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REVIEW ARTICLE

Social engagement and wellbeing in late life: a systematic review

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Abstract

Social engagement is considered a relevant modifiable factor for older adults' wellbeing. Theory and policies highlight its importance for ageing well. Empirical evidence shows that social activities are associated with positive psychological outcomes and might buffer wellbeing declines in late life. Despite growing research, social engagement lacks conceptual clarity, it is difficult to adopt standardised measures and findings are sometimes inconsistent. Previous systematic reviews either take a different approach to this topic or were published over a decade ago. Therefore, the present study aimed to review the literature systematically regarding the relationship between social engagement and wellbeing in community-dwelling older adults. Papers published from 2000 to 2021 were searched in five databases using a combination of terms. The reviewers screened the records according to predefined inclusion and exclusion criteria. After identifying eligible articles, the authors extracted data and produced a narrative synthesis covering conceptualisation, measurement and main findings. The review includes 42 papers. Despite great conceptual and methodological diversity, research supports that older adults with higher participation in social activities have improved wellbeing. Findings also suggest that these associations are stronger for individuals with disadvantages and have a cumulative nature whereby the greater the social engagement, the higher the wellbeing. Conversely, for more demanding activities, there might be optimal participation levels. Regardless of accumulating knowledge, social engagement remains diffuse and difficult to measure. This paper summarises the current state of research on this topic, showing encouraging evidence of social engagement benefits, but also questions that deserve further inquiry. Future studies should be anchored in a clear conceptual framework, use robust measures, and explore hedonic and eudaimonic wellbeing. Social engagement can be an important developmental resource for social interventions and policies aimed at improving people's lives.

Keywords: social engagement; social participation; wellbeing; older adults; systematic review

Introduction

It really seems no man is an island. Theory, empirical findings and policy all point to social engagement as a determining factor in the wellbeing of older adults. Late life can bring particular challenges concerning social relationships and activities, but these are modifiable. In other words, if social engagement is a way to improve people's lives, we can take action to facilitate it.

Research concerning social engagement in late life has considerably multiplied in the last two decades. However, scientific endeavours face a lack of conceptual consensus, obstacles in developing standardised measures and some inconsistency in findings, making it difficult to grasp the available evidence. Previous systematic reviews either take a different approach to this topic or were published over a decade ago. Therefore, this study aimed to review the literature systematically regarding the relationship between social engagement and wellbeing in community-dwelling older adults.

Social engagement and ageing well

Social activity has received much attention as a defining aspect of human existence. There are many terms for it, sometimes used interchangeably, including social participation, social involvement and social engagement, with several authors proposing conceptual definitions. Levasseur *et al.* (2010) define social participation as involvement in activities that provide interaction with others in society or the community. These authors propose a taxonomy of social activities based on activities' goals and level of involvement with others. There are six levels in this taxonomy: (1) performing activities in preparation to connect with others; (2) being alone but with people around; (3) interacting with others without performing an activity with them; (4) doing an activity with others; (5) helping others; and (6) contributing to society. Social participation corresponds to levels 3–6, including social engagement, which matches levels 5 and 6. Based on this and other contributions (Bukov *et al.*, 2002; Levasseur *et al.*, 2010; Scharlach and Lehning, 2016; Aroogh and Shahboulaghi, 2020), we understand social engagement as participating in activities embedded in social interactions that occur in a collective setting and require sharing individual resources.

While being socially engaged is vital throughout our lifespan, it has particular relevance in old age. During later life, social losses become more prominent due to changes such as retirement, death of family and friends, or children leaving home (Scharlach and Lehning, 2016; Windsor *et al.*, 2016; Bruggencate *et al.*, 2018). This means that remaining socially engaged might be especially challenging for older people. Yet, several successful ageing models highlight that social relationships and roles are essential factors of a good old age. Firstly, in the MacArthur Model (Rowe and Kahn, 1997), engagement with life is one of three elements of successful ageing. According to the authors, engagement with life entails the maintenance of interpersonal relations and meaningful activities that foster closeness, social support and purpose. Secondly, the Preventive and Corrective Proactivity Model (Kahana and Kahana, 1996) posits valued activities and relationships as successful ageing outcomes, and socially oriented behaviours (*e.g.* helping others, role substitution) as proactive mechanisms to age well.

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Simultaneously, ageing policies also incorporate social engagement, even though under different designations. Participation is one of the United Nations' principles for older people (United Nations, 1991) and one of the active ageing pillars (World Health Organization, 2002). These policy frameworks recognise that social activity promotes a sense of belonging, purpose in life and positive relations.

Globally, conceptual and theoretical contributions display social engagement as a construct with two main dimensions: social exchanges and meaningful activities. Moreover, social engagement is a hierarchic construct, moving from less-complex and self-focused expressions to more-demanding and other-oriented activities. Social engagement occurs at the intersection between individual and community, reflecting commitment to oneself, others and the world.

The many faces of wellbeing

Wellbeing is a multi-dimensional construct that addresses desirable psychological functioning and experiences (Ryan and Deci, 2001; Huta and Waterman, 2014). Two main approaches to this concept can be distinguished, with philosophical roots dating back to ancient Greeks and their interrogations about what constitutes a good life.

The hedonic perspective conceives wellbeing as happiness or pleasure attained by pursuing human appetites. The focus is on living pleasant and avoiding unpleasant experiences (Ryan and Deci, 2001; Huta and Waterman, 2014). Accordingly, this tradition is reflected in the threefold structure of subjective wellbeing: positive affect, negative affect and life satisfaction. These operational definitions were mainly empirically driven rather than theoretically based. Positive and negative affect tap into emotional aspects of human experience. In turn, life satisfaction is a cognitive component, referring to judgements about one's life (Ryff *et al.*, 2021). So, in this case, wellbeing is mainly associated with enjoyment and feeling good.

The eudaimonic perspective views wellbeing as more than happiness. Instead, wellbeing corresponds to fulfilling human potential (Ryan and Deci, 2001) and 'achieving the best that is within us' (Ryff *et al.*, 2021: 94). The focus is on human flourishing and excellence (Huta and Waterman, 2014). Hence, wellbeing is attained not by following transitory desires but by pursuing what is worth, leading to individual growth. From this point of view, wellbeing stands upon the congruence between what an individual is and what he or she does.

Within the eudaimonic perspective, Carol Ryff (Ryff, 1989*a*, 1989*b*; Ryff *et al.*, 2021) proposed a model in which psychological or eudaimonic wellbeing has six dimensions: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life and personal growth. Ryff's multi-dimensional model acknowledges that change is present in any life period and that gains and losses in wellbeing coexist throughout life, in line with a lifespan perspective of human development (Baltes *et al.*, 2006).

Both wellbeing approaches have been essential to further knowledge about psychological wellness. Research shows associations between hedonic and eudaimonic wellbeing but also supports that these are distinct constructs. Sociodemographic variables tend to correlate differently with each. Also, there is evidence of within-person and between-person differences in wellbeing components (Ryan and Deci,

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2001; Ryff *et al.*, 2021). Namely while increasing age tends to predict increased hedonic wellbeing, some dimensions of eudaimonia (purpose in life, personal growth) decrease with age even though others (positive relations, autonomy, self-acceptance) remain stable (Ryff *et al.*, 2021). So, while competing philosophically, these two views can complement in developmental research.

Social engagement and wellbeing in late life

Several cross-sectional and longitudinal studies observed that participation in social activities is associated with positive psychological functioning in old age, namely with psychological wellbeing (Sharifian and Grühn, 2019), quality of life (Park *et al.*, 2015; Hajek *et al.*, 2017; He *et al.*, 2017), self-esteem, satisfaction with life and positive affect (Huxhold *et al.*, 2013*a*, 2013*b*; Kang and Ahn, 2014; Michèle *et al.*, 2019), as well as absence of negative affect and depressive symptoms (Huxhold *et al.*, 2013*a*, 2013*b*; Morrow-Howell *et al.*, 2014; Hajek *et al.*, 2017; Michèle *et al.*, 2019). Moreover, social engagement may buffer declines in wellbeing and quality of life associated with advancing age (Nimrod and Shrira, 2016; Sharifian and Grühn, 2019). In a longitudinal approach, Sharifian and Grühn (2019) found that individuals with high social participation displayed better initial wellbeing, as well as less decline in wellbeing over time.

It has been proposed that social engagement benefits wellbeing by providing access to several psychologically beneficial resources. By participating in a meaningful social context, people live fully, they access companionship and sociability. Consequently, they feel attached to others, feel they belong and are valued, enabling self-acceptance. Also, involvement in social activities helps define and reinforce one's identity and social roles, fostering a sense of coherence, mastery and meaning in life (Berkman *et al.*, 2000; Adams *et al.*, 2011; Thoits, 2011).

Furthermore, according to Carstensen (Carstensen *et al.*, 1999; Carstensen and Löckenhoff, 2003), individuals actively prioritise emotionally rewarding experiences when they perceive future time as limited, which tends to occur with advancing age. Older adults seek to maximise emotional gains by investing in meaningful relationships and pro-social activities. Hence, social engagement can be seen as an optimisation mechanism through which people transform their social interactions to enhance the emotional resources derived from them, influencing wellbeing.

Nevertheless, social engagement does not depend only on individual volition. Social behaviour is influenced by personal (*e.g.* health, education) and contextual (*e.g.* social support, physical barriers) factors, and also by events (*e.g.* retirement, widowhood) typically linked to later life (Agahi *et al.*, 2013; Curl *et al.*, 2014; Sabbath *et al.*, 2015). At a macro-level, policies, social norms and cultural values structure social engagement opportunities, with substantial differences between countries (Hank, 2011; van Tienoven *et al.*, 2020; Lakomý, 2021). In Europe, participation in social activities is high in social-democratic and liberal welfare regimes (*e.g.* Denmark, England), but less widespread in conservative regimes (*e.g.* France), and even lower in the Mediterranean (*e.g.* Portugal, Spain) and post-communist (*e.g.* Bulgaria) regimes (Principi *et al.*, 2018; Lakomý, 2021). Older adults in the United States of America (USA) display higher involvement in paid work and volunteering than Belgians, possibly due to specificities of the US pension system

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and deep-rooted volunteering culture (van Tienoven *et al.*, 2020). Macro- and micro-level factors intersect to shape older adults' social engagement.

Overall, theory, empirical findings and policy suggest that social engagement can lead to desirable outcomes in late life. However, this concept gathers limited consensus and clarity. Consequently, it is difficult to communicate about this topic and to develop or select standardised measures (Levasseur *et al.*, 2010; Adams *et al.*, 2011; Douglas *et al.*, 2017). There is also diversity in the definition and measurement of wellbeing. Hence, research comparability becomes problematic, which has implications for policy and intervention.

Furthermore, it is important to uncover moderators and mediators, namely individual and activity characteristics (Adams *et al.*, 2011; Douglas *et al.*, 2017; Bruggencate *et al.*, 2018). Finally, there is a need to integrate findings regarding social engagement benefits and the contraction of social ties and activities in late life (Carstensen *et al.*, 1999; Pinto and Neri, 2017). Previous systematic reviews either focus on conceptual matters (Levasseur *et al.*, 2010; Aroogh and Shahboulaghi, 2020) or assume a different approach (Douglas *et al.*, 2017; Bruggencate *et al.*, 2018). In a review, Adams *et al.* (2011) focus on social activity and wellbeing in late life but also address leisure and survival.

Therefore, the present study proposes adding to these valuable contributions by adopting a narrower scope and including the period after 2011. The main question of this systematic review is:

- Do older adults who are more socially engaged have better psychological wellbeing than those who are less socially engaged?

The study aims to: (a) explore how social engagement and wellbeing are conceptualised and measured; (b) synthesise evidence regarding the relationship between social engagement and wellbeing in community-dwelling older adults; and (c) examine moderators and mediators of said relationship.

Methods

The present systematic review follows the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA; Page *et al.*, 2021). Initially, the researchers developed a study protocol following PRISMA protocols (PRISMA-P; Moher *et al.*, 2015), publicly available at PROSPERO (record CRD42021265191). The following sections present the research plan.

Search strategy

The general purpose of the search strategy was to identify original research articles focused on the connections between social engagement and wellbeing in community-dwelling older adults.

As mentioned, social engagement lacks consensus and terms surrounding this concept proliferate (Levasseur *et al.*, 2010; Adams *et al.*, 2011; Douglas *et al.*, 2017). Despite being more consensual, psychological wellbeing is also conceptualised and operationalised in different ways, namely hedonic and eudaimonic

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approaches (Ryff *et al.*, 2021). Therefore, the reviewers used search terms comprehensively to be as inclusive as possible. Several designations were also used for the population of interest. As a result, the search strategy combined the following terms:

(1) Population: aged OR ageing OR aging OR elder OR old OR older OR seniors.
(2) Exposure: social engagement OR social involvement OR social participation OR community engagement OR community involvement OR community participation OR social activities OR social activity OR social connectedness OR group participation.
(3) Outcome: well-being OR wellbeing OR well being OR satisfaction with life OR life satisfaction OR affect OR happiness OR quality of life.

Using these terms, relevant literature published from January 2000 to June 2021 was searched in the following databases: PsycINFO, PsycARTICLES, Scopus, Web of Science Core Collection and PubMed. Electronic database searching took place between 9 and 20 July 2021. Efforts were made to conduct a similar search in all databases by adjusting the search expression. In addition, reference lists of eligible articles were scanned to identify other potentially relevant studies. Final search expressions for each database are displayed in File 1 in the online supplementary material.

Study selection

Records identified through electronic databases were exported to EndNote 20 to enable duplicate removal and reference examination. Afterwards, two reviewers independently screened the records for potential inclusion in a two-step sequence: (a) title and abstract and (b) full-text. During this process, the two researchers were blind to one another's decisions. At the end of each step, reviewers discussed disagreements to find consensus. When necessary, a third element intervened. Inter-rater reliability was calculated at every step.

The researchers followed a set of predefined criteria in the study selection process. Preliminary inclusion and exclusion criteria were formulated based on the research questions, as Siddaway *et al.* (2019) recommend. These criteria were refined throughout the review process and reapplied whenever necessary, according to the iterative nature of systematic reviews. Table 1 presents all the inclusion and exclusion criteria.

This review comprises published original articles to guarantee that the included evidence has been subject to peer review. At the same time, preliminary searches indicated a considerable amount of published and current literature. Additionally, grey literature is harder to search systematically. Studies also had to report quantitative research analysing the relationship between social engagement and wellbeing, precluding solely descriptive studies. Qualitative studies were excluded because they did not quantify variables and were not the most suited to address the review question. Only papers with full-text in English, Portuguese or Spanish were retained due to a lack of translation resources.

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Table 1. Inclusion and exclusion criteria used in study selection

Inclusion criteria	Exclusion criteria
1. Original articles regarding the connections between social engagement and wellbeing, published in peer-reviewed journals. 2. Participants aged 55 years or older. 3. Community-dwelling participants, *i.e.* living in private housing. 4. Existence of an explicit measure of social engagement. 5. Presence of a wellbeing measure. 6. Analysis of the associations between social engagement and wellbeing.	1. Not an original research article (*e.g.* reviews, theses/dissertations, books, brief reports, technical reports, study protocols, abstracts, letters to the editor, erratum/correction). 2. Qualitative studies. 3. Participants living in institutions, *i.e.* in a place of residence that provides care. 4. Participants from clinical or specific groups. 5. No separate data for participants aged 55 years or older. 6. Exclusive focus on outcomes other than psychological wellbeing (*e.g.* physical health, survival, cognitive functioning). 7. Full-text not in English, Portuguese or Spanish.

Regarding population, this review focuses on late adulthood, including studies in which participants are 55 years of age or older, community-dwelling, and do not belong to clinical or specific groups (*e.g.* conditions or illnesses, such as stroke, cancer or cognitive impairment; disability, such as sensory impairments or movement difficulties; specific life events or demographics, such as widowhood or immigration). In longitudinal studies, we considered participants' age when the exposure was measured.

Concerning the exposure, social engagement was defined as activities done in interaction with others and in person. To be included in the review, studies had to measure one or several of these activities, such as participation in clubs, groups or associations, educational activities, volunteering, visiting family/friends, *etc*. The exposure was circumscribed to the last three levels of the taxonomy proposed by Levasseur *et al*. (2010). Accordingly, studies that measured activities outside this definition or not clearly within it (*e.g.* talking on the phone, shopping, driving, reading books, face-to-face communication) were excluded. Furthermore, studies generically measuring social contact frequency or diversity were excluded because, in such cases, it was impossible to know exactly what was assessed. Social contact might have entailed simply talking to a service provider or crossing paths with a stranger. Papers focused on online/digital activities and paid work were also excluded. Whenever any of these activities were measured together with social engagement ones, without the possibility of isolating the latter, papers were excluded as well.

Regarding outcomes, the aim was to include both hedonic and eudaimonic wellbeing approaches. Therefore, studies in this review had to measure any of the following indicators: psychological wellbeing, satisfaction with life, happiness or positive affect. Initially, it was established that quality of life would be considered as well since this concept also captures positive individual functioning. However, as the study proceeded, it became clear that the review should be more precise by focusing on wellbeing only. So, after full-text examination, the research team

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decided to exclude 11 papers in which the only outcome was quality of life. There were no restrictions based on the nature of the measures, but these were considered in the analysis.

Finally, studies explicitly focused on the COVID-19 pandemic were excluded since this was a very particular context, especially regarding social engagement. Similarly, one study was excluded because data collection occurred during the COVID-19 pandemic. Data collection periods were verified in all eligible articles published since 2020.

Data extraction and analysis

Following the previous procedures, one of the authors used a standardised form (*see* File 2 in the online supplementary material) to extract data from eligible papers, and another author checked the retrieved information. Data extraction focused on: (a) publication details; (b) conceptual and methodological aspects; and (c) main findings. Specifically, for each included paper, the researchers collected information on the title, author(s), authors' scientific affiliations, publication year, journal, journal's country, study country, goals, design, sampling, participants, social engagement concept and measures, wellbeing concept and measures, moderators and mediators, data analysis, results regarding the relationships between social engagement and wellbeing, and results concerning moderators and mediators.

These data were analysed to produce a narrative synthesis comprising a conceptual and methodological description of included studies and the integration of evidence about social engagement and wellbeing associations. A meta-analysis was deemed inadequate since there was considerable heterogeneity among the studies. Results are presented in the text and tables, separating longitudinal and cross-sectional studies. Each table shows sample features, participant's age and gender, measurement strategy for the central variables, main findings and risk of bias assessment.

Risk of bias assessment

Two authors independently analysed the methodological robustness of the included studies. In line with Boland *et al.* (2017), this was done after data extraction to minimise bias. After working independently, the two reviewers compared assessments to resolve disagreements through discussion or with the aid of a third reviewer.

The research team examined several risk-of-bias assessment tools to select the most appropriate one(s). First, the idea was to use a combination of different tools, one for each research design. However, none seemed to fit the body of studies under analysis adequately. Therefore, study quality was assessed using a single instrument – the Quality Assessment Tool for Reviewing Studies with Diverse Designs (QATSDD; Sirriyeh *et al.*, 2012).

The QATSDD has 14 items that apply to quantitative studies, of which one was not used in this review (user involvement in design). The 13 items used cover theoretical framework, goals, research setting, sample size and representativeness, recruitment, data collection tools and procedures, data analysis, strengths and limitations. With the aid of scoring guidance notes, each item is rated on a four-point

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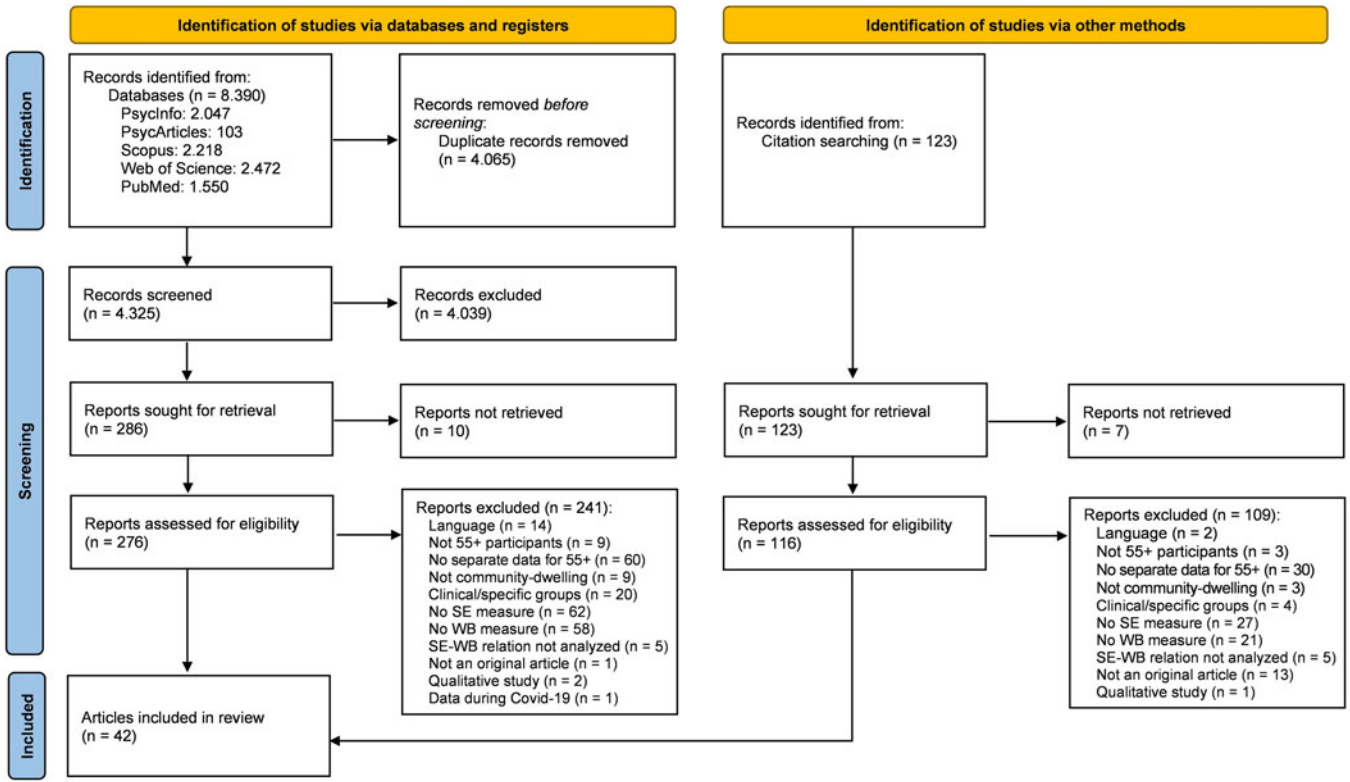

Figure 1. PRISMA flow diagram reporting the study selection process (adapted from Page *et al.*, 2021).
Notes: SE: social engagement. WB: wellbeing.

scale (0–3), producing scores that range from 0 (higher risk of bias) to 39 (lower risk of bias). Even though this type of scale is usually less encouraged (Boland *et al.*, 2017; Siddaway *et al.*, 2019), Sirriyeh *et al.* (2012) state that a scaled response can enhance accuracy in risk of bias assessment. Furthermore, even when using a scale, one can consider its different indicators separately, similar to what Siddaway *et al.* (2019) suggest.

Results

Study selection and description

The PRISMA flowchart (Figure 1) shows that the electronic database search rendered 8,390 records. After duplicate removal, two reviewers independently screened the titles and abstracts of 4,325 references. Subsequently, 276 reports went through full-text analysis, resulting in the retention of 35 articles. The backward citation strategy yielded 123 additional references and, following examination of eligibility criteria, another seven were included. Thus, a final set of 42 papers published between January 2000 and June 2021 were included in this systematic review. Regarding inter-rater reliability, the agreement rate was 92.3 per cent in the first step and 90.8 per cent in the full-text analysis.

Tables 2 and 3 display the characteristics and main findings of included studies for longitudinal and cross-sectional designs, respectively. Overall, scientific production tends to concentrate in more recent years, with 54.8 per cent (N = 23) of the articles published between 2016 and 2021. Only seven papers (16.7%) were published between 2000 and 2010. There are 11 different publication countries (*see* File 3 in the online supplementary material), among which the USA (N = 17; 40.5%) and the United Kingdom (N = 11; 26.2%) stand out. There is, however, a higher dispersion regarding the countries where studies were conducted – 15 nations with similar frequencies. Studies conducted in Australasian countries predominate (N = 24; 57.1%), followed by the American continent (N = 10; 23.8%) and finally by Europe (N = 8; 19.1%). Based on authors' institutional affiliations, papers were categorised into broad scientific domains (*see* File 3 in the online supplementary material), revealing a predominance of Social and Behavioural Sciences (N = 24; 60.0%), followed by Health Sciences (N = 17; 42.5%) and Social Work (N = 9; 22.5%).[1]

In what refers to methods, the majority (N = 28; 66.7%) of the studies are cross-sectional and 33.3 per cent (N = 14) are longitudinal. Except for one experimental study (Pettigrew *et al.*, 2020), all follow observational designs. Globally, 87.8 per cent (N = 36; one missing value) use probability samples, with a minimum of 101 participants and a maximum of 31,428 (mean = 4,430.1; standard deviation (SD) = 5,647.72). Females are predominant in 75.0 per cent (N = 30; two missing values) of the cases, even though samples tend to be fairly balanced in gender. In most studies (N = 32; 76.2%), the established age for older participants is 60 or 65 years.

Regarding the risk of bias, QATSDD scores vary from 20 to 33 in a range of 0–39. All included studies are above 50 per cent of the possible maximum score. Globally, 16 (38.1%) papers have a score between 20 and 24; 17 (40.5%) have a score between 25 and 29; and 9 (21.4%) have a score of 30 or more. Overall, studies are less robust in assessing the psychometric qualities of measurement tools,

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Table 2. Characteristics and main findings of longitudinal studies included in the review

Author (year)	Country	Sample nature, minimum age and size	Participants		Social engagement measure	Wellbeing measure	Main findings	RoB
			Age	Female %				
Bae and Kim (2021)	South Korea	Probability sample 65+ N = 4,164	Mean = 73.0; SD = 6.3	58.2	Several activities (5)	Standardised (Other)	↑SE frequency → ↑WB	22
Clark and Lee (2021)	USA	Probability sample 72[1] N = 3,086	72	52.0	Several activities (17)	Non-standardised (1 item) + standardised (PWBS)	↑SE frequency → ↑WB	23
Fancourt and Steptoe (2018)	UK	Probability sample 55+ N = 2,548	Mean = NI; SD = NI Groups: 55–64 (59.0%); 65+ (41.0%)	NI	Several activities (8)	Standardised (SWLS)	SE presence → ↑WB	25
Hoshino *et al.* (2020)	Japan	Probability sample 65+ N = 706	Mean = NI; SD = NI	52.2	Several activities (2)	Standardised (Other)	SE presence → ↑WB	20
Huxhold *et al.* (2013*a*)	Germany	Probability sample 65+ N = 2,034	Mean = 73.7; SD = 5.7	47.9	Several activities (9)	Standardised (SWLS; PANAS)	↑SE frequency → ↑WB	33
Huxhold *et al.* (2013*b*)	Germany	Probability sample 40+ N = 4,862 (65+ N = 2,032)	All: NI 65+ mean = 73.7; SD = NI	All: 48.6 65+: 47.9	Several activities (9)	Standardised (SWLS; PANAS)	↑SE frequency → ↑WB	30

(*Continued*)

Table 2. (*Continued.*)

Author (year)	Country	Sample nature, minimum age and size	Participants		Social engagement measure	Wellbeing measure	Main findings	RoB
			Age	Female %				
Jiang *et al.* (2019)	Australia	Probability sample 60+ N = 1,591	Mean = 66.5; SD = 1.5	48.0	Single activity	Standardised (SWLS)	↑Vol. frequency → ↑WB	26
Li *et al.* (2013)	Taiwan	Probability sample 58+ N = 1,847	Mean = 65.9; SD = 7.7	48.1	Single activity	Standardised (LSI-A)	Vol. presence → ↑WB	28
Lu *et al.* (2021)	Japan	Convenience sample 65+ N = 7,226	Mean = 73.1; SD = 5.1	51.1	Several activities (3)	Standardised (SWLS)	↑SE frequency/ diversity → ↑WB	30
Matthews and Nazroo (2021)	UK	Probability sample 63+ N = 3,740	All: NI Volunteers: males – mean = 72.4; females – mean = 71.4; non-volunteers: males – mean = 74.5; females – mean = 74.1 (SD = NI)	58.3	Single activity	Standardised (SWLS)	Vol. presence → ↑WB	27
Okabayashi and Hougham (2014)	Japan	Probability sample 64+ N = 498	All: NI Males: mean = 70.2; SD = 3.9; females: mean = 70.3; SD = 4.1	44.8	Several activities (2)	Standardised (LSI-A)	↑SE frequency → ↑WB	30

Pettigrew *et al.* (2020)	Australia	Convenience sample 60+ N = 445	Mean = 70.4; SD = 6.0	56.0	Single activity	Non-standardised (1 item) + standardised (PWBS)	Vol. presence → ↑WB	25
Piliavin and Siegl (2007)	USA	Probability sample 64[1] N = 4,000[1]	64	53.6	Several activities (5)	Standardised (PWBS)	↑Vol. frequency/ diversity → ↑WB	30
Van Willigen (2000)	USA	Probability sample 25+ N = 2,867 (60+ N = 705)	All: NI 60+: volunteers – mean = 68.7; SD = 6.2; non-volunteers – mean = 70.2; SD = 7.3	All: 53.2 60+: 60.1	Single activity	Non-standardised (1 item)	Vol. presence; ↑vol. frequency/ diversity → ↑WB	24

Notes: Only wellbeing outcomes considered for review purposes are reported. USA: United States of America. UK: United Kingdom. NI: no information available. LSI-A: Life Satisfaction Index-A (Neugarten et al., 1961). PANAS: Positive and Negative Affect Schedule (Watson *et al*., 1988). PWBS: Psychological Well-Being Scales (Ryff, 1989*b*). SWLS: Satisfaction with Life Scale (Diener *et al*., 1985). Other: other instruments. ↑: Higher. SE: social engagement variable. WB: wellbeing variable. Vol.: volunteering. RoB: risk of bias assessment result (possible range: 0–39 points). 1. Data correspond to the study's last wave since it was the only one considered in analysis due to participants' age at exposure time. The study follows a cohort mostly born in 1938/1939.

Table 3. Characteristics and main findings of cross-sectional studies included in the review

Author (year)	Country	Sample nature, minimum age and size	Participants		Social engagement measure	Wellbeing measure	Main findings	RoB
			Age	Female %				
Blace (2012)	Philippines	Probability sample 60+ N = 780	Mean = 68.5; SD = NI	57.7	Several activities (19)	Standardised (Other)	↑SE frequency ↔ ↑WB	21
Chan (2018)	Hong Kong	Probability sample 18+ N = 925 (55+ N = 341)	All: mean = NI; SD = NI 55+: mean = NI; SD = NI Groups: 18–34 (25.7%); 35–54 (37.1%); 55+ (36.9%)	All: 52.4 55+: 50.1	Several activities (4)	Standardised (Other)	↑SE activities ↔ ↑WB	24
Gautam *et al.* (2007)	Nepal	Convenience sample 60+ N = 489	Mean = 69.9; SD = 8.1	49.5	Several activities (3)	Standardised (SWLS)	SE presence ↔ ↑WB	28
Gilmour (2012)	Canada	Probability sample 65+ N = 16,369	Mean = NI; SD = NI Groups: 64–74 (55.1%); 75–84 (33.6%); 85+ (11.2%)	54.9	Several activities (8)	Non-standardised (1 item)	↑SE activities ↔ ↑WB	24
Greenfield and Marks (2004)	USA	Probability sample 65+ N = 373	Mean = 69.7; SD = 2.9	57.0	Single activity	Non-standardised (several items) + standardised (PWBS)	Vol. presence ↔ ↑WB	28
Hsu *et al.* (2016)	Taiwan	Probability sample 18+ N = 2,199 (65+ N = 397)	All: mean = NI; SD = NI 65+: mean = 73.8; SD = 6.6	All: 50.6 65+: 51.6	Other strategies (NA)	Non-standardised (1 item)	NA in the 65+ group	20

Joe *et al.* (2019)	India	Probability sample 60+ N = 9,174	Mean = NI; SD = NI Groups: 60–64 (35.7%); 65–69 (27.7%); 70–74 (17.3%); 75–79 (9.3%); 80+ (10.1%)	52.6	Several activities (5)	Non-standardised (several items)	↑SE frequency ↔ ↑WB	23
Lai *et al.* (2021)	China	Probability sample 60+ N = 969	Mean = 70; SD = NI	57.0	Other strategies (NA)	Non-standardised (1 item)	NA	30
Lee and Lee (2011)	South Korea	Probability sample 65+ N = 4,155	All: NI Males: mean = 72.3; SD = 5.8; females: mean = 73.5; SD = 6.6	58.2	Several activities (6)	Non-standardised (several items)	↑SE frequency ↔ ↑WB	24
Lee and Lee (2013)	South Korea	Probability sample 65+ N = 4,152	All: NI Less educated: mean = 73.8; SD = 6.6; Better educated: mean = 71.0; SD = 5.0	58.2	Other strategies (7)	Non-standardised (several items)	↑SE frequency ↔ ↑WB	23
Lee and Choi (2020)	South Korea	Probability sample 65+ N = 9,839	Mean = 73.9; SD = 6.5	57.3	Several activities (3)	Non-standardised (several items)	SE presence ↔ ↑WB	22
Li *et al.* (2018)	China	NI 60+ N = 696	Mean = 68; SD = 7.1	50.9	Several activities (3)	Non-standardised (several items)	↑SE frequency ↔ ↑WB	25
Litwin and Stoeckel (2013)	Several	Probability sample 60+ N = 14,728	Mean = NI; SD = NI Groups: 60–79 (82.0%); 80+ (18.0%)	57.4	Several activities (7)	Non-standardised (1 item)	↑SE frequency/ diversity ↔ ↑WB	29

(*Continued*)

Table 3. (*Continued.*)

Author (year)	Country	Sample nature, minimum age and size	Participants		Social engagement measure	Wellbeing measure	Main findings	RoB
			Age	Female %				
Mair and Thivierge-Rikard (2010)	USA	Probability sample 60+ N = 1,046	Mean = 72.6; SD = 7.1	68.0	Several activities (4)	Non-standardised (several items)	↑SE frequency ↔ ↑WB	25
McMunn *et al.* (2009)	UK	Probability sample 60+ N = 5,384	Mean = NI; SD = NI	62.4	Several activities (3)	Standardised (SWLS)	Vol. presence ↔ ↑WB	26
Palma-Candia *et al.* (2016)	Chile	Convenience sample 60+ N = 101	Mean = 72.1; SD = 7.2	57.4	Several activities (3)	Standardised (PWBS)	SE presence ↔ ↑WB	22
Pilkington *et al.* (2012)	Australia	Probability sample 55+ N = 561	Mean = 65.4; SD = 8.3	51.5	Single activity	Standardised (SWLS; PANAS)	Vol. presence ↔ ↑WB	29
Ponce *et al.* (2014)	Chile	Probability sample 60+ N = 31,428	Mean = NI; SD = NI Groups: 65–79 (83.0%); 80+ (17.0%)	43.0	Other strategies (11)	Non-standardised (1 item)	SE presence ↔ ↑WB	23
Ryu and Heo (2018)	South Korea	Convenience sample 60+ N = 188	Mean = 74.9; SD = 5.5	64.3	Several activities (6)	Standardised (SWLS)	SE frequency ↔ ↑WB	23

Srivastava *et al.* (2021*a*)	India	Probability sample 60+ N = 9,141	Mean = NI; SD = NI Groups: 60–69 (61.8%); 70–79 (27.5%); 80+ (10.7%)	52.6	Several activities (5)	Non-standardised (several items)	SE presence ↔ ↑WB	27
Srivastava *et al.* (2021*b*)	India	Probability sample 60+ N = 4,604	Mean = 68; SD = NI	27.4	Several activities (5)	Non-standardised (several items)	SE presence ↔ ↑WB	25
Tang *et al.* (2019)	USA	Probability sample[1] 55+ Sample 1 (S1): N = 1,035 Sample 2 (S2): N = 7,718	Mean = NI; SD = NI Groups: S1 – 55–64 (38.1%); 65–79 (40.9%); 80+ (21.0%). S2 – 55–64 (31.5%); 65–79 (46.5%); 80+ (22.0%)	S1: 56.2 S2: 61.9	Other strategies (4)	Non-standardised (1 item)	S1: NA S2: Vol. presence ↔ ↑WB; ↑SE frequency ↔ ↑WB	30
Toohey *et al.* (2018)	Canada	Probability sample 65+ N = 7,474	Mean = 72.6; SD = NI	48.3	Several activities (8)	Standardised (SWLS)	↑SE frequency ↔ ↑WB	33
Tosheva (2020)	Bulgaria	Probability sample 55+ N = 2,001	Mean = NI; SD = NI	NI	Several activities (7)	Non-standardised (1 item)	SE presence ↔ ↑WB	22
Vozikaki *et al.* (2017)	Several	Probability sample 65+ N = 7,025	Mean = 73.1; SD = 6.3	52.9	Several activities (7)	Non-standardised (1 item)	↑SE frequency ↔ ↑WB	32
Windsor *et al.* (2008)	Australia	Probability sample 60+ N = 2,136	Range = 60–64 Mean = NI; SD = NI	48.0	Single activity	Standardised (SWLS; PANAS)	↑Vol. frequency ↔ ↑WB	29

(*Continued*)

Table 3. (*Continued.*)

Author (year)	Country	Sample nature, minimum age and size	Participants		Social engagement measure	Wellbeing measure	Main findings	RoB
			Age	Female %				
Yang and Pang (2018)	China	Probability sample 60+ N = 2,773	Mean = 71.4; SD = 8.7	52.9	Several activities (5)	Non-standardised (several items)	↑SE diversity ↔ ↑WB	27
Zhang *et al.* (2015)	China	Probability sample 50+ N = 3,418 (65+ N = 2,250)	All: mean = 69.9; SD = 10.3 65+: mean = 75.4; SD = 8.1	All: 52.4 65+: NI	Several activities (6)	Non-standardised (several items)	↑SE diversity ↔↑WB	28

Notes: Only wellbeing outcomes considered for review purposes are reported. USA: United States of America. UK: United Kingdom. NI: no information available. PANAS: Positive and Negative Affect Schedule (Watson *et al.*, 1988). PWBS: Psychological Well-Being Scales (Ryff, 1989*b*). SWLS: Satisfaction with life scale (Diener *et al.*, 1985). Other: Other instruments. ↑: Higher. SE: social engagement variable. WB: wellbeing variable. Vol.: volunteering. NA: no association. RoB: risk of bias assessment result (possible range: 0–39 points). 1. The study focuses on two different samples, both probabilistic.

explaining the choice of sample size and describing data collection procedures. Conversely, the risk of bias is lower regarding the presentation of study goals, use of representative samples, and fit between the research question and analysis.

Conceptualisation and measurement

As expected, there is considerable diversity in how the exposure variable is named, even within the same paper. Taking into account authors' preferred designations, *social participation* is the most frequent (N = 11; 26.2%) and *social engagement* appears next (N = 5; 11.9%), closely followed by *social activity/activities* (N = 4; 9.5%) and, then, *community involvement* and *activity/activity participation* (N = 3; 7.1%). However, there are 12 different terms, besides nine articles (21.4%) specifically focused on volunteering (for additional information on conceptualisation and measurement, *see* File 3 in the online supplementary material).

Among the 42 articles, 11 (26.2%) do not have any conceptual definition or framework regarding social engagement, and an equal number provide only the latter. The remaining 20 (47.6%) offer explicit definitions. Authors place social engagement/participation at the intersection between activities and interactions. It is described as performing activities embedded in social relationships, and a few authors assert its different forms (*e.g.* formal or informal, self or other-oriented).

Regarding assessment strategies, there are no standardised instruments. As shown in Tables 2 and 3, most studies operationalise this variable as participation in several different activities or organisations (N = 29; 69.0%), but eight (19.1%) studies assess involvement in a single activity and five (11.9%) use different or mixed strategies. There is also heterogeneity in the number of activities assessed (minimum = 1; maximum = 19; mean = 5.18; SD = 4.0) and in indicators' nature. Some researchers use specific activities, others use activity types and others use groups/organisations.

Within the wellbeing outcomes covered in this review, hedonic indicators prevail. Satisfaction with life is the most frequent indicator (N = 29; 69.1%), with positive affect present in six (14.3%) papers and happiness present in four (9.5%). However, eudaimonic wellbeing is used in seven (16.3%) studies.[2]

Notably, 19 articles (45.2%) do not include any definition or conceptual discussion of the dependent variable. There is some conceptual or theoretical discussion in 12 (28.6%) articles. Finally, 11 (26.2%) articles explicitly define wellbeing. Overall, existing conceptualisations highlight the following aspects: (a) positive orientation towards life and positive psychological functioning; (b) individual nature; and (c) multi-dimensionality. As to multi-dimensionality, on the one hand, authors distinguish experienced and cognitive components of subjective wellbeing; on the other, they distinguish hedonic and eudaimonic wellbeing.

To measure wellbeing, researchers mostly use standardised instruments (N = 23; 54.8%). Nevertheless, there are also non-standardised measures composed of several items (N = 11; 26.2%) and an equal number of cases that use only one item. In line with the conceptual tendencies described above, the Satisfaction with Life Scale (Diener *et al.*, 1985) is predominant (N = 12; 28.6%) among standardised instruments. Ryff's Psychological Wellbeing Scales (Ryff, 1989*b*) are used in five cases (11.9%).

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Relationships between social engagement and wellbeing in late life

Overall, despite differences in measurement, research supports that those with higher participation in social activities display improved wellbeing (Tables 2 and 3). There is ample evidence for satisfaction with life, but also for positive affect, happiness and eudaimonia. These relationships are observed throughout diverse research strategies: in cross-sectional and longitudinal studies, when activities are analysed individually or as a whole, and in comparisons with continuous or categorical social engagement variables.

After adjustment for sociodemographic and health variables, these associations remain significant in some studies while, in others, social activities lose their predictive power. Nevertheless, in all longitudinal studies, the relationships in question persist after introducing covariates. The exception is the paper by Hoshino *et al.* (2020), in which it is unclear whether these were controlled for. Furthermore, some longitudinal studies also control for baseline wellbeing (Piliavin and Siegl, 2007; Matthews and Nazroo, 2021) and reversed causality (Van Willigen, 2000; Fancourt and Steptoe, 2018), offering further proof that social engagement is a significant wellbeing predictor.

When specific activities are investigated, volunteering stands out as a relevant wellbeing correlate. Apart from that, studies almost always find significant associations between some social activity or group and wellbeing, but results vary regarding which. Only two studies did not find any significant associations.

In what refers to moderators, several studies suggest that the relationship between social engagement and wellbeing is stronger or more beneficial in old age, compared with younger life periods (Van Willigen, 2000; Chan, 2018), but also in older ages within late life (Zhang *et al.*, 2015; Fancourt and Steptoe, 2018; Tosheva, 2020). Contrarily, Litwin and Stoeckel (2013) observed significant associations in the 60–79 age group but not in the 80+. Gender interactions also appear in the literature. Globally, studies find more significant associations in women than men (Gautam *et al.*, 2007; Windsor *et al.*, 2008; McMunn *et al.*, 2009; Lee and Lee, 2013; Zhang *et al.*, 2015).

Furthermore, there are studies that show no significant associations between the central variables in participants with higher educational attainment (Lee and Lee, 2013; Tosheva, 2020) and no financial difficulties (Tosheva, 2020). Besides that, the beneficial effect of volunteering is more significant in those who lost more friends (Jiang *et al.*, 2019) and with lower social integration (Piliavin and Siegl, 2007). Finally, reciprocity, *i.e.* feeling appreciated for the activities one performs, also determines the effects of such actions on wellbeing (McMunn *et al.*, 2009; Matthews and Nazroo, 2021).

Additionally, there is evidence of a cumulative effect whereby the greater the social engagement, the higher the wellbeing (Piliavin and Siegl, 2007; McMunn *et al.*, 2009; Gilmour, 2012; Toohey *et al.*, 2018; Lu *et al.*, 2021; Matthews and Nazroo, 2021). In contrast, some studies (Van Willigen, 2000; Windsor *et al.*, 2008; Pilkington *et al.*, 2012; Vozikaki *et al.*, 2017) suggest the existence of non-linear trends in which the association between social engagement and wellbeing declines, disappears or even becomes negative after a certain frequency/intensity. It should be noted that three of these studies focus on volunteering, and the fourth examines productive activities (volunteering, caring and providing help).

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Lastly, findings are scarcer regarding the mechanisms that might help explain the associations between social engagement and wellbeing. Three studies examine social support, with mixed conclusions (Gilmour, 2012; Pilkington *et al.*, 2012; Lee and Lee, 2013). Others suggest that positive social exchanges (Pilkington *et al.*, 2012), a sense of mattering (Piliavin and Siegl, 2007) and cognitive functioning (Bae and Kim, 2021) might be significant mediators.

Discussion

This study aims to summarise current knowledge about the role of social engagement in ageing well. The authors examined 42 studies, addressing conceptualisation, measurement and main findings.

Firstly, results show much diversity in how social activity is named and measured. Concurrently, some researchers assess the same activities even while naming the independent variable differently. Several authors (Zhang *et al.*, 2015; Vozikaki *et al.*, 2017; Toohey *et al.*, 2018; Tosheva, 2020; Lai *et al.*, 2021) mention obstacles in defining and measuring social engagement/participation, following previous literature reviews (Levasseur *et al.*, 2010; Adams *et al.*, 2011; Douglas *et al.*, 2017). Therefore, this concept seems broad and diffuse despite accumulating scientific evidence and previous conceptual contributions (*e.g.* Levasseur *et al.*, 2010).

Less than half the papers provide definitions of the independent variable. Although existing definitions align with conceptual proposals in the domain (Rowe and Kahn, 1997; Bukov *et al.*, 2002; Levasseur *et al.*, 2010; Aroogh and Shahboulaghi, 2020), in other studies, social engagement is established as a potential wellbeing predictor based on previous empirical data, rather than a theoretical framework. We claim that research about social engagement must stem from a robust theoretical base and adopt clear operational definitions of this variable. In other words, it should be known precisely what is under study and why.

Despite these difficulties, researchers' efforts to refine assessment strategies are evident and have the merit of stressing several features of social engagement that might impact wellbeing. In fact, social engagement should not be taken as a whole or reduced to single indicators since, as Huxhold *et al.* (2013*a*: 13) put it, 'different characteristics of the social network and different facets of wellbeing and health form a complicated developmental dynamic'. Measures of social engagement should aggregate several indicators, such as activity content, intensity, diversity and perceived importance. Adams *et al.* (2011: 704) state that 'Optimal measures of social and leisure activity should clearly specify the "active ingredients" that the researcher wishes to examine and identify categories that are mutually exclusive'.

In what refers to wellbeing, hedonic outcomes prevail over eudaimonic ones. Even though standardised instruments appear in more than half of the studies, non-standardised and single-item measures are still relatively frequent. Furthermore, several papers do not define or discuss the concept. This sustains the notion of Vozikaki *et al.* (2017) that the lack of a comprehensive conceptual and methodological wellbeing framework hinders the study of this construct.

In contrast, some studies comprise both hedonic and eudaimonic measures, which signals the growing recognition of both wellbeing conceptions as relevant research avenues. Researchers (Greenfield and Marks, 2004; Piliavin and Siegl, 2007; Clark

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and Lee, 2021) affirm that comparing various wellbeing indicators in the same individuals is necessary to understand how such indicators associate with each other and with distinct activity types. In line with Ryan and Deci (2001), hedonic enjoyment can be more associated with the absence of problems and relaxing activities, while eudaimonia is linked to activities that offer challenge, effort and personal growth. As already said, hedonism and eudaimonism can be complementary, and their determinants, including age, might differ (Ryan and Deci, 2001; Huta and Waterman, 2014; Ryff *et al.*, 2021). Hence, to fully understand the impact of social engagement on older adults' wellbeing, it is necessary to analyse aspects of immediate pleasure and human flourishing simultaneously. Furthermore, it is important to consider what each of us experiences as emotionally meaningful and worthy of investment.

Regarding the primary review question, research comparability is limited because included studies primarily rely on self-reports, have very different sample sizes and measures, and lack explicit theoretical stances. Nevertheless, there is evidence of positive associations between the central variables, in which longitudinal studies offer particular insight. Research globally supports that community-dwelling older adults who are more socially involved display improved wellbeing. Simultaneously, this is an oversimplification since it also became apparent that this relationship depends on individual characteristics and features of social engagement itself.

Findings suggest that social engagement may be especially beneficial for older and more vulnerable people. Although this evidence is preliminary, previous research on quality of life also found stronger associations with social engagement in older ages (Park *et al.*, 2015; Nimrod and Shrira, 2016). Moreover, other studies show that social activities buffer declines in older adults' wellbeing and quality of life (Nimrod and Shrira, 2016; Sharifian and Grühn, 2019). Since age is associated with wellbeing changes, particularly declines in personal growth and purpose in life (Ryan and Deci, 2001; Ryff *et al.*, 2021), social engagement can act as a compensation resource for wellbeing in later life. Perhaps this protective effect extends to socioeconomic and social disadvantages.

In turn, the moderator effect of reciprocity indicates that the gains of social activities can depend on their perceived rewards and meaning, following socioemotional selectivity (Carstensen *et al.*, 1999; Carstensen and Löckenhoff, 2003). Possibly, despite being socially involved, some individuals are not proactively selecting the activities most suited to their goals. As to the intensity of social engagement, non-linear associations suggest there may be optimal participation levels, with moderate involvement being more beneficial. However, the studies that observed this trend assessed more-demanding activities, suggesting this is something to consider when exploring social engagement thresholds and cumulative effects.

The included studies are quite diverse regarding countries of origin. There is evidence of positive associations between social activities and wellbeing across 15 nations. On the one hand, this speaks to the global relevance of social engagement for ageing well; on the other, this issue must be framed in terms of macro-contexts since both nations' longstanding cultural features and policy interventions can impact individual action (Hank, 2011; Principi *et al.*, 2018). Interventions must be context-sensitive (Lakomý, 2021) and '[c]ulturally blind "one-size-fits-all" strategies to foster social participation and productive aging are thus unlikely to be

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successful' (Hank, 2011: 537). So, although the present study does not focus on social engagement determinants, these aspects deserve consideration.

As with any study, this systematic review has limitations. First, some relevant papers might have been missed due to exclusion criteria. Articles published in languages other than English, Portuguese and Spanish before 2000 were excluded due to resource limitations. Studies with a qualitative design may provide relevant evidence but do not suit the review's aims. Grey literature was omitted, which might have impacted results, particularly regarding non-significant findings. However, the reviewers favoured a systematic search and peer-reviewed sources. Furthermore, the term leisure was not used in the literature search, which could have precluded some pertinent articles. Still, leisure can entail individual activities.

As mentioned, future research should use measurement strategies that combine different social engagement aspects and analyse hedonic and eudaimonic wellbeing. It is also important to explore age differences, paying attention to the agendas of different life periods and how these interact with social activities. Similarly, it is essential to examine mediators and moderators anchored in a developmental perspective. This includes sociodemographic characteristics that structure individual opportunities and constraints, but also social network variables and social activities' demands, degree of choice, reciprocity and perceived value. Likewise, it is necessary to explore how macro aspects shape social engagement and its associations with wellbeing. The buffering effect of social engagement on the wellbeing of vulnerable groups, potentially working as a compensatory mechanism, also deserves further scrutiny since it can be key in designing effective policies and practices.

Conclusion

To conclude, this paper reviews a considerable number of studies. It explores conceptualisation, measurement and findings to provide a snapshot of available knowledge. Robust evidence supports a relationship between social engagement and wellbeing in community-dwelling older adults. However, there is still a long way to go until we can unravel all the nuances of this relationship. Current literature raises many questions and indicates the need to adopt sound conceptual frameworks, along with comprehensive and clear measures.

In any case, this issue deserves further inquiry since social engagement is a modifiable factor that can be especially valuable for those more vulnerable. Social interventions and policies might target involvement in social activities as an important developmental resource to improve people's lives.

Supplementary material. The supplementary material for this article can be found at https://doi.org/10.1017/S0144686X24000011.

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Competing interests. The authors declare no competing interests.

Ethical standards. This manuscript relies on secondary data but is part of a research project that received ethical approval from the Ethics Committee of the Faculty of Psychology and Education Sciences at University of Porto (reference 2021/04-07).

Notes

1 There are two missing values and the sum of percentages exceeds 100 per cent because some papers include more than one scientific domain.

2 The sum of percentages exceeds 100 per cent because some papers include more than one wellbeing outcome. *Psychological wellbeing* includes the following indicators: *psychological wellbeing*, *eudaimonia*, *purpose in life* and *personal growth*.

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