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Suicide and Life-Threatening BEHAVIOR

ORIGINAL ARTICLE

# Modeling the associations between emotion regulation, suicide crisis syndrome and suicidal behavior: Results in community and clinical samples

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## Abstract

**Background:** Emotion Regulation (ER) and Suicide Crisis Syndrome (SCS) are psychological processes involved in suicide. Within ER, both the use of rumination and dysfunctional emotion beliefs are associated with suicide. SCS, a presuicidal mental state involving cognitive and affective dysregulation, is related to short-term suicide risk.

**Aims:** Here, we first examined associations between ER (beliefs about the uncontrollability of emotions and rumination), SCS and suicide behavior, and second, we test a multistep model in which ER factors are linked to suicide behavior through SCS.

**Materials & Methods:** We conducted two cross-sectional studies to address this issue by self-reports. Study 1 used a community sample ($N = 421$). Study 2 used a clinical sample ($N = 70$).

**Results:** Results from both studies showed that beliefs about the uncontrollability of emotions and rumination were associated with higher levels of SCS symptoms and suicide behavior, and that SCS was associated with suicide behavior. In addition, path analyses showed that uncontrollability beliefs were linked to rumination, which in turn was associated with SCS, and this variable mediated the association between ER factors and suicide ideation (in both community and clinical samples) and suicide attempts (in the community sample).

**Discussion:** As we expected, in both samples, uncontrollability of emotions and rumination were positively related with SCS and suicide behavior.

**Conclusion:** We emphasize the importance of addressing uncontrollability beliefs and rumination in suicide prevention.

KEYWORDS

emotional uncontrollability beliefs, rumination, suicidal behavior, suicide crisis syndrome

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# INTRODUCTION

Suicide is conceptualized as a spectrum of behaviors that include thinking about suicide or ideation, suicide planning, attempting suicide, and suicide itself (WHO, 2021). It is a critical public health concern. Approximately 703,000 people die each year by suicide, making it one of the leading causes of death worldwide (World Health Organization [WHO], 2021). Therefore, there is a critical need for research that focuses on identifying factors that can predict suicidal behavior (Bender et al., 2011). In this study, we will focus on two promising factors for understanding suicide: Emotion Regulation (ER) (Colmenero-Navarrete et al., 2022; Gross, 1998) and the Suicide Crisis Syndrome (SCS, Galynker et al., 2017).

## Emotion regulation and suicide behavior

According to Gross (1998), ER refers to the processes by which individuals influence the emotions they have, when they have them, and how they experience and express them. It is possible to distinguish different ER strategies that people use (Gross, 1998; Sheppes et al., 2015), which vary in their effectiveness (Webb et al., 2012). Although these strategies are not intrinsically "good" or "bad", research has found specific strategies to be generally maladaptive (e.g., rumination) or adaptive (e.g., cognitive reappraisal) in terms of their typical associations with health or psychopathology (Aldao et al., 2010). There is now strong evidence that maladaptive ER strategies are a transdiagnostic factor in psychopathology (Aldao et al., 2016; Lincoln et al., 2022). Of these, one widely studied maladaptive ER strategy is rumination (Aldao et al., 2010; Rickerby et al., 2022), which involves focusing on the causes, meanings, and consequences of negative mood (Nolen-Hoeksema, 1991), and has been considered a hallmark of psychopathology (Rickerby et al., 2022).

Having stablished the detrimental effects of certain ER strategies (such as rumination), research has focused on answering the question of why people engage in these strategies despite their negative consequences. In this line, researchers have examined whether people's beliefs about emotions might be influencing ER efforts (De Castella et al., 2013, 2018; Manser et al., 2012; Tamir et al., 2007). Ford and Gross (2018, 2019) proposed an integrative framework to understanding beliefs about emotions in which they organized beliefs into two independent (but related) superordinate categories: emotions are *good* versus *bad*, whereby believing that emotion is good or bad sets the stage for wanting to decrease or increase that emotion (including whether they are desirable or not, beneficial or harmful, useful or useless); and emotions are *controllable* versus *uncontrollable*, which refers to the beliefs a person has about his or her ability or inability to control or manage emotions.

Research has shown that individuals who hold dysfunctional beliefs about emotions (that emotions are *bad* and/or *uncontrollable*) tend to experience more intense negative emotions and psychopathology and to engage more frequently in maladaptive versus adaptive ER strategies (Arbulu et al., 2023; Ford & Gross, 2018, 2019; Hong & Kangas, 2022; Kneeland et al., 2016; Somerville et al., 2023). Moreover, of the two categories of emotion beliefs, beliefs about the uncontrollability of emotions appear to be especially relevant to understanding the use of maladaptive ER strategies and the presence of clinical symptoms (Somerville et al., 2023), with maladaptive ER strategies mediating associations between uncontrollability beliefs and emotion distress (Arbulu et al., 2023).

Based on the evidence linking ER and psychopathology, recent research has set out to examine whether the existence of difficulties in ER may be involved in the occurrence of suicide behavior. In this line, Colmenero-Navarrete et al. (2022) conducted a systematic review of studies that examined the associations between ER and suicide. They found (from 76 identified studies) that difficulties in ER were associated with suicidal behavior (both suicide ideation and attempt), and that this result was consistent across studies at different ages (adolescents, young adults, and adults) and type of sample (clinical and general population). Individuals who engage more in maladaptive ER strategies (e.g., rumination), less in adaptive ones (e.g., reappraisal), and who report dysfunctional attitudes and beliefs about their emotions (e.g., lack of clarity, nonacceptance of emotions), tend to show higher levels of suicide behavior. These results are consistent with the idea that people's ability to effectively regulate distressing emotions that are associated with relevant suicide-related factors (e.g., perceived burdensomeness, belongingness, or hopelessness) could help explain suicidal behavior (Colmenero-Navarrete et al., 2022).

Looking at specific strategies, previous research also found associations between rumination and suicidal ideation and attempts (Cameron et al., 2017; Miranda & Nolen-Hoeksema, 2007). In a meta-analysis conducted by Rogers and Joiner (2017), results indicated that global rumination, reflection, and brooding were associated with suicide ideation, whereas only global rumination and brooding were associated with suicidal attempts. There is also preliminary evidence for the associations between beliefs about the uncontrollability of emotions and suicide. Khaleghi et al. (2021) found, in a cross-sectional study, that individuals with higher emotion uncontrollability beliefs also reported greater suicide behavior. Zhu

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and Wong (2022) provided similar results in a prospective study using a large sample of adolescents. They found that beliefs about the non-malleability of depression, anxiety, and stress predicted suicidal ideation, even controlling for baseline levels of depression, anxiety, and suicidal ideation.

Taken together, this literature points to difficulties in ER, both specific maladaptive strategies (such as rumination) and beliefs about emotions (such as uncontrollability), as relevant to a better understanding of suicide. However, the specifics mechanism through ER is associated with suicide behavior are still unknown. In this sense, some authors have pointed to SCS (Colmenero-Navarrete et al., 2022).

## SUICIDE CRISIS SYNDROME AND SUICIDE BEHAVIOR

Although the long-term (distal) risk factors for suicide are well characterized (Nock et al., 2008; Oquendo et al., 2006), the ability of these traits to predict imminent suicide behavior remains limited (Large et al., 2011; Oquendo et al., 2006). Because of this, recent research has focused on identifying psychological risk that occur in the short to medium term prior to suicidal behavior (Galynker, 2017; Rogers et al., 2019).

Two distinct clinical syndromes have been proposed which are characterized by the existence of pre-suicidal states, with acute and rapidly increasing of symptoms, that precede suicidal behavior: SCS (Galynker, 2017) and Acute Suicidal Affective Disturbance (ASAD; Rogers et al., 2019). These syndromes have been examined in separate lines of research, however, they show some similarities, such as the occurrence of acute symptoms that precede suicidal behavior within hours or days, or the presence of specific symptom domains such as entrapment/hopelessness, hyperarousal, and social alienation/withdrawal. However, there are also some differences between them, for example, while ASAD explicitly emphasizes a conscious escalation of suicidal tendencies, with a drastic increase in suicidal intent, as its central criterion, SCS does not require experience or disclosure of suicidal intent (see Rogers et al., 2017 for a more detailed discussion on the similarities and differences between SCS and ASAD). In this paper, we focus on SCS.

SCS is defined as a pre-suicidal mental state involving cognitive and affective dysregulation, which aims to explain the psychological processes occurring in the days, hours, and minutes prior to suicide behavior (Galynker, 2017). The SCS has five components (Bloch-Elkouby et al., 2020; Galynker et al., 2017): (1) entrapment: or the pervasive feeling of needing to escape from a situation perceived as unbearable; (2) affective disturbance: consisting of emotional pain, rapid fluctuations of negative emotions, acute anhedonia, and extreme feelings of fear and worry; (3) loss of cognitive control: rumination about one's own problems, cognitive rigidity, somatic discomforts such as headaches or pressure in the head due to excessive rumination, and repetitive and unsuccessful attempts to suppress distressing thoughts; (4) hyperactivity/hyperarousal and; (5) social withdrawal. Each of these elements has been considered based on empirical research revealing significant relationships between them and suicidal behavior (see Schuck et al., 2019, for a review). SCS represents a pioneering effort to comprehensively investigate these components in unison, culminating in the formation of an integrated cognitive and affective state syndrome that is suggested to precede short-term suicide behavior (Galynker, 2017, 2023).

SCS has demonstrated to be a robust construct (e.g., Bloch-Elkouby et al., 2021) capable of predicting imminent suicide behavior (e.g., Barzilay et al., 2020; Galynker et al., 2017; Rogers et al., 2022; Yaseen et al., 2019). For example, Galynker et al. (2017) found that SCS symptoms predicted suicidal behavior at the 2 months post-discharge in a sample of high-risk psychiatric inpatients. More recently, Barzilay et al. (2020) replicated these results in a sample of 867 adult psychiatric inpatient and outpatient, showing that SCS total score predicted a near suicide attempt (in a 1-month follow up), even after controlling for the effect suicide ideation and history of suicide attempts.

Furthermore, according to the Narrative-Crisis Model of Suicide (Cohen et al., 2022; Galynker, 2017), long-term risk factors (e.g., impulsivity, perfectionism) are associated to suicide behavior through the SCS, which is the most proximal risk factor to suicide. Different studies have examined the mediation role of SCS between long-term factors and suicidal behavior in psychiatric samples (Cohen et al., 2018, 2019, 2022) finding that the SCS mediates the association between different chronic risk factors (e.g., perfectionism, poor social support) and lifetime suicidal behavior (Cohen et al., 2018), and between interpersonal factors and past-month suicide behavior (Cohen et al., 2019). This mediating effect has also been found in a prospective study; Cohen et al. (2022) showed that SCS mediated the effect of chronic stressors (childhood trauma, insecure attachment, and impulsivity) and stressful life events on 1-month follow-up suicidal behavior.

Together, these results indicate that the SCS is a promising variable for advancing our understanding of suicide, capable of predicting suicide behavior in the short-term, and a possible mechanism through which chronic risk factors might be associated with suicidal behavior. However, it is a relatively novel construct and less is known about why people end up suffering from this syndrome.

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## THE PRESENT RESEARCH: EMOTION REGULATION, SUICIDE CRISIS SYNDROME AND SUICIDE BEHAVIOR

SCS is characterized by intense cognitive and affective dysregulation, with a high prevalence of feelings of entrapment, affective disturbances, or dismissed cognitive control. It is possible that the existence of difficulties in regulating emotions contributes to the occurrence of this syndrome. Specifically, beliefs about the uncontrollability of emotions could lead to the perceived lack of control that characterizes feelings of entrapment (Colmenero-Navarrete et al., 2022), while the use of maladaptive strategies such as rumination is encompassed within the loss of cognitive control criterion of SCS (Bloch-Elkouby et al., 2020). In addition, both uncontrollability beliefs and rumination could increase and maintain the emotional distress and affective disturbances present in the SCS (Rickerby et al., 2022; Somerville et al., 2023). On the other hand, there is previous evidence of the associations between emotion uncontrollability beliefs (Khaleghi et al., 2021; Zhu & Wong, 2022) and rumination (Rogers & Joiner, 2017) to suicide, and SCS is a predictor of short-term suicide behavior (Barzilay et al., 2020; Galynker et al., 2017; Rogers et al., 2022; Yaseen et al., 2019). From this perspective, it is possible to hypothesize a multi-step model of associations between ER, SCS and suicide behavior (see Figure 1).

In this model, people who believe that their emotions are uncontrollable may engage in maladaptive ER strategies, such as rumination, in an (ineffective) attempt to reduce negative emotions and/or regain perceived control over them (Arbulu et al., 2023; Ford & Gross, 2018). These difficulties in regulating emotions could contribute to the onset of SCS, facilitating the emergence of feelings of entrapment, affect disturbances or lack of cognitive control. Finally, SCS lead to higher levels of suicidal behavior (e.g., Barzilay et al., 2020; Galynker et al., 2017).

To our knowledge, no empirical study has examined the link between ER and SCS, or the mediating role of SCS between ER and suicide. In this study, we aimed to examine the associations between ER, SCS and suicide behavior and to test the proposed multi-step model in two studies with different samples of adults from community (Study 1) and clinical settings (Study 2). In both studies, we hypothesized that: (1) beliefs about uncontrollability of emotions would be positively associated with rumination, SCS and suicidal behavior (suicide ideation and attempts); (2) rumination would be positively associated with SCS and suicide behavior; (3) SCS would be associated with suicide behavior; (4) uncontrollability beliefs would be associated to suicide behavior both directly and indirectly (through rumination and SCS); and, finally, (5) SCS would mediate the effect of rumination on suicidal behavior.

## METHOD

### Participants and procedure

#### Sample 1: Community sample

Participants were 421 individuals from the Spanish population (122 men and 299 women), ranging in age between 18 to 70 years (M = 31.15, SD = 11.79). Of these, 2.6% had no formal education, 0.7% had only completed primary education, 34.7% had secondary education, 28.7% had a university degree, and 33.3% had a graduate-level degree. Regarding the economic status, 12.8% of declared annual household income was less than 12,000€, 34.9% between 12,000€ and 24,000€, 24.7% between 24,000€ and 36,000€, 20% between 36,000€ and 60,000€ and 7.6% more than 60,000€. Regarding the sentimental situation, 36.6% were single, 20.4% were married, 37.1% had a stable partner (more than a year), 2.4% were divorced and the remaining 3.6% had a different situation.

Participants were recruited using incidental and snowball procedure and completed an online questionnaire. Recruitment materials emphasized the voluntary and anonymous nature of the study, providing a link to complete all measures online. All participants gave written informed consent. After completing the questionnaires, participants could share the link to the survey with others. The procedure was approved by the Ethics Committee of the University of Malaga (CEUMA, Registration number: 8-2021-H).

#### Sample 2: Clinical sample

This sample consisted of 70 patients receiving psychological treatment in two private psychotherapeutic clinics. Of

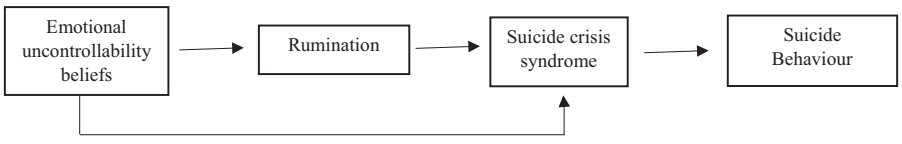



**FIGURE 1** Multistep model of the associations between uncontrollability about emotions, rumination, suicide crisis syndrome, and suicide behavior.

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this sample, $n = 51$ (72.9%) were female and $n = 19$ (27.1%) were male. Age ranged from 18 to 71 years with a mean of 31.74 (SD = 10.26). In this sample, 2.9% had completed primary education, 32.9% attended secondary education, 32.9% had a university degree, and 22.9% had a graduate-level degree. The remaining 8.6% had other studies. Regarding economic status, 12.9% had income less than 12,000€, 32.9% between 12,000€ and 24,000€, 25.7% between 24,000€ and 36,000€, 22.9% between 36,000€ and 60,000€ and 5.6% more than 60,000€. Finally, 41.4% were single, 18.6% were married, 32.9% had a stable partner, 2.9% were divorced and 4.3% had a different situation. As primary diagnosis, most patients suffered from emotional disorders: 22.9% had any anxiety disorder, 18.6% had a major depressive disorder or depressive symptoms, 22.8% suffered from stress and adaptive disorders, 5.7% had an eating disorder, 4.29% obsessive-compulsive disorder, 1.4% bipolar disorder, and the remaining 24.31% had subclinical problems (relationship problems, low self-esteem, social skills deficit...).

The questionnaires were administered during the psychological evaluation, between the first and third sessions. Exclusion criteria included minors and persons without cognitive capacity to complete the surveys. The practitioner provided the patient with brief information about the research and emphasized that it was completely anonymous and voluntary. They were instructed that they could fill out the questionnaires online or in paper-pencil format. This procedure was also approved by the Ethics Committee of the University of Malaga (CEUMA, Registration number: 8-2021-H).

## Measures

The same measures were used to assess the key variables in both samples: Uncontrollability beliefs about emotions (*Beliefs about Emotions Questionnaire*, *BAEQ*; Manser et al., 2012). This self-report measure contains six subscales evaluating different types of beliefs that people may have about their emotions: overwhelming and uncontrollable, shameful and irrational, invalid and meaningless, useless, harmful, and contagious. In this study, we used the nine-item uncontrollability subscale, which assesses the beliefs that people have about the control of their emotions (e.g., "When I start to feel upset, I can't control it"). The participant indicates agreement with each of the items on a scale from 1 (totally disagree) to 5 (totally agree). The original scale has good internal consistency, with α from 0.69 to 0.88 (Manser et al., 2012). In the present study, the uncontrollability subscale had excellent internal consistency in the general ($\alpha = 0.90$) and the clinical sample ($\alpha = 0.87$).

Rumination (*Ruminative Response Scale*; *Brooding Subscale*, RRS; Nolen-Hoeksema & Morrow, 1991). This scale assesses individual responses to negative emotions describing self-centered responses and depressive mood symptoms. In the current study, the *brooding* subscale was used, which is the scale that has been primarily linked to depressive symptoms. This 5-item subscale evaluates a form of rumination focused on negative aspects of oneself or negative interpretations of one's life (e.g., I think: "What have I done to deserve this?"). For each item, the subjects indicated the frequency of each event on a 4-point scale ranging from 1 ("almost never") to 4 ("almost always"), where higher scores indicate a higher frequency of rumination. RRS has shown adequate psychometric properties in the original ($\alpha = 0.89$; Nolen-Hoeksema, 1991), and the Spanish version ($\alpha = 0.86$; Hervás, 2008). In this sample, Cronbach's alphas were 0.83 in the community sample and 0.81 in the clinical sample.

SCS (*The Suicide Crisis Inventory-Short Form*, *SCI-SF*; Galynker et al., 2017; Galynker, 2023). It is the abbreviated 8-item version of the original 49-item Suicide Crisis Inventory, that assesses the presence and severity of the SCS. It includes different affective and cognitive aspects, such as the feelings of entrapment and flooding rumination. Respondents are asked to indicate how they felt when they were "at their worst in recent months" (e.g., Were you afraid of dying?), using a 5-point Likert-type scale, ranging from 0 (not at all) to 4 (extremely), with higher scores indicating more severe symptoms. This abbreviated version presents a good internal consistency ($\alpha = 0.87$; Galynker et al., 2017). In community and clinical samples, Cronbach's alphas were: $\alpha = 0.90$ and $\alpha = 0.89$ respectively.

Suicidal ideation (*Frequency of Suicide Ideation Inventory, FSII*; Chang & Chang, 2016). The FSII is a 5-item self-report scale that assesses the frequency of suicidal thoughts in the past 12 months (e.g., *Have you thought about hurting yourself?*). It is presented on a 5-point Likert scale (1 = never to 5 = almost every day). The total score ranges from 5 to 25, with higher scores indicating a higher frequency of SI. The internal consistency was good in the original, $\alpha = 0.96$, and in the Spanish version, $\alpha = 0.89$ (Sánchez-Álvarez et al., 2020). In this study, in both the community and clinical samples Cronbach's alpha was $\alpha = 0.93$.

Suicide attempt. To evaluate this variable, the following question was used: *Have you ever tried to kill yourself?*

### Data analysis

We used IBM SPSS (Version 23) for computing descriptive statistics, correlation analyses, and internal consistency (Cronbach's alpha), and Mplus version 8 (Muthén &

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Muthén, 1998) to conduct path analysis, a structural equation modeling (SEM) technique that only examines observed variables (Byrne, 1998). MLR estimation was used to test models examining suicide ideation (in both community and clinical samples) and weighted least squares estimation (WLSMV), which is an efficient parameter with dichotomous or ordinal observed variables (Muthén & Satorra, 1995), was used to test the model examining suicide attempt (in the community sample). Both procedures are appropriate for use with nonnormal data (Flora & Curran, 2004).

# RESULTS

## Descriptive statistics

Mean, standard deviation, and Cronbach's α for the variables analyzed in both samples are shown in Table 1. In both samples, age, and gender were similar, with most of the participants being women. Regarding the main variables of this study, statistically and significant differences were found in all the variables between both samples, with higher scores in the clinical sample. Regarding suicide attempt, 27 individuals had at least one attempt in the community sample, while six attempted in the clinical sample. Nevertheless, the percentage of attempts was higher in the clinical population.

## Associations between the ER, SCS, and suicide behavior

Bivariate correlations between all the main variables in the community and clinical samples are presented in Table 2. In both samples, we found positive and significant correlations in the expected direction, thus, suicide ideation correlated positively and significantly with beliefs about uncontrollability of emotions, rumination, and SCS. Uncontrollability beliefs were significantly positively correlated with rumination and SCS. Finally, rumination correlated positively with SCS.

With respect to suicide attempt in the community sample, statistically significant differences were found in all variables. Thus, for uncontrollability beliefs, the scores of people with previous suicide attempt (M = 31.55, SD = 7.9) were higher than those of people without attempts (M = 25.44, SD = 8.06, $t$ (419) = 3.82, $p < 0.05$, $r = 0.18$). Similarly, rumination scores were higher in people with attempt (M = 13.22, SD = 4.02) than in those without attempt (M = 10.53, SD = 3.56, $t$ (419) = 3.78, $p < 0.05$, $r = 0.18$). With regard SCS, significant differences were also found between those with attempt (M = 16.63; SD = 7.6) and without attempt (M = 8.56; SD = 7.44, $t$ (419) = 5.45, $p < 0.05$, $r = 0.26$). Finally, suicide ideation was higher in those with attempt (M = 13.89; SD = 6.17), than without attempt (M = 7.8; SD = 3.94, $t$ (419) = 5.05, $p < 0.05$, $r = 0.69$).

## Path analyses testing the multi-step model

We tested the proposed model in the community, for suicide ideation (Figure 2) and suicide attempt (Figure 3), and in the clinical sample, for suicide ideation (Figure 4). Regarding the community sample, uncontrollability beliefs were positively and significantly related to rumination, and rumination had a positive and significant effect on the SCS, which had an effect on suicide ideation. In this model, uncontrollability beliefs were related to suicide ideation both directly and indirectly ($b = 0.37$, SE = 0.04, $p < 0.01$). Regarding suicide attempt (Figure 2), we found similar results to those found with ideation; however, uncontrollability beliefs were only related to suicide attempt indirectly through rumination and SCS ($b = 0.28$, SE = 0.06, $p < 0.01$).

In the clinical sample, we found results similar to those of the community sample: uncontrollability beliefs had a positive and significant effect on rumination, which in turn was related positively and significantly with SCS, and this variable had an effect on suicide ideation.

**TABLE 1** Means, standard deviations, and reliability from variables in community and clinical sample.

| **Community sample ($n = 421$)** | | | **Clinical sample ($n = 70$)** | | | |
|---|---|---|---|---|---|---|
| | **M (SD)** | ***α*** | **M (SD)** | ***α*** | ***t*** | ***p*** |
| Age | 31.15 (11.79) | | 31.74 (10.26) | | | |
| Female | 71.02% | | 72.9% | | | |
| Suicide ideation (FSII) | 8.19 (4.37) | 0.93 | 9.69 (5.28) | 0.93 | −2.56 | <0.05 |
| Suicide crisis syndrome (SCI-SF) | 9.08 (7.7) | 0.90 | 14.53 (8.23) | 0.89 | −5.18 | <0.05 |
| Uncontrollability beliefs (BAEQ) | 25.83 (8.18) | 0.90 | 31.66 (7.80) | 0.87 | −3.97 | <0.05 |
| Rumination (RRS- SF) | 10.7 (3.64) | 0.83 | 12.67 (3.89) | 0.81 | −5.74 | <0.05 |
| Suicide attempt | 6.4% | | 8.6% | | | |

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**TABLE 2** Bivariate correlations between key variables in the community and clinical sample.

| | Community sample | | | | Clinical sample | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Suicide ideation (FSII) | - | | | | - | | | |
| Suicide crisis syndrome (SCI-SF) | 0.67** | - | | | 0.61** | - | | |
| Uncontrollability beliefs (BAEQ) | 0.53** | 0.63** | - | | 0.47** | 0.50** | - | |
| Rumination (RRSSF) | 0.53** | 0.68** | 0.64** | - | 0.42** | 0.53** | 0.59** | - |

**$p < 0.01$.

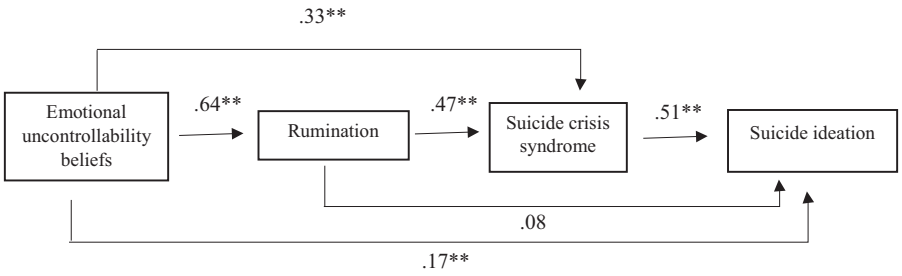



**FIGURE 2** Path analysis testing the multistep model for suicide ideation in the community sample. **$p < 0.01$.

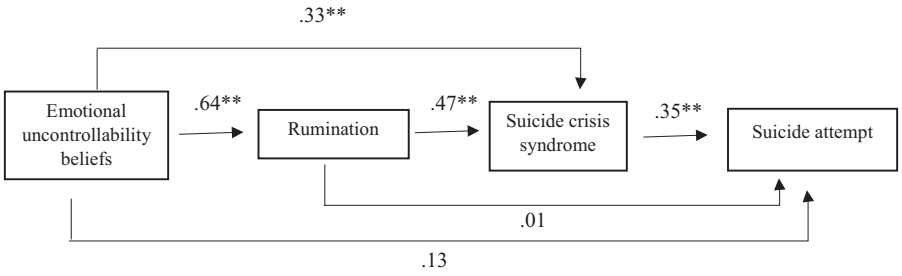



**FIGURE 3** Path analysis testing the multistep model for previous suicide attempts in the community sample. **$p < 0.01$.

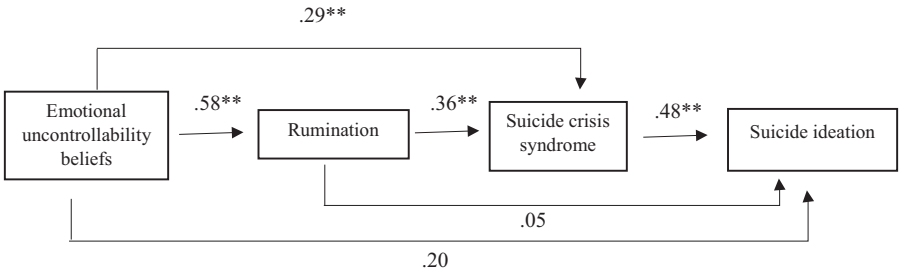



**FIGURE 4** Path analysis testing the multistep model for suicide ideation in the clinical sample. **$p < 0.01$.

Besides, uncontrollability beliefs were related to suicide ideation indirectly ($b = 0.27$, SE = 0.09, $p < 0.01$).

## DISCUSSION

In this study, we examined the associations between ER, SCS, and suicide behavior (suicide ideation and attempt) in two different samples of adults from community and clinical setting. Based on previous research, we expected that, in both samples, beliefs about the uncontrollability of emotions and rumination would be positively related with SCS and suicide behavior. We also aimed to provide preliminary test of a multi-step model in which ER factors are linked to suicide through SCS. Our results are in line with these predictions.

Beliefs about the uncontrollability of emotions and rumination were associated with higher levels of suicide ideation and with previous suicide attempts. This result is

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consistent with previous literature on rumination (Rogers & Joiner, 2017) and extends the few studies that had examined the link between uncontrollability beliefs and suicide (Khaleghi et al., 2021; Zhu & Wong, 2022). Regarding SCS, we provide the first evidence for significant and positive associations between ER factors, uncontrollability beliefs and rumination, with SCS symptoms. In line with our expectancies, those participants who hold the beliefs that their emotions are less controllable, and who use rumination more frequently, reported a higher level of SCS in the previous months. Moreover, this result was the same in participants from the community or clinical settings. Finally, SCS was also positively associated with suicide behavior, a result that corroborated findings in previous inpatient and outpatient studies (Bloch-Elkouby et al., 2021; Galynker et al., 2017) and adds evidence in community samples, where SCS has hardly been examined (Rogers et al., 2023). Together, our results point to ER and SCS as factors associated with suicide and that this association appears in both community and psychiatric participants, suggesting that the relevance of these factors does not depend on the intensity individuals' symptomatology.

Our results also add preliminary evidence of a multi-step model in which ER factors are linked to suicide through SCS. In this model, people who hold the idea that their emotions are uncontrollable are more likely to use rumination to reduce negative emotions and/or regain perceived control; however, the use of rumination and the beliefs of uncontrollability, rather than effectively regulating negative emotions, lead to SCS by facilitating feelings of entrapment, affect disturbances or lack of cognitive control. Finally, SCS leads to higher levels of suicidal ideation and attempts. We found evidence for this model in the community and the clinical sample, and for suicide ideation (in both samples) and previous suicide attempts (in the community sample). These results are in line with previous research that found links between beliefs of uncontrollability and rumination, and that rumination mediates the associations between these beliefs and emotional distress (Arbulu et al., 2023). Similarly, the mediating role of SCS that we found is in line with de Narrative-Crisis Model of Suicide (Galynker, 2017) and with previous work in which SCS mediated the link between long-term risk factors and suicide (Cohen et al., 2018, 2022). Although this is preliminary evidence from cross-sectional studies, we hope it will encourage future studies to replicate and extend what we have found here.

## THEORETICAL AND CLINICAL IMPLICATIONS

Our results have two major implications. First, if ER is linked to SCS and suicide, theoretical accounts should consider ER factors when explaining suicide behavior. Leading psychological models of suicide (Galynker, 2017; Joiner, 2005; O'Connor, 2011) can improve their predictive ability by considering the role of ER. Key variables of these models, such as perceived burdensomeness, thwarted belongingness, hopelessness, or entrapment, are associated with experiencing of higher levels of emotional distress that people must regulate. In this sense, we previously suggested that ER plays a role throughout the entire process of suicide, first, in regulating negative feelings associated with suicide-related factors (e.g., perceived burdensomeness, belongingness, or hopelessness), and, finally, closer to the suicide behavior (Colmenero-Navarrete et al., 2022). Here we provided evidence for the latter suggestion, with ER being associated to SCS.

Second, given our findings that beliefs about the uncontrollability of emotions are related to rumination, SCS, and suicide, individuals who hold these types of beliefs may benefit from interventions that focus directly on changing them. Previous research has found that emotion beliefs are modifiable through treatment (De Castella et al., 2015; Gallagher et al., 2014). For example, Gallagher et al. (2014) found, using a large clinical sample ($N = 606$), that individuals who received cognitive-behavioral therapy reported increases in perceived control over their emotions, and that this change mediated improvement of symptoms of different anxiety disorders. On the other hand, there is also evidence that interventions aimed at reducing rumination strategies were effective to prevent anxiety and depressive symptoms in high-risk individuals within a CBT framework (rumination-focused CBT, Watkins, 2015; Watkins, 2018), or in a rumination-focused Internet-Delivered Cognitive-Behavioral Therapy (Cook et al., 2019; Topper et al., 2017). These data suggest that ER is malleable and responsive to treatment, so by targeting ER mental health professionals may be better equipped to reduce SCS and thus the risk of suicidal behavior.

## LIMITATIONS AND FUTURE DIRECTIONS

Although the present study revealed novel results, several limitations will require further research. Its main limitation is the use of a mediation analysis in cross-sectional design, a design that cannot establish causality. In this sense, while our results can serve as useful potential preliminary evidence, future experimental as well as longitudinal research is needed. Second, we used a small clinical sample, so the results should be treated with caution. In addition, we were unable to test

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our model for suicide attempts in our clinical sample, so future studies should examine whether this model is also valid for understanding suicide attempts in psychiatric samples. Finally, in both samples, most participants were female. Given that women are more likely to attempt suicide, whereas men are more likely to complete suicide (Schrijvers et al., 2012; WHO, 2021), it is important to corroborate our results in a more gender-balanced sample.

## CONCLUSION

Despite these limitations, we found that having beliefs about emotions being uncontrollable and using rumination are associated with higher SCS symptoms and suicide behavior in individuals from the community and clinical settings. The results also provided a preliminary evidence of a multi-step model in which ER factors are linked to suicide through SCS. These results encourage the idea that ER factors should be integrated into theoretical models of suicide, and that suicide prevention would benefit from evidence-based interventions aimed at reducing beliefs about emotional uncontrollability and rumination.

### CONFLICT OF INTEREST STATEMENT

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### DATA AVAILABILITY STATEMENT

Data available on request from the authors.

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