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The role of humor in social, psychological and physical well-being

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Raquel Oliveira

(rsaoa@iscte-iul.pt)

Iscte-University Institute of
Lisbon (CIS-Iscte) &
INESC-ID (GAIPS),
Dpt. of Social and
Organizational Psychology.
Lisbon, Portugal

Patrícia Arriaga

Iscte-University Institute of
Lisbon (CIS-Iscte),
Dpt. of Social and
Organizational Psychology.
Lisbon, Portugal

João Barreiros

Iscte-University Institute of
Lisbon (CIS-Iscte),
Dpt. of Social and
Organizational Psychology.
Lisbon, Portugal

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A B S T R A C T

Humor is a pervasive part of our daily lives that has several important social functions. Although past literature has suggested the existence of a link between certain components of humor and well-being, the extent and specific characteristics of this link are still unclear. To shed light on this issue, we conducted a scoping review of the literature through which we identified 128 publications examining the association between humor components (i.e., styles of humor, coping humor, sense of humor, comic styles and laughter) and psychological, physical, social and general well-being. Overall findings support a clear positive relation between all components of humor and psychological well-being, and a less pronounced positive association between humor and physical, social and general well-being.

Introduction

Despite its apparent ubiquity, humor still stands out as a unique and puzzling phenomenon. In previous literature, humor has been defined as a multi-faceted concept that includes anything that one does or says that is perceived as being funny, in conjunction with the mental processes that go into creating and interpreting such stimuli and the emotional responses that they evoke (Martin & Ford, 2018).

Laughter, which is typically, but not always, associated with humor (cf. Wood & Niedenthal, 2018), constitutes a specific type of vocalization that involves supra-larangeal structures, characterized by rapid contractions of the intercostal muscles that result in ample, quick exhalations (Scott et al., 2014).

Although it is not yet clear what are the evolutionary origins of laughter, and the exact nature of its relationship with humor (Gervais & Wilson, 2005), previous studies have emphasized its social component as a core attribute (Wood & Niedenthal, 2018). For example, we are approximately 30 times more likely to laugh when in the company of others than when we are alone (Provine & Emmorey, 2006; Provine, 2004), and observational studies examining interpersonal conversations indicate that laughter occurs very frequently (at an approximate rate of 5 laughs per 10 minutes of conversation; Vettin & Todt, 2004).

In addition to its social ubiquity, humor and laughter have been associated with several positive outcomes that span from strengthening social bonds (Wood & Niedenthal, 2018), to improving mental (Savage et al. 2017; Yim, 2016) and physical health (Mora-Ripoll, 2011).

As a reflection of the recognition of its importance, researchers have proposed and developed several models that emphasize both the individual and interpersonal facets of humor.

As an individual trait, research on sense of humor has focused on how different individuals behave, experience, engage, perceive and feel about amusing and humorous situations in general (Ruch, 2010). Similarly, humor orientation has been defined as the extent to which individuals present “...*differences in the[ir] disposition to enact humorous messages*” (Booth-Butterfield & Booth-Butterfield, 1991, p. 32). Both sense of humor and humor orientation have been suggested to produce or be associated with intra (such as reducing anxiety, Yovetich, Dale & Hudak, 1990; fewer headaches, Curran, Janovec & Olsen, 2019) and interpersonal beneficial effects (lower levels of loneliness, Curran, Janovec & Olsen, 2019; increased satisfaction and cohesion in a relationship, Maki, Booth-Butterfield & McMullen, 2012).

The extent to which individuals use humor as a coping mechanism (i.e. a strategy to deal with adversities) has also accrued a lot of academic attention, in particular regarding its association with positive personal (such as, decreased burnout, Talbot & Lumden, 2009; and stress, Abel, 2002) and social outcomes (including, time spent with others, perceived pleasurableness and confidence in interactions with others, Nezlek & Derks, 2001). Similarly, a more recent conceptualization of humor as a character strength (i.e., “[a] *unipolar and unidimensional strength (...) [that] is subsumed under the virtue of transcendence*”, Müller & Ruch, 2011, p. 368), identifies humor as being one of the highest endorsed character strengths (Park, Peterson, & Seligman, 2006) and one of the character strengths that shows a higher correlation with subjective well-being and life satisfaction (Park, Peterson, & Seligman, 2004, Peterson, Ruch, Beermann, Park, & Seligman, 2007).

Besides being an individual character strength, other authors have focused on the more social aspects of humor by considering individual differences on how people use humor in their daily lives (i.e., humor styles, Martin et al., 2003). These styles of humor organize humor usage in four dimensions according to the valence (positive or negative) and the target

(oneself or others) of the humor, resulting in four humor styles: affiliative (positive and directed at others), self-enhancing (positive and directed at oneself), aggressive (negative and directed at others) and self-defeating (negative and directed at oneself). Positive styles of humor have been extensively linked to positive outcomes, including greater self-esteem, well-being and social support (Martin et al., 2003).

Comic styles, unlike humor styles, focus on the lower-level aspects of humor (i.e., its content, form, structure, modality and degree of refinement), and are based on classical literature on humor (Ruch, 2008). The eight comic styles include fun, humor, nonsense, wit, irony, satire, sarcasm, and cynicism, and have, as other facets of humor, have been observed to have positive relations with several character strengths (Ruch, Heintz, Platt, Wagner & Proyer, 2018), well-being and decreased worry (Dionigi, Duradoni & Vagnoli, 2021).

Well-being

The concept of well-being has been notoriously difficult to define due to its “*intangible and amorphous*” nature (Kiefer, 2008, p. 244). In general, well-being has been broadly defined as an umbrella term which encompasses factors related to psychological, physical and social well-being (Kiefer, 2008).

The psychological component concerns how people evaluate and judge the quality of their lives (Keyes, 2007). According to Ryff (1989), one of the main theorists on well-being, it includes dimensions such as self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. However, other authors have extended this definition by arguing for the importance of variables such as self-esteem (Solomon, 2006), life satisfaction (Diener, Lucas & Oishi, 2002, Rojas, 2007) and happiness (Hills & Argyle, 2002; although others disagree, c.f. Raibley, 2012).

The social component focuses on the quality of the relationships with other people and society, like the perceived social support from family and friends (Canty-Mitchell & Zimet, 2000) and social adjustment/functioning (McDowell, 2006). It includes dimensions such as extension of the social network, provision of instrumental support, and perception of support adequacy (Canty-Mitchell & Zimet, 2000).

Finally, the physical component concerns the ability to perform physical activities, as well as social roles not hindered by physical limitations and experiences of bodily pain, and it can also comprise biological health indicators like overweight and chronic illness status (Capio, Sit, & Abernathy, 2014; Doll, Petersen, & Stewart-Brown, 2000).

This latter component, although not present initially in main theoretical models of well-being (Ryff, 1989, Brief, Butcher, George & Link, 1993, Diener, Suh, Lucas & Smith, 1999), has been recognized since by many later researchers as a key component of well-being that supports individual's abilities to participate and embody social roles and activities that are facilitators of social and psychological well-being. In other words, physical well-being is an important contributor to individuals' autonomy, self-determination and environmental mastery (Emmons & King, 1988, McKee-Ryan, Song, Wanberg & Kinicki, 2005, Ryan & Patrick, 2009, Sommerfeldt, Schaefer, Brauer, Ryff & Davidson, 2019, Buecker, Simacek, Ingwersen, Terwiel & Simonsmeier, 2021), which are all important components of psychological well-being (Ryff, 1989).

Conversely, social and psychological factors of well-being and mental health (e.g., optimism) are also thought to contribute to greater levels of physical well-being by buffering the effects of stress on this variable (Emmons, 1991, Scheier & Carver, 1992).

Well-being and Humor

The idea that humor has beneficial effects in one’s health is neither new nor obscure. Over the years, a lot has been speculated regarding the relationship between humor, laughter and well-being (Gonot-Schoupinsky & Garip, 2018). In particular, in the context of positive psychology, which is the field of psychology dedicated to investigating how “(...) *positive subjective experience, positive individual traits, and positive institutions promise(s) to improve quality of life and prevent the pathologies(...)*” (Seligman & Csikszentmihalyi, 2014, p.5). Several theories have been proposed to explain the mechanisms through which positive emotions and states (such as humor) contribute to improving well-being and improving individual’s lives (for an overview, see table 1).

Table 1. Summary of positive psychology theoretical approaches to the relation between positive emotions and states, and well-being based on Oades & Mossman (2017).

<i>Theory</i>	<i>Main premise</i>	<i>Main proponents</i>
Broaden-and-build theory	Positive emotions and states increase people’s thought-action repertoires and thus promote exploration and discovery of creative ideas, actions and social bonds, which in turn contribute to building an individuals’ personal resources (physical, social, psychological).	Fredrickson, 2001, 2004, 2013

Psychological well-being theory	Psychological well-being goes beyond the absence of having something negative, rather it depends on the presence of positive qualities, namely growth, positive relationships, autonomy, purpose, and environmental mastery.	Ryff, 1989; Ryff & Keyes, 1995
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PERMA theory	There are five main pathways to well-being: positive emotions, engagement, positive relationships, meaning and accomplishment.	Seligman, 2018
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Character strengths theory	Individuals have a set of character strengths that are associated with subjective well-being.	Park, Peterson & Seligman, 2004; Peterson & Seligman, 2006
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Although these theories differ in many important aspects, the idea that positive states, emotions or values are positively associated with well-being and with desirable outcomes for individuals seems to be common ground among them. This, in turn, is congruent with findings from past research on the beneficial effects of humor and laughter. For instance, in accordance with the hypotheses based on the Broaden-and-Build theory (Fredrickson, 2001, 2004, 2013), humor has indeed been linked consistently to improved social outcomes, such as greater relationship satisfaction (Butzer & Kuiper, 2008; Cann et al., 2011; Hall, 2013)), and to improved psychological outcomes such as stress reduction (Abel, 2002).

However, each theory also requires different conceptualizations of humor. Indeed, as with the conceptualization of well-being, a consensual definition of humor is also difficult by its amorphous and multifaceted nature. Humor has been conceptualized as a coping mechanism

(Nezlek & Derks, 2001), a character strength (Edward & Martin, 2014), an individual trait (Wrench & McCroskey, 2001, Svebak, 2010) and as a specific situational response (Martin & Lefcourt, 1984). In addition, due to its complexity, humor also involves different responses and mechanisms, including specific cognitive (e.g., humor detection and appreciation), emotional (e.g., mirth) and behavioral (e.g., laughter) responses and processes.

Despite, or perhaps due to this complexity, literature still lacks an integrative and comprehensive model that connects these different facets and mechanisms of humor.

The conciliation of these different facets of humor is, however, particularly important when considering efforts devoted to systematically mapping its effects on individual variables, such as well-being.

The Present Review

The scant attention given to laughter and humor within positive psychology, as well as a pattern of limitations (e.g., insufficient sample sizes, inconsistent operationalizations, lack of control of potential confounds) in studies investigating these phenomena, as noted in previous systematic reviews (Gonot-Schoupinsky & Garip, 2018), leave an important gap in our understanding of them. With this review, we seek to contribute to bridge that gap by investigating and systematically summarizing primary evidence regarding the association between laughter, humor and well-being. We argue that this contribution is an important step in fomenting future research to the extent that it might stimulate other researchers to further explore the association between humor and other psychological correlates (such as well-being).

In this context, some reviews and meta-analyses have already been conducted with the goal of investigating the relation between humor (and its different components) and well-being.

More specifically, a recent meta-analysis has suggested that positive styles of humor (namely,

self-enhancing and affiliative, Martin et al., 2003) are positively associated with subjective well-being, whereas negative styles of humor (self-defeating and aggressive) are negatively associated with that variable (Jiang, Lu, Jiang & Jia, 2020). This review also showed that these relations between humor styles and subjective well-being are not moderated by either age or culture. Similarly, a recent review has shown that positive humor styles are generally positively associated with different components of mental health (self-esteem, life satisfaction, optimism, depression), whereas self-defeating humor (negative) was overall negatively correlated with these variables (Schneider, Voracek & Tran, 2018). Aggressive humor was found to be unrelated to mental health (Schneider, Voracek & Tran, 2018). Unlike the aforementioned review, the review conducted by Schneider, Voracek and Tran (2018) found some moderating effects of geographic location and sex on the relationship between humor styles and some of the considered components of mental health. Our review seeks to confirm and extend the findings of these reviews by looking at different measures of humor, and by considering the potential effects of humor on different facets of well-being.

Furthermore, one review has also been conducted with the goal of investigating the effects of laughter and humor interventions on well-being on an elder population (Gonot-Schoupinsky & Garip, 2018). This review found beneficial impacts associated with the interventions in at least one of the metrics of well-being employed in all of the studies included. Our review extends this work by considering a wider population of individuals in terms of age and also by investigating the associations of other concepts related to humor, such as sense of humor and styles of humor.

Goals and research questions

The goal of this review is twofold. First, we seek to investigate the pattern of association between humor and social, psychological and physical well-being in adult individuals (i.e.,

<18 years old). Second, we aim to systematically review studies on the effects of laughter-inducing-interventions in social, psychological and physical well-being.

Method

Search strategy

Our search was conducted in the following databases: PubMed, Scopus, Web of Science (WoS), PsycARTICLES, Science Direct (SD) and Google Scholar. After the relevant articles were identified through this search, we also analyzed potential relevant references within each article. In congruence with our aforementioned goals, we used the following keywords and boolean operators in our search:

(Humor* OR Jok* OR laughter OR sense of humor OR humor style*) AND (well-being OR wellbeing) AND (mental OR psycholog* OR social* OR physical).

The search and extraction was conducted by two independent individuals and was last conducted on June, 14th, 2021.

Inclusion and exclusion criteria

We included only peer-reviewed articles published in journals or scientific conferences, in English, Spanish or Portuguese, until January 2021. In addition, we only considered publications that reported the results of original empirical research related to our goals, involving human adult participants (i.e. >18 years old). We excluded extended abstracts, “*work-in-progress*”, study protocols and workshop presentations.

Data collection, extraction and coding

Data collection, extraction and coding were conducted by two independent individuals. The coding schemes and analysis strategy were discussed and defined a priori among all the authors, and later disagreements between reviewers were resolved through joint discussions. After all the articles returned by the search query were extracted, the two coders scanned all the titles and abstracts and removed all articles that did not fit the exclusion criteria and duplicates.

Then, all of the remaining articles were randomly divided between the two reviewers, who analyzed each one according to the coding scheme developed. This coding scheme included the following information regarding the extrinsic characteristics of each study: (a) title, (b) year of publication, (c) abstract, (d) country (as inferred by the affiliation of the first author), (e) approval by an ethics committee), as well as the intrinsic characteristics: such as (f) type of study (e.g., experimental), (g) type of study design (between/within-subjects), (h) presence of a control group and details about the control and experimental group's activities or interventions (including a description of said activities, duration, frequency, human or technology-based delivery), (i) independent and (j) dependent variables, (k) the metrics used, (l) demographic characteristics of participants (age (M , SD), health status), and (m) summary of the main findings.

One third of the articles coded by each reviewer was then randomly selected and assigned to the other reviewer for an agreement evaluation. The process of data collection and extraction can be consulted in figure 1. After disagreements were resolved, the final database of articles was completed and we proceeded to conduct quality, bias and certainty in evidence evaluations according to PRISMA guidelines (Page et al., 2021).

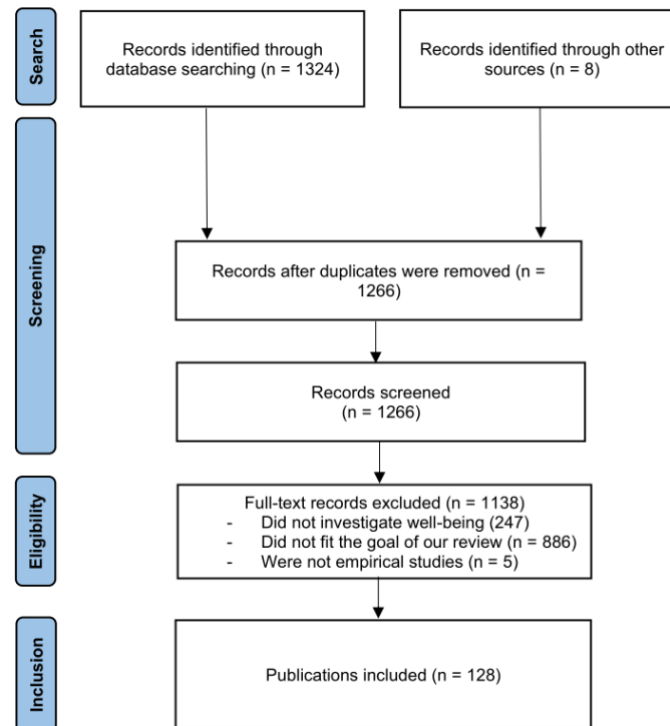
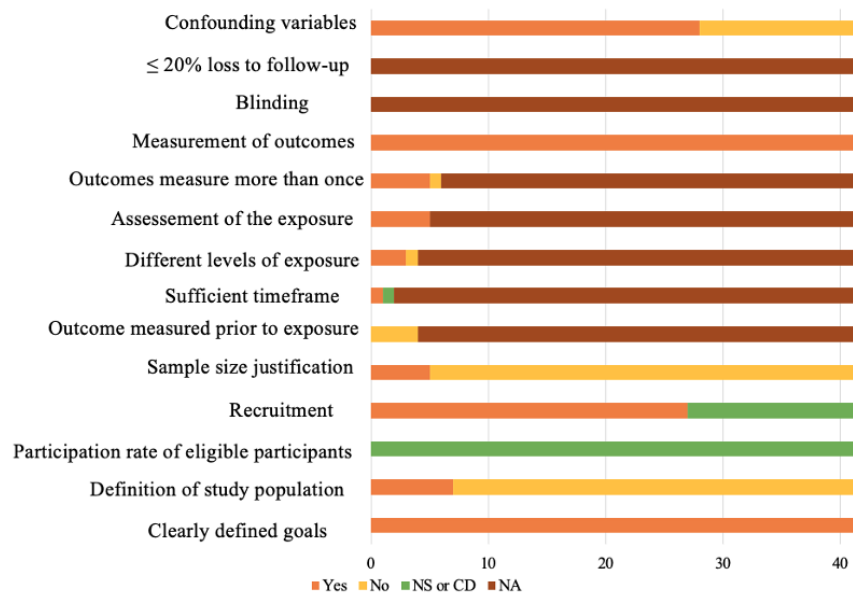


Figure 1 - PRISMA diagram detailing the search and inclusion process.

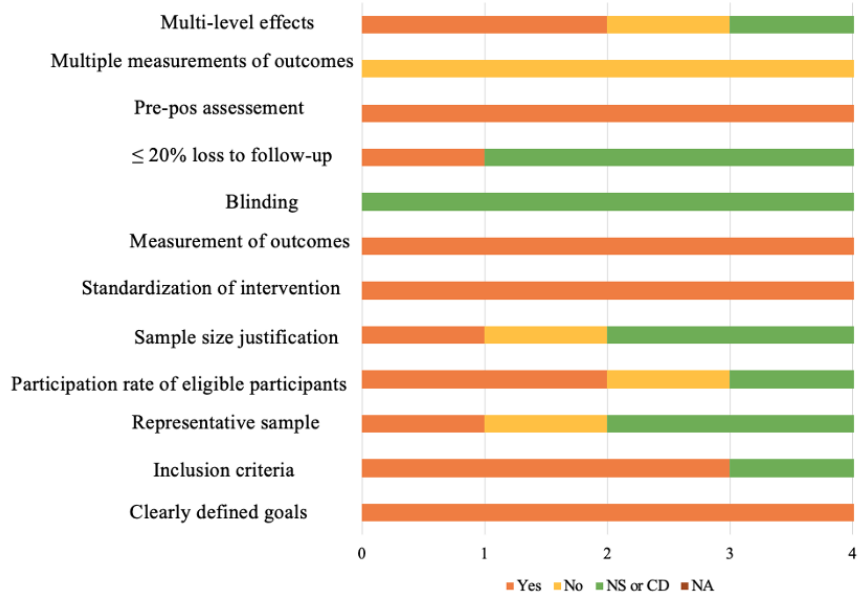
Quality assessment

Quality assessment was conducted using the study quality assessment tools developed by NHLBI (National Heart, Lung and Blood Institute¹). This toolbox includes different quality assessment instruments specific to certain study designs. As such, and based on our goals, the studies collected were divided into three main clusters according to their design: (1) experimental and quasi-experimental, (2) pre-post comparisons without a control group and (3) cross-sectional. For each cluster of studies, the appropriate quality assessment tool was used. The outcomes of this assessment are presented in figure 2.

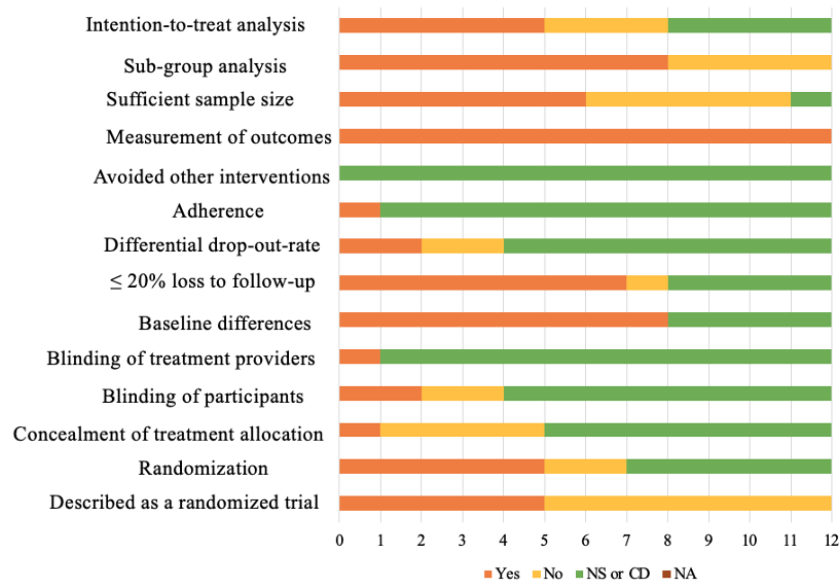
¹ The quality assessment tools can be consulted online at <https://www.nhlbi.nih.gov/health-topics/study-quality-assessment-tools> [last consulted on October 22nd, 2021].



a)



b)



c)

Figure 2 - Summary of the quality assessment of studies involving (a) correlational, (b) pre-post without a control group (c) and pre-post with a control group design.

Risk of Bias

Risk of bias was assessed using the RoB 2 tool (randomized trials), the ROBINS-I tool (non-randomized intervention studies) and the categories proposed by Wang et al. (2006) for the non-randomized studies. Visualizations of the outcomes of the assessment are presented in figure 3, and were produced using the robvis tool (McGuinness & Higgins, 2020).

Study	Risk of bias domains					Overall
	D1	D2	D3	D4	D5	
Crawford & Caltabiano, 2011	+	+	+	+	+	+
Ganz & Jacobs, 2014	-	-	+	+	+	+
Houston, Mckee, Carroll & Marsh, 1998	-	-	?	+	+	-
Kurtz & Algoe, 2017	+	+	+	+	+	+
Lee, Kim & Park, 2020	+	X	+	-	+	-
Spencer et al., 2020	+	+	+	-	+	+
Szabo, 2003	+	-	+	+	+	+
Tagalidou, Distlberger, Loderer & Laireiter, 2019	+	+	+	+	+	+
Tagalidou, Faschingbauer, Mussuros, Ruch & Laireiter, 2019	+	+	+	+	+	+
Wellenzohn, Proyer & Ruch, 2016	+	+	+	+	+	+
Zhao et al., 2020	-	+	+	+	-	-

Domains:
D1: Bias arising from the randomization process.
D2: Bias due to deviations from intended intervention.
D3: Bias due to missing outcome data.
D4: Bias in measurement of the outcome.
D5: Bias in selection of the reported result.

Judgement
X High
- Some concerns
+ Low
? No information

a)

	Risk of bias domains							Overall
	D1	D2	D3	D4	D5	D6	D7	
Amjad & Dastli, 2020	+	+	-	-	+	+	+	-
Berrios-Martos, Pulido-Martos, Augusto-Landa & López-Zafra, 2012	+	+	+	-	?	+	+	+
Bhattacharyya, Jena & Pradhan, 2019	+	+	+	+	+	+	+	+
Çalgıdemir & Tagay, 2015	+	-	+	-	+	+	+	+
Cann, Stilwell & Taku, 2010	+	-	+	-	+	+	+	+
Casellas-Grau, Ochoa, Uleras de Frutos, Flix-Valle, Rosales & Gil, 2021a	-	-	-	+	+	+	+	-
Caudil & Woodzicka, 2017	-	-	?	?	?	+	?	-
Curran, Janovec & Olsen, 2021	+	+	?	?	?	+	?	-
De Francisco et al., 2019	-	-	-	-	?	+	?	-
Dijkstra, Barelds, Ronner & Nauta, 2011	+	-	?	?	+	+	+	+
Dionigi, Duradoni & Vagnoli, 2021	+	+	?	?	+	+	+	+
Eden, Johnson, Reinecke & Grady, 2020	-	-	?	-	+	+	+	-
Edwards & Martin, 2010	+	+	+	+	+	+	+	+
Fiyah, Majeed & Khan, 2016	+	-	?	?	+	+	+	+
Ford, McCreight & Richardson, 2014	+	-	?	?	+	+	+	+
Gander, Hoffman, Proyer & Ruch, 2020	+	+	?	?	+	+	+	+
Greven, Chamorro-Premuzic, Arletche & Furnham, 2008	+	-	?	?	+	+	+	+
Helvik, Jacobsen, Hallberg, 2006	-	-	?	?	+	+	+	-
Herzog & Strevey, 2008	+	-	?	?	+	+	+	+
Holcomb & Ivvey, 2017	-	-	?	?	?	+	+	-
Jovanovic, 2011	-	-	?	?	+	+	+	-
Kazarian & Martin, 2004	-	-	?	?	+	+	+	-
Kuiper & Borowicz-Sibenik, 2005	-	-	?	?	+	+	+	-
Kuiper & McHale, 2009	+	-	?	?	+	+	+	+
Kuiper, Grimshaw, Leite & Kirsh, 2006	+	-	?	?	+	+	+	+
Kuiper, Kirsh, Maiolino & 2016	+	-	?	?	+	+	+	+
Kuiper, Klein, Vertes & Maiolino, 2014	+	-	?	?	+	+	+	+
Kuiper, Martin, Olinger, Kazarian & Jetté, 1998	-	-	?	?	+	+	+	-
Machado, Tavares, Petribó, Pinto & Cantilino, 2016	-	-	?	?	?	+	+	-
Marrero, Carballera & Hernández-Cabrera, 2020	+	+	?	?	+	+	+	+
Martin, Puhlik-Doris, Larson, Gray & Weir, 2003	-	+	?	?	+	+	+	+
Martinez-Marti & Ruch, 2014	-	+	?	?	+	+	+	+
Navarro-Carrillo, Torres-Marín, Corbacho-Lobato & Carretero-Dios, 2020	-	-	?	?	+	+	+	-
Nezdek, Derks & Simanski, 2021	-	-	+	-	-	-	+	-
Páez, Seguel, Martínez-Sánchez, 2012	-	-	?	?	+	+	+	-
Portefield, 1987	+	-	?	?	+	+	+	-
Rizeanu & Chraif, 2020	+	-	?	?	+	+	+	+
Smedema, Catalano & Ebener, 2010	+	-	?	?	+	+	+	+
Tagaldou, Loderer, Distlberger & Laisreiter, 2018	+	-	+	-	+	+	+	-
Tsukawaki & Imura, 2021	+	+	?	?	+	+	+	+
Tumkaya, 2011	+	-	?	?	+	+	+	-
Umucu & Lee, 2020	+	-	?	?	+	+	+	+
Wang, Zou, Zhang & Hou, 2019	+	-	?	?	+	+	+	+
Weinberg, Hammond & Cummins, 2014	-	-	+	+	+	+	+	+
Yue, Liu, Jiang & Hiranandani, 2014	+	-	?	?	+	+	+	+
Zacher & Rudolph, 2021	+	-	?	?	+	+	+	+

Domains:
D1: Bias due to confounding.
D2: Bias due to selection of participants.
D3: Bias in classification of interventions.
D4: Bias due to deviations from intended interventions.
D5: Bias due to missing data.
D6: Bias in measurement of outcomes.
D7: Bias in selection of the reported result.

Judgement
+ Moderate
- Low
? No information
NA

b)

Figure 3 - Results of the risk of bias assessment for a) randomized and b) non-randomized or intervention studies (organized alphabetically).

Data Analysis and Synthesis Procedure

According to our goals, the results will be presented separately for each outcome, and for each facet of humor being considered. Different variables related to well-being were extracted from each study and then grouped together into clusters according to their relation to psychological, physical, social and general well-being, and their classification of them made by each study's author.

The clusters of variables and their respective composition are presented in figure 4.

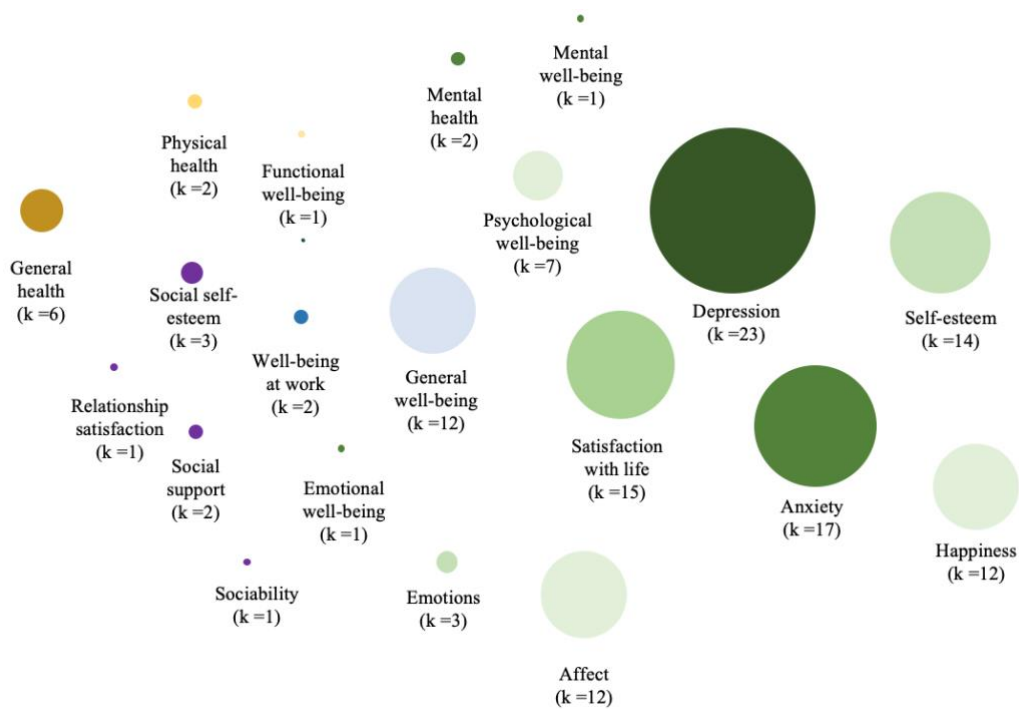


Fig 4. Distribution of studies according to main independent variables.

Regarding the different facets of humor explored in the 43 correlational studies included, the majority included humor styles ($k = 26$), sense of humor ($k = 7$) and humor as a coping mechanism ($k = 4$). Two studies looked at humor as a character strength, one study looked at comic styles, another at humor orientation, and another two involved more than one facet (sense of humor and coping humor). This smaller subset of studies was included in the analysis in an attempt to provide a more comprehensive overview of the research on the link between humor and well-being. The remaining studies (pre-post comparisons with and without control groups) investigated the impact of humor ($k = 11$) or laughter ($k = 5$) interventions on well-being.

When one article reported results for more than one independent group of individuals (e.g., hospitalized individuals and their parents/spouses), the findings for each group were considered separately.

Because of the variety and diversity of measures used in each study, a meta-analysis was not conducted. Instead, we labeled each main outcome of interest in each study as supporting, partially supporting (mixed), or not supporting the link between humor and well-being.

Statistically non-significant results were also recorded and included in the analysis.

Results

Descriptive analysis of Extrinsic Characteristics

The studies included originated mostly from Western countries (specifically from North American and European continents; see fig. 5).

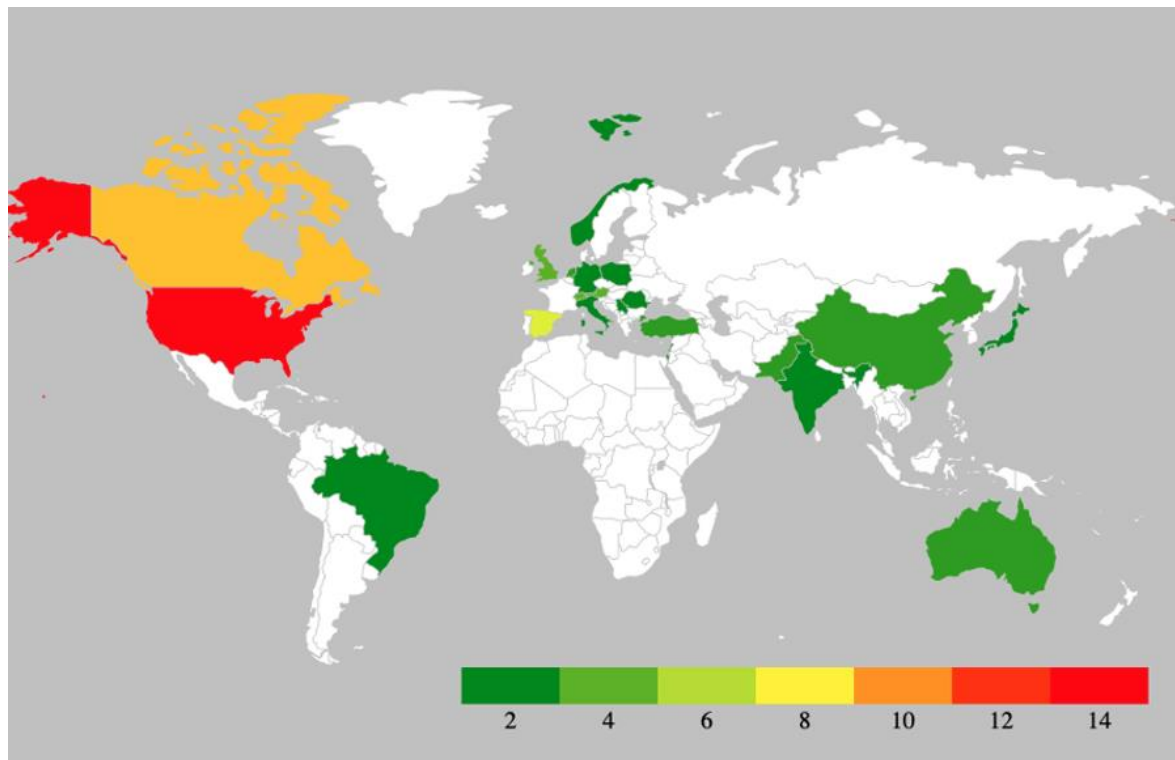


Figure 5. Heat map of the geographic distribution of the studies included (as inferred from the affiliation of the first author)- the color scheme denotes the number of studies from each region.

A detailed reporting of the socio-demographic characteristics of the participants in the studies included can be consulted in table 2.

Table 2. Sociodemographic characteristics of participants.

<i>M ± SD</i>	
Age	37.85 ± 17.70

		Number of studies	Number of participants	Percentage
Age range	18-29	23	7901	45%
	30-39	9	1714	10%
	40-49	11	5172	29%
	50-59	8	517	3%
	>60	5	570	3%
	Unclear	NA	1667	10%
Sex	Female	NA	9953 (at least)	57%
	Total	58	17541	100%

Humor Styles and Well-being

Most of the studies reported a positive relation between positive humor styles (i.e., affiliative and self-enhancing) and psychological, social, and general well-being, with psychological well-being being the most predominantly explored category ($k = 21$; see fig. 6).

In addition, the studies suggest a relationship between self-enhancing humor and well-being ($k = 3$), but offer poor support for a link between any of the other humor styles and well-being. Aggressive humor does not seem to be significantly associated with any of the

dimensions of well-being explored. However, self-defeating humor was observed to be negatively correlated with psychological well-being in most of the studies included.

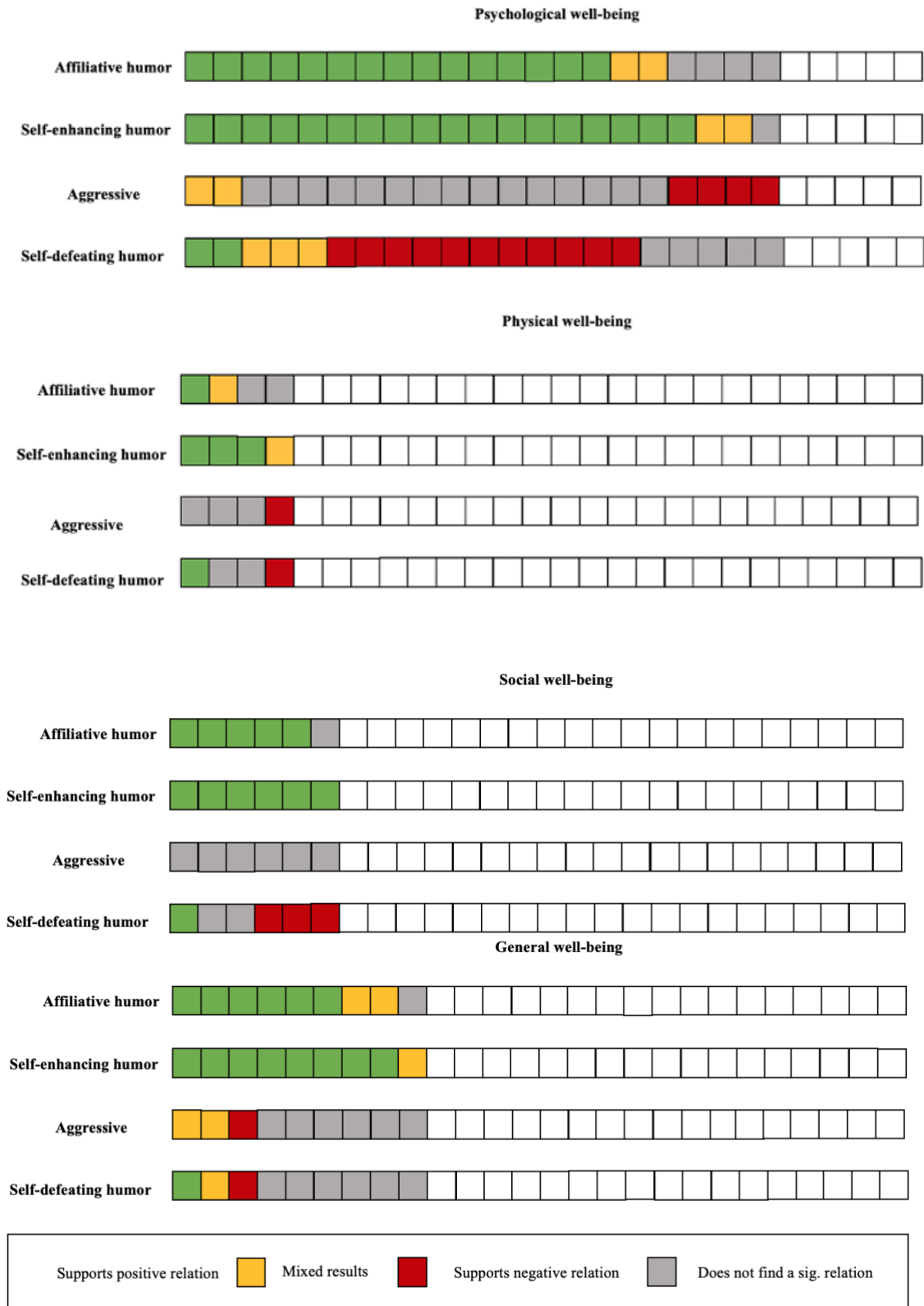


Figure 6. Summary of the evidence, supporting, not supporting or providing mixed evidence on the association between humor styles and psychological, physical, social and general well-being.

Sense of humor

Most of the studies considered psychological well-being, and found evidence that supports a positive link between sense of humor and that variable. Notably, none of the studies investigated the relation between sense of humor and physical, social, emotional and general well-being.

Humor as a coping mechanism

Humor as a coping mechanism has been observed to have beneficial effects on psychological well-being, and in general well-being to a lesser extent. Evidence of the effects of humor in emotional well-being suggest a mixed or negative relation between the two. Similar to what was observed for sense of humor, we found a lack of studies investigating the relationship between the use of humor as a coping mechanism and physical and social well-being.

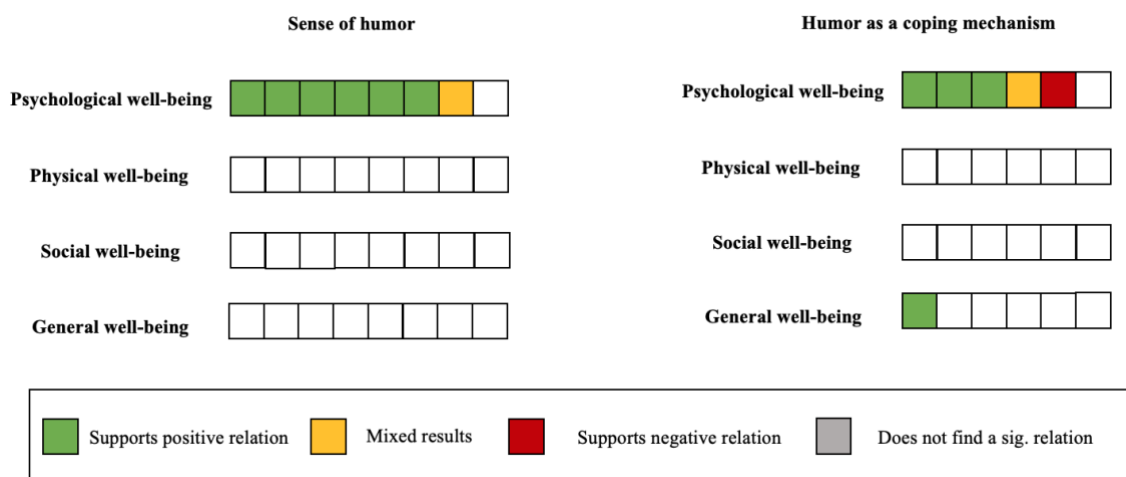


Figure 7. Summary of the evidence, supporting, not supporting or providing mixed evidence on the association between sense of humor and humor as coping mechanism and psychological, physical, social and general well-being.

Humor as a character strength

As a character strength, the studies included suggest either a positive ($k = 1$) or mixed ($k = 1$) relation between humor and psychological well-being. No associations with other types of well-being were apparent in the literature analyzed.

Comic styles and humor orientation

The study included for comic styles reports a positive relationship between the use of specific comic styles (namely, fun, humor, wit and satire) and psychological and general well-being. Humor orientation was positively correlated with psychological well-being. No other relations with other types of well-being were found for these variables.

Laughter and humor interventions

Both humor and laughter interventions were found to be associated with predominantly positive effects in psychological well-being. One study found that laughter interventions were linked to improved physical well-being, but no studies were found investigating the relationship between humor interventions and physical well-being. Both humor and laughter interventions were found to be linked to social well-being in one study each. Laughter interventions were associated with improved general well-being in one study. Humor interventions were found to be positively associated with general well-being in three studies, and mixed evidence was found in one study. Two studies found no significant link between participation in humor interventions and general well-being.

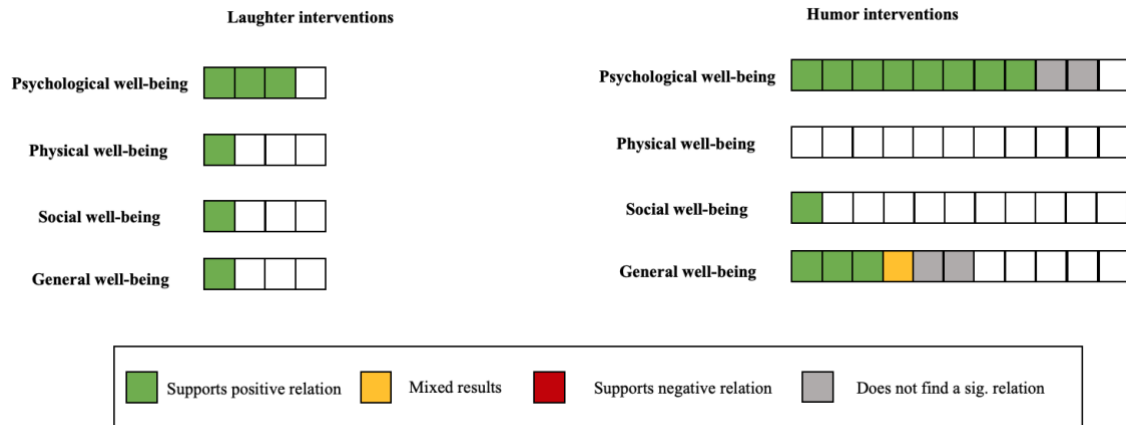


Figure 8. Summary of the evidence, supporting, not supporting or providing mixed evidence on the association between laughter and humor interventions and psychological, physical, social and general well-being.

Discussion

Humor is a pleasurable and inescapable way to interact with others and with the world around us. However, its common, pervasive and malleable nature, as evidenced by research and by our daily experiences with it, do not lend humor the simplicity of straightforwardness that one might need when attempting to comprehend it and track its effects and associations. This review largely confirmed previous findings regarding the existence of an association between some components of humor and psychological well-being. In this sense, of all the components of humor analyzed here (sense of humor, humor orientation, humor as a coping mechanism, humor as a character strength, humor styles and comic styles), humor styles seems to be the most extensively studied, with results supporting the thesis that positive styles of humor (affiliative and self-enhancing) are positively associated with psychological well-being. In addition, most of the studies analyzing the associations between sense of

humor, and humor as a coping mechanism with psychological well-being also supported a positive relation between these variables (although these variables were much less well-represented in the literature when compared to humor styles). Similarly, social well-being and general well-being were found to be positively associated predominantly with positive humor styles. This finding is broadly consistent with the findings of previous systematic reviews focused on the association between humor styles and well-being (Jiang, Lu, Jiang & Jia, 2020) and between humor styles and mental health (Schneider, Voracek & Tran, 2018). Regarding the effects of humor in physical well-being - which out of all the components of well-being, was the least predominant in the literature analyzed-, results suggest that positive styles of humor (in particular, self-enhancing humor) have a positive association with greater well-being. No consistent association between any other styles of humor and physical well-being was observed; and no other studies regarding other components of humor with this variable were found. The association between humor and physical well-being, thus, provides a promising path for future research given the positive nature of the limited empirical evidence that exists in the literature.

Both laughter and humor-based interventions yielded largely positive results across most dimensions of well-being analyzed. Similarly to what described above for the humor components, the research analyzed focused mostly on the association between these interventions and psychological well-being.

Limitations

There are many challenges inherent to the scientific study of humor. Most evidently, the lack of validated material that can be applied consistently across different samples hinders the generalizability of the results observed in some of the studies included. This issue is aggravated by a lack of methodological fail-safes, such as the implementation of manipulation verifications and the assessment and control of individuals' perception of the

humorous material used. Moreover, among the studies included in this review, we found that sharing the materials used through its inclusion in the supplementary materials or by using open science platforms was not a common practice. This limitation emphasizes the importance of developing and evaluating datasets of humorous material, that allow humor researchers a greater degree of control over their experimental settings.

In addition, most studies included did not control for other important state variables that were likely to affect individuals' responses and perceptions of humorous materials (e.g., mood, Yoon, 2018). Given that most studies relied on convenience samples (as opposed to probabilistic samples), the potential effects of confounding variables (such as mood) needs to be better understood or controlled for in future studies.

Cultural diversity

As evidenced by the geographical distribution of the studies included in this review (see fig. 2), and as noted in previous publications (e.g., Jiang, Lu, Jiang & Jia, 2020; Elshakry, 2010), the existing research reflects mostly a Western and European perspective. Although a previous review could not find a moderating effect of culture on the association between humor (in particular, humor styles) and well-being (Jiang, Lu, Jiang & Jia, 2020), there are important aspects to consider before discarding a possible cultural influence which may also explain the inconsistent findings.

Firstly, we must consider the possibility of an ambivalent perspective on humor in Eastern cultures explained by the contradictory views on humor of two of some of the most common philosophical and religious beliefs (i.e., Confucian philosophy and Taoist and Buddhist teachings; Jiang, Lu, Jiang & Jia, 2020), and the possibility that the disproportionate distribution of studies looking at the relationship between humor and well-being (favoring

Western perspectives) might itself complicate the task of investigating a potential moderating role of culture (Jiang, Lu, Jiang & Jia, 2020).

Second, and looking beyond humor styles, we must consider that there are several studies that suggest potential cultural differences in other facets of humor such as sense of humor (e.g., Martin & Sullivan, 2013), as well as the existence of different perceptions on humor itself (Yue, Jiang, Lu & Hiranandani, 2016). This fact raises two particularly important questions. The first regards the ability of current instruments to adequately reflect, and hence gauge, subjective factors related to humor, and originates from the recognition of the fact that many of the most prominent humor scales are developed and tested with Western populations. The second regards the importance of specific cultural values and their interaction with specific humor-related components. In particular, although it is assumed that humor is a universal type of behavior or trait, some would argue that its meaning is not universal (Suoqiao, 2017). The extent to which these differences in meaning relate to different levels of desirability and understanding of different conceptualizations of humor (e.g., humor as a coping mechanism, sense of humor), however, still warrants further research.

Future research and Conclusion

Humor can be beneficial for psychological well-being; however the question of if and how it positively affects physical, social and general well-being is still far from resolved. Through this review, we identified many gaps in the literature that can provide interesting avenues for future research, and benefit our understanding of humor both by increasing its span and quality.

Firstly, we would like to call for more research examining the potential association between humor components and physical and social well-being. Previous research has shown that humor has both physiological substrates (Scott et al., 2014) and consequences (Oliveira &

Arriaga, 2022), that can be leveraged to improve the health and well-being of individuals in a cost-effective way, that is straightforward to implement and with few negative side effects in clinical settings. Although the studies presented limited evidence (due to their limited scope and quantity), some positive associations between some humor components and interventions and social and physical well-being were still observed. More research is needed to confirm and further explore these positive associations.

Secondly, we would like to emphasize the need for more research that takes a more holistic approach to the effects of humor, both by analyzing more extensively the association between other (than humor styles) components of humor and well-being, but also by attempting to model how (and if) different components of humor contribute in different ways (or through different mechanisms) to well-being.

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