



**Nathalia Melo de Carvalho**

**I lost you, I lost myself: self-expansion,  
relationship breakups and self**

**Tese de Doutorado**

Thesis presented to the Programa de Pós-graduação em Psicologia of PUC-Rio in partial fulfillment of the requirements for the degree of Doutor em Psicologia.

Orientador: Prof. Jean Carlos Natividade

Rio de Janeiro,  
July de 2024



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### Bibliographic data

Carvalho, Nathalia Melo de

I lost you, I lost myself : self-expansion, relationship breakups and self / Nathalia Melo de Carvalho ; orientador: Jean Carlos Natividade. – 2024.

125 f. : il. color. ; 30 cm

Tese (doutorado)–Pontifícia Universidade Católica do Rio de Janeiro, Departamento de Psicologia, 2024.

Inclui bibliografia

1. Psicologia – Teses. 2. Autoexpansão. 3. Self. 4. Rompimentos. 5. Relacionamentos amorosos. 6. Relacionamentos familiares. I. Natividade, Jean Carlos. II. Pontifícia Universidade Católica do Rio de Janeiro. Departamento de Psicologia. III. Título.

CDD: 150

To my parents, Maria Cristina and  
Mário, who gave me everything in  
life.

## **Acknowledgements**

I thank my mother, Maria Cristina Franca Melo, for providing me with the best possible opportunities throughout my life and for being the strongest inspiration I could have. Our mutual love gave us the strength to keep going when enormous losses hit our door. I am so lucky to have had her holding my hand all the way.

I thank my father, Mário Lisboa de Carvalho Júnior (in memory), for all the love and opportunities he gave me. Our family was my first source of self-expansion, and there is not even a day that I do not miss his kind heart and the beautiful relationship we had.

I thank my brother, Bernardo Melo de Carvalho, for being a great friend and inspiration during this journey. Also, I thank him for giving our family the best gifts: my nephews Arthur, Lucas, and Clara. I admire and love them infinitely.

I thank my grandparents, Ione Franca Melo and Délio Bernardino de Melo (in memory), for all the presence, genuine love, and support they always gave me.

I thank my friends for all the laughs and support. Each day, I am more convinced that friendship is one of the most beautiful forms of love we can experience.

I thank my advisor, Jean Natividade, for believing in me and encouraging me to reach my full potential at every moment of the last six years.

I thank all the members of the Social Psychology Research Laboratory (L2PS).

I thank the professors Jesus Landeira-Fernandez, Vicente Cassepp-Borges, Amanda Londero dos Santos, and Luís Antônio Monteiro for all the support and for accepting the invitation to be part of this thesis defense committee.

This study was financed in part by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brasil (CAPES) - Finance Code 001, Fundação de Amparo à Pesquisa do Rio de Janeiro (FAPERJ), and Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq).

## Abstract

Carvalho, Nathalia Melo; Natividade, Jean Carlos (Advisor). **Self-expansion, relationship breakups and self**. Rio de Janeiro, 2024. 125p. Tese de doutorado – Departamento de Psicologia, Pontifícia Universidade Católica do Rio de Janeiro.

In social psychology, the self-expansion model posits that people are motivated to expand their capabilities, adopting an exploratory, curious, and self-improving stance. Also, according to this model, people seek to expand themselves by incorporating intimate relationships into their own self-concept. Self-expansion in close relationships is, therefore, the level of self-improvement a relationship provides. Previous research has shown that higher self-expansion in romantic relationships that broke down results in contraction and less clarity in one's self-concept. However, no study has investigated the impact of self-expansion on the affective dimension of the self, nor has the self-expansion model been applied to family relationships. This research aimed to test relationships between self-expansion and affective changes in the self after the dissolution of romantic and family relationships. We developed four studies: 1) adaptation of the self-expansion scale for people who experienced the dissolution of romantic and family relationships; 2) development of a scale to assess attitudes towards changes in the self after the dissolution of romantic and family relationships; 3) impact of self-expansion on the affective dimension of the self after the dissolution of romantic and family relationships; 4) a sentiment analysis with a lexical approach to assess affective changes in the self after the dissolution of romantic and family relationships. All four studies had the participation of 282 people who had recently experienced the dissolution of a romantic relationship, with an average age of 24.2 years old; and 155 people who had recently experienced the dissolution of a family relationship, with an average age of 35.8. Study 1 showed that the self-expansion questionnaire (SEQ) had adequate psychometric proprieties to retrospectively assess the level of self-expansion that a recently broken romantic and family relationship provided before the dissolution. In Study 2, we also found good psychometric proprieties for a scale to assess attitude towards changes in the self after the dissolution of romantic and family relationships. Study 3 showed that the more self-expansion a relationship provided in the past, the more negative the

attitude towards changes in the self after a dissolution, both for romantic and family relationships. Finally, in Study 4, sentiment analysis with a linguistic approach showed that people with high self-expansion in a broken romantic or family relationship used words with a negative valence more frequently to describe themselves than people with low self-expansion. We conclude that higher self-expansion in romantic and family relationships that ended for various reasons tends to negatively impact the self after the severance of ties.

## **Keywords**

Self-expansion; self; relationship dissolution; romantic relationships; family relationships.

## Resumo

Carvalho, Nathalia Melo; Natividade, Jean Carlos. **Autoexpansão, rompimentos de relacionamentos e self**. Rio de Janeiro, 2024. 125p. Tese de doutorado – Departamento de Psicologia, Pontifícia Universidade Católica do Rio de Janeiro.

Na psicologia social, o modelo de autoexpansão postula que as pessoas são motivadas a expandir suas capacidades, adotando uma postura exploratória, curiosa e de autoaprimoramento. Além disso, de acordo com esse modelo, as pessoas procuram expandir-se incorporando relacionamentos íntimos no próprio autoconceito. A autoexpansão em relacionamentos íntimos é, portanto, o nível de autoaprimoramento que um relacionamento proporciona. Pesquisas anteriores mostraram que uma maior autoexpansão em relacionamentos amorosos que se romperam resulta em contração e menos clareza no autoconceito. No entanto, nenhum estudo investigou o impacto da autoexpansão na dimensão afetiva do self, nem o modelo de autoexpansão foi aplicado a relacionamentos familiares. Esta pesquisa teve como objetivo testar relações entre autoexpansão e mudanças na dimensão afetiva do self após o rompimento de relacionamentos amorosos e familiares. Foram desenvolvidos quatro estudos: 1) adaptação da escala de autoexpansão para pessoas que vivenciaram o rompimento de relacionamentos amorosos e familiares; 2) desenvolvimento de uma escala para aferir atitudes frente a mudanças percebidas no self após o rompimento de relacionamentos amorosos e familiares; 3) impacto da autoexpansão na dimensão afetiva do self após o rompimento de relacionamentos amorosos e familiares; 4) uma análise de sentimento com abordagem lexical para avaliar mudanças afetivas no self após o rompimento de relacionamentos amorosos e familiares. Os quatro estudos contaram com a participação de 282 pessoas que haviam vivenciado recentemente o rompimento de um relacionamento amoroso, com idade média de 24,2 anos; e 155 pessoas que haviam vivenciado recentemente o rompimento de um relacionamento familiar, com idade média de 35,8 anos. O Estudo 1 mostrou que o questionário de autoexpansão (SEQ) apresentou propriedades psicométricas adequadas para avaliar retrospectivamente o nível de autoexpansão que um relacionamento amoroso e familiar recentemente rompido proporcionava antes do rompimento. No Estudo 2,

também foram encontradas propriedades psicométricas adequadas para uma escala que avalia a atitude em relação às mudanças percebidas no self após o rompimento de relacionamentos amorosos e familiares. O Estudo 3 mostrou que quanto mais autoexpansão um relacionamento proporcionava no passado, mais negativa é a atitude em relação às mudanças percebidas no self após um rompimento, tanto para relacionamentos amorosos quanto familiares. Finalmente, no Estudo 4, a análise de sentimento com abordagem linguística mostrou que pessoas com alta autoexpansão em um relacionamento amoroso ou familiar rompido usaram palavras com valência negativa com mais frequência para se descreverem do que pessoas com baixa autoexpansão. Concluiu-se que uma maior autoexpansão em relacionamentos amorosos e familiares rompidos por motivos diversos tende a impactar negativamente o self após o rompimento dos vínculos.

### **Palavras-chave**

Autoexpansão; self; rompimentos; relacionamentos amorosos; relacionamentos familiares.

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# 1

## Introduction

The self, in social psychology, refers to the associations that people have between the concept of self and other attributes (Greenwald et al., 2002). The model of self-expansion in close relationships proposed by Aron and Aron (1986) posits that people have an inherent motivation to increment their self-concept with new abilities, resources, and exciting experiences. One of the ways people expand their selves is by incorporating intimate relationships into their own self-concept. If two people are intimately connected, they will likely see the abilities, resources, and overall content of this close other's self-concept as their own.

The more a relationship contributes to self-expansion (i.e. self-improvement), the more people feel connected to close others, and the less likely the relationship will end (Aron et al., 2022; Le et al., 2010; McIntyre et al., 2015). Even relationships high in self-expansion will eventually end, however. People can dissolve a relationship due to the desire of one or both members of a dyad, difficult-to-manage differences, or even more dramatic and uncontrollable reasons, such as the death of a close other. In this research, we conceptualized relationship dissolution as a loss or a significant weakening of a bond with a close other, whether by personal decision or by uncontrollable reasons (another person's decision, death, etc.).

Previous research has shown that romantic relationships with high self-expansion negatively impact the self after a breakup (Lewandowski et al., 2006; Slotter et al., 2010). For example, people tend to experience a contraction in the self and less clarity about who they are without a partner (Lewandowski et al., 2006; Slotter et al., 2010). However, we are unaware of studies investigating the role of self-expansion on the affective dimension of the self, such as self-esteem and attitudes towards changes perceived in the self after a relationship dissolution. Also, we are unaware of studies that relate self-expansion in family relationships to possible changes in the self after the severance of ties.

It is known that romantic and family relationships are essential to self-concept formation and that a dissolution in these relationships can lead to adverse outcomes (Badia, 2019; Lewandowski et al., 2006; Slotter et al., 2010). Considering that, we developed this research to test relations between self-expansion in romantic

and family relationships that had recently ended and affective aspects of the self, such as self-esteem, ideal self, and attitude towards changes in the self after a relationship dissolution.

We conducted four studies to reach this aim: 1) adaptation of the self-expansion scale for people who experienced the dissolution of romantic and family relationships; 2) development of a scale to assess attitudes towards changes in the self after the dissolution of romantic and family relationships; 3) impact of self-expansion on the affective dimension of the self after the dissolution of romantic and family relationships; 4) a sentiment analysis with a lexical approach to assess affective changes in the self after the dissolution of romantic and family relationships. All four studies had the participation of 282 people who had recently experienced the dissolution of a romantic relationship, with an average age of 24.2 years old; and 155 people who had recently experienced the dissolution a family relationship, with an average age of 35.8.

The first two studies were methodological and allowed us to test the central hypothesis of this work in Studies 3 and 4, which is that people with high self-expansion in romantic and family relationships that had recently ended would report a more negative evaluation of the self even using self-report instruments (Study 3) and a broader open question (Study 4). Together, these four studies would amplify our knowledge about how self-expansion impacts the self in different types of close relationships that broke down for various reasons. Also, Study 4 was designed to apply a modern linguistic analysis (sentiment analysis) to identify possible affective changes in the self after the dissolution of romantic and family relationships.

We believe these studies are theoretically innovative in that they amplify the self-expansion questionnaire and the self-expansion model by applying it to family relationships. Furthermore, for applied social psychology, the results of this research can be helpful to psychologists working with people beavered by different kinds of relationship dissolution. They may open the door for future research to test interventions to work with people who have ended intimate relationships with different levels of self-expansion

**2**

**Retrospective Self-Expansion Scale for Contexts of the  
Dissolution of Romantic and Family Relationships:  
Evidence of Validity and Reliability**

## **Abstract**

Self-expansion in close relationships refers to the level of personal improvement that a relationship provides. One of the ways to measure this construct is through the self-expansion scale, originally developed to assess the current context of romantic relationships. In this research, we adapted the self-expansion scale to retrospectively assess how much a recently broken romantic or family relationship provided self-expansion before the dissolution. To this end, two studies were carried out, one for each type of dissolution: 1) romantic dissolution and 2) family dissolution. The first study had the participation of 282 people, with an average age of 24.2 years, who had experienced the dissolution of a romantic relationship in the 12 months before participating in the research. The results indicated a single-factor structure for the self-expansion scale. The scale's reliability indices and the item difficulty and discrimination parameters were satisfactory. Self-expansion correlated in the expected way with other variables, for example, positively with closeness to the partner and negatively with the attitude towards dissolution. The second study had the participation of 155 people, with an average age of 35.8 years, who had experienced the dissolution of a family relationship in the 12 months before participating in the research. The results were similar to those found in Study 1, revealing a scale with adequate psychometric properties. We discuss the possibility of extending the self-expansion scale, with slight adaptations, to the contexts of the dissolution of romantic and family relationships.

## **Keywords**

self-expansion; intimate relationships; romantic relationships; family relationships; test adaptation.

Looking for new knowledge, skills, resources, and social roles is an inherently human motivation (Aron et al., 2004). To some extent, all human beings seek to expand towards something new. This expansion can occur in isolation when people engage in new activities or acquire some new knowledge independently (Mattingly & Lewandowski, 2013). It is also possible, however, that people seek to expand themselves through intimate relationships. Romantic and family relationships, in particular, have a high potential to promote self-expansion, as people tend to incorporate the skills and characteristics of people close to them into their own selves (Aron et al., 2004). However, the dissolution of these relationships can represent a setback in self-expansion, which may lead to adverse outcomes. This research aimed to adapt and seek validity evidence for an instrument that retrospectively assesses the extent to which recently broken romantic and family relationships provided self-expansion before the dissolution.

## **2.1. The Self-expansion Model**

In social psychology, self-expansion refers to the process of including new attributes on the self (Aron & Aron, 1986; Mattingly & Lewandowski, 2013). The self-expansion model understands that people seek resources, perspectives, and identities that can increase their likelihood of success (Aron et al., 2001). That seek is not necessarily a conscious motivation, even if it can be automatically part of our choices of romantic partners, leisure activities, place of residence, friends, and profession, among other items (Aron et al., 2004). In short, this model argues that self-expansion is a central human motivation and that one of the ways to achieve it involves allowing yourself to change through contact with intimate people (Aron et al., 2001).

According to Aron & Aron (1986), the concept of self-expansion presents two fundamental principles: 1) a motivational principle, according to which human beings are motivated to expand their own capabilities, adopting an exploratory, curious and self-improving stance; 2) and a principle of inclusion of others in the self, according to which people seek to expand themselves by incorporating intimate relationships and social groups into their own self-concept (Aron & Aron, 1996; Aron et al., 2001).

According to this model, from the moment one incorporates another person into one's own self, there is no longer a clear separation between the two. The resources of one get to be the resources of the other, as well as skills, characteristics, and needs, becoming accessible and applicable to their self (Aron et al., 2004; Aron et al., 2013). Consequently, there is an increase in general self-efficacy as people start to rely not only on the content of their own self, but also on the content of a significant other (Aron et al., 2004; Aron et al., 2013).

When linked to other people or groups, people often seek to improve their own performance, whether through new resources, perspectives, identities, knowledge, social status, communities, sense of belonging, security, well-being, physical strength, health, or other content that can facilitate adjustment to the environment (Aron et al., 2013). Although individual self-expansion is also possible (Mattingly & Lewandowski, 2013), relationships with other people and groups help the self-improvement process. The reason is that each community or individual comprises a universe of particular contents, which would hardly be achievable without interaction with close others.

However, incorporating another person into the self only sometimes represents an opportunity for growth. Just as people acquire desirable aspects from others close to them, they also begin to consider as their own some undesirable aspects or aspects with which they do not identify (Aron et al., 2004). Depending on the level and direction of an expansion provided by a relationship, one may begin to feel deprived of one's identity or authentic self (Aron et al., 2004). Likewise, people who do not have their need for self-expansion met in a relationship – for instance, they do not think the other has any significant content to add - may seek other relationships to develop themselves (Aron et al., 2013). In these cases, attachment to the other no longer contributes to self-improvement, and a dissolution becomes a possibility.

On the whole, the self-expansion model emphasizes relationships' role in forming the self and, consequently, in emotions and behaviors. In cognitive terms, people include attributes of close others in the network of associations that make up the self-concept and the valence (affective load) associated with these attributes (Aron et al., 2013; Greenwald et al., 2002). Thus, if being a mother is a central attribute in a person's identity, for example, she tends to incorporate characteristics

of her child into her own self. To a certain extent, therefore, we become these close others we live with (Aron et al., 2013).

## **2.2. The Self-Expansion Scale**

The Self-Expansion Questionnaire (SEQ; Lewandowski & Aron, 2002) was developed to measure the extent to which a person believes that a romantic partner provides opportunities for self-expansion. That is, the potential of a relationship to introduce new perspectives, provide new experiences, develop new skills, facilitate learning new things, and help the individual become a better person. Examples of items are: “To what extent does knowing your partner make you a better person?” and “To what extent do you see your partner as a means of expanding your own capabilities?”

The original SEQ construction study was carried out on a sample of North American university students and showed that the scale had satisfactory evidence of validity and precision (Lewandowski & Aron, 2002). A Chinese version (Liu et al., 2023) and an Iranian version (Rajabi et al., 2017) of the scale also showed adequate psychometric properties. Studies using SEQ have found that greater self-expansion in relationships tends to present positive outcomes, such as greater self-efficacy and greater commitment to the partner (Aron et al., 2022). However, when a relationship that provides high self-expansion ends, the impacts on the self tend to be negative, as there is a loss of self-concept attributes that were deemed desirable (Aron et al., 2022).

In addition to SEQ, other direct (e.g., Aron et al., 1991; Sande et al., 1988) and indirect (e.g., Aron et al., 1991; Schultz et al., 2004) measures make it possible to access constructs that are relevant to the model of self-expansion. The Inclusion of Other in the Self (IOS) (Aron et al., 1992), for example, evaluates the strength of the connection of others to the self through a graphic representation. In it, the respondent is invited to observe seven pairs of intersecting circles and select the option that best represents their relationship with a close other (e.g., romantic partner, friend, family member, among other possibilities). The greater the intersection between the two circles, the more one perceives one’s own self as interconnected with the self of a close other. When people perceive that the other provides a high opportunity for self-improvement, they tend to integrate them more

strongly into the self, as predicted by the self-expansion model (Aron & Aron, 1986; Aron et al., 2022).

In the Brazilian context, no adaptation of SEQ was found, except one by D. B. Santos and F. A. Lopes (personal communication, February 13th, 2024). Studies that have adapted this scale for other types of relationships besides romantic ones or for people who have experienced relationship dissolutions are still unknown. In a recent literature review, Aron et al. (2022) highlighted the importance of new studies investigating the self-expansion model in populations with specific characteristics.

### **2.3. Self-Expansion in Different Contexts**

The self-expansion model has been applied to several contexts, such as interpersonal attraction, beginning, maintenance, and dissolution of relationships, and individual search for self-expansion (Aron et al., 2013). Some relationships are particularly prone to self-expansion. Romantic relationships, for instance, have proved to be a source of obtaining new skills and resources. Several studies show that the characteristics, gains, and losses of a romantic partner are understood as belonging to the other partner, depending on the extent to which the identities of the members of the dyad are interconnected (e.g., Beach et al., 1998; Gardner et al., 2002; Slotter & Gardner, 2009).

To our knowledge, SEQ has been used exclusively to assess the self-expansion provided by a romantic partner. Considering the model proposed by Aron and Aron (1986), however, other relationships are recognized as capable of providing self-expansion. For example, family members can be strongly integrated into self-concept and provide opportunities for a person's self-expansion. Despite the relevance that other relationships may have for self-expansion, up to this date, no study has been found using SEQ to investigate self-expansion provided by objects other than romantic relationships.

Furthermore, SEQ was originally developed to assess the self-expansion provided by a current romantic relationship. However, we consider it relevant to understand how a person perceives, after a relationship dissolution, the self-expansion that an object provided. Another study has already carried out a retrospective assessment of self-expansion in relationships (Lewandowski et al.,

2006). However, no evidence of validity was presented for this type of use of the scale. There is evidence that dissolutions with romantic partners (Lewandowski et al., 2006; Mattingly et al., 2020) and family members (Badia, 2019) can result in adverse outcomes, such as pathological grief and impairment in mental health indicators. An instrument to assess the level of self-expansion provided before a dissolution could be helpful for health professionals working with bereaved people by the end of diverse relationships. For example, to identify and intervene in the possible impacts of a dissolution on self-concept, depending on the level of self-expansion that a relationship provided in the past.

## **2.4. Present Study**

We adapted the SEQ to the contexts of the dissolution of romantic (dating, engagement, stable union, or marriage) and family relationships (mother, father, brother, sister, or child) and sought evidence of its validity. The items were adapted to retrospectively assess the extent to which a recently broken romantic or family relationship provided self-expansion before the dissolution. To this end, we carried out two studies, one for each type of dissolution: 1) romantic dissolution and 2) family dissolution.

## **2.5. Study 1 – Romantic Relationships**

### **2.5.1. Participants**

Two hundred and eighty-two Brazilian adults participated in this study: 66% ( $n = 186$ ) were women, 31.6% ( $n = 89$ ) were men, and 2.5% ( $n = 7$ ) non-binary. The average age was 24.2 years ( $SD = 8.57$ ), with 94.4% ( $n = 266$ ) from the Southeast region. Most participants had incomplete higher education (54.3%;  $n = 153$ ); 22% ( $n = 62$ ) had complete high school education; 8.2% ( $n = 23$ ) had complete undergraduate education; 7.4% ( $n = 21$ ) had complete postgraduate education; 6% ( $n = 17$ ) had incomplete postgraduate education; 1.8% ( $n = 5$ ) had incomplete high school education; and 0.4% ( $n = 1$ ) had complete elementary education. Regarding skin color, 69.9% of the participants declared themselves white; 20.9% ( $n = 59$ ), mixed race; 7.4% ( $n = 21$ ), black; 0.7% ( $n = 2$ ), yellow/Asian; 0.7% ( $n = 2$ ) did not

know or did not want to inform; and 0.4% ( $n = 1$ ), indigenous people. Furthermore, most participants declared they did not have children (87.9%;  $n = 248$ ).

All participants declared having experienced a committed romantic relationship dissolution in the 12 months before participating in the research. Regarding the type of dissolution, 89.4% ( $n = 252$ ) reported having experienced the dissolution a going steady relationship; 5.3% ( $n = 15$ ), a marriage; 2.8% ( $n = 8$ ), a stable union; 2.5% ( $n = 7$ ), an engagement. Half of the participants ( $n = 141$ ) declared that they were not in a romantic relationship at the time of their participation in the research, 25.5% ( $n = 72$ ) were in a non-committed romantic relationship, 19.1% ( $n = 54$ ) were dating, and 5.4% ( $n = 14$ ) were in another relationship format. The average time span since the relationship dissolution was 5.58 months ( $SD = 3.49$ ), and the average extent of the broken relationship was 3.05 years ( $SD = 5.35$ ). Regarding the reasons for the dissolution, 29.4% ( $n = 83$ ) reported it was due to a desire from their partner; 27% ( $n = 76$ ), to irreconcilable differences; 25.9% ( $n = 73$ ), to a personal desire; 7.1% ( $n = 20$ ), to a desire shared by both partners; 0.7% ( $n = 2$ ), to the death of the partner; and 9.9% ( $n = 28$ ), to other reasons.

### **2.5.2. Instruments**

The participants responded to an online questionnaire with sociodemographic questions about gender, age, education, region of residence, skin color, and whether they had children. They were then asked to state whether they had experienced a romantic dissolution in the last 12 months after being introduced to the definition of dissolution used in this research: “a loss or a significant weakening of a bond with a close other, whether by personal decision or by uncontrollable reasons (another person’s decision, death, etc.).” If the participant had experienced more than one dissolution, they were asked to choose just one to answer the survey. There were also specific questions about the dissolution experienced: type of dissolution, time span since the dissolution, duration of the broken relationship, the main reason for the dissolution, and current relationship status. Furthermore, participants were asked how close they felt to their ideal self (0 = not at all close; 100 = extremely close), that is, to the person they would like to be, before and after the relationship dissolution. The questionnaire was applied

at a single moment, with participants invited, in some questions, to report how they felt during the relationship and, in others, how they felt at that moment while answering the survey.

Furthermore, control questions were included in which the participant was asked to respond in a specific way, for example: “this is a control question, please mark number two on the scale”. These questions were used to exclude possible random responses. In addition to these questions, the following instruments were applied.

***Retrospective Self-Expansion Questionnaire in Romantic Relationships (R-SEQ)***. The Retrospective Self-Expansion Questionnaire in Romantic Relationships (R-SEQ) is an adaptation of the Self-Expansion Questionnaire (SEQ) by Lewandowski and Aron (2002) and its Brazilian version by D. B. Santos and F. A. Lopes (personal communication, February 13, 2024). The 14 items of SEQ were adapted to reflect experiences of self-expansion in a post-dissolution context, differing from the original scale that was designed for current relationships. The final version of R-SEQ had 13 statements that concerned a retrospective view of how the participants perceived the self-expansion provided by a romantic relationship that ended in the last 12 months. Item examples include: “To what extent did you see your partner as a means of expanding your own capabilities?” and “To what extent did your partner expand your sense of who you were?” Response options vary on a scale from 1 (not very much) to 7 (very much). The original SEQ demonstrated high reliability, with Cronbach’s alpha coefficients of .87 and .89 in previous studies (Lewandowski & Aron, 2002). The psychometric properties of the R-SEQ are presented in the Results section of this study.

***Inclusion of Other in the Self Scale (IOS)*** (Aron et al., 1992). This scale, which contains a single item, was adapted to the Brazilian context in this research. It assesses a person’s perception of being interconnected with another. Seven images are presented, and the intersection between two circles varies from no overlapping area to almost completely overlapping. The greater the overlapping area marked, the more the participant perceives himself or herself as being interconnected with the person in question. It is a graphic scale that can be answered in less than 1 minute. In the original study, the alpha coefficient using alternating forms was .93, and the test-retest coefficient  $r = .83$ . In another Brazilian study, the

alpha coefficient was .79 (Teixeira & Silva, 2019). To respond to this scale, the participant was asked to think about their relationship with their former partner.

***Subjective Closeness Index*** (SCI; Berscheid et al., 1989). This measure, which contains two items, was adapted to the Brazilian context in this research. It assesses the degree of closeness with a close other through two questions: “Regarding all your other relationships (with the same sex and with the opposite sex), how do you characterize your relationship with X?” and “Given what you know about other people’s intimate relationships, how would you characterize your relationship with X?” Participants answer these questions using a scale ranging from 1 (not at all close) to 7 (very close). In the original study, the internal consistency coefficient of the measure was not presented. Another study that used it obtained an alpha of .94 (Badia, 2019). To respond to this scale, the participant was asked to think about their relationship with their former partner. The “X” was replaced by the name of the person with whom the participant had a relationship. In this research, the alpha coefficient was .79.

***Rosenberg Self-Esteem Scale*** (Hutz et al., 2014; Brazilian version of the original by Rosenberg, 1965). This single-factor scale measures self-esteem through ten items in statement format. Participants are asked to state how much they agree with each of them on a four-point scale (1 = completely disagree; 4 = completely agree). Examples of items are: “On the whole, I am satisfied with myself” and “Sometimes I feel useless”. In the study by Hutz and Zanon (2011), the scale presented an alpha coefficient of .90. In this research, the alpha coefficient was .91.

***Attitude towards Relationship Dissolution Scale***. This single-factor scale contains six items and was developed in this research to assess how favorable or unfavorable the person’s stance towards the relationship dissolution they experienced is. Participants are asked to state how much they agree with each statement on a seven-point scale (1 = completely disagree; 7 = completely agree). Examples of items are: “I see more advantages than disadvantages in the dissolution with X” and “Looking back, I think the dissolution with X was for the best.” In each item, the “X” was replaced by the name of the person the participant declared having dissolved a relationship with. In this research, the alpha coefficient was .89.

***Attitude towards Perceived Changes in the Self Scale***. This single-factor scale contains five items and was created by Carvalho and Natividade (2024) to

assess how favorable or unfavorable is the person's attitude towards the changes perceived in their own self after the dissolution of a relationship. Participants are asked to state how much they agree with each statement on a seven-point scale (1 = completely disagree; 7 = completely agree). The scale wording consists of "after the dissolution of the relationship with X...", and the participant must agree or disagree with the ensuing items. Examples of items are: "It hurts to think about the person I have become" and "I think I have changed for the worse". The "X" was replaced by the name of the person the participant declared having dissolved a relationship with. In the original study and in this research, the alpha coefficient was .85.

### **2.5.3. Procedures**

#### **2.5.3.1. Data Collecting**

We collected the data through an online questionnaire and disseminated it on online social networks. We also used in-person recruitment for online data collection on university premises (see Wachelke et al., 2014). During recruitment, we collected the email addresses of those who agreed to participate in the research and, subsequently, sent invitations with the questionnaire address. This research was approved by the Human Research Ethics Committee of the Catholic University of Petrópolis, under protocol number 5.958.140.

#### **2.5.3.2. Analyses**

First, we cleaned the database to exclude participants who did not meet the inclusion criteria (i.e., being an adult, Brazilian, and having experienced a committed romantic relationship dissolution – dating, engagement, stable union, or marriage – in the last 12 months) and those who got the control questions wrong. Afterward, conducted a confirmatory factor analysis with the items from the self-expansion scale using the software R version 3.5.3 (R Core Team, 2023) and the Lavaan package version 0.6.3 (Rosseel, 2012). In this analysis, we started with the covariance matrix and used the Weighted Least Squares Mean and Variance Adjusted (WLSMV) estimator. We also calculated the item discrimination and difficulty parameters using the mirt package in R (Chalmers, 2012). Next, we

calculated the alpha and omega coefficients to obtain reliability indicators using the semTools package in R (Jorgensen et al., 2022). Still looking for evidence of validity for the scale, we tested Pearson correlations between self-expansion, the inclusion of others in the self (IOS), closeness to the partner, self-esteem, attitude towards the relationship dissolution, attitude towards changes in self, length of the relationship, time span since the dissolution, ideal self (before and after the dissolution). Finally, we performed an ANOVA to test differences in levels of self-expansion between participants who reported different reasons for the dissolution and a t-test to verify differences in self-expansion between people who had children and those who had no children.

#### **2.5.4. Results**

##### **2.5.4.1. Internal Structure and Precision Indicators**

The one-factor model explaining the 14 items of the self-expansion scale obtained the following fit indices:  $\chi^2(77, N = 282) = 250.5; p < .001; \chi^2/df = 3.25$ ; Tucker-Lewis Index (TLI) = .89; Comparative Fit Index (CFI) = .91; Root Mean Square Error of Approximation (RMSEA) = .099 (CI90% = .087–.113). The factor loadings of the items ranged from .25 to .87. The scale presented alpha and omega coefficients of .91 and .92, respectively.

We tested a second one-factor model with item 4 removed from the scale. We chose to test this second model because item 4 had a factor loading of .25, which was low compared to the other items on the scale. The one-factor model explaining the 13 items of the scale obtained the following fit indices:  $\chi^2(65, N = 282) = 239.4; p < .001; \chi^2/df = 3.68$ ; Tucker-Lewis Index (TLI) = .90; Comparative Fit Index (CFI) = .91; Root Mean Square Error of Approximation (RMSEA) = .106 (CI90% = .092–.120). The factor loadings of the items ranged from .44 to .87. Regarding reliability indicators, the alpha and omega coefficients were .92 and .93, respectively, the average variance extracted was .54, and the composite reliability was .94. Furthermore, the item discrimination and difficulty parameters reinforced the better adequacy of the 13 items model with item 4 removed from the scale. The factor loadings, item discrimination, and difficulty parameters can be seen in Table

1. The following analyses were carried out considering the 13-item version of the scale.

**Table 1***Factor Loadings, Discrimination Parameters and Item Difficulty – Romantic Relationships*

	$\Lambda$	$A$	$b1$	$b2$	$b3$	$b4$	$b5$	$b6$
Item 1	.79	2.16	-1.06	-0.62	-0.31	0.15	0.60	1.04
Item 2	.44	0.83	-2.54	-1.68	-0.87	-0.21	0.58	1.56
Item 3	.86	2.91	-0.96	-0.48	-0.09	0.39	0.93	1.36
Item 4*	.25	0.44	-2.04	-0.64	0.31	1.70	3.76	5.03
Item 5	.77	2.03	-1.21	-0.69	-0.25	0.08	0.70	1.16
Item 6	.87	2.95	-0.81	-0.42	-0.03	0.38	0.94	1.42
Item 7	.68	1.58	-1.71	-1.03	-0.52	-0.02	0.71	1.22
Item 8	.78	2.14	-1.03	-0.40	-0.01	0.39	0.93	1.45
Item 9	.72	1.76	-1.12	-0.61	-0.20	0.35	0.96	1.64
Item 10	.75	1.92	-1.25	-0.67	-0.16	0.37	0.96	1.58
Item 11	.84	2.68	-1.21	-0.81	-0.33	0.01	0.60	1.06
Item 12	.65	1.46	-2.01	-1.54	-0.96	-0.28	0.44	1.10
Item 13	.55	1.11	-1.20	-0.43	0.20	1.03	1.67	2.67
Item 14	.81	2.35	-1.11	-0.66	-0.17	0.19	0.86	1.37

*Note.*  $\lambda$  = factorial loading.  $a$  = discrimination/slope parameter.  $b$  = difficulty/threshold parameters. Factor loadings obtained through confirmatory factor analysis, Weighted Least Squares Mean and Variance Adjusted method. Discrimination and difficulty parameters estimated by the Graded Response Model (Samejima, 1969). The numbering of items is following the version by Lewandowski and Aron (2002); the final version of the instrument for Brazil has different numbering, considering the exclusion of item 4 (Annex 1).

\*Item removed from the final version.  $N = 282$ .

#### **2.5.4.2. Relations with Other Variables**

The Pearson correlation values can be seen in Table 2. As expected, self-expansion was positively correlated with the variables related to closeness to the partner (IOS and *Subjective Closeness Index*); and negatively with those related to attitude towards relationship dissolution and attitude towards changes perceived in the self after the dissolution. Furthermore, the positive correlation between self-expansion and the ideal self before the dissolution and the negative correlation between self-expansion and the ideal self after the dissolution stand out.

**Table 2***Correlations between the Retrospective Self-Expansion Questionnaire in Romantic Relationships and Other Variables*

	1	2	3	4	5	6	7	8	9
1. Retrospective Self-expansion	—								
2. IOS	.35**	—							
3. Closeness (SCI)	.42**	.50**	—						
4. Self-esteem	-.04	-.01	.08	—					
5. Attitude towards Relationship Dissolution	-.51**	-.31**	-.28**	.28**	—				
6. Attitude towards Changes in the Self	-.28**	-.18**	-.14*	.44**	.57**	—			
7. Duration of the Relationship	-.04	.04	.10	.05	-.08	-.08	—		
8. Time since Dissolution	-.11	-.02	-.05	.10	.18*	.08	.07	—	
9. Ideal Self before Dissolution	.56**	.21**	.34**	-.01	-.50**	-.28**	.01	-.08	—
10. Ideal Self after Dissolution	-.18*	-.06	-.01	.44**	.47**	.45**	-.07	.18*	-.09

*Note.* IOS = Inclusion of Other in the Self Scale. SCI = Subjective Closeness Index.  $N = 282$ .

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

### 2.5.4.3. Differences between Groups

We found a significant difference between participants who had children and participants who had no children concerning the extent to which they perceived that a relationship provided self-expansion. Participants who declared they had no children perceived greater self-expansion in the relationship ( $M = 4.04$ ;  $SD = 1.45$ ) than participants who declared they had children ( $M = 3.48$ ;  $SD = 1.48$ ),  $t(280) = 2.10$ ;  $p = .04$ ;  $d = 0.38$ . Furthermore, people who declared that the relationship had ended due to their own desire ( $M = 3.64$ ;  $SD = 1.38$ ) perceived the relationship as providing lower levels of self-expansion than people who declared that the relationship had ended due to their partner's desire. ( $M = 4.51$ ;  $SD = 1.44$ ),  $F(5, 10.7) = 3.29$ ;  $p = .048$ ;  $d = 0.62$ . Finally, people who declared that the dissolution occurred due to irreconcilable differences ( $M = 3.67$ ;  $SD = 1.41$ ) showed lower levels of self-expansion than people who declared that the dissolution occurred due to their partner's desire. ( $M = 4.51$ ;  $SD = 1.44$ ),  $F(5, 10.7) = 3.29$ ;  $p = .048$ ;  $d = 0.59$ .

## 2.6. Study 2 - Family Relationships

### 2.6.1. Participants

One hundred fifty-five Brazilian adults participated in this study: 65.2% ( $n = 101$ ) were women, 33.5% ( $n = 52$ ) were men and 1.3% ( $n = 2$ ) non-binary. The average age was 35.8 years ( $SD = 16.1$ ), with 86.5% ( $n = 134$ ) from the Southeast region. The majority of participants had incomplete higher education (31.6%;  $n = 49$ ); 21.9% ( $n = 34$ ) had complete postgraduate education; 18.7% ( $n = 29$ ) had complete high school education; 15.5% ( $n = 24$ ) had complete undergraduate education; 5.2% ( $n = 8$ ) had incomplete postgraduate education; 3.2% ( $n = 5$ ) had incomplete high school education; 2.6% ( $n = 4$ ) had complete elementary education; and 1.3% ( $n = 2$ ) had incomplete elementary education. Regarding skin color, 58.1% ( $n = 90$ ) declared themselves white; 21.9% ( $n = 34$ ), mixed race; 16.8% ( $n = 26$ ), black; 1.9% ( $n = 3$ ), yellow/Asian; and 1.3 ( $n = 2$ ) did not know or did not want to inform. Furthermore, most participants declared they did not have children (54.8%;  $n = 85$ ).

All participants declared having experienced a family dissolution in the 12 months prior to participating in the research. Regarding the type of dissolution, 39.4% ( $n = 61$ ) reported having experienced the dissolution of a relationship with the father; 33.5% ( $n = 52$ ), with the mother; 24.5% ( $n = 38$ ), with a sister; 2.6% ( $n = 4$ ), with a child. The average time span since the relationship dissolution was 6.35 months ( $SD = 3.82$ ) and the average duration of the broken relationship was 29.1 years ( $SD = 17.9$ ). Regarding the reasons for the dissolution 46.5% ( $n = 72$ ) reported the death of a family member; 23.2% ( $n = 36$ ), irreconcilable differences; 15.5% ( $n = 24$ ), their own desire; 7.1% ( $n = 11$ ), the family member's desire; 2.6% ( $n = 4$ ), a desire shared by both; and 5.2% ( $n = 8$ ), other reasons.

### **2.6.2. Instruments**

The instruments were the same as in Study 1, except that we asked the participants to think about the relationship they had with a family member. Therefore, the term “partner” was replaced by “family member” in the items of the self-expansion scale in order to adapt them to this type of relationship while preserving the content. Examples: “To what extent did your family member expand your notion of who you are?” and “To what extent did you see your family member as an opportunity to expand your capabilities”? Furthermore, in this study, we chose to use the 13-item version of the self-expansion scale, as determined in Study 1, that is, without item 4 of the original version of SEQ. We removed this item because its content was deemed inappropriate for assessing self-expansion in family relationships (“To what extent being with your partner made you potentially more attractive to new partners?”).

### **2.6.3. Procedures**

The data collection and analysis procedures were the same as those described in Study 1, except that we included an invariance analysis to test whether the factorial structure of the self-expansion scale is the same between participants who experienced a romantic dissolution and those who experienced a family dissolution. We performed this invariance analysis using the semTools package in R (Jorgensen et al., 2022).

## **2.6.4. Results**

### **2.6.4.1. Internal Structure and Precision Indicators**

The one-factor model explaining the 13 items of the scale obtained the following fit indices:  $\chi^2 (65, N=155) = 127.2; p < .001; \chi^2 /df = 1.95$ ; Tucker-Lewis Index (TLI) = .95; Comparative Fit Index (CFI) = .95; Root Mean Square Error of Approximation (RMSEA) = .095 (CI90% = .073–.119). The factor loadings of the items ranged from .64 to .95. Regarding reliability indicators, the alpha and omega coefficients were .95, the average variance extracted was .68, and the composite reliability was .96. The factor loadings, the item discrimination and difficulty parameters can be seen in Table 3.

**Table 3***Factor Loadings, Discrimination Parameters and Item Difficulty – Family Relationships*

	$\Lambda$	$a$	$b1$	$b2$	$b3$	$b4$	$b5$	$b6$
Item 1	.91	3.83	-0.62	-0.27	0.01	0.18	0.57	0.92
Item 2	.64	1.42	-1.79	-1.21	-0.94	-0.61	-0.06	0.60
Item 3	.94	4.81	-0.49	-0.26	-0.09	0.18	0.56	0.91
Item 5	.86	2.93	-0.76	-0.38	-0.12	0.18	0.54	0.87
Item 6	.86	2.91	-0.59	-0.27	-0.01	0.23	0.53	0.77
Item 7	.78	2.14	-0.87	-0.45	-0.11	0.28	0.79	1.13
Item 8	.87	3.07	-0.58	-0.28	0.02	0.28	0.67	0.98
Item 9	.82	2.40	-0.54	-0.23	0.03	0.38	0.84	1.14
Item 10	.79	2.20	-0.93	-0.51	-0.19	0.17	0.57	1.10
Item 11	.95	5.46	-0.74	-0.49	-0.19	0.08	0.36	0.68
Item 12	.90	3.45	-1.14	-0.80	-0.55	-0.21	0.01	0.29
Item 13	.74	1.87	-0.66	-0.46	-0.08	0.28	0.68	0.89
Item 14	.92	3.99	-0.85	-0.42	-0.12	0.22	0.54	0.81

*Note.*  $\lambda$ =factorial loading.  $a$ =discrimination/slope parameter.  $b$ =difficulty/threshold parameters. Factor loadings obtained through confirmatory factor analysis, Weighted Least Squares Mean and Variance Adjusted method. Discrimination and difficulty parameters estimated by the Graded Response Model (Samejima, 1969).  $N = 155$ .

#### **2.6.4.2. Relations with Other Variables**

The Pearson correlation values can be seen in Table 4. As expected, self-expansion was positively correlated with the variables related to closeness to the family member (IOS and Subjective Closeness Index); and negatively with attitude towards the relationship dissolution and attitude towards changes perceived in the self after the dissolution. Furthermore, the positive correlations between self-expansion and the ideal self before the dissolution and the negative correlation between self-expansion and the ideal self after the dissolution stand out.

**Table 4***Correlations between the Retrospective Self-Expansion Questionnaire in Family Relationships and Other Variables*

	1	2	3	4	5	6	7	8	9
1. Retrospective Self-expansion	—								
2. IOS	.52**	—							
3. Closeness (SCI)	.56**	.67**	—						
4. Self-esteem	.07	-.05	.21*	—					
5. Attitude towards Relationship Dissolution	-.66**	-.41**	-.57**	-.18**	—				
6. Attitude towards Changes in the Self	-.41**	-.21**	-.20**	.36**	.41**	—			
7. Duration of the Relationship	.19*	.35**	.38**	.40**	-.31**	.06	—		
8. Time Span since Dissolution	-.10	-.18*	-.11	.01	.22*	.02	.05	—	
9. Ideal Self before Dissolution	.52**	.38**	.55**	.18	-.68**	-.30**	.31**	-.15	—
10. Ideal Self after Dissolution	-.20*	.01	-.01	.49**	.20**	.48**	.15	.04	.04

*Note.* IOS = Inclusion of Other in the Self Scale. SCI = Subjective Closeness Index.  $N = 155$ .

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

### 2.6.4.3. Differences between Groups

There was no significant difference between participants who had children and participants who had no children concerning the extent to which people perceived that a relationship provided self-expansion before the dissolution,  $t(153) = -1.42$ ;  $p = .16$ . However, a significant difference was found in levels of self-expansion between people who stated different reasons for the dissolution. People who declared that the dissolution occurred due to the death of a family member ( $M = 4.95$ ;  $SD = 1.61$ ) perceived the relationship as providing greater levels of self-expansion than people who declared that the relationship occurred due to their own desire ( $M = 3.14$ ;  $SD = 1.58$ ) and due to irreconcilable differences ( $M = 2.71$ ;  $SD = 1.22$ ),  $F(5, 21.9) = 18.1$ ;  $p < .001$ . The effect sizes (Cohen's  $d$ ) of these differences were 1.13 and 1.57, respectively.

#### *Invariance*

The results of the invariance tests indicated configural, metric, and scalar invariance between the scales (romantic and family dissolutions). The difference between the metric and configural models indicated  $\Delta CFI = .004$ ,  $\Delta TLI = .006$ ,  $\Delta RMSEA = -.012$ . And the difference between the scalar and metric models indicated  $\Delta CFI = -.006$ ,  $\Delta TLI = .001$ ,  $\Delta RMSEA = -.003$ .

## 2.7. Discussion

This research aimed to seek evidence of validity for the self-expansion scale in samples of people who experienced the dissolution of romantic and family relationships. The results indicated adequate evidence of validity based on the internal structure and relations with other variables, as well as satisfactory reliability indicators for both scales. We chose instruments with 13 items (Annexes 1 and 2) after excluding item 4, thus differentiating the versions adapted in this research from the original instrument containing 14 items. Item 4 showed unsatisfactory psychometric parameters in Study 1, in the context of romantic relationships, and its content was inappropriate for the context of family relationships.

In both studies, the model fit indices were satisfactory (e.g., CFI and TLI exceeding .90), providing evidence of the test's validity based on its internal

structure. Although the RMSEA of the two scales was slightly higher than what would be considered an acceptable value (less than .08), the values found (.10 and .09) would still be within a margin that would not characterize an inadequate RMSEA index (Fabrigar et al., 1999).

Furthermore, the parameters of discrimination and difficulty of the items were moderate to strong in both scales, according to Baker's (2001) classification, indicating that the items satisfactorily differentiate people with different levels of latent trait. Considering the results of confirmatory factor analyses, precision indices (Cronbach's alpha, composite reliability, and average variance extracted) and analyses based on Item Response Theory (IRT), we considered that the scales presented satisfactory evidence of validity and reliability. An invariance analysis also revealed that the structure of the two scales (applied to romantic and family relationships) can be considered the same. As expected, the scales proved to be reliable tools for assessing levels of self-expansion not only in the context of the dissolution of romantic relationships but also in the context of family relationships.

These results point to the direction that the self-expansion scale, as constructed, can assess the self-expansion provided by types of relationships other than the romantic ones with minimal changes in content – replacing the term “partner” with “family member” in the scale items. It is an expected result, considering that the self-expansion model predicts that intimate relationships, in general, have high potential to provide self-expansion (Aron & Aron, 1986; Aron et al., 2022). Furthermore, the results of this research expand the possibilities of using the self-expansion scale, as it proved to be suitable for evaluating the self-expansion provided by recently broken relationships. Although this has been done previously in another study (Lewandowski et al., 2006), we are unaware of studies that have presented evidence of validity for this type of scale use.

In the clinical context of psychologists at work, for example, some patient complaints refer to a current relationship and others to broken relationships (OliFFE et al., 2022). Knowing to what extent a recently broken romantic or family relationship provided self-expansion in the past can be helpful for psychologists to develop intervention strategies because the end of a relationship that provided high self-expansion will possibly affect identity and mental health indicators differently than a relationship that provided low self-expansion (Aron et al., 2022). Therefore, knowing the level of self-expansion a broken relationship provided can contribute

to an adequate conceptualization of cases and the coherent establishment of therapeutic goals.

The relations found in this research between the self-expansion scale and other variables align with the literature in the field. Relationships that provide high self-expansion have been associated with more detrimental impacts on identity after a dissolution (Aron et al., 2022). In both studies, we found negative correlations between self-expansion and variables that refer to impacts on identity: attitude towards changes in the self and the ideal self after the dissolution. On the other hand, self-expansion was positively correlated with closeness, integration of others in self (IOS), and ideal self before the dissolution.

Given the self-expansion model proposed by Aron and Aron (1986), all these relations were expected. A relationship that provides high self-expansion tends to be more strongly integrated with the self and contributes to people feeling more satisfied with themselves (ideal self) (Aron & Aron, 1986; Aron et al., 2022). This is due to the perception that the other person contributes to one becoming a better person, adding significant content to one's life. (Aron et al., 2013). When a relationship that provides high self-expansion ends, however, the impacts tend to be negative, making people experience a more negative attitude towards the dissolution and realize that they have lost the positive qualities they acquired through the relationship (Lewandowski et al., 2006).

Differences between groups were also expected. That is, people who willingly broke off romantic and family relationships experienced less self-expansion in the relationship than people who experienced relationship dissolutions due to uncontrollable reasons, such as someone else's wish, death, or irreconcilable differences. According to the self-expansion model, people who experience low self-expansion in relationships tend to see a dissolution as a better alternative than maintaining the relationship, for they may seek other people and opportunities for self-improvement (Aron et al., 2013). It is worth mentioning that, in Study 2, people who severed family ties due to the death of a family member saw the relationship as providing greater self-expansion than people who ended the relationship due to their own desire or due to irreconcilable differences. This result may indicate that when a family member dies, there is a tendency to perceive the relationship experienced in the past with a more positive "lens." However, this finding is exploratory, and other studies could delve deeper into this issue.

In the specific context of romantic relationships, people who reported having children showed lower levels of self-expansion in the relationship than people who reported not having children. We are not aware of other studies that tested this difference. This result may indicate that when a couple has children, the challenges of motherhood and fatherhood – attention and care directed to children – decrease the levels of self-expansion in the relationship. Furthermore, considering the self-expansion model, the couple may find in their child a new opportunity to expand the self, reducing the potential of the romantic relationship to provide self-expansion and consequently increasing the chances of a dissolution. Future studies can test this difference again, in larger samples and with other characteristics, to verify whether it is a consistent finding.

A limitation of this research is that it had a cross-sectional design, in which participants were invited, at a single moment, to answer questions about the broken relationship and the current situation. In this sense, the results indicate more of a current perception of the level of self-expansion that a relationship provided in the past than the level of self-expansion perceived during the relationship. We made this choice to facilitate data collection with a view to access the perception of self-expansion in broken relationships, considering that a retrospective assessment of self-expansion is important when working with patients bereaved by the end of relationships. Other studies may opt for a longitudinal design in which self-expansion is accessed during the relationship and, in a second moment, the impacts on the identity of people who have experienced romantic and family dissolutions are examined.

Another limitation of this research is the sample differences between the two studies. It is expected that romantic relationships dissolve more frequently due to the desire of the members of a dyad. In contrast, family relationships tend to dissolve more frequently due to uncontrollable reasons, such as the death of a family member. This trend was reflected in the characteristics of the samples in each study. However, both romantic and family relationships can dissolve for controllable and uncontrollable reasons. Future studies may seek more evidence of validity for the scales in more diverse samples regarding the reasons for the dissolution. That is, romantic relationships that broke down for uncontrollable reasons (e.g., death) and family relationships that broke down due to people's desire. Studies with larger

samples can reveal whether the self-expansion scales presented in this research work for different groups, regardless of the dissolution reason.

Finally, this research expands the possibilities of using the self-expansion scale, as it has proved to be suitable for assessing self-expansion in broken relationships and family relationships, going beyond its traditional use in the context of current romantic relationships. We recommend that other studies seek more evidence of validity for these scales, for instance, testing relationships between self-expansion and other variables (e.g., seeking to recover a lost relationship, frequency, and intensity of negative emotions, levels of anxiety or depression, and so on). Furthermore, other studies may adapt the self-expansion scale to contexts of dissolution of other types of intimate relationships, such as friendships.

**3**

**Development of a Scale to Assess Attitudes Towards  
Perceived Changes in the Self After the Dissolution of  
Romantic and Family Relationships**

## **Abstract**

The loss of romantic and family relationships has been associated in the literature with possible changes in self-concept. However, there is no knowledge of an instrument to measure how much a person likes or dislikes the changes perceived in themselves after a relationship dissolution. In this research, we constructed scales to measure attitudes toward perceived changes in the self after the dissolution of romantic and family relationships. To this end, we ran two studies, one for each type of dissolution: 1) romantic and 2) family. In the first study, 282 people participated, with an average age of 24.2 years, who had experienced the dissolution of a romantic relationship in the 12 months before participating in the research. The results indicated a single-factor structure for the scale. Reliability indices were satisfactory, as were item difficulty and discrimination parameters. The attitude towards changes perceived in the self correlated in the expected direction with other variables: positively with self-esteem and attitude towards the relationship dissolution; and negatively with self-expansion and ideal self before the dissolution. In study 2, the participants were 155 people, with an average age of 35.8 years, and they had experienced the dissolution of a family relationship in the 12 months before participating in the research. The results were similar to those found in Study 1, revealing a scale with adequate psychometric properties. We discuss the possibility of using the scales constructed in this research to assess impacts on the self after relationship dissolutions.

## **Keywords**

Intimate relationships; romantic relationships; family relationships; self-expansion; test adaptation.

Losing an intimate relationship has been associated with possible changes in self-concept (Aron et al., 2022; Lewandowski et al., 2006). For example, there is less clarity about who someone is after a breakup (Slotter et al., 2010). Previous research has employed various methods to assess the impact of relationship dissolution on self-concept. These studies have developed instruments to measure changes in the content of self-concept (e.g., Slotter et al., 2010) and its clarity (e.g., Campbell et al., 1996), as well as various approaches to evaluating emotional responses following dissolutions (e.g., Barutcu & Aydin, 2013). However, there is no knowledge of instruments to assess the valence of the changes, that is, how much one likes or dislikes the changes perceived in oneself after a relationship dissolution. This research aimed to build and seek evidence of validity for a scale to measure attitudes towards perceived changes in the self after romantic and family dissolutions.

### **3.1. Self-concept, Attitudes and Relationship Dissolutions**

Self-concept, in psychology, is understood as what a person perceives as being himself/herself. In other words, the concept that a person has of himself/herself (Greenwald et al., 2002). This perception is built throughout life as people observe their own behavior and interact with one another. It is expected that intimate relationships – romantic, family, friendship – introduce changes in self-concept due to two fundamental principles: 1) self-concept is formed, at least in part, from the intimate bonds that a person builds and maintains; 2) these relationships have the potential to increase self-concept with new content, such as characteristics, skills, and resources (Aron et al., 2013).

There is no affective load associated with self-concept; it is a cognitive concept that refers to the associations a person entertains between the concept of self and attributes without valence (Greenwald et al., 2002). For example, a person may understand herself as a mother, wife, and teacher; these roles would be part of her self-concept. However, each content comprising the self-concept tends to be associated with a positive or negative affect. When this happens, these concepts refer to attitudes (Greenwald et al., 2002). For example, how much one likes or dislikes being a mother, wife, and teacher, refers to favorable or unfavorable attitudes towards these objects. Furthermore, the sum of the affective loads

associated with all the contents that make up self-concept refers to self-esteem – a global assessment (positive or negative) that one makes of oneself (Greenwald et al., 2002).

Self-concept, self-esteem, and attitude towards each attribute of the self are influenced by the intimate bonds a person builds throughout life (Greenwald et al., 2002). A new relationship tends to add not only new content to self-concept but also affective loads that can impact on the extent to which one has a favorable or unfavorable attitude towards oneself. This statement is based on the model of self-expansion in intimate relationships developed by Aron and Aron (1986). According to this model, people seek intimate relationships that can improve their sense of self through new resources, perspectives, knowledge, social status, sense of belonging, or other content (Aron et al., 2013). Still, according to this model, when one person has intimately bonded with another, one tends to incorporate characteristics of that other into one's own self (Aron et al., 2013).

Both self-concept and self-esteem have been investigated in the context of the dissolution of intimate relationships. If a new relationship is expected to add content to a person's self-concept, the dissolution of an intimate relationship may also cause changes in self-concept (Aron et al., 2013; Aron et al., 2022; Lewandowski et al., 2006; Slotter et al., 2010). Studies have found that the dissolution of relationships tends to reduce the clarity and content of self-concept (Slotter et al., 2010), depending on how much this relationship provided self-expansion (Lewandowski et al., 2006). Furthermore, a study found a negative impact of romantic breakups on the self-esteem of people with little control over the breakup (Perilloux et al., 2013). However, this is one of the few studies that investigated the impact of dissolutions on the affective dimension of self-concept.

It is known that self-esteem tends to be relatively stable, suffering few fluctuations due to the passage of time and isolated events (Robins & Trzesniewski, 2005). So, measuring attitudes towards more specific objects tends to be more informative (Heberlein & Black, 1976). Since self-esteem is a global assessment of self-concept, a person may suffer no impact on self-esteem due to a relationship dissolution and still have a negative attitude towards the changes perceived in the self. For example, a person may dislike finding himself/herself less funny after the end of a relationship, but this may not significantly affect self-esteem.

### **3.2. Measurement of Relationship Dissolution Impacts on Self-Concept**

One of the ways to assess impacts on self-concept as a result of relationship dissolution has been to investigate the clarity of self-concept, which refers to how strong a person's notion of who they are and that all their characteristics form a cohesive self (Campbell et al., 1996;). Slotter et al. (2010) used the self-concept clarity scale created by Campbell (1996) and found that, after a romantic dissolution, people tend to have less clarity about who they are. For example, people tend to believe that getting to know others is easier than getting to know themselves.

Another instrument developed for the same context by Slotter et al. (2010) sought to assess the level of possible changes in self-concept content after a dissolution. For example, changes in values, looks, and future plans. Furthermore, other measures focused on the concepts of loss of self, which refers to the perception that important parts of oneself have been lost after a dissolution (Lewandowski & Bizzoco, 2007); and rediscovery of the self, which involves the extent to which a person realizes that they have reconnected with themselves because of a dissolution (Lewandowski & Bizzoco, 2007).

Similarly, Habermas and Kober (2015) developed a scale to assess the concept of identity disruption, which implies the extent to which a person's identity seems consistent with the past. For example, how estranged people feel from their former selves when they think about what they were like in the past. Sedikides et al. (2015) constructed a similar scale to assess discontinuity in the self, which is defined as confusion, interruption, and change in identity after a stressful event. For example, how disconnected a person feels from who they were in the past and that important aspects of their personality have changed.

Some studies have also assessed changes in self-concept through open-ended questions and linguistic analyses. For example, asking participants, "How much were you affected by the end of your relationship?" and "Who are you today?" (Lewandowski et al., 2006). Furthermore, a study used naturalistic samples of texts published online (on blogs) to evaluate changes in self-concept, identifying less clarity and a contraction (loss of content) in the self-concept of people who had recently broken up a romantic relationship (Slotter et al., 2010).

Regarding the affective dimension of self-concept, Perilloux et al. (2013) found negative impacts on the self-esteem of people who broke off a romantic

relationship and perceived they had no control over this decision – that is, the decision to break up was made by their partner. Another study assessed attitudes towards a romantic breakup through a single item, in which the respondent was asked to report how they evaluated the breakup with their former partner, having to choose one of five answer options: irrelevant, positive, harmful, threatening, or challenging. The “irrelevant” and “positive” response options were understood as representing a favorable attitude towards the breakup, while the other options represented an unfavorable attitude (Márquez et al., 2017).

Although all the measures mentioned above assess changes in self-concept due to relationship dissolutions, no measures were found to assess how much a person likes or dislikes the changes perceived in the self after a dissolution. Furthermore, all the mentioned studies evaluated changes in self-concept due to romantic breakups. It is known that intimate relationships, in general, have the potential to impact self-concept (Aron et al., 2013). Family relationships, for example, are an essential source of self-concept construction and can represent a threat to the self when they dissolve (Badia, 2019).

This research aimed to fill some gaps in measuring the impacts of relationship dissolution on self-concept: 1) provide a measure that assesses the affective dimension of changes perceived in the self in a post-dissolution context; 2) present evidence of validity for this measure not only in the context of romantic relationships but also in the context of family relationships, since the literature in the field of intimate relationships has privileged the investigation of romantic relationships.

### **3.3. Present Research**

This research aimed to build and seek evidence of validity for a measure to assess attitudes towards perceived changes in the self after the dissolution of romantic and family relationships. This construct was defined as the extent to which people attribute a positive or negative valence (affective load) to the changes they perceive in themselves after a relationship dissolution. To achieve the mentioned objectives, two studies were conducted, one for each type of dissolution: 1) romantic dissolution and 2) family dissolution.

### 3.4. Study 1 – Romantic Relationships

#### 3.4.1. Participants

Two hundred and eighty-two Brazilian adults participated in this study: 66% ( $n = 186$ ) were women, 31.6% ( $n = 89$ ) were men, and 2.5% ( $n = 7$ ) non-binary. The average age was 24.2 years ( $SD = 8.57$ ), with 94.4% ( $n = 266$ ) from the Southeast region. Most participants had incomplete higher education (54.3%;  $n = 153$ ); 22% ( $n = 62$ ) had complete high school education; 8.2% ( $n = 23$ ) had complete undergraduate education; 7.4% ( $n = 21$ ), complete postgraduate education; 6% ( $n = 17$ ), incomplete postgraduate education; 1.8% ( $n = 5$ ), incomplete high school education; and 0.4% ( $n = 1$ ), complete elementary education. Regarding skin color, 69.9% of people declared themselves white; 20.9% ( $n = 59$ ), mixed race; 7.4% ( $n = 21$ ), black; 0.7% ( $n = 2$ ), yellow/Asian; 0.7% ( $n = 2$ ) did not know or did not want to inform; and 0.4% ( $n = 1$ ), indigenous people. Furthermore, most participants declared that they did not have children (87.9%;  $n = 248$ ).

All participants declared having experienced a committed romantic dissolution in the 12 months before participating in the research. Regarding the type of dissolution, 89.4% ( $n = 252$ ) reported having dissolved a romance; 5.3% ( $n = 15$ ), a marriage; 2.8% ( $n = 8$ ), a stable union; 2.5% ( $n = 7$ ), an engagement. Half of the participants ( $n = 141$ ) declared that they were not in a romantic relationship at the time of participation in the research, 25.5% ( $n = 72$ ) were in a non-committed relationship, 19.1% ( $n = 54$ ) were dating and 5.4% ( $n = 14$ ) were in another relationship format. The average time span since the relationship dissolution was 5.58 months ( $SD = 3.49$ ), and the average duration of the broken relationship was 3.05 years ( $SD = 5.35$ ). Regarding the reasons for the dissolution, 29.4% ( $n = 83$ ) reported a desire from their partner; 27% ( $n = 76$ ), irreconcilable differences; 25.9% ( $n = 73$ ), a personal desire; 7.1% ( $n = 20$ ), a desire shared by both partners; 0.7% ( $n = 2$ ), the death of the partner; and 10.6% ( $n = 30$ ), other reasons.

#### 3.4.2. Instruments

Participants responded to an online questionnaire with sociodemographic questions about gender, age, education, region of residence, color, and whether the

participant had children. They were then asked to state whether they had experienced a romantic dissolution in the last 12 months after being introduced to the definition of relationship dissolution used in this research: “a loss or significant weakening of a bond with a close other, whether by personal decision or by uncontrollable reasons (another person’s decision, death, etc.).” If the participant had experienced more than one relationship dissolution, they were asked to choose just one to answer the survey. There were also specific questions about the dissolution experienced: type of dissolution, time span since the dissolution, duration of the broken relationship, the main reason for the dissolution, and current relationship status. Furthermore, participants were asked how close they felt to their ideal self (0 = not at all close; 100 = extremely close), that is, to the person they would like to be, before and after the relationship dissolution. The questionnaire was applied at a single moment, with participants invited, in some questions, to report how they felt during the relationship and, in others, how they felt at the moment they were answering the survey. In addition to these questions, the following instruments were applied:

*Attitude towards Perceived Changes in the Self Scale.* This scale was developed in the present research to measure how favorable or unfavorable a person’s stance is about the changes perceived in their own self after the dissolution of a relationship. On a seven-point scale, participants are asked to state how much they agree with each statement (1 = completely disagree; 7 = completely agree). The final version of this scale had five items. The scale wording consists of “after the relationship dissolution with X...”, and the participant must agree or disagree with the ensuing items. Examples of items are: “It hurts to think about the person I have become” and “I think I have changed for the worse”. The “X” was replaced by the name of the person the participant declared having dissolved a relationship with. The psychometric properties of this scale are presented in the Results section of this study.

*Attitude towards Relationship Dissolution Scale.* This single-factor scale contains six items and was developed in this research to assess how favorable or unfavorable people’s stances concerning the dissolution they experienced. Participants are asked to state how much they agree with each statement on a seven-point scale (1 = completely disagree; 7 = completely agree). Examples of items are: “I see more advantages than disadvantages in the dissolution with X” and “Looking

back, I think the dissolution with X was for the best.” The “X” was replaced in each item by the name of the person the participant declared having dissolved a relationship with. In this research, the alpha coefficient was .89.

**Rosenberg Self-Esteem Scale** (Hutz et al., 2014; Brazilian version of the original by Rosenberg, 1965). This single-factor scale measures self-esteem through ten items in statement format. On a four-point scale, participants are asked to state how much they agree with each (1 = completely disagree; 4 = completely agree). Examples of items are: “On the whole, I am satisfied with myself” and “Sometimes I feel useless.” In the Hutz and Zanon (2011) study, the scale presented an alpha coefficient of .90. In this research, the alpha coefficient was .91.

**Retrospective Self-Expansion Questionnaire in Romantic Relationships (R-SEQ)** (Carvalho & Natividade, 2024). The Retrospective Self-Expansion Questionnaire in Romantic Relationships (R-SEQ) is an adaptation of the Self-Expansion Scale (SEQ) by Lewandowski and Aron (2002) and its Brazilian version by D. B. Santos and F. A. Lopes (personal communication, February 13, 2024). The 14 items of SEQ were adapted to reflect experiences of self-expansion in a post-dissolution context, differing from the original scale that was designed for current relationships. The final version of R-SEQ had 13 items in the format of statements related to a retrospective view of how people perceived the self-expansion provided by a romantic relationship that ended in the last 12 months. Examples of items include: “To what extent did you see your partner as a means of expanding your own capabilities?” and “To what extent did your partner expand your sense of who you were?” Response options vary from 1 (not very much) to 7 (very much). In the original study, R-SEQ presented an alpha coefficient of .92 (Carvalho & Natividade, 2024).

### **3.4.3. Procedures**

#### **3.4.3.1. Item Construction**

Two researchers created 12 items to build the attitude scale toward perceived changes in the self after a relationship dissolution based on the construct’s definition. These items were independently evaluated by three experienced judges specializing in intimate relationship research, who provided

their opinions on the suitability of each item to the construct's definition. After revising the items, a five-item version of the scale was put to empirical test. The final version of the instrument had five items, as shown in the Results section of this study.

### **3.4.3.2. Data Collecting**

We collected the data through an online questionnaire on the internet and disseminated it on social networks. We also used in-person recruitment for online data collection on university premises (see Wachelke et al., 2014). During recruitment, we collected the email addresses of those who agreed to participate in the research and sent invitations with the questionnaire address. This research was approved by the Human Research Ethics Committee of the Catholic University of Petrópolis under protocol number 5.958.140.

### ***Analyses***

First, we cleaned the database to exclude participants who did not meet the inclusion criteria (i.e., being an adult, Brazilian, and having experienced a committed romantic dissolution – dating, engagement, stable union or marriage – in the last 12 months) and those who got the control questions wrong. Afterward, we carried out an exploratory factor analysis with the items of the attitude scale towards perceived changes in the self with the software Factor 10.9.02 (Ferrando & Lorenzo-Seva, 2017), applying the Robust Diagonally Weighted Least Squares method (RDWLS) based on the polychoric correlation matrix and using parallel analysis based on minimum rank factor analysis for factor retention (Timmerman & Lorenzo-Seva, 2011). We also calculated the item discrimination and difficulty parameters using MIRT Package version 1.30, in R (Chalmers, 2012), as well as the alpha and omega coefficients, in order to obtain reliability indicators, using the semTools package version 4.6, in R (Jorgensen et al., 2022). Still looking for evidence of validity for the scale, we tested Pearson correlations between attitude towards perceived changes in the self, attitude towards the relationship dissolution, self-esteem, self-expansion, duration of the relationship, time span since the dissolution, and ideal self (before and after of the dissolution). Finally, we performed an ANOVA to test differences in levels of attitudes towards perceived changes in the self between participants who reported different reasons for the

dissolution and a *t* test to verify differences in the levels of attitude towards changes perceived in the self between people who had children and those who had no children.

#### **3.4.4. Results**

##### **3.4.4.1. Internal Structure and Precision Indicators**

To test scale's internal structure, we performed an exploratory factor analysis applying the Robust Diagonally Weighted Least Squares method (RDWLS) based on the polychoric correlation matrix to extract factors and the parallel analysis method to retain factors. Initially, the suitability of the data for factorization was confirmed, KMO = .81 and Bartlett's test of sphericity:  $\chi^2(10, N = 282) = 924.6, p < .001$ . A parallel analysis of random eigenvalues, 500 bootstrap samples, showed that only Factor I had a higher observed variance than the simulated one (Factor I: observed variance = 80.4%, simulated variance = 50.2%; Factor II: observed variance = 13.5% and simulated variance = 35.9%). This factor explained 71.6% of the variance in the data. The scree plot also showed the emergence of a single factor. Given these results, we considered appropriate to extract a single factor. The data adequacy indices for the single-factor model were:  $\chi^2(5, N = 155) = 40.7; p < .001; \chi^2/df = 8.14$ ; Tucker–Lewis Index (TLI) = .96; Comparative Fit Index (CFI) = .98; Root Mean Square Error of Approximation (RMSEA) = .16 (CI90% = .09 – .22). Factor loadings ranged from .75 to .88. The item discrimination parameters ranged from 1.94 to 3.13, and the difficulty parameters from -0.08 to 2.18. Furthermore, the alpha and omega coefficients of the scale were .85. The items and their respective factor loadings, commonalities, discrimination, and difficulty indices can be seen in Table 1.

**Table1***Factor Loadings, Commonalities, Item Discrimination and Difficulty Parameters – Romantic Relationships*

	$\Lambda$	$h^2$	$A$	$b1$	$b2$	$b3$	$b4$	$b5$	$b6$
Item 1	.75	.56	1.94	0.17	0.73	1.13	1.56	1.96	2.12
Item 2	.87	.75	2.97	-0.05	0.37	0.70	0.89	1.31	1.73
Item 3	.88	.77	3.13	-0.08	0.35	0.60	0.87	1.30	1.50
Item 4	.78	.61	2.27	0.45	0.95	1.37	1.79	1.92	2.18
Item 5	.79	.63	2.23	0.36	0.88	1.20	1.49	1.80	2.01

*Note.*  $\lambda$  = factorial loading.  $a$  = discrimination/slope parameter.  $b$  = difficulty/threshold parameters. Factor loadings obtained by means of exploratory factor analysis, Robust Diagonally Weighted Least Squares method. Discrimination and difficulty parameters estimated through the Graded Response Model (Samejima, 1969).  $N = 282$ .

#### **3.4.4.2. Relations with Other Variables**

The Pearson correlation values can be seen in Table 2. As expected, the attitude towards perceived changes in the self was positively correlated with attitude towards the relationship dissolution, self-esteem, and ideal self after the dissolution; and negatively with a retrospective assessment of the level of self-expansion that a relationship provided and how close participants felt to their ideal self before the dissolution. Furthermore, the lack of correlation between self-expansion and self-esteem stands out.

**Table 2**

*Correlations between Attitude towards Perceived Changes in the Self and Other Variables – Romantic Relationships*

	1	2	3	4	5	6	7	8
1. Attitude towards Changes in the Self	—							
2. Attitude towards Relationship Dissolution	.57**	—						
3. Self-esteem	.44**	.28**	—					
4. Retrospective Self-expansion	-.28**	-.51**	-.04	—				
5. Duration of the Relationship	-.08	-.08	.05	-.04	—			
6. Time Span since Dissolution	.08	.18*	.10	-.11	.07	—		
7. Ideal Self before Dissolution	-.28**	-.51**	-.01	.56**	.01	-.08	—	
8. Ideal Self after Dissolution	.45**	.47**	.44**	-.18*	-.07	.18*	-.09	—

*Note.*  $N = 282$ .

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

### 3.4.4.3. Differences between Groups

A significant difference was found in the levels of attitude towards perceived changes in the self after the dissolution between participants who reported different reasons for the dissolution,  $F(5, 276) = 3.53; p = .004$ . People who reported that the dissolution occurred because of their own desire reported a more favorable attitude ( $M = 6.20; SD = 1.15$ ) towards the changes perceived in the self after the dissolution than people who reported that the dissolution occurred because of a desire from the partner ( $M = 5.29; SD = 1.65$ ). No significant differences were found in the levels of attitude towards perceived changes in the self between participants who had children and those who did not have children,  $t(280) = -0.21; p = .84$ .

## 3.5. Study 2 - Family Relationship

### 3.5.1. Participants

One hundred fifty-five Brazilian adults participated in this study: 65.2% ( $n = 101$ ) were women, 33.5% ( $n = 52$ ) were men and 1.3% ( $n = 2$ ) non-binary. The average age was 35.8 years ( $SD = 16.1$ ), with 86.5% ( $n = 134$ ) from the Southeast region. The majority of participants had incomplete higher education (31.6%;  $n = 49$ ); 21.9% ( $n = 34$ ) had incomplete postgraduate education; 18.7% ( $n = 29$ ) had complete high school education; 15.5% ( $n = 24$ ) had complete undergraduate education; 5.2% ( $n = 8$ ) had incomplete postgraduate education; 3.2% ( $n = 5$ ) had incomplete high school education; 2.6% ( $n = 4$ ) had complete elementary education; and 1.3% ( $n = 2$ ) had incomplete elementary education. Regarding skin color, 58.1% ( $n = 90$ ) of people declared themselves white; 21.9% ( $n = 34$ ), mixed race; 16.8% ( $n = 26$ ), black; 1.9% ( $n = 3$ ), yellow/Asian; and 1.3 ( $n = 2$ ) did not know or did not want to inform. Furthermore, most participants declared that they did not have children (54.8%;  $n = 85$ ).

All participants declared having experienced a family dissolution in the 12 months before participating in the research. Regarding the type of dissolution, 39.4% ( $n = 61$ ) reported having dissolved with the father; 33.5% ( $n = 52$ ), with the mother; 24.5% ( $n = 38$ ), with a sister; 2.6% ( $n = 4$ ), with a child. The average time

span since the relationship dissolution was 6.35 months ( $SD = 3.82$ ), and the average duration of the broken relationship was 29.1 years ( $SD = 17.9$ ). Regarding the reasons for the dissolution, 46.5% ( $n = 72$ ) reported the death of a family member; 23.2% ( $n = 36$ ), irreconcilable differences; 15.5% ( $n = 24$ ), a personal desire; 7.1% ( $n = 11$ ), a family member's desire; 2.6% ( $n = 4$ ), a desire shared by both; and 5.2% ( $n = 8$ ), other reasons.

### **3.5.2. Instruments**

The instruments used were the same as in Study 1, except for the Retrospective Self-Expansion Questionnaire, and we used the version adapted for the context of dissolution of relationships with family members (R-SEQ; Carvalho & Natividade, 2024). This scale contains slight adaptations in relation to the self-expansion scale applied in Study 1, for example, using the term “family member” in the scale items instead of the term “partner”. Examples of items are: “To what extent did you see your family member as a means of expanding your own capabilities?” and “To what extent did your family member expand your notion of who you were?” Response options vary on a scale from 1 (not very much) to 7 (very much). In the original study and in this study, R-SEQ presented an alpha coefficient of .95 (Carvalho & Natividade, 2024).

### **3.5.3. Procedures**

Data collecting and analysis procedures were the same as those described in Study 1, except that an invariance analysis was included to test whether the factorial structure of the scale of attitude towards perceived changes in the self is the same between participants who experienced a romantic dissolution and those who experienced family dissolution. This invariance analysis was performed using the semTools package in R (Jorgensen et al., 2022).

### **3.5.4. Results**

#### **3.5.4.1. Internal Structure and Precision Indicators**

To test the scale's internal structure, we performed an exploratory factor analysis applying the Robust Diagonally Weighted Least Squares method (RDWLS) based on the polychoric correlation matrix to extract factors and the parallel analysis method to retain factors. Initially, the suitability of the data for factorization was confirmed,  $KMO = .87$  and Bartlett's test of sphericity:  $\chi^2(10, N = 155) = 693.1, p < .001$ . A parallel analysis of random eigenvalues, 500 bootstrap samples, showed that Factor I was the only one that had observed variance greater than the simulated one (Factor I: observed variance = 87.4%, simulated variance = 44.1; Factor II: observed variance = 9.01% and simulated variance = 34.4%). This factor explained 80.4% of the variance in the data. The scree plot also showed the emergence of a single factor. Given these results, it was considered appropriate to extract a single factor. The data adequacy indices for the single-factor model were:  $\chi^2(20, N = 155) = 15.5; p = .75; \chi^2/df = 0.77; Tucker-Lewis Index (TLI) = .99; Comparative Fit Index (CFI) = .99; Root Mean Square Error of Approximation (RMSEA) = .10 (CI90% = .01 - .21)$ . Factor loadings ranged from .85 to .90. The item discrimination parameters ranged from 2.71 to 3.68; and the difficulty parameters, from 0.09 to 2.44. Furthermore, the alpha and omega coefficients of the scale were .90. The items and their respective factor loadings, commonalities, discrimination, and difficulty indices can be seen in Table 3.

**Table 3***Factor Loadings, Commonalities, Item Discrimination and Difficulty Parameters – Family Relationships*

	$\Lambda$	$h^2$	$A$	$b1$	$b2$	$b3$	$b4$	$b5$	$b6$
Item 1	.88	.78	3.67	0.41	0.68	1.03	1.24	1.50	1.69
Item 2	.90	.81	3.68	0.20	0.64	0.95	1.21	1.56	1.93
Item 3	.85	.72	2.94	0.09	0.36	0.67	0.88	1.26	1.56
Item 4	.86	.73	2.71	0.52	0.88	1.14	1.40	1.98	2.44
Item 5	.89	.79	3.51	0.38	0.80	0.94	1.27	1.58	1.91

*Note.*  $\lambda$  = factorial loading.  $a$  = discrimination/slope parameter.  $b$  = difficulty/threshold parameters. Factor loadings obtained by means of exploratory factor analysis, Robust Diagonally Weighted Least Squares method. Discrimination and difficulty parameters estimated through the Graded Response Model (Samejima, 1969).  $N = 155$ .

#### **3.5.4.2. Relations with Other Variables**

The Pearson correlation values can be seen in Table 4. As expected, the attitude towards perceived changes in the self was positively correlated with attitude towards the relationship dissolution, self-esteem, and ideal self after the dissolution; and negatively with a retrospective assessment of the level of self-expansion provided by the relationship and of how close the participants felt to their ideal self before the dissolution. Furthermore, the lack of correlation between self-expansion and self-esteem stands out.

**Table 4**

*Correlations between Attitude towards Perceived Changes in the Self and Other Variables – Family Relationships*

	1	2	3	4	5	6	7	8
1. Attitude towards Changes in the Self	—							
2. Attitude towards Relationship Dissolution	.41**	—						
3. Self-esteem	.36**	-.18*	—					
4. Retrospective Self-expansion	-.41**	-.66**	.07	—				
5. Duration of the Relationship	.06	-.31**	.40**	.19*	—			
6. Time Span since Dissolution	.02	.22*	.01	-.10	.05	—		
7. Ideal Self before Dissolution	-.30**	-.68**	.18*	.52**	.31**	-.15	—	
8. Ideal Self after Dissolution	.48**	.20*	.49**	-.20*	.15	.04	.04	—

*Nota.*  $N = 155$ .

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

### 3.5.4.3. Differences between Groups

No significant differences were found in the levels of attitude towards changes observed in the self between participants who reported different reasons for the dissolution,  $F(5, 149) = 1.84$ ;  $p = .11$ ; nor between participants who reported having children and participants who declared being childless,  $t(153) = -1.49$ ,  $p = .14$ .

### 3.5.4.4. Invariance

The results of the invariance tests indicated configural, metric, and scalar invariance between the scales for romantic and family relationships. The difference between the metric and configural models indicated  $\Delta CFI = .001$ ,  $\Delta TLI = .016$ ,  $\Delta RMSEA = -.036$ . Additionally, the difference between the scalar and metric models showed  $\Delta CFI = .001$ ,  $\Delta TLI = .021$ ,  $\Delta RMSEA = -.064$ .

## 3.6. Discussion

This research presented evidence of validity for the scales of attitude towards perceived changes in the self after a romantic dissolution (Annex 3) and a family dissolution (Annex 4). Exploratory factor analyses showed that the best structure for the scales is that of a single factor, just like the definition of the construct. Unlike the instruments currently available to assess the impacts of relationship dissolution on self-concept (e.g., Lewandowski & Bizzoco, 2007; Slotter et al., 2010), the scales constructed in this research aim to assess the affective dimension of the changes perceived in the self.

Regarding psychometric properties, the adequacy indices of the scales to the one-factor structure proved to be appropriate (factor loadings  $> .70$ ; communalities  $> .50$ ; CFI and TLI  $> .95$ ), except RMSEA, which was slightly higher than the value recommended by Fabrigar et al. (1999) (recommended value = .06 and tolerable value = .10; value observed for romantic relationships = .16 and value observed for family relationships = .10). This result can be justified by the reduced degrees of freedom in the two samples, which generally cause higher RMSEA values, not necessarily indicating that there is a problem in the model (Kenny et al., 2015). Furthermore, the difficulty and discrimination indices of the items were moderate

to strong according to Baker's (2001) classification. the precision indices were also adequate (alpha for romantic relationships = .85; alpha for romantic relationships = .90). Analyzing these results together, we assume that we found satisfactory evidence of validity and adequate reliability indices for the scales.

The scales also correlated as expected with other variables. In both studies, the attitude towards perceived changes in the self was positively correlated with the attitude towards relationship dissolution – an expected relation considering that when people tend to dislike the fact that a dissolution has happened, they also tend to dislike the perceived changes in themselves after the dissolution. In both studies, a more unfavorable attitude towards perceived changes in the self was correlated with lower levels of self-esteem and less proximity to the ideal self after the dissolution. These relations are also expected, considering that the attitude towards changes perceived in the self would constitute a part of self-esteem and the global assessment one makes about oneself (Greenwald et al., 2002). Thus, if a person negatively evaluates the changes that followed the relationship dissolution, this tends to impact self-esteem negatively.

Furthermore, the attitude towards perceived changes in the self was negatively correlated with a retrospective assessment of self-expansion levels and proximity to the ideal self before the dissolution. Considering the self-expansion model proposed by Aron and Aron (1986), it is expected that lower levels of self-expansion in a relationship lead to a greater desire to end the relationship, as people tend to believe that without the other there would be more room for development. This research has shown that this relation is expected not only in the context of romantic relationships but also in the context of family relationships. As expected, when the other contributes little to a person's self-improvement, whether a romantic partner or a family member, a more favorable attitude towards changes perceived in oneself after a dissolution is observed.

Concerning differences between groups, a more favorable attitude towards perceived changes in the self was observed in people who wanted to end the relationship, compared to people who dissolved a romantic relationship due to their partner's desire. This is expected, considering that a desire to end the relationship possibly indicates dissatisfaction with the levels of self-expansion provided by the relationship (Aron & Aron, 1986; Aron et al., 2013). This relation was not found in Study 2. Despite being an expected relation, the reasons reported for family

dissolutions were less diversified than the reasons reported for romantic dissolutions in this research. Future studies could diversify the sample of people who ended family relationships, for example, expanding the number of people who broke down a family relationship due to their own desire.

The relation between self-esteem and a retrospective assessment of self-expansion also occurred as expected. In both studies, the results indicated a lack of correlation. Since self-esteem is a global assessment of self-concept that tends to be resistant to change (Robins & Trzesniewski, 2005), it is possible that the levels of self-expansion that a relationship provided in the past do not have a considerable impact on self-esteem after a relationship dissolution. On the other hand, self-expansion was negatively correlated with the attitude towards perceived changes in the self after a romantic dissolution ( $r = -.28$ ) and a family dissolution ( $r = -.41$ ). These results reinforce the usefulness of the scales constructed in this research, indicating that an assessment of attitudes towards more specific aspects of the self may be more informative, in some contexts, than a global assessment of self-esteem.

Some limitations of this research include having accessed some variables retrospectively (e.g., self-expansion in the relationship, ideal self before the dissolution) and some sample characteristics. Other studies may measure these variables over time and test relations with attitudes toward perceived changes in the self after a relationship dissolution. Furthermore, future studies can verify whether the validity evidence for these scales is maintained in samples with other characteristics, for example, with other levels of education, more diverse regarding skin color/race, and with a more balanced distribution of people in the groups that reported different reasons for the dissolution. For example, it would be interesting to look for more people who experienced romantic dissolutions due to the death of their partner and people who had experienced family dissolutions due to the desire of one of the people involved.

Finally, it is noteworthy that the scales of attitudes towards changes perceived in the self after romantic and family dissolutions fill gaps in measuring the impacts of relationship dissolutions on self-concept. The currently available instruments focus on the impacts of dissolutions on the cognitive dimension of the self (self-concept) (Lewandowski & Bizzoco, 2007; Slotter et al., 2010) or a global assessment of the self-concept (self-esteem) (Perilloux et al., 2013). The scales

presented in this research make it possible to assess more specifically how much people like or dislike the extent to which they changed after a relationship dissolution. Future studies can use these scales to test the impact of romantic and family dissolutions on the affective dimension of the self.

**4**

**I Lost You, I Lost Myself: The Impact of Self-Expansion on the Affective Dimension of the Self after the Dissolution of Romantic and Family Relationship**

## **Abstract**

Previous research has shown that the loss of intimate relationships is associated with possible changes in the self-concept. This research aimed to test the impact of self-expansion provided by recently broken romantic and family relationships on self-esteem, the ideal self, and the attitudes toward perceived changes in the self in a post-dissolution context. To this end, we ran two studies, one for each type of dissolution: 1) romantic dissolution, and 2) family dissolution. In the first study, 282 people participated, with an average age of 24.2 years, who had experienced the dissolution of a romantic relationship in the 12 months prior to participating in the research. The results indicated that pre-dissolution self-expansion significantly predicted a greater distance from the ideal self and a more unfavorable attitude toward perceived changes in the self after the dissolution. In study 2, 155 people participated, with an average age of 35.8 years, who had experienced the dissolution of a family relationship in the 12 months prior to participating in the research. The results were similar to those found in study 1, revealing that high self-expansion predicts more negative changes in affective aspects of the self in the context of romantic and family dissolutions. We discuss the importance of evaluating possible changes in affective aspects of the self, in addition to cognitive ones, in a post-dissolution context of intimate relationships.

## **Keywords**

romantic relationships; family relationships; relationship dissolution; self-concept; self-expansion.

The breakdown of intimate relationships has been associated in the literature with impacts on self-concept (Lewandowski et al., 2006; Slotter et al., 2010). Lewandowski et al. (2006) found, for example, that people who experienced romantic relationships with high self-expansion before a breakup tend to present a contraction in the self after the breakup. In other words, the more people realize that a broken relationship contributed to self-enhancement in the past, the more people feel in the present that they have lost a part of themselves.

Few studies, however, have investigated the impact of other types of relationship dissolution on the self in addition to the romantic ones. Furthermore, although other studies have investigated the impact of breakups on psychological stress (Manvelian et al., 2018), self-esteem (Perilloux et al., 2013), and emotions (Barutcu & Aydin, 2013), there is no knowledge of studies that tested the role of self-expansion in affective aspects related to the self. Given these gaps, this research aimed to test the impact of the self-expansion provided by recently broken romantic and family relationships on self-esteem, the ideal self, and the attitude towards perceived changes in the self in a post-dissolution context.

#### **4.1. The Self and the Self-Expansion Model**

Self-concept can be understood as an association of the concept of self with one or more attributes without valence, that is, without an affective load (Greenwald et al., 2002). In other words, self-concept corresponds to how people perceive themselves: their personality, abilities, groups to which they belong, etc. Throughout life, people form an idea of who they are as they interact, compare themselves, observe their own behavior, and receive feedback. This idea does not necessarily correspond to reality but is usually consistent with the impression that external observers report (Kim et al., 2018).

In addition to attributes without valence, the self is also formed by affective loads. For example, a person may have a profession as a psychologist and like or dislike performing this role. A positive affect towards being a psychologist refers to a favorable attitude towards this attribute, while a negative affect refers to an unfavorable attitude (Greenwald et al., 2002). Together, attitudes towards self-concept attributes form self-esteem, a global evaluation (positive or negative) that one makes of oneself (Greenwald et al., 2002). From a cognitive view, the concept

of self refers to what people are - their self-concept, their attitudes towards each attribute of self-concept, and their self-esteem.

Intimate relationships are one of the sources of content in the process of formation of the self. According to the self-expansion model in social psychology, people incorporate other people's characteristics, resources, and perspectives into their sense of self. In cognitive terms, this means that people include attributes of other people in the network of associations that make up the self-concept, as well as the affective loads associated with these attributes (Aron et al., 2013; Greenwald et al., 2002). This mechanism means that, in an intimate relationship, the selves of both members of a dyad are interconnected (Mattingly et al., 2020). For example, if being a mother or wife is a central role in a woman's identity, she tends to incorporate characteristics of her child and partner into her own self, and vice versa.

The self-expansion model posits that people have an inherent motivation to pursue self-improvement; therefore, they tend to bond with other people who can facilitate adjustment to the environment. However, incorporating the other into the self does not always represent an opportunity for growth. Just as people acquire desirable aspects from others close to them, they also begin to consider some undesirable aspects or those they do not identify as their own (Aron et al., 2004). Depending on the level and direction of expansion caused by a relationship, one may feel deprived of one's identity or authentic self (Aron et al., 2004).

Based on this understanding, instruments were created to evaluate the fundamental components of the self-expansion model: 1) *Inclusion of Others in the Self* (IOS) (Aron et al., 1992), a graphic scale with a single item that aims to evaluate the extent to which people integrate a close other into their own self; 2) and the *Self-Expansion Questionnaire* (SEQ; Lewandowski & Aron, 2002), a scale with fourteen items that aims to assess the extent to which a relationship allows for self-expansion, that is, to what extent a person perceives that a close other provides new experiences, perspectives and makes them a better person. Both the IOS and the SEQ were adapted to the Brazilian context and presented evidence of validity to retrospectively evaluate these concepts in recently broken romantic and family relationships (Carvalho & Natividade, 2024).

## 4.2.

### **The Impact of Romantic Dissolutions on the Self**

Under certain conditions, the dissolution of romantic relationships causes changes in self-concept and, consequently, in well-being (Mattingly et al., 2020). Less clarity in self-concept is observed after the breakup of committed relationships, which provided high self-expansion and involved identities that were strongly associated (Lewandowski et al., 2006; Mattingly et al., 2020). Consequently, romantic breakups of this nature result in a high level of psychological stress and in strategies devised by those involved to rebuild their own identity (Drew et al., 2004; Manvelian et al., 2018; Mason et al., 2012).

To some extent, the loss of a romantic partner can be felt as a loss of oneself due to the level of intimacy generally observed in this type of relationship (Ketey et al., 2020). Committed partners are expected to provide mutual opportunities for growth over time – they sometimes acquire common friends, hobbies, and interests that would not have emerged without each other's influence. With the end of the relationship, the entire network of associations linked to the other needs to be given new meaning, as the other no longer occupies the role of “boyfriend/girlfriend”, “husband/wife”, etc.

After a dissolution, figuring out what to do with the characteristics, skills, and knowledge acquired from the partner becomes a challenge. Some people (especially those with an anxious style of attachment) try to recover the lost relationship in the hope of feeling better, even though they know that the reasons that led to the dissolution are substantial (Cope & Mattingly, 2021). Others deny the entire part of their self-concept linked to their former partner or, which seems to be the most effective strategy, they seek to build a narrative for the relationship and find a way to integrate it into the self, selecting what they want to keep in their own identity after the dissolution. (Bourassa et al., 2017; Mattingly et al., 2020).

A dissolution can give rise to a feeling of great discomfort, which leads to profound impacts on well-being and, quite often, to psychopathological processes (Manvelian et al., 2018). It is important to highlight, however, that relationships that are strongly committed and have a high level of self-expansion/interdependence are less likely to end (Le et al., 2010; McIntyre et al., 2015). When they do end, however, they are the ones that require the greatest effort to detach the partner from the self since there was a high investment of time and resources to make the couple see themselves as a unit (Mattingly et al., 2020).

Some variables are also expected to impact the degree of confusion one feels about oneself after a dissolution. If the dissolution was a decision made by just one partner, it is possible that he/she went through a period of reflection and gradually detached the other partner from his/her self. On the other hand, when a partner is taken by surprise and feels he/she has no control over the decision, less clarity in his/her self-concept can be observed (Lewandowski & Bizzoco, 2007). Furthermore, dissatisfaction with a relationship can make one perceive that staying in it, rather than ending it, threatens identity (Bourassa et al., 2015; Lewandowski & Bizzoco, 2007).

The intensity with which a person perceives a dissolution as a loss of self also depends on the extent to which the other person represents an opportunity for self-expansion. People who realized that they could grow with their partner reported, after a dissolution, having less clarity about who they are and having lost a large part of themselves (Lewandowski et al., 2006). On the other hand, relationships that do not allow for the desired level of expansion can have the opposite effect – a perception that, without the other, there is more room to grow and acquire an authentic identity (Aron et al., 2013; Lewandowski & Bizzoco, 2007).

### **4.3. The Impact of Family Dissolutions on the Self**

Unlike romantic relationships, family disruptions have been mainly investigated in association with the contexts of death and mourning (e.g., Badia, 2019). In this research, family ties are understood as those with a high degree of kinship: mother, father, children, and siblings. Each of these roles has a strong influence on a person's identity. Perceiving oneself as a family member contributes to constructing a narrative about oneself, which is inserted within a larger narrative about a particular family nucleus (Baddeley & Singer, 2010).

A dissolution in the family, depending on the level of closeness between the members of that group and the prominence of a person in the family nucleus, can cause less clarity in the self-concept (Badia, 2019). This is especially evident in cases of marginalized identity, in which a person's self is wholly tied to the self of another, to the point that there is almost no space left for individual characteristics, dreams, and abilities (Maccallum & Bryant, 2013). This is the case, for example, of

mothers who build their own identity around a child or children who rely almost exclusively on their parents' identities to build their own.

Some studies have shown that a marginalized identity and the closeness to a family member who passed away are the main predictors of complicated mourning that tend to last for years (e.g., Badia, 2019; Maccallum & Bryant, 2013; Papa & Lancaster, 2015). Faced with an abrupt or sudden family dissolution, one may have difficulty rebuilding the (large) part of the self linked to the other person. This difficulty can lead to a substantial disruption of the self when one cannot recognize oneself as alive, whole, or autonomous after a dissolution.

Furthermore, the closeness that a person experiences with a family member can generate suffering and a lack of clarity in self-concept after a dissolution (Badia, 2019). Based on the self-expansion model, family ties are expected to be a source of growth at some point in life and are strongly integrated into the self. Therefore, a dissolution with a close family member will impact the associations that make up the self-concept. It is common for people in this condition to experience a contrast between how they perceive themselves in the present and how they perceived themselves in the past before the dissolution (Rutchick et al., 2018).

A limitation of the research on family dissolutions lies in the fact that it focuses almost exclusively on the impact caused by death, disregarding the possibility of other types of family dissolutions. It is possible to observe a dissolution with a close relative during a lifetime, for example, due to political differences, values, or personal choices. Someone who reveals a sexual orientation that is unwanted by the family, for example, being for this reason excluded from the role of "daughter," may experience impacts on the self as a result of the dissolution.

#### **4.4. Gaps and Hypotheses**

The study by Lewandoski et al. (2006) retrospectively evaluated self-expansion in recently broken romantic relationships and showed that relationships that provided greater self-improvement before a breakup tend to cause a contraction (reduction in size) in self-concept after a breakup. This result remained unchanged even after controlling the effect of closeness to the partner before the breakup. The authors chose to control the effect of this variable because closeness to the partner

is related to both self-expansion in a relationship and the impacts on self-concept after a dissolution. Therefore, closeness to the partner could impact the relationship between self-expansion and changes in self-concept.

However, no studies tested the impact of self-expansion on the self in the context of family relationship breakdowns. Considering the self-expansion model proposed by Aron and Aron (1986), the dissolution of intimate relationships, in general, is expected to provoke changes in the self. The reason is that intimate attachment to other people (not only romantic partners) plays a fundamental role in forming the cognitive and affective dimensions of the self. Like a romantic relationship, family relationships are expected to further self-improvement on different levels and impact the self differently after a dissolution.

Furthermore, a limitation of the previous research is that it only assessed the impact of self-expansion on the cognitive dimension of the self (Lewandowski et al., 2006) after dissolutions. We found only one survey that assessed the impact of romantic breakups on self-esteem – a global assessment (positive or negative) of self-concept (Perilloux et al., 2013). However, it is known that measuring attitudes towards specific objects tends to be more informative (Heberlein & Black, 1976). Thus, it is possible that pre-dissolution self-expansion is not related to people's self-esteem in a post-dissolution context since self-esteem is a global assessment of self-concept that tends to be resistant to change (Robins & Trzesniewski, 2005). It might be related, though, to more specific attitudes towards the self, such as how much people like or dislike the changes perceived in themselves (Carvalho & Natividade, 2024).

Based on the given theoretical definitions, we assume that people who experienced romantic and family relationships with high self-expansion before a dissolution will tend to feel further away from their ideal self and have a more unfavorable attitude towards the changes perceived in themselves after a dissolution; and that these relations will subsist regardless of the effect of closeness to the romantic partner or family member before the dissolution. On the other hand, we assume that self-expansion before the dissolution will not significantly impact self-esteem in a post-dissolution context, both in romantic and family relationships.

#### **4.5. Present Study**

In short, this research differs from other previous research (e.g., Lewandowski et al., 2006) by applying the self-expansion scale to the context of dissolution in family relationships, in addition to romantic dissolutions, and by choosing affective aspects related to the self (self-esteem, ideal self and attitude towards changes in the self) as outcome variables. In this research, relationship dissolutions (romantic and family) were operationalized as a loss or significant weakening of a bond with a close other, whether due to a personal decision or to uncontrollable reasons (death, someone else's decision, etc.). Therefore, we meant to test a unified model of self-expansion (retrospectively assessed) as a predictor of changes in affective aspects of the self after different types of relationship dissolution. To achieve this objective, two studies were carried out, one for each type of dissolution: 1) romantic dissolution and 2) family dissolution.

## **4.6. Study 1 – Romantic Relationships**

### **4.6.1. Participants**

Two hundred eighty-two Brazilian adults participated in this study: 66% ( $n = 186$ ) were women, 31.6% ( $n = 89$ ) were men and 2.5% ( $n = 7$ ) non-binary. The average age was 24.2 years ( $SD = 8.57$ ), with 94.4% ( $n = 266$ ) from the Southeast region. Most participants had incomplete higher education (54.3%;  $n = 153$ ); 22% ( $n = 62$ ) had complete high school education; 8.2% ( $n = 23$ ), complete undergraduate education; 7.4% ( $n = 21$ ), complete postgraduate education; 6% ( $n = 17$ ), incomplete postgraduate education; 1.8% ( $n = 5$ ), incomplete high school education; and 0.4% ( $n = 1$ ), complete elementary education. Regarding skin color, 69.9% of the participants declared themselves white; 20.9% ( $n = 59$ ), mixed race; 7.4% ( $n = 21$ ), black; 0.7% ( $n = 2$ ), yellow/Asian; 0.7% ( $n = 2$ ) did not know or did not want to inform; and 0.4% ( $n = 1$ ), indigenous people. Furthermore, most participants declared they did not have children (87.9%;  $n = 248$ ).

All participants declared having experienced a committed romantic dissolution in the 12 months before participating in the research. Regarding the type of dissolution, 89.4% ( $n = 252$ ) reported having dissolved a romance; 5.3% ( $n = 15$ ), a marriage; 2.8% ( $n = 8$ ), a stable union; 2.5% ( $n = 7$ ), an engagement. Half of the participants ( $n = 141$ ) declared that they were not in a romantic relationship at

the time of their participation in the research, 25.5% ( $n = 72$ ) were in a non-committed relationship, 19.1% ( $n = 54$ ) were dating and 5.4% ( $n = 14$ ) were in another relationship format. The average time span since the dissolution of the relationship was 5.58 months ( $SD = 3.49$ ) and the average duration of the broken relationship was 3.05 years ( $SD = 5.35$ ). Regarding the reasons for the dissolution, 29.4% ( $n = 83$ ) reported it was due to a desire from their partner; 27% ( $n = 76$ ), to irreconcilable differences; 25.9% ( $n = 73$ ), to a personal desire; 7.1% ( $n = 20$ ), to a desire shared by both partners; 0.7% ( $n = 2$ ), to the death of the partner; and 10.6% ( $n = 30$ ), to other reasons.

#### **4.6.2. Instruments**

The participants answered an online questionnaire with sociodemographic questions about gender, age, education, region of residence, skin color, and whether they had children. They were then asked to state whether they had experienced a romantic dissolution in the last 12 months after being introduced to the definition of relationship dissolution used in this research. If the participant had experienced more than one dissolution, they were asked to choose just one to answer the survey. There were also specific questions about the dissolution they had experienced: type of dissolution, time span since the dissolution, duration of the broken relationship, the main reason for the dissolution and current relationship status. Furthermore, participants were asked how close they felt to their ideal self (0 = not at all close; 100 = extremely close), that is, to the person they would like to be, before and after the relationship dissolution. The questionnaire was applied at a single moment, with participants invited, in some questions, to report how they felt during the relationship and, in others, how they felt at the present moment while they were answering the survey. In addition to these questions, the following instruments were applied:

*Retrospective Self-Expansion Questionnaire in Romantic Relationships (R-SEQ)* (Carvalho & Natividade, 2024). The Retrospective Self-Expansion Questionnaire in Romantic Relationships (R-SEQ) is an adaptation of the Self-Expansion Scale (SEQ) by Lewandowski and Aron (2002) and its Brazilian version by D. B. Santos and F. A. Lopes (personal communication, February 13, 2024). The 14 items of the SEQ were adapted to reflect experiences of self-expansion in a post-

dissolution context, differing from the original scale designed for current relationships. The final version of R-SEQ had 13 items in the format of statements that relate to a retrospective view of how people perceived the self-expansion provided by a romantic relationship that ended in the last 12 months. Examples of items include: “How much did you see your partner as a means of expanding your own capabilities?” and “How much did your partner expand your sense of who you were?” Response options vary from 1 (not very much) to 7 (very much). In the original study, R-SEQ presented an alpha coefficient of .92 (Carvalho & Natividade, 2024).

***Attitude Towards Perceived Changes in the Self Scale.*** This scale was created by Carvalho and Natividade (2024) to measure how favorable or unfavorable is people’s attitude towards changes perceived in their own self after the dissolution of a relationship. Participants are asked to state how much they agree with each statement on a seven-point scale (1 = completely disagree; 7 = completely agree). The final version of this scale had five items. The scale wording consists of “after the dissolution with X...” and the participant must agree or disagree with the following items. Examples of items are: “It hurts to think about the person I have become,” and “I think I have changed for the worse.” The “X” was replaced by the name of the person with whom the participant declared having dissolved a relationship with. The original study’s alpha coefficient was .85 (Carvalho & Natividade, 2024).

***Attitude Towards the Dissolution Scale.*** This single-factor scale contains six items and was developed in this research to assess how favorable or unfavorable people’s stances concerning the dissolution they experienced. Participants are asked to state how much they agree with each statement on a seven-point scale (1 = completely disagree; 7 = completely agree). Examples of items are: “I see more advantages than disadvantages in the dissolution with X” and “Looking back, I think the dissolution with X was for the best.” The “X” was replaced in each item by the name of the person the participant declared having dissolved a relationship with. In this research, the alpha coefficient was .89.

***Rosenberg Self-Esteem Scale*** (Hutz et al., 2014; Brazilian version of the original by Rosenberg, 1965). This single-factor scale measures self-esteem through ten items in statement format. On a four-point scale, participants are asked to state how much they agree with each (1 = completely disagree; 4 = completely

agree). Examples of items are: “On the whole, I am satisfied with myself” and “Sometimes I feel useless.” In the Hutz and Zanon (2011) study, the scale presented an alpha coefficient of .90. In this research, the alpha coefficient was .91.

***Inclusion of Other in the Self Scale (IOS)*** (Aron et al., 1992). This scale, which contains a single item, was adapted to the Brazilian context in this research. It assesses a person’s perception of being interconnected with another. Seven images are presented, and the intersection between two circles varies from no overlapping area to almost completely overlapping. The greater the overlapping area marked, the more the participant perceives himself or herself as being interconnected with the person in question. It is a graphic scale that can be answered in less than 1 minute. In the original study, the alpha coefficient using alternating forms was .93, and the test-retest coefficient  $r = .83$ . In another Brazilian study, the alpha coefficient was .79 (Teixeira & Silva, 2019). To respond to this scale, the participant was asked to think about their relationship with their former partner.

***Subjective Closeness Index (SCI)*** (Berscheid et al., 1989). This measure, which contains two items, was adapted to the Brazilian context in this research. It assesses the degree of closeness with a close other through two questions: “Regarding all your other relationships (with the same sex and with the opposite sex), how do you characterize your relationship with X?” and “Given what you know about other people’s intimate relationships, how would you characterize your relationship with X?” Participants answer these questions using a scale ranging from 1 (not at all close) to 7 (very close). In the original study, the internal consistency coefficient of the measure was not presented. Another study that used it obtained an alpha of .94 (Badia, 2019). To respond to this scale, the participant was asked to think about their relationship with their former partner. The “X” was replaced by the name of the person with whom the participant had a relationship. In this research, the alpha coefficient was .79.

### **4.6.3. Procedures**

#### **4.6.3.1. Data Collecting**

The questionnaire was administered through an online research platform and disseminated through social networks and invitation emails. In-person

recruitment was also used for online data collection on university premises (see Wachelke et al., 2014). During recruitment, the email addresses of those who agreed to participate in the research were collected and, subsequently, invitations were sent with the questionnaire address. This research was approved by the Human Research Ethics Committee of the Catholic University of Petrópolis under protocol number 5.958.140.

#### **4.6.3.2. Analyses**

First, the database was cleaned to exclude participants who did not meet the inclusion criteria (i.e., being an adult, Brazilian and, having experienced a committed romantic dissolution – dating, engagement, stable union or marriage – in the last 12 months), and those who got the control questions wrong. Afterward, Pearson correlations were tested between pre-dissolution self-expansion, self-esteem, ideal self (before and after the dissolution), attitude towards perceived changes in the self, attitude towards the dissolution, closeness to the former partner before dissolution (IOS and SCI), duration of relationship, time span since the dissolution and age. Furthermore, to test the main hypotheses of the research, multiple linear regression analyses were carried out in which pre-dissolution self-expansion and closeness to the former partner (IOS and SCI) were included as predictor variables and ideal self/attitude towards perceived changes in the self as outcome variables. All analyses were performed using the Jamovi software (The Jamovi Project, 2024).

#### **4.6.4. Results**

The Pearson correlation values can be seen in Table 1. As expected, self-expansion was negatively correlated with ideal self after the dissolution, attitude towards perceived changes in the self and attitude towards the dissolution; and positively with closeness to the partner (IOS and SCI) and ideal self before the dissolution. The lack of correlation between self-expansion and self-esteem stands out, as well as the positive correlation of self-esteem with attitude towards changes in the self and with the ideal self after the dissolution.

**Table 1***Correlations between Retrospective Self-Expansion in Romantic Relationships and Other Variables*

	1	2	3	4	5	6	7	8	9	10
1. Retrospective Self-Expansion	—									
2. Self-Esteem	-.04	—								
3. Ideal Self Before Dissolution	.56**	-.01	—							
4. Ideal Self After Dissolution	-.18*	.44**	.09	—						
5. Attitude Towards Changes in the Self	-.28**	.44**	.28**	.45**	—					
6. Attitude Towards Dissolution	-.51**	.28**	.50**	.47**	.57**	—				
7. IOS	.35**	-.01	.21**	.06	.18*	.31**	—			
8. Closeness (SCI)	.42**	.08	.34**	.01	.14*	.28**	.50**	—		
9. Duration of Relationship	-.04	.05	.01	.07	.08	.08	.04	.10	—	
10. Time Span Since Dissolution	.11	.10	.08	.18*	.08	.18*	.02	.05	.07	—
11. Age	-.05	.18*	.01	.07	.04	.07	.06	.04	.70**	.04

*Note.* IOS = Inclusion of Other in the Self Scale. SCI = Subjective Closeness Index;  $N = 282$ .

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

A multiple linear regression analysis with the variables self-expansion and closeness to the partner (IOS and SCI) before the dissolution as predictors of the ideal self after the dissolution showed a significant model,  $F(3, 278) = 3.74$ ,  $p < .001$ , adjusted  $R^2 = .03$ . Individual predictors were analyzed, and pre-dissolution self-expansion was found to be a significant predictor of distance from the ideal self after the dissolution ( $t = -3.11$ ;  $p < .001$ ). Closeness to the partner before the dissolution did not significantly predict the ideal self, either using the IOS ( $t = -0.67$ ;  $p = .50$ ) or using the SCI ( $t = 1.48$ ;  $p = .14$ ) to measure partner's closeness.

Furthermore, a second multiple linear regression analysis with the variables self-expansion and closeness to the partner (IOS and SCI) before the dissolution as predictors of the attitude towards the changes perceived in the self after the dissolution showed a significant model,  $F(3, 278) = 8.87$ ,  $p < .001$ , adjusted  $R^2 = .08$ . Individual predictors were analyzed and pre-dissolution self-expansion proved to be a significant predictor of a more unfavorable attitude towards perceived changes in the self after the dissolution ( $t = -3.95$ ;  $p < .001$ ). The closeness of the partner before the dissolution did not significantly predict the attitude towards perceived changes in the self, either using the IOS ( $t = 1.49$ ;  $p = .14$ ) or using the SCI ( $t = 0.21$ ;  $p = .83$ ) to measure the closeness of the partner. The results of regression analysis can be seen in Tables 2 (ideal self as dependent variable) and 3 (attitude towards changes in the self as dependent variable).

**Table 2**

*Regression Coefficients of Self-Expansion, IOS and Closeness Before Dissolution on Ideal Self After Dissolution – Romantic Relationships*

Variable	<i>b</i>	<i>SE</i>	95% CI		<i>B</i>	<i>p</i>
			<i>LL</i>	<i>UP</i>		
Constant	77.9	4.35	69.3	86.5	-	< .001
Self-expansion	-3.10	0.10	-5.06	-1.14	-0.20	.002
IOS	0.63	0.43	-0.21	1.47	0.10	.14
Closeness (SCI)	-0.53	0.78	-2.07	1.02	-0.05	.50

*Note.* CI = confidence interval; *LL* = lower limit; *UL* = upper limit. IOS = Inclusion of Other in the Self Scale. SCI = Subjective Closeness Index. *N* = 288.

**Table 3**

*Regression Coefficients of Self-Expansion, IOS and Closeness Before Dissolution on Attitude Towards Changes in the Self After Dissolution – Romantic Relationships*

Variable	<i>B</i>	<i>SE</i>	95% CI		$\beta$	<i>p</i>
			<i>LL</i>	<i>UP</i>		
Constant	7.01	0.29	6.43	7.57	-	< .001
Self-expansion	-0.25	0.06	-0.38	-0.13	-0.25	< .001
IOS	-0.08	0.05	-0.01	0.02	-0.10	.14
Closeness (SCI)	-0.01	0.03	-0.05	0.06	0.01	.83

*Note.* CI = confidence interval; *LL* = lower limit; *UL* = upper limit. IOS = Inclusion of Other in the Self Scale. SCI = Subjective Closeness Index. *N* = 288.

## **4.7. Study 2 – Family Relationships**

### **4.7.1. Participants**

One hundred fifty-five Brazilian adults participated in this study: 65.2% ( $n = 101$ ) were women, 33.5% were ( $n = 52$ ) men and 1.3% ( $n = 2$ ) non-binary. The average age was 35.8 years ( $SD = 16.1$ ), with 86.5% ( $n = 134$ ) from the Southeast region. The majority of participants had incomplete higher education (31.6%;  $n = 49$ ); 21.9% ( $n = 34$ ) had incomplete postgraduate education; 18.7% ( $n = 29$ ), complete high school education; 15.5% ( $n = 24$ ), complete undergraduate education; 5.2% ( $n = 8$ ), incomplete postgraduate education; 3.2% ( $n = 5$ ), incomplete high school education; 2.6% ( $n = 4$ ), complete elementary education; and 1.3% ( $n = 2$ ), incomplete elementary education. Regarding skin color, 58.1% ( $n = 90$ ) of people declared themselves white; 21.9% ( $n = 34$ ), mixed race; 16.8% ( $n = 26$ ), black; 1.9% ( $n = 3$ ), yellow/Asian; and 1.3% ( $n = 2$ ) did not know or did not want to inform. Furthermore, most participants declared they did not have children (54.8%;  $n = 85$ ).

All participants declared having experienced a family dissolution in the 12 months before participating in the research. Regarding the type of dissolution, 39.4% ( $n = 61$ ) reported having dissolved a relationship with the father; 33.5% ( $n = 52$ ), with the mother; 24.5% ( $n = 38$ ), with a sister; 2.6% ( $n = 4$ ), with a child. The average time span since the relationship dissolution was 6.35 months ( $SD = 3.82$ ), and the average duration of the broken relationship was 29.1 years ( $SD = 17.9$ ). Regarding the reasons for the dissolution, 46.5% ( $n = 72$ ) reported the death of a family member; 23.2% ( $n = 36$ ), irreconcilable differences; 15.5% ( $n = 24$ ), a personal desire; 7.1% ( $n = 11$ ), a family member's wish; 2.6% ( $n = 4$ ), a desire shared by both family members; and 5.2% ( $n = 8$ ), other reasons.

### **4.7.2. Instruments**

The instruments we used were the same as in Study 1, except for the Retrospective Self-Expansion Questionnaire, which used the version adapted for the context of dissolution of relationships with family members (R-SEQ; Carvalho & Natividade, 2024). This scale contains minor adaptations from the self-expansion

questionnaire applied in Study 1; for instance, the use of the term “family member” instead of “partner” in the scale items. Examples of items are: “How much did you see your family member as a means of expanding your own capabilities?” and “How much did your family member expand your notion of who you were?” Response options vary from 1 (not very much) to 7 (very much). In the original study, R-SEQ presented an alpha coefficient of .95 (Carvalho & Natividade, 2024).

#### **4.7.3. Procedures**

The data collecting and analysis procedures were the same as those described in Study 1, except that the variables age and duration of the relationship were inserted as predictors (covariates) in the multiple linear regression model due to their correlation with self-expansion and the outcome variables ideal self/attitude towards perceived changes in the self.

#### **4.7.4. Results**

The Pearson correlation values can be seen in Table 4. As expected, self-expansion was negatively correlated with the ideal self after the dissolution, the attitude towards perceived changes in the self and the attitude towards dissolution; and positively with family closeness (IOS and SCI) and the ideal self before the dissolution. The lack of correlation between self-expansion and self-esteem stands out, as well as the positive correlation of self-esteem with attitude towards changes in the self and with the ideal self after the dissolution.

**Table 4***Correlations between Retrospective Self-Expansion in Family Relationships and Other Variables*

	1	2	3	4	5	6	7	8	9	10
1. Retrospective Self-Expansion	—									
2. Self-Esteem	.07	—								
3. Ideal Self Before Dissolution	.52**	.18*	—							
4. Ideal Self After Dissolution	.20*	.49**	.04	—						
5. Attitude Towards Changes in the Self	.41**	.36**	-.30**	.48**	—					
6. Attitude Towards Dissolution	.66**	-.18*	-.68**	.20*	.41**	—				
7. IOS	.52**	.06	.38**	.01	.21*	-.41**	—			
8. Closeness (SCI)	.56**	.21*	.55**	.01	.21*	-.57**	.67**	—		
9. Duration of Relationship	.19*	.40**	.31**	.15	.06	-.31**	.35**	.38**	—	
10. Time Span Since Dissolution	.10	.01	.15	.04	.02	.22*	-.18*	.11	.05	—
11. Age	.18*	.47**	.38**	.27**	.11	-.42**	.20*	.38**	.69**	-.06

*Note.* IOS = Inclusion of Other in the Self Scale. SCI = Subjective Closeness Index;  $N = 155$ .

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

A multiple linear regression analysis with the variables self-expansion and family closeness (IOS and SCI) before the dissolution, duration of the relationship, and age as predictors of the ideal self after the dissolution showed a significant model,  $F(5, 148) = 5.29, p < .001$ , adjusted  $R^2 = .12$ . Individual predictors were analyzed and pre-dissolution self-expansion ( $t = -3.35; p < .001$ ) and age ( $t = 3.19; p = .002$ ) proved to be significant predictors of the distance from the ideal self after the dissolution. Closeness to the family member before the dissolution did not significantly predict the ideal self, either using the IOS ( $t = 1.37; p = .17$ ) or using the SCI ( $t = -0.26; p = .79$ ) to measure the closeness of the family member; neither did the duration of the relationship ( $t = -0.59; p = .55$ ).

Furthermore, a second multiple linear regression analysis with the variables self-expansion and family closeness (IOS and SCI) before the dissolution, duration of the relationship, and age as predictors of the attitude towards the changes perceived in the self after the dissolution revealed a significant model,  $F(5, 148) = 7.93, p < .001$ , adjusted  $R^2 = .18$ . Individual predictors were analyzed and pre-dissolution self-expansion proved to be a significant predictor of a more unfavorable attitude towards perceived changes in the self after the dissolution ( $t = -4.74; p < .001$ ;). The closeness of the family member before the dissolution did not significantly predict the attitude towards perceived changes in the self, either using the IOS ( $t = -0.16; p = .87$ ) or using the SCI ( $t = -0.32; p = .75$ ) to measure the closeness of the family member; neither did the duration of the relationship ( $t = 0.76; p = .45$ ) and age ( $t = 1.21; p = .23$ ). The results of regression analysis can be seen on Tables 5 (ideal self as dependent variable) and 6 (attitude towards changes in the self as dependent variable).

**Table 5**  
*Regression Coefficients of Self-Expansion, IOS and Closeness Before Dissolution on Ideal Self After Dissolution – Family Relationships*

Variable	<i>B</i>	<i>SE</i>	95% CI		$\beta$	<i>p</i>
			<i>LL</i>	<i>UP</i>		
Constant	65.62	5.22	55.31	75.94	-	< .001
Self-expansion	-3.77	1.12	-5.99	-1.55	-0.32	.001
IOS	1.57	1.15	-0.70	3.85	0.15	.17
Closeness (SCI)	-0.31	1.20	-2.68	2.06	-0.03	.79
Duration of Relationship	-2.14	3.61	-9.27	5.00	-0.06	.55
Age	0.46	0.15	0.18	0.75	0.34	.002

*Note.* CI = confidence interval; *LL* = lower limit; *UL* = upper limit. IOS = Inclusion of Other in the Self Scale. SCI = Subjective Closeness Index. *N* = 288.

**Table 6**

*Regression Coefficients of Self-Expansion, IOS and Closeness Before Dissolution on Attitude Towards Changes in the Self After Dissolution – Family Relationships*

Variable	<i>B</i>	<i>SE</i>	95% CI		$\beta$	<i>P</i>
			<i>LL</i>	<i>UP</i>		
Constant	6.83	0.35	6.13	7.53	-	< .001
Self-expansion	-0.36	0.08	-0.51	-0.21	-0.43	< .001
IOS	-0.01	0.08	-0.17	0.14	-0.02	.87
Closeness (SCI)	-0.03	0.08	-0.19	0.13	-0.03	.75
Duration of Relationship	1.85	2.45	-2.98	6.68	0.08	.45
Age	0.01	0.01	-0.01	0.03	0.13	.23

*Note.* CI = confidence interval; *LL* = lower limit; *UL* = upper limit. IOS = Inclusion of Other in the Self Scale. SCI = Subjective Closeness Index. *N* = 288.

#### **4.8. Discussion**

This research aimed to test the role of self-expansion provided by recently broken romantic and family relationships before the dissolution in the affective aspects related to the self after the dissolution. As expected, pre-dissolution self-expansion significantly predicted greater distance from the ideal self and a more negative attitude toward perceived changes in the self after the dissolution, regardless of how close people felt to their partner (Study 1) and the family member (Study 2) before the dissolution.

These results are expected based on the self-expansion model (Aron & Aron, 1986; Aron et al., 2022) and the study conducted by Lewandowski et al. (2006), which showed that people experienced a contraction in the self after a dissolution due to higher levels of self-expansion in recently broken romantic relationships. Unlike the research by Lewandowski et al. (2006), however, this research tested the impact of self-expansion on affective aspects related to the self in romantic and family relationships. From the results we have presented, it is possible to conclude that pre-dissolution self-expansion impacts not only the cognitive dimension of the self (Lewandowski et al., 2006) after a dissolution but also the affective dimension.

Those who perceived that their romantic or family relationship contributed more to self-improvement in the past evaluated the perceived changes in the self as more negative and felt that they were further away from the ideal self (the person they would like to be) in the present. According to the self-expansion model, relationships that contribute more to self-enhancement are more strongly integrated into the self and tend to impact the self after dissolutions negatively (Aron et al., 2022; Lewandowski et al., 2006). However, we do not know any previous study that tested the role of self-expansion in affective aspects of the self in the context of dissolutions. Furthermore, we did not find any previous study that evaluated possible changes in the self due to the self-expansion provided by family relationships.

This research has shown that intimate relationships, in general, seem to impact affective aspects of the self after dissolutions. The literature in the area has privileged the investigation of romantic relationships (e.g., Lewandowski et al., 2006; Slotter et al., 2010). According to the self-expansion model (Aron & Aron,

1986; Aron et al., 2022), however, intimate relationships (not only romantic ones) are an important part of the construction of the self and, consequently, should impact the self if they come to break down for a variety of reasons. By testing a unified model of self-expansion as a predictor of changes in affective aspects of the self, this research confirmed the hypothesis that both romantic and family relationships that provide high self-expansion tend to have a more negative impact on the self after a dissolution.

Also, as expected, pre-dissolution self-expansion did not impact self-esteem in a post-dissolution context. This result is expected considering that self-esteem is a global assessment of self-concept that tends to be resistant to changes over time (Robins & Trzesniewski, 2005). The items on the self-esteem scale reflect, for instance, the extent to which people consider they have good qualities and perceive that they have as much value as other people. The absence of a relationship between pre-dissolution self-expansion and post-dissolution self-esteem may indicate that self-esteem tends to suffer less impact from dissolutions than from other possible stressful events throughout life. It is also possible, however, that the relationship between self-expansion and self-esteem has a small effect on the population, and this research did not have enough power to identify it. Further research could test this relation again in larger and more diverse samples.

This research also highlighted the importance of evaluating other affective aspects of the self, not only self-esteem, in relationship dissolution. As the results showed, some relationship qualities (such as the level of self-expansion) may be related to more specific attitudes towards the self, even if they are not related to self-esteem. Although self-esteem is understood as the affective dimension of the self, it is a comprehensive assessment that is formed by several more specific attitudes towards the attributes of self-concept (Greenwald et al., 2002), whose affective loads can also be investigated. This research showed that pre-dissolution self-expansion seems to impact the affective loads associated with possible changes in attributes of the self more than the self-esteem itself.

The effect size of the impact of self-expansion on the ideal self and the attitude towards changes in the self was greater in Study 2, that is, in the context of family relationships. There was a considerable sample difference between the two studies regarding the reasons for dissolutions, with death being the most frequent reason for family dissolutions and a partner's desire being the most frequent reason

for romantic dissolutions. Dissolutions due to death may have a more negative impact on the self than the ones that happened for other reasons. It is also possible that family relationships are more integrated to the self and will, therefore, have a greater impact on the self after dissolution. Other studies may seek more diverse samples, for instance, with more people who experienced a dissolution with a family member due to their own desire and more people who experienced a dissolution with a romantic partner due to death. In any case, Studies 1 and 2 showed that self-expansion is a relevant variable in possible impacts on the self after romantic and family dissolutions that happened for different reasons.

In addition to sample limitations, this research had a cross-sectional design, evaluating self-expansion retrospectively. This type of design assumes possible errors due to memory biases since the perception of the extent to which a relationship provided self-expansion in the past can be influenced by the impacts of a dissolution in the present. Other research may opt for a longitudinal design. Furthermore, future studies can test the impact of self-expansion on the self after other types of dissolution in intimate relationships, such as friendships.

In short, this research advances the understanding that there is a common cognitive basis for the impact of self-expansion on the self, regardless of the type of intimate relationship that has broken down. When two people experience the dissolution of a relationship, whether romantic or family, the impact on the self tends to be more damaging if the relationship provides a high opportunity for self-improvement. This understanding may be helpful to clinical psychologists, for example, dealing with patients who have experienced relationship dissolutions and do not feel good about perceived changes in themselves. Future studies might test interventions focused on helping to promote more positive changes in people who have experienced the dissolution of relationships that provided high self-expansion.

**5**

**Self-Expansion and Affective Aspects of the Self after the  
Dissolution of Romantic and Family Relationships: A  
Sentiment Analysis with a Lexical Approach**

## **Abstract**

The level of self-expansion a relationship provides has been associated in the literature with possible changes in the self-concept after a dissolution. This research aimed to test relations between the self-expansion provided by recently broken romantic and family relationships and the valence associated with self-concept attributes in a post-dissolution context. With this purpose, sentiment analyses were carried out using a lexical approach to words people used to describe themselves before and after each type of dissolution: 1) romantic and 2) family. In the first study, 282 people participated, with an average age of 24.2 years, who had experienced the dissolution of a romantic relationship in the 12 months before participating in the research. The results indicated that the greater the self-expansion provided by a relationship, the more positive the words associated with the self before the dissolution and the more negative the words associated with the self after the dissolution. In study 2, the participants were 155 people, with an average age of 35.8 years, who had experienced the dissolution of a family relationship in the 12 months before participating in the research. The results were similar to those found in study 1. We discuss the role of self-expansion in changes detected in affective aspects of the self after the dissolution of different intimate relationships.

## **Keywords**

romantic relationships; family relationships; relationship dissolution; self-concept; self-expansion.

Previous studies have shown that the perception of the level of self-improvement that a relationship provided before a dissolution tends to impact the cognitive (Lewandowski et al., 2006) and affective (Carvalho & Natividade, 2024) dimensions of the self after a dissolution. Higher levels of self-expansion in a relationship tends to reduce the self-concept in size and clarity (Lewandowski et al., 2006; Slotter et al., 2010) after a dissolution, as well as to produce a more negative evaluation of who one is (Carvalho & Natividade, 2024). One study showed that a more negative evaluation of the changes perceived in the self tends to occur in people who experienced the dissolution of romantic and family relationships that provided high self-expansion (Carvalho & Natividade, 2024).

Although Lewandowski et al. (2006) carried out a content analysis to assess the relation between self-expansion and changes in cognitive aspects of the self after a romantic breakup, we do not know any studies that have used a sentiment analysis with a lexical approach to assess possible changes in affective aspects of the self after a dissolution. Furthermore, no studies have used a lexical analysis to test the relation between self-expansion and changes in the self in the context of family dissolutions. This research aimed to test the relation between the extent to which recently broken romantic and family relationships provided self-expansion in the past and the valence (affective loads) associated with the contents of the self-concept before and after the dissolution.

## **5.1. The Self-Expansion Model**

In social psychology, self-expansion in relationships is understood as the extent to which a relationship provides an opportunity for self-improvement. In other words, the extent to which one feels that one is a better person - with new and desirable knowledge, perspectives, and resources - as a result of living with a close other (Aron et al., 2004; Aron et al., 2022). Living with people in an intimately is a central human motivation and, in general, people seek to live with others who can improve them and help them develop themselves (Aron et al., 2004; Aron et al., 2013).

Close relationships (romantic, family, friendship) are one of the ways in which people can expand their self-concept. When two people live together intimately, the self of both tends to be interconnected so that the two add content to

each other's self-concept (Mattingly et al., 2020). For example, a person may be a volleyball player and date someone without contact with the sport; gradually, volleyball may become part of their self-concept. Even if the partner does not start playing volleyball due to the relationship, they may start attending volleyball matches or acquiring knowledge on the subject so that some change in self-concept will occur.

In addition to examples in the context of romantic relationships, other types of relationships can also provide self-expansion. In the family context, for example, the parents' financial resources tend to be part of their children's self-concept. The perception of belonging to a family with a certain status in the socio-economic hierarchy makes children see themselves as being able to access certain consumer goods and not others. Another example could be a person who is the son/daughter, sister, or parent of someone they consider remarkably intelligent. They may feel that, through this relationship, they can acquire new knowledge and develop.

Relationships provide different levels of self-expansion. In the case of romantic relationships, people can choose a partner and tend to opt for partners who contribute to self-improvement. Sometimes, however, people find themselves in relationships that do not provide the desired levels of self-expansion and a dissolution becomes more likely (Aron et al., 2013). In family relationships, people do not usually choose whose mothers/fathers, siblings, or children they will be. Like romantic relationships, however, family relationships provide different levels of self-improvement, and they can break down for various reasons (from controllable reasons, such as their own will, to uncontrollable reasons, such as death).

## **5.2. Self-Expansion and Relationship Dissolutions**

Like the beginning of relationships, the end of intimate relationships tends to cause changes in the self. Lewandowski et al. (2006) and Slotter et al. (2010) observed a reduction in size and less clarity in self-concept after romantic breakups. Studies have also shown that the self-expansion provided by a relationship before a dissolution tends to have an impact on the changes perceived in cognitive (Lewandowski et al., 2006) and affective (Carvalho & Natividade, 2024) aspects of the self after a dissolution. Relationships that provide high self-expansion tend to have a more negative impact on the self in a post-dissolution context (Carvalho &

Natividade, 2024; Lewandowski et al., 2006).

The study by Lewandowski et al. (2006) specifically used an open question to assess possible changes in the self-concept of people who had broken off romantic relationships: “How have you been affected by the end of your relationship?” People had up to five minutes to answer this question on a blank piece of paper with twenty-five lines. The answers were then analyzed by trained judges who identified thoughts that referred to a contraction in the self and thoughts that referred to an expansion in the self. Examples of sentences that indicated a contraction in the self were: “I no longer know who I am,” “I feel lost as a person,” and examples of sentences that indicated an expansion in the self were: “I have become a better person,” “I feel more like myself.” The final score was computed by subtracting the number of thoughts that indicated a contraction in the self from the number of thoughts that indicated an expansion in the self.

The same study found that greater self-expansion in a romantic relationship before a breakup relates to a contraction in the self after a breakup. The authors discussed this result based on the model of self-expansion in intimate relationships (Aron et al., 2013; Aron et al., 2022), revealing that high self-expansion seems to contribute to the self and to satisfaction with an ongoing relationship, but it seems to have a detrimental effect on the self if a relationship breaks down (Lewandowski et al., 2006).

According to the self-expansion model (Aron et al., 1992), it is expected that the formation and dissolution of intimate relationships will generally impact the self. However, we are unaware of any studies that have used lexical analysis to test the relationship between the self-expansion provided by other types of relationships besides romantic ones and possible changes in self-concept. Yet, there are no known studies that have used a sentiment analysis to assess the valence of the words used by people to describe themselves before and after the dissolution of intimate relationships. This analysis has been understood as a more modern and efficient approach to investigating verbal behavior (Cero et al., 2024).

### **5.3. Present Research**

This study aimed to test the relation between the self-expansion provided by romantic and family relationships (retrospectively assessed) and the valence

associated with the content of self-concept (words people use to describe themselves) before and after the dissolution. Two studies were carried out to achieve this aim, one for each type of dissolution: 1) romantic and 2) family. In this research, relationship dissolutions (romantic and family) were operationalized as a loss or significant weakening of the bond with a close other, either by personal decision or for uncontrollable reasons (death, someone else's decision, etc.).

## **5.4. Study 1 – Romantic Relationships**

### **5.4.1. Participants**

A total of 282 Brazilian adults took part in this study: 66% ( $n = 186$ ) were women, 31.6% ( $n = 89$ ) were men and 2.5% ( $n = 7$ ) non-binary. The average age was 24.2 years ( $SD = 8.57$ ), and 94.4% ( $n = 266$ ) were from the Southeast region. Most participants had incomplete higher education (54.3%;  $n = 153$ ); 22% ( $n = 62$ ) had complete high school education; 8.2% ( $n = 23$ ), complete undergraduate studies; 7.4% ( $n = 21$ ), complete postgraduate studies; 6% ( $n = 17$ ), incomplete postgraduate studies; 1.8% ( $n = 5$ ), incomplete high school education; and 0.4% ( $n = 1$ ), complete elementary school education. Regarding skin color, 69.9% of people declared themselves white; 20.9% ( $n = 59$ ), brown; 7.4% ( $n = 21$ ), black; 0.7% ( $n = 2$ ), yellow/Asian; 0.7% ( $n = 2$ ) did not know or did not want to say; and 0.4% ( $n = 1$ ), indigenous people. In addition, most participants declared that they had no children (87.9%;  $n = 248$ ).

All the participants said they had experienced a romantic dissolution in the 12 months before participating in the survey. In terms of the type of dissolution, 89.4% ( $n = 252$ ) reported having dissolved a romantic affair; 5.3% ( $n = 15$ ), a marriage; 2.8% ( $n = 8$ ), a stable union; 2.5% ( $n = 7$ ), an engagement. Half of the participants ( $n = 141$ ) declared that they were not in a romantic relationship at the time of their participation in the survey, 25.5% ( $n = 72$ ) were in a non-committal relationship, 19.1% ( $n = 54$ ) were dating and 5.4% ( $n = 14$ ) were in another type of relationship. The average time span since the dissolution was 5.58 months ( $SD = 3.49$ ) and the average duration of the broken relationship was 3.05 years ( $SD = 5.35$ ). With regard to the reasons for the dissolution, 29.4% ( $n = 83$ ) reported a desire on the part of their partner; 27% ( $n = 76$ ), irreconcilable differences; 25.9%

( $n = 73$ ), a desire of their own; 7.1% ( $n = 20$ ), a desire on the part of both partners; 0.7% ( $n = 2$ ), the death of their partner; and 10.6% ( $n = 30$ ), other reasons.

#### **5.4.2. Instruments**

Participants answered an online questionnaire with sociodemographic questions about gender, age, education, region of residence, color, and whether the participant had children. They were then asked to state whether they had experienced a relationship dissolution in the last 12 months after being introduced to the definition of dissolution used in this research. If the participant had experienced more than one dissolution, they were asked to choose only one to answer the survey. There were also specific questions about the dissolution they experienced: type of dissolution, time span since the dissolution, duration of the broken relationship, the main reason for the dissolution, and current relationship status. The questionnaire was administered at a single point in time, with participants being asked, in some questions, to report how they felt during the relationship and, in others, how they felt at present while they were answering the survey. In addition to these questions, the scale/questions below were applied to assess the primary constructs of the survey:

*Retrospective Self-Expansion Questionnaire in Romantic Relationships (R-SEQ)* (Carvalho & Natividade, 2024). The Retrospective Self-Expansion Questionnaire in Romantic Relationships (R-SEQ) is an adaptation of the Self-Expansion Scale (SEQ) by Lewandowski and Aron (2002) and its Brazilian version by D. B. Santos and F. A. Lopes (personal communication, February 13, 2024). The 14 items of the SEQ were adapted to reflect experiences of self-expansion in a post-dissolution context, differing from the original scale designed for current relationships. The final version of R-SEQ had 13 items in the format of statements that relate to a retrospective view of how people perceived the self-expansion provided by a romantic relationship that ended in the last 12 months. Examples of items include: “How much did you see your partner as a means of expanding your own capabilities?” and “How much did your partner expand your sense of who you were?” Response options vary from 1 (not very much) to 7 (very much). In the original study, R-SEQ presented an alpha coefficient of .92 (Carvalho & Natividade, 2024).

*Description of the Self.* At the beginning of the questionnaire, participants were asked to report the first five words or short expressions that came to their mind to define themselves as they were before the relationship broke down. They were informed that these words or short expressions could refer to their personality, mood, or any characteristic they felt was appropriate to describe themselves when they were still in a relationship with the person in question. At the end of the questionnaire, they were asked to repeat this procedure, but with words or short expressions that came to their mind to describe themselves at the present moment, i.e., while they were answering the survey.

### **5.4.3. Procedures**

#### **5.4.3.1. Data Collecting**

The questionnaire was applied via an online survey platform and disseminated via social networks and invitation emails. In-person recruitment was also used for online data collection at the university (see Wachelke et al., 2014). In this recruitment process, the email addresses of those who agreed to participate in the survey were collected and then invitations were sent out with the addresses of the questionnaire. This research was approved by the Human Research Ethics Committee of the Catholic University of Petrópolis under protocol number 5.958.140.

#### **5.4.3.2. Analyses**

Firstly, the database was cleaned to exclude participants who did not meet the inclusion criteria (i.e., being an adult, Brazilian, and having experienced a committed romantic relationship dissolution - dating, engagement, stable union, or marriage - in the last 12 months) and those who got the control questions wrong. Next, the words and short expressions used by the participants to describe themselves before and after the dissolution were automatically translated into English using Google's translation hub. The text corpus was then cleaned and prepared for a lexical analysis.

Polarity analyses were conducted to assess the valence and intensity of the feelings/emotions in the words the participants chose to characterize themselves

before and after the dissolution. Thus, two polarity scores were computed for each individual: before and after the dissolution. The polarity analysis was carried out using the `qdap` package in R (Rinker, 2013) so that to each text (words or short expressions) that was identified by the package's dictionary as containing a positive valence, the value +1 was assigned while to each text with a negative valence, the value -1 was assigned. Per individual, the polarity before the dissolution was the average of the valence of the five texts used by the participants to describe themselves before the dissolution. The same procedure was conducted with the texts used by the participants to describe themselves at the present moment, after the dissolution, so that each participant had an average polarity for before the dissolution and another average polarity for after the dissolution. These averages were considered indicators of the valence associated with the attributes of self-concept before and after the dissolution.

Next, the difference between the polarity of the texts written for the contexts of after the dissolution and before the dissolution (i.e., the after-before difference) was computed for each participant. The after-before difference is a value between -1 and 1, which indicates the direction and intensity of the change in attitude towards the self-concept attributes after the dissolution compared to before the dissolution. Thus, positive values indicate that, after the dissolution, there was a positive increase in attitude towards the self-concept attributes compared to before the dissolution. Negative values indicate a negative increase in attitude towards the attributes of self-concept after the dissolution compared to before the dissolution. Values equal to zero indicate no change in attitude towards the attributes of self-concept after the dissolution compared to before the dissolution. The closer the after-before distance values are to 1 or -1, the greater the intensity of the increase (positive or negative, respectively) in the valence associated with the self-concept attributes. Spearman's correlation analysis was then carried out between the difference after and before the dissolution and the levels of self-expansion.

Other analyses were also conducted to investigate differences between individuals with high and low self-expansion in the valence of the words chosen to characterize the self. The participants were divided into two groups: participants with standardized scores on the self-expansion scale higher than 0.5 were classified as belonging to the "high self-expansion" group; participants with standardized scores on the self-expansion scale lower than -0.5 were classified as belonging to

the “low self-expansion” group. In order to visualize the words most frequently used to characterize the self before and after the dissolution, comparison word clouds were made for participants with high self-expansion and participants with low self-expansion. Finally, Student’s t-tests for paired samples were carried out to compare the mean polarity after the dissolution and the mean polarity before the dissolution in individuals with high self-expansion, and the same was done for individuals with low self-expansion.

All the analyses were conducted using the R software. The packages used were: *qdap* (Rinker, 2013), for polarity analysis; *stats* (R Core Team, 2023), for the t-test; and *psych* (Revelle, 2024), for correlation analysis.

#### **5.4.4. Results**

The correlation between the levels of self-expansion and the difference in polarity (valence) after-before the dissolution was negative and statistically significant,  $r = -.47$ ,  $p < .001$ , indicating that the greater the self-expansion before the dissolution, the more the attributes of self-concept had an increase in negative valence after the dissolution.

Sentiment analysis with a lexical approach, carried out in separate groups (low self-expansion,  $n = 90$ ; and high self-expansion,  $n = 86$ ), indicated that the words most frequently used by participants in the “low self-expansion” group to describe themselves before the dissolution had negative valence (in red, in Figure 1). Examples: “insecure”, “anxious”, “sad”, and “tired”; the words most often used by this group to describe themselves after the dissolution had positive valence (in blue in Figure 1). Examples: “happy”, “free”, “beautiful”, and “myself.” In the “high self-expansion” group, the opposite pattern was found, i.e., the words most frequently used by the participants to describe themselves before the dissolution had positive valence (in red in Figure 2). Examples: “happy”, “loved”, “dreamy”, and “comfortable”; the words most frequently used by this group to describe themselves after the dissolution had negative valence (in blue in Figure 2). Examples: “sad”, “lost”, “tired”, and “alone.” It is important to note, however, that





A difference was found between the mean polarity of the words used by the participants to describe themselves before ( $M = -0.43$ ;  $SD = 0.42$ ) and after ( $M = 0.38$ ;  $SD = 0.44$ ) the dissolution in the “low self-expansion” group,  $t(89) = 11.84$ ;  $p < .001$ ;  $d = 1.88$ . The results indicate that the words had a more positive valence after the dissolution than before the dissolution.

On the other hand, there was no significant difference between the mean polarity of the words used by the participants to describe themselves before ( $M = 0.12$ ;  $SD = 0.48$ ) and after ( $M = 0.04$ ;  $SD = 0.49$ ) the dissolution in the “high self-expansion” group,  $t(85) = -0.92$ ;  $p = .36$ .

## **5.5. Study 2 – Family Relationships**

### **5.5.1. Participants**

A total of 155 Brazilian adults took part in this study: 65.2% ( $n = 101$ ) were women, 33.5% ( $n = 52$ ) were men and 1.3% ( $n = 2$ ) non-binary. The average age was 35.8 years ( $SD = 16.1$ ), and 86.5% ( $n = 134$ ) were from the Southeast region. Most participants had incomplete higher education (31.6%;  $n = 49$ ); 21.9% ( $n = 34$ ) had incomplete postgraduate education; 18.7% ( $n = 29$ ) had complete high school education; 15.5% ( $n = 24$ ) had complete undergraduate education; 5.2% ( $n = 8$ ) had incomplete postgraduate education; 3.2% ( $n = 5$ ) had incomplete high school education; 2.6% ( $n = 4$ ) had complete elementary school education; and 1.3% ( $n = 2$ ) had incomplete elementary school education. Regarding skin color, 58.1% ( $n = 90$ ) of the people declared themselves white; 21.9% ( $n = 34$ ), brown; 16.8% ( $n = 26$ ), black; 1.9% ( $n = 3$ ), yellow/Asian; and 1.3% ( $n = 2$ ) did not know or did not want to say. In addition, most participants declared they had no children (54.8%;  $n = 85$ ).

All the participants said they had experienced a family dissolution in the 12 months before participating in the survey. As for the type of dissolution, 39.4% ( $n = 61$ ) reported having dissolved a relationship with their father; 33.5% ( $n = 52$ ), with their mother; 24.5% ( $n = 38$ ), with a sister; 2.6% ( $n = 4$ ), with a child. The average time span since the dissolution was 6.35 months ( $SD = 3.82$ ), and the average duration of the broken relationship was 29.1 years ( $SD = 17.9$ ). Regarding the reasons for the dissolution, 46.5% ( $n = 72$ ) reported the death of the family

member; 23.2% ( $n = 36$ ), irreconcilable differences; 15.5% ( $n = 24$ ), their own wishes; 7.1% ( $n = 11$ ), the family member's wishes; 2.6% ( $n = 4$ ), the wishes of both relatives; and 5.2% ( $n = 8$ ), other reasons.

### **5.5.2. Instruments**

The instruments were the same as in Study 1, except for the Retrospective Self-Expansion Questionnaire, which used the version adapted for the context of relationship dissolution with family members (Carvalho & Natividade, 2024). This scale contains slight adaptations in relation to the self-expansion scale applied in Study 1, for example, using the term “family member” in the scale items instead of the term “partner.” Examples of items are: “To what extent did you see your family member as a means of expanding your own capabilities?” and “To what extent did your family member expand your sense of who you were?”. The answer options vary from 1 (not at all) to 7 (very much). In the original study, the R-SEQ had an alpha coefficient of 0.95 (Carvalho & Natividade, 2024).

### **5.5.3. Procedures**

The data collection and analysis procedures were the same as those described in Study 1.

### **5.5.4. Results**

The correlation between the levels of self-expansion and the difference in polarity (valence) after-before the dissolution was negative and statistically significant,  $r = -.59$ ,  $p < .001$ , indicating that the greater the self-expansion before the dissolution, the more the self-concept attributes had an increase in negative valence after the dissolution.

Sentiment analysis with a lexical approach carried out in separate groups (low self-expansion,  $n = 63$ ; and high self-expansion,  $n = 55$ ), indicated that the words most frequently used by participants in the “low self-expansion” group to describe themselves before the dissolution had negative valence (in red in Figure 3). Examples: “sad”, “stressed”, “angry”, and “tired”; the words most often used by this group to describe themselves after the dissolution had positive valence (in blue

in Figure 3). Examples: “happy”, “free”, “strong”, and “independent.” In the “high self-expansion” group, the opposite pattern was found, i.e., the words most frequently used by the participants to describe themselves before the dissolution had positive valence (in red in Figure 4). Examples: “happy”, “loved”, “complete”, and “and safe”; the words most frequently used by this group to describe themselves after the dissolution had negative valence (in blue in Figure 4). Examples: “sad”, “lost”, “missing”, and “mourning.” It is important to note, however, that for this group, it is also possible to identify frequent words that indicate growth after the dissolution, such as “mature”, “independent”, and “relieved.”

### Figure 3

#### *Word Cloud – Family Relationships with Low Self-Expansion*



*Note.*  $N = 63$ . Words in red were used by participants to describe themselves before the dissolution; words in blue were used by participants to describe themselves after the dissolution.



the dissolution. The results showed, in general, that people who experienced recently broken romantic and family relationships with high self-expansion before the dissolution tend to have a more positive valence in the words used to describe how they were (personality, moods etc.) before the dissolution than in the words used to describe themselves after the dissolution. When the relationships provided low self-expansion, however, there was the opposite tendency: to have a more positive valence in the attributes of the self-concept after the dissolution in comparison to before the dissolution

These results were expected in the context of romantic relationships, given the self-expansion model (Aron et al., 2004; Aron et al., 2022) and previous studies (Carvalho & Natividade, 2024; Lewandowski et al., 2006; Slotter et al., 2010). Romantic relationships that provide high self-expansion are less likely to end but tend to negatively impact the self after the end because they have strongly contributed to self-improvement in the past (Aron et al., 2022; Lewandowski et al., 2006). On the other hand, the end of relationships that provided low self-expansion before a dissolution may represent more exciting opportunities for self-improvement without the former partner, possibly contributing to a healthier construction of the self (Lewandowski & Bizzoco, 2007).

We are unaware of previous studies that have used lexical analysis to test relations between self-expansion and changes in self-concept in the context of family dissolutions. It was expected, however, that the results would be similar to those found in the context of romantic dissolutions, as it was brought to light in this research. As the self-expansion model predicts, intimate relationships can provide self-expansion and should bring about changes in the self if they come to an end (Aron et al., 2022; Lewandowski et al., 2006). This research has shown that this pattern is found not only in romantic relationships, as the literature has shown, but also in family relationships.

In the two studies, the relations between the levels of self-expansion and the valence associated with the attributes of self-concept were tested using different analyses: correlation analysis between self-expansion and the difference after-before the dissolution in the polarity/valence of the words used by the participants to describe themselves; a sentiment analysis with a lexical approach to the valence associated with the content of the texts (which resulted in word clouds); and the

differences between groups (before and after the dissolution) in the polarity/valence of the texts written by the participants.

In Study 1, a negative correlation was found between self-expansion and the difference in polarity after-before the dissolution, indicating that the greater the self-expansion provided by a romantic relationship in the past, the more negative the self-concept attributes were in the present. The sentiment analysis reinforced this pattern, as people who experienced relationships with low self-expansion before the dissolution used more positive words to describe themselves in the present (e.g., “happy,” “free,” and “beautiful”) and more negative words to describe themselves in the past (e.g., “insecure,” “anxious,” “sad”) when they were still in a relationship with their partner (Figure 1). The opposite pattern was found for the group of people who experienced relationships characterized by high self-expansion, with people using more negative words to describe themselves in the present (e.g., “sad,” “lost,” “tired”) and more positive words to describe themselves in the past (e.g., “happy,” “loved,” “dreamer”) (Figure 2).

Furthermore, the first analysis of differences between groups in Study 1 reinforced this pattern. People who experienced low self-expansion in a broken romantic relationship had a significant increase in positive valence in the self-concept attributes after the dissolution. Contrary to expectations, however, people who experienced high self-expansion in the broken relationship did not significantly increase negative valence in the self-concept attributes after the dissolution. In this group, words referring to personal growth after the dissolution also appeared, such as “mature,” “independent,” and “authentic.” It is possible that for people who experienced high self-expansion in the relationship, a negative change in self-concept is balanced with a perception of personal growth, to the extent that there is no quantitative difference between the before and after for this group - although a qualitative difference can be perceived in the content of the words (Figure 2).

Similar results were found in Study 2. A negative correlation was found between self-expansion and the difference in polarity after-before the dissolution, indicating that the greater the self-expansion provided by a family relationship in the past, the more negative the self-concept attributes were in the present. There was also a difference between the polarity/valence of the words most frequently used by participants with low and high self-expansion in family relationships

(Figures 3 and 4, respectively). Words with positive valence, such as “happy” and “safe,” appeared more frequently before the dissolution for people who experienced relationships with high self-expansion and after the dissolution for people who experienced relationships with low self-expansion. On the other hand, words with negative valence, such as “sad” and “tired,” appeared more frequently before the dissolution for people who experienced relationships with low self-expansion and after the dissolution for people who experienced relationships with high self-expansion.

Unlike Study 1, however, both analyses of differences between groups were significant in Study 2. People who experienced low self-expansion in broken family relationships had a significant increase in positive valence in the self-concept attributes after the dissolution. Moreover, people who experienced high self-expansion in the broken family relationship had an increase in negative valence in the self-concept attributes after the dissolution. This result is to be expected and is compatible with other analyses that have confirmed a relation between self-expansion and the valence associated with the self-concept attributes.

It is possible that, unlike what was found in Study 1, both differences between the groups were significant in Study 2 because most of the family relationships that provided high levels of self-expansion in this study broke down due to the death of a family member; unlike romantic relationships, most of which broke down due to the wishes of one of the partners or due to irreconcilable differences. The dissolution of a relationship due to death may have a more negative impact on the self, regardless of the levels of self-expansion. Other studies could diversify the samples of romantic and family relationships, expanding the number of participants who have ended romantic relationships due to the death of the partner and family relationships due to their own desire. Future studies could also relate self-expansion to the valence associated with the attributes of self-concept before and after the dissolution, conducting separate analyses for participants who experienced relationship dissolutions for different reasons (e.g., a wish of their own, a wish of the other, death, etc.).

In any case, the results presented in this study are consistent with what is known about the way self-expansion impacts self-concept after relationship dissolutions. It is expected that the more one feels that a relationship contributed to one’s growth, that is, the more a relationship added desirable content to the self, the

more one dislikes the changes perceived in oneself after a dissolution (Carvalho & Natividade, 2024). Theoretically, there is support that this pattern is observed in diverse intimate relationships, in addition to what was already known about romantic relationships (Aron et al., 2004; Aron et al., 2022).

A limitation of this research is that it retrospectively accessed the levels of self-expansion that a relationship provided in the past, as well as the words that people would have used to describe themselves before the dissolution of a relationship. A retrospective evaluation has a memory bias that should be considered while interpreting the results of this research. Those results may refer more to a person's current perception of the level of self-expansion that a relationship provided in the past or to their current perception of how they would describe themselves during the relationship. Other studies could opt for a longitudinal design to see if the results are maintained.

Finally, we assume that this research makes relevant contributions to the field of intimate relationships. To the best of our knowledge, no other study has measured levels of self-expansion provided by family relationships and tested relationships with affective aspects of the self after a dissolution. Also, to the best of our knowledge, no previous study has used a sentiment analysis with a lexical approach to test relations between the self-expansion provided by a relationship and the impacts on the affective dimension of the self after romantic and family dissolutions. This research showed that high self-expansion before a dissolution tends to impact not only cognitive aspects of the self (Lewandowski et al., 2006) but also affective ones (Carvalho & Natividade, 2024) and that this is evident in the content of the words people use to describe themselves. Future studies could refine the characteristics of the samples and the method to seek even more robust results and verify whether there would be a unified model of self-expansion explaining changes in the self after the dissolution of different types of intimate relationships (romantic, family, friendships, etc.) that occurred for different reasons (personal decision, someone else's decision, death, etc.).

## 6

### Conclusion

This research aimed to test the impact of self-expansion that recently broken romantic and family relationships provided before a dissolution on the affective aspects of the self after a dissolution. The first two articles presented methodological advances for the field, adapting the self-expansion questionnaire (SEQ) for the context of relationship dissolution (Study 1) and building a scale to assess attitudes towards changes in the self after a dissolution (Study 2). Both instruments showed adequate psychometric properties.

Regarding the central hypothesis of this research, as expected, people who experienced higher self-expansion in relationships had more detrimental effects on the self after a dissolution, as they reported being more distant from their ideal self and having a more negative attitude towards the changes perceived in themselves (Study 3). Also, this pattern was reinforced by Study 4, which revealed that higher self-expansion in broken relationships is related to people using words with a more negative valence (affective load) to describe themselves in the present.

The results were very similar for romantic and family relationships, showing that regardless of the type of intimate relationship or the reason for the dissolution, the end of highly self-expanding relationships may negatively impact the self. In contrast, relationships with low self-expansion may increment the self with positive-valence content after a dissolution. The effect size was higher for family dissolutions, however, probably because the dissolution of a relationship because of death has a more negative effect on the self. Another possible explanation is that family relationships might be more strongly integrated in the self, and, therefore, have a greater impact on the self after a dissolution. Future studies can test this pattern in more diverse samples regarding the reasons for the dissolution, for example, people who experienced the dissolution of romantic relationships due to uncontrollable reasons (e.g., death) and family relationships due to their own desire.

This research showed, however, that there is good reason to believe in a standard cognitive basis for the impact of self-expansion on the self after the dissolution of different intimate relationships – as people experience high self-expansion in any close relationship (romantic, family) that ended for various reasons (own desire, death, etc.), they may have a more detrimental effect on the

self. The present study, however, is insufficient to affirm that this pattern will occur in all kinds of intimate relationships that terminated for all sorts of reasons.

Future studies should investigate this issue more deeply and test more specificities for the role of self-expansion on changes in the self after the dissolution of each type of intimate relationship (romantic, family, friendship, etc.). Although this research showed a similar pattern for romantic and family relationships, there may be some yet unknown specificities for each type of relationship that broke down for a particular reason.

## 7

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## Annex 1

### Questionário Retrospectivo de Autoexpansão em Relacionamentos Amorosos (R-SEQ)

*Retrospective Self-Expansion Questionnaire in Romantic Relationships (R-SEQ)*

Responda a cada pergunta de acordo com o que você sente pessoalmente, usando a escala a seguir.

*Answer each question according to the way you personally feel, using the following scale.*

1      2      3      4      5      6      7

Não Muito  
*Not Much*

Muito  
*Very Much*

- 1) O quanto estar com seu(sua) parceiro(a) resultava em viver novas experiências?  
*How much did being with your partner result in your having new experiences?*
- 2) Quando você estava com seu(sua) parceiro(a), você ficava mais consciente (atento(a) às coisas) por causa dele ou dela?  
*When you were with your partner, did you feel a greater awareness of things because of him or her?*
- 3) O quanto seu(sua) parceiro(a) aumentava a sua habilidade de realizar coisas novas?  
*How much did your partner increase your ability to accomplish new things?*
- 4) O quanto seu(sua) parceiro(a) ajudava você a expandir sua percepção sobre o tipo de pessoa que você é?  
*How much did your partner help to expand your sense of the kind of person you are?*
- 5) O quanto você via seu(sua) parceiro(a) como um meio de expandir suas próprias capacidades?  
*How much did you see your partner as a way to expand your own capabilities?*
- 6) Você frequentemente aprendia coisas novas sobre seu(sua) parceiro(a)?  
*Did you often learn new things about your partner?*
- 7) O quanto seu(sua) parceiro(a) oferecia oportunidades de experiências empolgantes?  
*How much did your partner provide a source of exciting experiences?*
- 8) O quanto as suas próprias fraquezas como pessoa eram compensadas pelos pontos fortes do(a) seu(sua) parceiro(a) como pessoa (habilidades, aptidões, etc.)?  
*How much did your partner's strengths as a person (skills, abilities, etc.) compensate for some of your own weaknesses as a person?*

- 9) O quanto você sentia que possuía uma perspectiva mais ampla sobre as coisas por causa do(a) seu(sua) parceiro(a)?  
*How much did you feel that you had a larger perspective on things because of your partner?*
- 10) O quanto o fato de estar com seu(sua) parceiro(a) fazia com que você aprendesse coisas novas?  
*How much has being with your partner resulted in your learning new things?*
- 11) O quanto conhecer seu(sua) parceiro(a) fez de você uma pessoa melhor?  
*How much has knowing your partner made you a better person?*
- 12) O quanto estar com seu(sua) parceiro(a) aumentava o respeito que outras pessoas tinham por você?  
*How much did being with your partner increase the respect other people have for you?*
- 13) O quanto seu(sua) parceiro(a) aumentava o seu conhecimento?  
*How much did your partner increase your knowledge?*

Cálculo: Média aritmética de todos os itens (sem itens invertidos).

*Calculation: Arithmetic mean of all items (no inverted items).*

## Annex 2

### Questionário Retrospectivo de Autoexpansão em Relacionamentos Familiares (R-SEQ)

*Retrospective Self-Expansion Questionnaire in Family Relationships (R-SEQ)*

Responda a cada pergunta de acordo com o que você sente pessoalmente, usando a escala a seguir.

*Answer each question according to the way you personally feel, using the following scale.*

1      2      3      4      5      6      7

Não Muito  
*Not Much*

Muito  
*Very Much*

- 1) O quanto estar com seu familiar resultava em viver novas experiências?  
*How much did being with your family member result in your having new experiences?*
- 2) Quando você estava com seu familiar, você ficava mais consciente (atento(a) às coisas) por causa dele ou dela?  
*When you were with your family member, did you feel a greater awareness of things because of him or her?*
- 3) O quanto seu familiar aumentava a sua habilidade de realizar coisas novas?  
*How much did your family member increase your ability to accomplish new things?*
- 4) O quanto seu familiar ajudava você a expandir sua percepção sobre o tipo de pessoa que você é?  
*How much did your family member help to expand your sense of the kind of person you are?*
- 5) O quanto você via seu familiar como um meio de expandir suas próprias capacidades?  
*How much did you see your family member as a way to expand your own capabilities?*
- 6) Você frequentemente aprendia coisas novas sobre seu familiar?  
*Did you often learn new things about your family member?*
- 7) O quanto seu familiar oferecia oportunidades de experiências empolgantes?  
*How much did your family member provide a source of exciting experiences?*
- 8) O quanto as suas próprias fraquezas como pessoa eram compensadas pelos pontos fortes do seu familiar como pessoa (habilidades, aptidões, etc.)?  
*How much did your family member's strengths as a person (skills, abilities, etc.)*

*compensate for some of your own weaknesses as a person?*

- 9) O quanto você sentia que possuía uma perspectiva mais ampla sobre as coisas por causa do seu familiar?

*How much did you feel that you had a larger perspective on things because of your family member?*

- 10) O quanto o fato de estar com seu familiar fazia com que você aprendesse coisas novas?

*How much has being with your family member resulted in your learning new things?*

- 11) O quanto conhecer seu familiar fez de você uma pessoa melhor?

*How much has knowing your family member made you a better person?*

- 12) O quanto estar com seu familiar aumentava o respeito que outras pessoas tinham por você?

*How much did being with your family member increase the respect other people have for you?*

- 13) O quanto seu familiar aumentava o seu conhecimento?

*How much did your family member increase your knowledge?*

Cálculo: Média aritmética de todos os itens (sem itens invertidos).

*Calculation: Arithmetic mean of all items (no inverted items).*

## Annex 3

### *Escala de Atitude frente às Mudanças Percebidas no Self – Rompimentos Amorosos* *Attitude towards Perceived Changes in the Self Scale – Romantic Dissolutions*

Rompimentos amorosos são entendidos como uma perda ou enfraquecimento significativo do vínculo com um parceiro romântico, seja por uma decisão pessoal ou por motivos incontroláveis (decisão de outra pessoa, morte, etc.). Tendo em mente o rompimento amoroso que você experimentou recentemente, leia cada afirmação com atenção e marque o quanto você concorda com elas (1 = discordo totalmente; 7 = concordo totalmente). Por favor, substitua o X pelo nome da pessoa com quem você se relacionava.

*Romantic dissolutions are understood as a loss or significant weakening of the bond with a romantic partner, whether due to a personal decision or to uncontrollable reasons (another person's decision, death, etc.). Keeping in mind the romantic dissolution you recently experienced, read each statement carefully and mark how much you agree with them (1 = completely disagree; 7 = completely agree). Please replace the X with the name of the person you used to relate with.*

1 2 3 4 5 6 7

Discordo Plenamente  
*I Strongly Disagree*

Concordo Plenamente  
*I Strongly Agree*

Após o rompimento com X,  
*After the relationship dissolution with X,*

- 1) Eu sinto que perdi várias das minhas boas qualidades  
*I feel like I have lost a lot of my good qualities.*
- 2) Tenho dificuldade em me reconhecer.  
*I have difficulty recognizing myself.*
- 3) Eu me sinto perdido(a) em relação a quem eu sou.  
*I feel lost in relation to who I am.*
- 4) Penso que mudei para pior.  
*I think I've changed for the worse.*
- 5) Dói pensar na pessoa que me tornei.  
*It hurts to think about the person I have become.*

Cálculo: 1) Inverta todos os itens; 2) Média aritmética de todos os itens.  
*Calculation: 1) Invert all items; 2) Arithmetic mean of all items.*

## Annex 4

### *Escala de Atitude frente às Mudanças Percebidas no Self – Rompimentos Familiares* *Attitude towards Perceived Changes in the Self Scale – Family Dissolutions*

Rompimentos familiares são entendidos como uma perda ou enfraquecimento significativo do vínculo com um familiar, seja por uma decisão pessoal ou por motivos incontroláveis (decisão de outra pessoa, morte, etc.). Tendo em mente o rompimento familiar que você experimentou recentemente, leia cada afirmação com atenção e marque o quanto você concorda com elas (1 = discordo totalmente; 7 = concordo totalmente). Por favor, substitua o X pelo nome da pessoa com quem você se relacionava.

*Family dissolutions are understood as a loss or significant weakening of the bond with a family member, whether due to a personal decision or to uncontrollable reasons (another person's decision, death, etc.). Keeping in mind the family dissolution you recently experienced, read each statement carefully and mark how much you agree with them (1 = completely disagree; 7 = completely agree). Please replace the X with the name of the person you used to relate with.*

1 2 3 4 5 6 7

Discordo Plenamente  
*I Strongly Disagree*

Concordo Plenamente  
*I Strongly Agree*

Após o rompimento com X,  
*After the relationship dissolution with X,*

- 1) Eu sinto que perdi várias das minhas boas qualidades  
*I feel like I have lost a lot of my good qualities.*
- 2) Tenho dificuldade em me reconhecer.  
*I have difficulty recognizing myself.*
- 3) Eu me sinto perdido(a) em relação a quem eu sou.  
*I feel lost in relation to who I am.*
- 4) Penso que mudei para pior.  
*I think I've changed for the worse.*
- 5) Dói pensar na pessoa que me tornei.  
*It hurts to think about the person I have become.*

Cálculo: 1) Inverta todos os itens; 2) Média aritmética de todos os itens.  
*Calculation: 1) Invert all items; 2) Arithmetic mean of all items.*