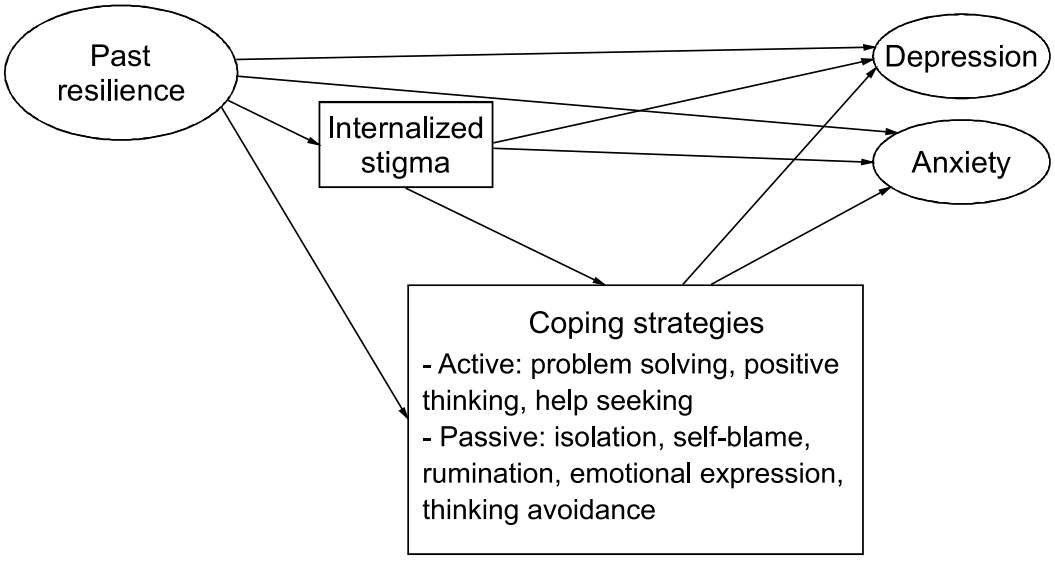

Figure 1. Initial model to be tested.

Note. The eight coping strategies are shown here as a single variable.

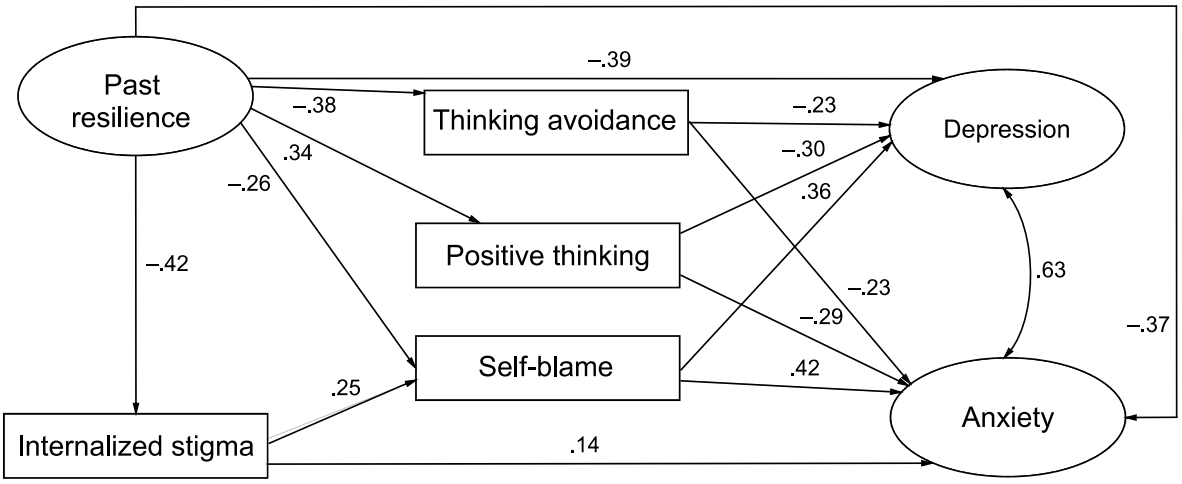

Figure 2. Final standardized solution for the anxiety and depression prediction model.

Note. The measurement model is not shown. Rectangles represent observed variables and ovals represent latent variables estimated through items.