

**Positive Psychology Interventions for elderly in Brazil**  
**Intervenções psicológicas positivas para idosos no Brasil**  
**Intervenciones psicológicas positivas para adultos mayores en Brasil**

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**Abstract:** Research on intervention programmes aiming to work strengths/virtues for health promotion of the elderly/retirees is still scarce in Brazil. The objectives of this systematic review are to identify: strengths/virtues worked in multicomponent programmes for health promotion of the elderly/retirees in Brazil; methodological quality criteria; and results of these interventions. SCIELO, BIREME, Pepsic, PsychInfo and Medline databases were searched for empirical articles (2000-2017). Out of 445 studies, nine were included in the review. The main strengths worked on in the interventions were Social/Emotional Intelligence, Self-regulation/ self-control, Prudence/self-care, Creativity, and Enthusiasm/Vitality. All studies presented favourable effects for primary outcome measures, and two for secondary outcome measures. Lack of systematic criteria for programme evaluation was detected. Findings are discussed as to their relevance for future intervention designs, policies and services for health promotion.

**Key words:** psychology interventions, strengths/virtues, health promotion, elderly, retirees

**Resumo:** Pesquisas sobre programas de intervenção que trabalham forças/virtudes para a promoção de saúde de idosos/aposentados ainda são escassas no Brasil. Os objetivos dessa revisão sistemática são identificar: forças/virtudes trabalhadas em programas multicomponentes para promoção de saúde de idosos/aposentados no Brasil; critérios de qualidade metodológica empregados nas intervenções; e resultados dessas intervenções. Realizou-se a busca de artigos empíricos (2000-2017) nas bases de dados SCIELO, BIREME, Pepsic, PscInfo e Medline. De 445 estudos encontrados, nove foram incluídos na revisão. As principais forças trabalhadas nas intervenções foram: Inteligência social/emocional, Auto-regulação/auto-controle, Prudência/auto-cuidado, Criatividade e Entusiasmo/vitalidade. Todos os estudos apresentaram resultados favoráveis para variáveis de efeito primário, e dois estudos apresentaram resultados para variáveis de efeito secundário. Constatou-se carência de critérios sistemáticos para avaliar a evolução dos programas. Os resultados encontrados contribuem para modelos de intervenção futuros, de políticas e de serviços para promoção de saúde.

**Palavras-chave:** intervenções psicológicas positivas, forças/virtudes, promoção de saúde, idosos, aposentados

**Resumen:** La investigación sobre programas de intervención para trabajar fortalezas/virtudes en la promoción de la salud de los adultos mayores/jubilados, todavía es escasa en Brasil. Los objetivos de esta revisión sistemática son identificar: fortalezas/virtudes trabajadas en programas multicomponentes para la promoción de salud de adultos mayores/jubilados en Brasil; criterios de calidad metodológica; y los resultados de estas intervenciones. Se realizó una búsqueda de artículos empíricos (2000-2017) en las bases de datos: SCIELO, BIREME, Pepsic, PsychInfo y Medline. De los 445 artículos, nueve se incluyeron en la revisión. Las principales fortalezas trabajadas fueron: Inteligencia Social/Emocional; Autorregulación/autocontrol; Prudencia/autocuidado; Creatividad y Entusiasmo/Vitalidad. Todos los estudios presentaron efectos favorables para las medidas de resultado primario y dos de ellos para las medidas de resultado secundario. Se constató falta de criterios sistemáticos para la evaluación de los programas. Se discuten los hallazgos en cuanto a la relevancia para futuros diseños de intervención, políticas y servicios para la promoción de la salud.

**Palabras clave:** intervenciones psicológicas positivas, fortalezas/virtudes, promoción de la salud, adultos mayores, jubilados

Received: 02/01/2018 Revised: 11/15/2018 Accepted: 03/03/2019

How to cite this article:

Durgante, H., Mezejewski, L. W., Sá, C. N., & Dell’Aglío, D. D. (2019). Positive Psychology Interventions for elderly in Brazil. *Ciencias Psicológicas*, 13(1), 106-118. doi: 10.22235/cp.v13i1.1813

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## Introduction

Population aging has been a worldwide health concern once the index of people aged 60 years or above grows faster than any other age group. This is especially relevant in developing countries where approximately 70% of third agers dwell (United Nations, 2013). In Brazil, specificities, and challenges arising from population aging, both within the social, and public health contexts are still little explored as regards the health promotion of the elderly and/or retired people. The need for policies and programmes that promote physical, social, and mental well-being throughout the life course is imperative, so that aging may be perceived as a positive experience (Ministério da Saúde 2010, Organização Pan-Americana da Saúde, 2005).

Health promotion may be defined as a process of empowering individuals, communities, institutions, and other health agents, to control the determinants of health in order to achieve greater and better health potential and improve quality of life (MS, 2010). With regard to the health of the elderly, the promotion of emotional-mental health and social relationships is just as important as the promotion of physical health, once it helps to prolong independence and autonomy, conversely, delaying disabilities, chronic diseases, and improving quality of life. Through health promotion practices, it is possible to reduce costs with the care of disease, because much less is spent/needed to prevent diseases, rather than treating them (OPAS, 2005).

Aging as a positive experience, thus, becomes the goal of programmes and policies delivered to groups and individuals at more

advanced ages. In this sense, recently, intervention programmes aimed at promoting strengths (constituents of virtues of character) have shown a positive impact on both, physical and mental health (Seligman, 2005). Conceptually, strengths are positive traits in terms of thoughts, feelings, and behaviours, which enable the development of character virtues (24 strengths subdivided into six virtues). Strengths, in turn, favour a better perception of quality of life, well-being, and health indicators (Oliveira, Nunes, Legal, & Noronha, 2016; Seligman, Steen, Park, & Peterson, 2005). In this sense, Positive Psychological Interventions (PPIs) include interventions or activities aimed at developing positive individuals’ cognitive, emotional and behavioural processes (Sin & Lyubomirsky, 2009).

However, as pointed out by a recent review of the literature on PPIs for the rehabilitation of adults and elderly people (Machado, Gurgel, & Reppold, 2017), there is still lacking research in Brazil on Positive Psychology programmes (which aim to develop strengths/virtues), as well as controlled trials to evaluate their results (Durgante, 2017). In addition, various studies do not present a detailed description of the programmes, which makes it difficult to comprehend the methodological quality of the studies, how the design was elaborated, and the programme implemented (Machado et al., 2017). In addition, due to the multitude of factors involved in the promotion/maintenance of health and well-being, multicomponent programmes have been used and considered more adequate, which include different practices (psychoeducation, dynamics, tasks, etc.), and work different outcome variables to

maximize health gains (Shults, Elder, Nichols, Sleet, Compton, & Chattopadhyay, 2009).

Thus, it is fundamental to know the panorama of intervention programmes for promoting strengths/virtues, developed and implemented in the Brazilian contexts for health promotion of the elderly/retired. Thus, the objectives of this systematic review are to a) identify which strengths/virtues have been worked in multicomponent intervention programmes (including the development of at least one strength/virtue and/or well-being) for the health promotion of the elderly/retired in Brazil; b) to verify which methodological quality criteria were used in the interventions; c) to verify the results of primary and secondary outcome variables derived from the interventions.

## Method

### *Eligibility criteria of the studies*

Searches were conducted for papers published between the years 2000-2017 in the following databases: Scientific Electronic Library Online - SCIELO (Integrated method/Google Scholar, Social Sciences, all indexes, type: article); Virtual Health Library-BIREME (title, abstract and subject; limits: adults and the elderly; type: article; Database: LILACS); Pepsic, (all indexes); PsychInfo (in any field) and Medline (title/abstract), to obtain greater amplitude in the searches, as suggested by the Cochrane Collaboration guideline (Guyatt et al., 2008). The terms used in the searches (Portuguese, English, and Spanish) were: "program/programme or intervention"; "Elderly or retired or elderly"; "Positive Psychology or strengths or virtues";

"Health promotion or active aging", and related terms according to the DECS/MeSH terms of the Virtual Health Library (BIREME). Specific terms related to each outcome variable was not included (each Positive Psychology strength/virtue in specific), to increase the detection of papers, and avoid restriction of the searches. For each Positive Psychology term (Positive Psychology, strengths, virtues), searches were conducted combining the terms with the other descriptors (program/programme or intervention, elderly, retired, old age, health promotion, active aging). The inclusion criteria for the studies in the review were: 1. Be an intervention programme; 2. Conducted in Brazil; 3. Target population: retired or elderly people; 4. Languages of publication: Portuguese, English, or Spanish; 5. Focus on health promotion, in addition to disease prevention; 6. Be a Multicomponent programme; 7. Include evaluation of results (quantitative or qualitative). The lists of references of the studies evaluated for eligibility were analyzed to identify potentially relevant studies to this review. Figure 1 shows the flow diagram of processes with the different stages of study selection. Titles and abstracts of the studies identified in the searches ( $N = 445$ ) were analyzed. Overall, 75 papers were selected and analyzed in detail, according to each inclusion criterion. Of those, 66 were excluded, and nine included in the systematic review. The process of obtaining, selecting, and analyzing data was carried out in parallel by the authors and reassessed by the lead author in order to reduce methodological bias in the process of reviewing the studies.

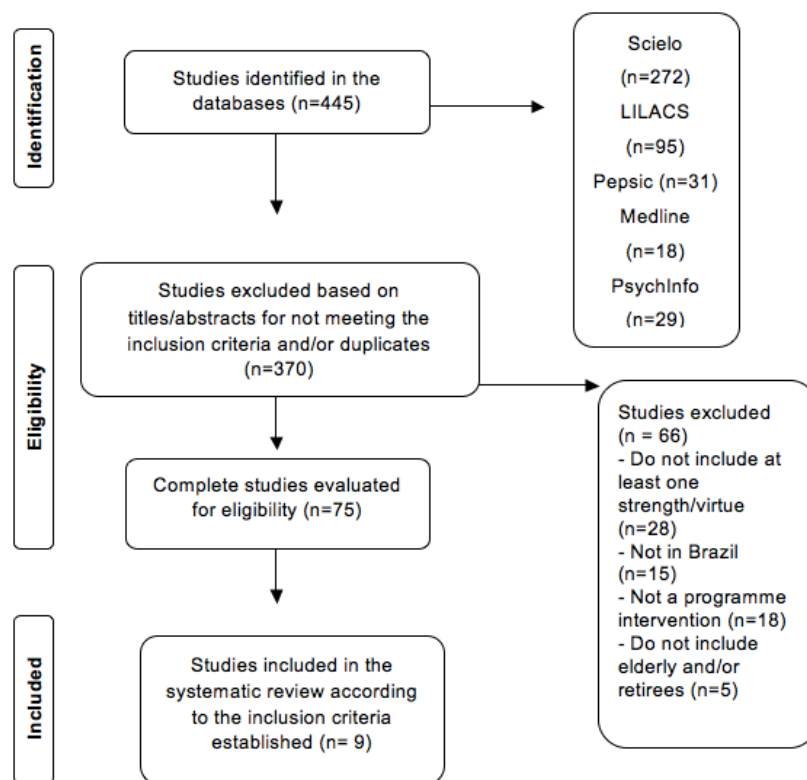


Figure 1  
PRISMA flow diagram of processes for systematic review

### *Methodological criteria assessed in the studies included in the review*

Each study included in the review was evaluated based on the methodological quality criteria used. The criteria used for the analysis in this review were compiled/adapted from the Downs and Black (1998) guideline for methodological quality analysis of randomized and non-randomized health interventions, also according to the PRISMA, and recommendations from the Cochrane Collaboration grid (Guyatt et al., 2008). The criteria analysed are described below: 1. Is the hypothesis/ aim/ objective of the study clearly described?; 2. Are the main outcomes to be measured clearly described in the Introduction or Methods section?; 3. Are the characteristics of the patients included in the study clearly described?; 4. Was there randomization of the sample?; 5. Were the participants from different groups selected at the same time?; 6. Was the number of participants in each group described?; 7. Does it include a description of

the intervention? 8. Were the instruments used to evaluate the results validated/adapted for their use in Brazil? 9. Was there blinding in data processing?; 10. Were all the results presented?; 11. Does the study describe the associated probability value for the expected results?; 12. Does it include a description of participant loss?; 13. Does the discussion of the results include practical implications/benefits for future research?

## **Results**

The sample of the programmes evaluated varied between 9 and 76 participants, aged 60-91, predominantly female. One study did not provide information about sample size (Lemos & Cavalcante Júnior, 2009), and only four studies reported participants' ages. From the nine studies included in the review, four applied a pre-test evaluation (Borges & Seidl, 2014; Carneiro & Falcone, 2013; Irigaray et al., 2011; Lopes & Cachioni, 2013); all studies used some method of post-test evaluation; and

only two performed a follow-up evaluation, being one month (Carneiro & Falcone, 2013), and four months after the intervention (Borges & Seidl, 2014).

#### *Strengths worked on the interventions*

Based on the data obtained it was observed that the main strengths worked on the interventions were Social/Emotional Intelligence (78%), Self-regulation/emotional self-control (33%), Prudence/self-care (33%), Creativity (11%), and Enthusiasm/Vitality (11%). Social/Emotional Intelligence was the most prevalent strength as primary outcome variable with observed effects in the studies evaluated (Borges & Seidl, 2014; Carneiro & Falcone, 2013; Irigaray et al., 2011; Lemos & Cavalcante Júnior, 2009; Machado, Campos & Rabelo, 2013, Morais, 2009, Resende et al., 2010).

It is also evidenced that this strength has been fundamentally worked on via social skills training, or groups that promote social support/networks. With regard to Self-regulation/emotional self-control (Borges & Seidl, 2014; Lemos & Cavalcante Júnior, 2009; Lopes & Cachioni, 2013), and Prudence/self-care (Borges & Seidl, 2014; Morais, 2009; Santos et al., 2011), there was a

predominance of psychoeducational practices, particularly directed to the regulation of emotions through dynamics for disinhibition, both for the elderly, and for caregivers and/or family members.

As for Creativity (Santos et al., 2011), and Enthusiasm/Vitality (Resende et al., 2010), both interventions that aimed to work on these strengths used artistic resources, including group dynamics, collective work, and theatre groups. In addition, even though not characterized as a strength specifically (Oliveira et al., 2016), well-being was cited by more than 60% of the studies as a possible goal to be reached by the proposed interventions (Carneiro & Falcone, 2013; Irigaray et al., 2011; Lemos & Cavalcante Júnior, 2009; Lopes & Cachioni, 2013; Morais, 2009; Resende et al., 2010). This construct (well-being) was included as an outcome variable because it is investigated in Positive Psychology and correlated with different strengths/virtues, and health promotion of the age-group of interest for this review. The syntheses of the studies included in this review, as well as the strengths, worked on in the interventions are described in Table 1.

Table 1  
*Main characteristics and results of the studies included in the systematic review*

Author / Design	Sample	Variables worked on in the intervention	Instruments	Results
Borges & Seidl (2014) Pre-experimental; 9-weekly sessions (90min)	13 men (aged 62-78)	Assertiveness; empathy; self-care (prudence)	Self-report qualitative questionnaire of men's health (QUASHI)	Improved self-care (prudence); physical exercises; assertiveness; healthy eating; empathy; reduction of shyness and social anxiety
Carneiro & Falcone (2013) Quasi-experimental; 12 sessions twice a week (90min)	N=20 (aged 62-83) Control= aged 20 (60-74)	Social skills; Life satisfaction	Geriatric Depression Scale-15; MiniMental; Game situation; Satisfaction with Life Scale; Descriptive questions	Increased the of social skills repertoire: assertiveness; empathy; life satisfaction
Irigaray et al. (2011) Quasi-experimental; four groups (experimental and control); 12-weekly sessions (90min)	N=38 (aged 60-88) Control=38 (aged 60-89). 90,8% feminine	Attention; memory; executive functions; well-being	Socio demographic questionnaire; MiniMental; Geriatric Depression Scale-15; Beck Anxiety Inventory; NEUPSILIN; WHOQOL - <i>brief</i> ; Personal Development Scale	Improved attention; memory; language; praxias; executive functions; problem solving skills; physical and psychological quality of life domains
Lemos & Cavalcante Júnior (2009) Pre-experimental; 12-weekly sessions	Sample size/age not provided	Psychological support; emotional expression; well-being	Phenomenological methodology; self-report; psychiatric evaluation; psychotherapeutic observations; perceptions from the team	Greater personal development; solidarity; celebration; acceptance of the negative; serenity; happiness
Lopes & Cachioni (2013) Pre-experimental; 15-weekly sessions (90min)	N=21	Subjective well-being; emotional regulation; coping with stress	Socio demographic questionnaire; Satisfaction with Life Scale with reference to domains; Positive and Negative Affect Scale; Geriatric Depression Scale-15	Improvement in mental capacity; life satisfaction; social involvement; positive affect
Machado, Campos & Rabelo (2013) Pre-experimental; 9-weekly sessions (1h30)	14 men (aged 65-91)	Self-confidence; social skills; knowledge acquisition	Self-report; reports from the team; observation; facilitators' field diary	Improvement in mood; sociability; quantity and quality of social interactions
Morais (2009) Pre-experimental; 1-weekly session (2h), for four months	N=20 Control= 10,85% feminine	Leisure; self-care (prudence); satisfaction; self-knowledge	Participants' self-report after the programme	Improved vitality and optimism; relationships/social support; cooperation; satisfaction with life; self-care (prudence)
Resende et al. (2010) Pre-experimental	N= 12 (aged 60-80). 91,6% feminine	Subjective well-being; life meaning; social support	Socio demographic questionnaire; Vitality Scale; Positive and Negative Affect Scale; Satisfaction with Life Scale; Resilience Scale; Social Support Perception Scale	Improved subjective well-being; resilience; social support; Positive correlations: age and resilience; group time and vitality; social support and positive affects; positive feelings and life satisfaction; Negative correlation: negative affect and resilience
Santos et al. (2011) Pre-experimental; 9-weekly sessions (1h30)	N= 9	Values; concentration; (prudence) creativity; self-care	Intuitive reading via meaning inferred by the group	Healthy Aging; self-care (prudence)

### *Criteria for methodological quality used in the interventions*

In terms of the methodological quality of the articles selected, two studies met 11 of the criteria evaluated (Carneiro & Falcone, 2012; Irigaray et al., 2011), one study met 10 criteria (Lopes & Cachioni, 2013), nine criteria (Resende et al., 2010), and eight quality criteria, respectively (Machado et al., 2013). Two studies included seven criteria (Borges et al., 2014; Santos et al., 2011), one study met four criteria (Lemos et al., 2009), and, finally, one study included only two criteria (Morais, 2009). At least two of the criteria evaluated, regarding the attempt to blinding of data treatment, and reporting of participant loss were scored by only one study in each criterion, respectively (Irigaray et al., 2011;

Carneiro et al., 2012). In terms of the samples characteristic, no randomization was observed, including interventions that did not clearly describe the specification of the participants (Lemos et al., 2009; Morais, 2009), or the total sample size (Lemos, 2009; Morais, 2009). In addition, four out of the nine studies reviewed did not describe in detail how the proposed intervention occurred - description of the intervention (Borges et al., 2014; Lemos et al., 2009; Morais, 2009; Resende et al., 2010). These results illustrate lacking systematic criteria for programme evaluation, as suggested by reference agencies in the fields (American Psychological Association, 2002; Gottfredson et al., 2015). The description of the methodological quality criteria used in the studies is presented in Table 2.

Table 2  
*Methodological quality of the studies included in the systematic review*

Studies	1	2	3	4	5	6	7	8	9	10	11	12	13	Total
Borges & Seidl (2014)	1	1	1	0	0	1	0	0	0	1	0	0	1	7
Carneiro & Falcone (2012)	1	1	1	0	1	1	1	1	0	1	1	1	1	11
Irigaray et al. (2011)	1	1	1	0	1	1	1	1	1	1	1	0	1	11
Lemos & Cavalcante Júnior (2009)	1	1	0	0	0	0	0	0	0	1	0	0	1	4
Lopes & Cachioni (2013)	1	1	1	0	0	1	1	1	0	1	1	0	1	10
Morais (2009)	0	0	0	0	0	0	0	0	0	1	0	0	0	2
Resende et al. (2010)	1	1	1	0	0	1	0	1	0	1	1	0	1	9
Santos et al. (2011)	1	1	1	0	0	1	1	0	0	1	0	0	1	7
Machado et al. (2013)	1	1	1	0	0	1	1	0	0	1	0	0	1	8

**Note:** 1. Is the hypothesis/ aim/ objective of the study clearly described?; 2. Are the main outcomes to be measured clearly described in the Introduction or Methods section? 3. 3) Are the characteristics of the patients included in the study clearly described?; 4. Was there randomization of the sample?; 5. Were the participants from different groups selected at the same time?; 6. Was the number of participants in each group described?; 7. Does it include a description of the intervention? 8. Were the instruments used to evaluate the results validated/adapted for their use in Brazil? 9. Was there blinding in data processing?; 10. Were all the results presented?; 11. Does the study describe the associated probability value for the expected results?; 12. Does it include a description of participant loss?; 13. Does the discussion of the results include practical implications/benefits for future research?.

### *Results of primary and secondary outcome variables*

All studies obtained favourable results for primary outcome variables. That is, the results obtained after participation in the intervention programme were in accordance with the objective defined *a priori*. In relation to emotional self-regulation, Borges and Seidl (2014) demonstrated significant results in reducing levels of shyness, and social anxiety, whereas Lemos and Cavalcante Júnior (2009) reported greater serenity levels after the intervention.

As for subjective well-being, five of the articles reviewed reported an improvement in this variable, with an increase in life satisfaction (Carneiro & Falcone, 2013; Lopes & Cachioni, 2013), subjective/psychological well-being (Irigaray et al., 2011; Resende et al., 2010), and happiness (Lemos & Cavalcante Júnior, 2009).

Resende et al. (2010) found positive correlations between group participation time and vitality. As regards social/emotional

intelligence, worked on primarily through social skills training, Borges and Seidl (2014) and Carneiro and Falcone (2013) reported having achieved significant results for increased empathy. Lemos and Cavalcante Júnior (2009) and Machado et al. (2013) obtained an increase in solidarity and socialization, respectively. Resende et al. (2010) and Morais (2009) showed better results for social relations/social support. The other studies did not report effects for social/emotional intelligence. In relation to prudence/self-care, the three interventions that proposed to intervene on this strength reported gains after the intervention (Borges & Seidl, 2014, Morais, 2009; Santos et al., 2011).

Two studies reported significant results for secondary outcome variables, that is, significant results obtained for variables of interest (strengths), which were not predicted in the initial objectives of the programme. One study reported that participants achieved improvement in social involvement as a side effect/unexpected secondary outcome variable of the program (Lopes & Cachioni, 2013),

while another identified greater vitality and optimism regarding the aging processes after the intervention (Morais, 2009).

### Discussion

The aims of this study were to systematically review which strengths/virtues (including subjective well-being) have been worked on in multicomponent intervention programmes for health promotion of elderly/retired people in Brazil, as well as to verify which methodological quality criteria were employed in the studies, and the results produced by these interventions.

From the data obtained in this review, it was evidenced there is a tendency to use training and psychoeducational practices for the development of well-being and health, which is also observed in the interventions implemented worldwide (Bolier, Haverman, Westerhof, Riper, Smit, & Bohlmeijer, 2013). However, when Brazilian interventions are compared to multicomponent programmes carried out in other countries, it is observed absence of other strengths such as gratitude, forgiveness, and optimism, such as programmes proposed by Proyer, Gander, Wellenzohn and Ruch (2014) in Switzerland, and Chiang, Lu, Chu, Chang, and Chou (2008) in Taiwan.

In addition, although other strengths compose the studies evaluated, such as Creativity, Enthusiasm/Vitality, Prudence/Self-Care, Self-Regulation/Emotional self-control, it was observed a prevalence of interventions focused on increasing well-being. In other words, most of the studies that have proposed to work on some strength, have as their final result the evaluation of the subjective well-being (Carneiro & Falcone, 2013; Irrigaray et al., 2011; Lemos & Cavalcante Júnior, 2009; Lopes & Cachioni, 2013; Morais, 2009; Resende et al., 2010), evaluated mainly as satisfaction with life, and positive and negative affect. On this basis, the studies mentioned in this review consider the improvement of personal resources (strengths/virtues) as a way to contribute to the increase of well-being, and

vice-versa. However, as a broad concept, the consensual definition of well-being still poses a challenge within the current literature (Roscoe, 2009).

Roscoe (2009) analyzed nine studies that addressed well-being and proposed integration of the components found that integrated well-being, such as emotional, intellectual, physical, social, spiritual, environmental, and occupational well-being. Taking the complexity of the construct, both, the operational definition, and the evaluation of well-being pose extra challenges to evaluate the effects of interventions on this variable. It is also argued whether this construct is better elucidated from individual dimensions separately, or in a unified multidimensional form (Roscoe, 2009). In Irigaray et al. (2011), for example, the evaluation of psychological well-being was composed by the dimensions of self-acceptance, positive interrelations, mastery of the environment, autonomy, life purpose, and personal growth. Thus, it is possible to note difficulties in the Brazilian studies to find a consensus about the definition and evaluation of such broad concept such as well-being. The theoretical background of the authors regarding the operational definition of well-being, as well as methodological rigor, become fundamental to evaluate how the intervention impacts levels of well-being.

Another important aspect of the interventions investigated concerns the predominant target population of the intervention programmes. The interventions included in this review follow the trend found in international studies, especially in relation to the predominance of female samples (Cattan, White, Bond, & Learmouth, 2005). In this respect, it is possible to question possible barriers found by the male population to access health services. According to the National Health Policy for the Integral Attention to the Health of Men (MS, 2009), aggravating the non-adherence of men to health programmes is, in principle, a consequence of the non-recurrence of men to primary prevention measures in the first place. This is justified not only by sociocultural barriers, but also due to communication



strategies, and health actions that still give greater focus on the health of children, adolescents, and women.

In addition, research data in Brazil reveal that the female population tends to more frequently report morbidity issues related to physical and psychological health (Costa-Júnior & Maia, 2009), while the male population is oriented to specialized services, as opposed to searching for basic care (Souza, Meireles, Tavares, & Menandro, 2015). Similarly, within the male samples, issues of vulnerability to serious and chronic diseases present a higher number of early deaths, when compared to the indexes of the female population (Courtenay, 2000). Thus, great difficulty for the attention of men's health, in this context, remains to build strategies to help them seek healthcare services prior to the onset of illnesses.

In terms of the methodological quality of the studies selected, there was insufficient use of standardized instruments/methods for data collection and analysis to evaluate the results of the interventions. By observing international studies, there is a predominance of using quantitative measures (analyzed by standardized measures), both in pre and post-intervention evaluation (Bolier et al., 2013; Sin & Lyubomirsky, 2009).

However, the use of standardized measures does not appear as a general rule in the studies evaluated, with only three interventions using validated measures for the Brazilian population (Carneiro & Falcone, 2013; Irigaray et al., 200; Lopes & Cachioni, 2013). Resende et al. (2010) also used quantitative measures, nonetheless, only applied after the intervention, which weakens the finding of the effects. In another study, a questionnaire was formulated and applied in the pre-test, and its simplified/reduced version applied in the post-test evaluation, with responses recorded in audio (Borges & Seidl, 2014). Another study was based on the participants' statements to evaluate the results of the interventions (Morais, 2009), while other two studies based the evaluation of results on the observations of the team, without any pre-test evaluation of participants'

health conditions (Lemos & Júnior, 2009; Machado et al., 2013).

There is an international consensus in the area of programme evaluation which states it is preferable to use different measures and/or sources for data collection (e.g.: participants self-report, validated/reliable measures, reports from parents, peers, classification by observers or health professionals, other qualitative methods, etc.), and subsequent analysis (Gottfredson et al., 2015). That is, to ensure greater safety in the results obtained, it is fundamental that different indicators be used as convergent sources for data collection and subsequent evaluation of the intervention results. Likewise, the data should ideally be collected by different personnel from whom the intervention is delivered (moderator). The low consistency in the design and methods of application of the instruments/measures represents an impediment to the adequate analysis of the main results obtained in the interventions (Gottfredson et al., 2015). Therefore, there is evidence of insufficient methodological rigor regarding all these aspects in the studies evaluated.

Additionally, in terms of methodological quality, of the nine interventions selected in this review, seven are pre-experimental studies, and only two used a quasi-experimental design (Carneiro & Falcone, 2013; Irigaray et al., 2011). It remains uncommon the use of comparative groups (control, placebo, or other interventions), as suggested to meet empirical criteria for outcome assessment (Gottfredson et al., 2015). In most national studies, interventions are implemented and evaluated from a single-group design – characterized as a feasibility study. In the international context, however, the importance of introducing comparison groups in the design of the programmes is highlighted, in order to reduce threats to the internal validity of the results (APA, 2002). This is the case of an intervention developed in Chile by Cuadra-Peralta, Veloso-Besio, Puddu-Gallardo, Salgado-García and Peralta-Montecinos (2012), based on perspectives of Positive Psychology, which analyzed the levels of life satisfaction and depression

symptoms in the elderly. The design included three groups: a Positive Psychology Intervention, and two controls (recreational activities, and no intervention).

As for the duration of the interventions included in this review, the time varied considerably, with four interventions lasting longer than or equal to 12 weeks (Irigaray et al., 2011; Lemos & Júnior, 2009; Lopes & Cachioni, 2013; Morais, 2009), three 9-week interventions (Borges & Seidl, 2014; Machado et al., 2013; Santos et al., 2011), one six-week intervention (Carneiro & Falcone, 2013), and one with indeterminate duration (Resende et al., 2009). No study conducted analysis taking the intervention length into consideration.

Another fundamental criterion to ensure reliability in the results obtained is to include at least one follow-up study in the design of the intervention (Gottfredson et al., 2015). Bolier et al. (2013) evaluated 39 studies of positive interventions, out of which only 10 studies included follow-up assessment, being mostly three to six months after the intervention. Despite being considered small, the effects obtained at follow-up were significant in comparison with the control groups (Bolier et al., 2013). Thus, it is still not standard to conduct systematic follow-up studies, even in international contexts, although this practice is suggested as a method to ensure greater empirical rigor in the evaluation of interventions.

In the case of the studies evaluated, the lack of follow-up studies to determine long-term effects is an impediment to suggest that the results of health gains presented by the authors are, in fact, sustained, to safely assure the efficacy of the interventions (APA, 2002). Given the mentioned limitations, it is possible to verify that only three studies fulfilled ten or more criteria of methodological quality, according to the criteria established in this review (Carneiro & Falcone, 2012; Irigaray et al., 2011; Lopes & Cachioni, 2013).

## Final considerations

This review contributes with knowledge about multicomponent PPIs conducted in Brazil, for the target population of interest, even if the interventions have not been delineated primarily with the theoretical foundations from Positive Psychology. In other words, given the data of this review, one can have a panoramic view of the psychological practices implemented that contribute to the promotion of strengths (Social/Emotional Intelligence, Self-regulation/emotional self-control, Prudence/self-care, Creativity and Enthusiasm/Vitality); which methodological quality criteria have been used and/or weaknesses observed (lack of blinding and/or reports of loss of participants, lack of randomization, poor clarity in the description of the sample and/or the intervention); and the effects produced by the interventions in the national context (all studies reported favourable results for primary outcome variables, and two for secondary outcome variables). As strengths of this work are the foundations in the Cochrane protocol, recognized and suggested for review studies, and the inclusion of studies with qualitative and quantitative methods, to reduce selection bias.

Insufficient data provided by the studies, mainly regarding the description of the interventions and methodological aspects (details of the sample, lack of validated instruments, control group, follow-up study, etc.), hinders inferences to be made about which intervention could benefit more the target population, in terms of strengths acquisition and health promotion.

In addition, this review has also the limitation of not having evaluated the interventions' length (short, medium, long-term). This could be important to infer which intervention results in a greater impact on health promotion. Another limitation is the inclusion of only peer-reviewed studies as a measure of control over minimum aspects of rigor and methodological quality, which may have biased the selection process.

The results found, however, serve to aid health professionals and stakeholders to identify faults in the development and evaluation processes, as well as in the identification of methodological criteria that should be considered for programme implementation and evaluation. However, even though the methodological quality of the reviewed studies was found to be flawed in some aspects, the results point out that all the interventions presented some kind of health gains for the participants'. This reinforces the need for investments in policies and services in the area of health promotion, for the development of strengths, instead of focusing solely on the reduction or treatment of diseases and, at most, on the prevention of specific pathologies, a pattern still common in the national context.

**Author participation:**

a) Planning and design of the work; b) Data collection; c) Analysis and interpretation of data; d) Writing the manuscript; e) Critical review of the manuscript.  
LH.B.D. contributed in a,b,c,d, e; L.W.M. in b,c,d,e; C.N.S. in b,c,d, e; D.D.D in a,b,c,d, e.

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