



Lay perspectives of successful ageing: A systematic review and meta-ethnography

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3 **Lay perspectives of successful ageing: A systematic review and meta-**
4 **ethnography**
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45 Running head: Lay perspectives of successful ageing
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Article Focus

- Currently there is no consensus definition of successful ageing
- The current study provides a comprehensive snapshot of exploratory qualitative studies of layperson perspectives of successful ageing

Key Messages

- Successful ageing is much more complex than simply physical health
- Psychosocial, e.g. attitude, and external, e.g. finances, factors were the most frequently mentioned components of successful ageing
- Layperson perspectives advocate the inclusion of components of successful ageing that go beyond physical health

Strengths

- Article conducts a systematic review of qualitative studies

Limitations

- Meta-ethnography involves the subjective interpretation of secondary data that is, itself, a subjective interpretation
- Languages that did not have “successful ageing” in their vernacular used approximations of the term

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3 The review and search protocol was planned by TDC, BS and CB.
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5 TDC conducted the primary article review and data extraction; JP conducted a
6
7 second, independent, screen of the articles. TDC wrote the manuscript, which
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9 was edited and reviewed by JP, BS and CB.
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14 There is no additional data available.
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ABSTRACT

Objectives: The aim of the current study was to conduct a systematic review of lay perspectives of SA, synthesize these data using a meta-ethnographic framework and to provide a snapshot of extant lay perspectives of SA.

Design: A systematic review of layperson perspectives of SA was conducted across MedLine, PsycInfo, CINAHL, EMBASE and ISI Web of Knowledge.

Participants: Peer-reviewed studies conducting qualitative exploratory investigations of lay perspectives of SA were included. Included studies were coded and analysed using NVivo 9 to examine underlying themes of SA.

Results: The search strategy identified 10,580 articles; 21 articles met inclusion criteria. Results revealed psychosocial components, notably engagement and personal resources, as integral components of SA in more studies than “physiological” components, such as longevity or physical functioning. These results also highlight the profound underrepresentation of non-Western countries and the cultural homogeneity of research participants.

Conclusions: The current study reveals the importance laypersons place on the incorporating psychosocial components into multidimensional models of SA as well as highlights the need for increased research with underrepresented populations.

Keywords: successful ageing, healthy ageing, lay perspectives, systematic review

INTRODUCTION

Despite an increasing focus on the improvement of quality of life throughout the life-course, there is no generally accepted definition of what it means to age well. What successful ageing (SA) is, or is not, is a contentious issue. Since the inception of the term, subjective interpretations of SA have generated an increase in disparate perspectives and conceptualisations. Depending on the context, objectives and sample characteristics of a study, the definition of SA has varied significantly¹. In the absence of a consensus definition, the generalisability of SA studies has been severely impeded, inhibiting cross-study comparisons.

The most popular model of SA, Rowe & Kahn's^{2,3} conceptualisation of SA is primarily biomedical. This tri-partite model suggests that high cognitive/physical functioning, low risk of illness, and active engagement comprise SA. This widely used model provides the theoretical underpinnings for many operational definitions of SA [1]. Although these researcher-driven conceptualizations of SA are popular, they have, however, been subject to criticism due to their biomedical focus, without explicit input of layperson perspectives⁴.

The aim of the study is to provide a comprehensive review of studies examining lay perspectives of SA, in order to augment the largely quantitatively dominated SA literature with insights from qualitative research. Through the acknowledgement of qualitative data, quantitative studies may be better informed, with increased practical relevance and impact. This review expands upon a previous review of lay perspectives by Hung, et al.⁵ through a broadened search strategy, an augmented temporal search span and the

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3 inclusion of non-English articles. Further, whilst Hung, et al.⁵ focused on the
4
5 concept of “healthy ageing”, the current review shifts its focus to SA.
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7 8 **METHODS**

9 10 **Search Strategy**

11 A systematic review of the literature in PubMed, PsycInfo, ISI Web of
12 Knowledge, EmBase and the Cumulative Index of Nursing and Allied Health
13 Literature (CINAHL) databases was conducted between May 31 and June 7,
14
15 2011; all literature published before June 1, 2011 was eligible for inclusion.
16
17 The specific search strategy includes “successful ageing” along with seven
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19 successful ageing synonyms: robust ageing, optimal ageing, positive ageing,
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21 healthy ageing, productive ageing, effective ageing and ageing well. These
22
23 phrases were used with both “aging” and “ageing” spelling conventions, put in
24
25 quotations, and linked via the Boolean operator “OR”. Where possible, the
26
27 wildcat operator “*” was inserted to capture all permutations of the phrase.
28
29 Furthermore, where possible, in a given database, non-human studies were
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31 excluded. For example the search input for the phrase “successful ageing” in
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33 PubMed was "successful* ageing" OR "successful* ageing", which was
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35 searched as “successful* ageing”[All Fields] OR "successful* ageing"[All
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37 Fields] AND "humans"[MeSH Terms].
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39 This process was repeated across the six databases using the seven SA
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41 related phrases. Relevant articles referenced in the captured studies were
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43 also included.
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51 52 **Study Inclusion**

53 Peer-reviewed research articles conducting exploratory qualitative
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55 research with laypersons on the components of SA were included. Studies
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3 discussing synonyms of SA without specific reference to SA, or components
4 of SA, were excluded. Non-peer reviewed articles such as dissertations,
5 opinion pieces, and letters to the editor, as well as review articles, were
6 excluded.
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10 As the intent was to provide a comprehensive review of operational
11 definitions of SA, studies were neither excluded nor weighted based on study
12 characteristics or methodological rigor, as there is no established
13 methodology for quality assessment of construct reviews ⁶.
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20 **Data Extraction**

21 Abstract review was conducted (TDC & JP), to identify relevant articles
22 for full-text extraction. Disagreements regarding inclusion were resolved by
23 discussion. No language restrictions were made; non-English articles were
24 translated by multilingual staff at the Cambridge Institute of Public Health,
25 Cambridge University. Information regarding the definitions and components
26 of SA, the ranked importance of SA components and the percentage of
27 individuals listing each SA component were extracted.
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38 **Synthesis**

39 Themes created by study authors and direct quotes from study
40 participants were identified, coded and analyzed in NVIVO 9. The different
41 components of SA were analyzed using a meta-ethnographic framework;
42 synthesizing and integrating inter-study themes ⁷. A hierarchy of SA
43 components was identified through the identification of overarching themes
44 and the components constituting these broad themes with progressively more
45 specific items.
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55 **RESULTS**

Included Studies

The search strategy identified 10,580 articles, 5,244 of which were duplicates, leaving 5,336 for screening. Abstract screening eliminated 4,895 articles and full-text screening eliminated 420 articles, 21 studies met inclusion criteria (Figure 1).

<INSERT FIGURE ABOUT HERE>

Study characteristics

Exploratory studies were primarily conducted in the US (n=12) and Canada (n=3) using purposive sampling with community dwelling populations of Caucasian older adults. The sample size ranged from 14 to 1771, with a mean of 208 (SD=423) (Table 1).

<INSERT TABLE ABOUT HERE>

Components of SA

All studies (n=21) included psychosocial items, 81% (17) included biomedical items and 62% (13) included external items.

The biomedical items were grouped into cognitive & mental, health, health maintenance behaviors, longevity, and physical health & functioning items (Figure 2).

<INSERT FIGURE ABOUT HERE>

1
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3 External items were grouped into environmental factors and finances
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5 (Figure 3).
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10 <INSERT FIGURE ABOUT HERE>
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14 Psychosocial factors were grouped into acceptance, adjustment,
15 maintenance, spirituality, community, social roles, quality of life,
16 independence, prevention & remediation, self-awareness, perspective, and
17 engagement (Figure 4).
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25 <INSERT FIGURE ABOUT HERE>
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30 A comparison of the percentage of respondents reporting each of the
31 constituent components of SA revealed physical functioning/disability was the
32 most often mentioned, followed by life-satisfaction/wellbeing, engagement,
33 personal resources and health status. Longevity was most infrequently
34 mentioned (Figure 5). North American studies (n=15) most often mentioned
35 engagement (93%, 14), perspective (87%, 13) and self-awareness (80%, 12)..
36 Australian studies (n=2) mentioned engagement (100%, 2), perspective
37 (100%, 2), independence (100%, 2) and quality of life (100%, 2) most often.
38 All Asian studies (n=2), mentioned engagement (100%, 2), independence
39 (100%, 2), and quality of life (100%, 2), finances (100%, 2), environment
40 (100%, 2) and physical health (100%, 2). The South American study (n=1)
41 mentioned engagement, perspective, self-awareness, independence,
42 acceptance, finances, environment and health. The British study mentioned
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3 engagement, perspective, self-awareness, acceptance, quality of life,
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5 adjustment, finances, environment, cognitive & mental and health
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7 maintenance behaviors.
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11 <INSERT FIGURE ABOUT HERE>
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14 15 16 **DISCUSSION**

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18 The components of SA identified by the exploratory studies captured in
19
20 the current review reflect a divergence from traditional biomedical
21
22 conceptualizations of SA, highlighting the multidimensionality and
23
24 psychosocial emphasis of SA. In contrast to popular models of SA,
25
26 components of personal resources and engagement were the most frequently
27
28 mentioned components of SA. Furthermore, external factors, such as finances
29
30 and environment, which are absent in the majority of SA conceptualizations,
31
32 were also frequently mentioned. The current review highlights the importance
33
34 of psychosocial and external factors in SA definitions as well as emphasizes
35
36 the multidimensional nature of SA. These results suggest that the
37
38 incorporation of psychosocial and extrinsic components identified by
39
40 laypersons into a multidimensional model of SA is necessary as biomedical
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42 components are inadequate on their own to capture what it means to age
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44 successfully. .
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50 Limitations in the current study include the subjective nature of meta-
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52 ethnography and issues with the translation of SA. Meta-ethnography involves
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54 the interpretation and integration of researchers' interpretations of primary
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56 data ⁷ that may result in bias. Where possible, direct quotes from respondents
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3 were coded; however, researchers' interpretive themes were coded, primarily.
4
5 A further limitation was the translation of the phrase "successful ageing".
6
7 Non-English studies used phrases the authors felt were equivalent to SA. For
8
9 example, Hsu ⁸ notes that there is no word that directly translates to SA in
10
11 Taiwanese. The authors then used (what translates into English as) "ideal or
12
13 satisfactory life in old age"; a phrase they identified as being roughly
14
15 equivalent to SA in a pilot study.
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19 Psychosocial components of SA were the most frequently mentioned
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21 aspects of SA, highlighting the necessity to expand conceptualizations of SA
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23 beyond physiologically-based models. Traditional models of SA often suggest
24
25 that an individual's physiological health is the sole indicator of one's SA, which
26
27 is, as the current study suggests, a parochial perspective of a multifaceted
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29 construct. Components of personal resources were suggested by laypersons
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31 in all of the included studies, providing strong evidence for the importance of
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33 psychosocial components of SA. Furthermore, the breadth of the
34
35 psychosocial components mentioned by laypersons highlights the
36
37 multidimensionality of SA.
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41 Using a meta-ethnographic framework, 12 psychosocial subthemes
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43 were identified: social roles, self-awareness, acceptance, perspective,
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45 engagement, spirituality, maintenance, quality of life, community, prevention &
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47 remediation, independence, adjustment. It is important to note the
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49 heterogeneity of these components even within this psychosocial umbrella,
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51 with components ranging from internal (e.g. spirituality) to inter-personal (e.g.
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53 social roles). This breadth of psychosocial components in SA has not been
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3 illuminated to this degree in previous studies, providing invaluable insight into
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5 the complexity of layperson perspectives of SA.
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8 With such a variety of psychosocial components mentioned in the
9
10 current review, including every aspect of layperson perspectives into models
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12 of SA becomes increasingly difficult. It would be unrealistic to expect a study
13
14 to touch on every nuance of SA that has been captured in the current review;
15
16 however, there are a number of emergent themes that would be possible to
17
18 capture. Most significantly is the prominence of psychosocial factors, notably
19
20 engagement, perspective and self-awareness. These themes are then broken
21
22 down into separate subthemes, highlighting the profound multidimensionality
23
24 and complexity of SA components. This theoretical complexity manifests itself
25
26 in attempts to quantify these psychosocial components of SA. There are a
27
28 myriad of metrics that may be used to capture these phenomena, ranging
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30 from, for example, frequency of social interaction to self-confidence,
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32 highlighting another area where further research is needed. Identifying
33
34 appropriate metrics for capturing psychosocial SA phenomena presents a
35
36 unique challenge for researchers: translating a nebulous concept into a
37
38 quantifiable and practically relevant construct.
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43 A component of SA identified in approximately two-thirds of the studies,
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45 but rarely examined in quantitative studies of SA, was extrinsic factors, i.e.
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47 environment and finances. Financial security was found to be important
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49 across all age bands in Charbonneau-Lyons' study ⁹, in all permutations of
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51 gender, education and income, aside from females in no/low
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53 education/income group in Nagalaginam's study ¹⁰, and by all the respondents
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55 in the study by Lin ¹¹. Environment and finances are typically excluded from
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3 current models^{3 12} and the identification of these factors in such a large
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5 number of studies is therefore a unique finding. Further research is needed to
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7 explore these factors cross-culturally and along biomedical components of SA.
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10 The SA component that was least frequently identified as being
11
12 important was longevity. This contrasts with biomedical approaches in SA
13
14 research that typically focus on the extension of life. There have been
15
16 previous suggestions that extreme longevity, in the form of centenarians, is a
17
18 representative model of SA^{13 14}; however, these models have been met with
19
20 opposition¹⁵. Surviving to 100 is not necessarily indicative of holistic wellbeing
21
22 and is often accompanied by great losses and/or physical deficits¹⁵. The
23
24 results from the current study support these assertions; elderly laypersons do
25
26 not value simply living a long time as an integral component of SA. This
27
28 departure from biomedical models supporting mere longevity aligns closely
29
30 with the “adding life to years, not just years to life” ethos.
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34 Of importance to note in this study is that numerous factors were
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36 identified by laypersons as being important for SA (e.g. engagement, self-
37
38 awareness, perspective, etc.) for which, specific interventions for modifiable
39
40 behaviors could be implemented. For example, aiding individuals in,
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42 decreasing depressive symptomology, social engagement, invoking coping
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44 and resilience training, could augment and compliment physical remediation
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46 strategies in the pursuit of SA. In contrast, proponents of strictly biomedical
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48 models suggest that psychosocial components should not be included in
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50 models of SA, excluding possibility for remediation or improvement of these
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52 factors closely linked to what it means to be SA in the real world. It is
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3 necessary to look beyond the scope of biomedical models to areas of the
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5 lived life that have not been covered by traditional models of SA.
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8 There are important research and policy implications associated with
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10 the identification and acknowledgement lay perspectives of SA. These data
11
12 have the potential to provide invaluable information to researchers planning to
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14 conduct studies of SA through the incorporation of psychosocial variables into
15
16 otherwise biomedical models. For example, if a researcher plans to use SA as
17
18 an outcome variable, they have the opportunity to include psychosocial
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20 components in addition to physiological components. SA ageing is clearly not
21
22 simply a physiological construct, so it seems intuitive that psychosocial
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24 components should be included into otherwise biomedical models of SA.
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28 The distribution of the various SA components across regions
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30 reasserts the prevalence of psychosocial and external factors as components
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32 of successful ageing. The only components that were represented in all five
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34 regions (North America, South America, Asia, Australia, United Kingdom)
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36 were engagement and self-awareness. Given the profound
37
38 overrepresentation of North American studies and studies conducted in
39
40 Caucasian populations, however, it is hard to discern whether any cultural
41
42 variations exist. These results highlight the need for further research to be
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44 conducted to augment and incorporate the influence of psychosocial
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46 components and cross-cultural perspectives of SA. The number of studies
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48 investigation of layperson perspectives of SA is comparatively small in terms
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50 of the volume of research on SA. Furthermore, the number of studies that are
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52 conducted outside Anglophone countries is very small when compared to the
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54 volume of research conducted in the UK, US and Canada. Similarly, within the
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3 sample groups captured in the included studies, there were an inordinate
4 proportion of Caucasian participants. Consequently, despite illuminating lay
5 perspectives, these perspectives are largely the views of white Westerners.
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7 Further research is required to articulate the cultural similarities and
8
9 disparities in SA conceptualizations.
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14 The current review reinforces the multidimensional nature of SA and
15 emphasizes the importance of psychosocial aspects of SA. Components of
16 engagement and personal resources were identified by laypersons in more
17 studies than biomedical components, representing a divergence from
18 traditional (biomedical) models of SA and highlighting the need for the
19 inclusion of psychosocial components. Of particular note was the poor
20 representation of longevity amongst lay perspectives of SA. Although the
21 current study provides insights into the concept of SA, it must be
22 acknowledged that the included studies represent a strong Anglophone bias.
23
24 Through the collection and synthesis of layperson perspectives, the current
25 study provides a comprehensive examination of layperson conceptualizations
26 of SA.
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GRAPHICS

Table 1: Included study characteristics

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Author	n	Population	Age				Country	Ethnicity	Marital Status			
			Mean	Min	Max	Caucasian			Married	Single	Divorced/ Separated	Widowed
Duay, et al. (2006) ¹⁶	18	Community dwelling	72.6	≥59	60	86	USA	94.4%				
Ferri, et al. (2009) ¹⁷	53	Community dwelling	78	≥60	61	90	USA	96.2%	32.1%	3.8%	11.3%	52.8%
Fisher & Specht (1999) ¹⁸	36	Community dwelling artists	73.75	≥60	60	93	USA	97.2%	66.7%	5.6%	5.6%	22.2%
Fisher (1995) ¹⁹	40	Community dwelling, foster grandparents	72.65		61	92	USA	97.5%	2.5%		10.0%	97.5%
Fisher, (1992) ²⁰	19	Seniors activity center	75		62	85	USA	100.0%	47.4%	5.3%		47.4%
Hilton, et al. (2009) ²¹	65	Caregivers of elderly individuals	51.8		29	72	USA	81.5%	59.4%			
Lewis (2010) ²²	15	Alaska natives	56		26	84	USA					
Lewis (2011) ²³	26	Alaska natives			61	93	USA		53.8%			46.2%
Reichstadt et al. (2007) ²⁴	72	Retirement communities			60	99	USA					
Reichstadt et al. (2010) ²⁵	22	Retirement communities/seniors housing/seniors learning center	80	≥60	64	96	USA	86.0%				
Rossen, et al. (2008) ²⁶	31	Community dwelling women	78		61	90	USA		20.0%	12.0%		65.0%
Stevens-Ratchford & Cebulak (2004) ²⁷	14	Community dwelling with osteo- or rheumatoid arthritis	67		61	87	USA	100.0%				
Bowling (2006) ²⁸	854	Community dwelling	64	≥50	50	94	UK		72.0%	5.0%	9.0%	14.0%
Hsu (2007) ⁸	584	Community dwelling		≥65			Taiwan					
Lee (2009) ²⁹	109	Living-alone, low SES		≥60			China		5.5%	17.4%	8.3%	68.8%
Collings (2001) ³⁰	38	Inuit			23	86	Canada					
Guse & Masesar (1999) ³¹	32	Long-term care		≥55			Canada		34.0%	3.0%	16.0%	47.0%
Tate, et al. (2003) ³²	1771	Community dwelling World War II veterans	78				Canada					

Lay perspectives of successful aging

Cupertino, et al. (2007) ³³	501	Community dwelling	72.65		60	93	Brasil
Knight & Ricciardelli (2003) ³⁴	60	Community/ retirement village dwelling	80.05	≥70	70	101	Australia
McCann et al. (2008) ³⁵	14	Spiritually affiliated women			60	89	Australia

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Figure 1: Inclusion Flowchart

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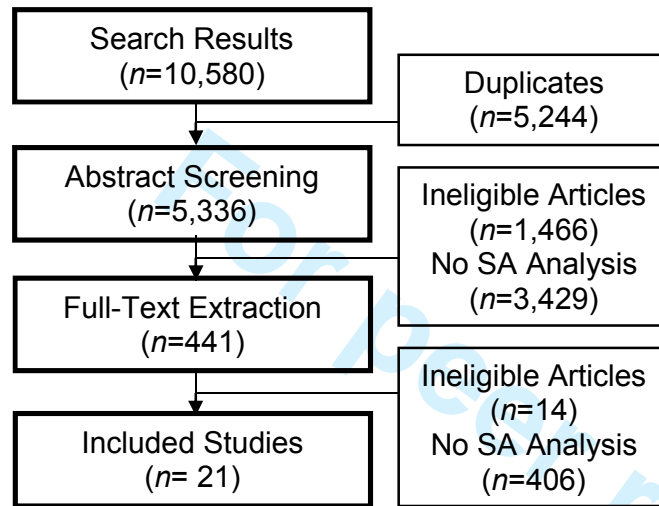
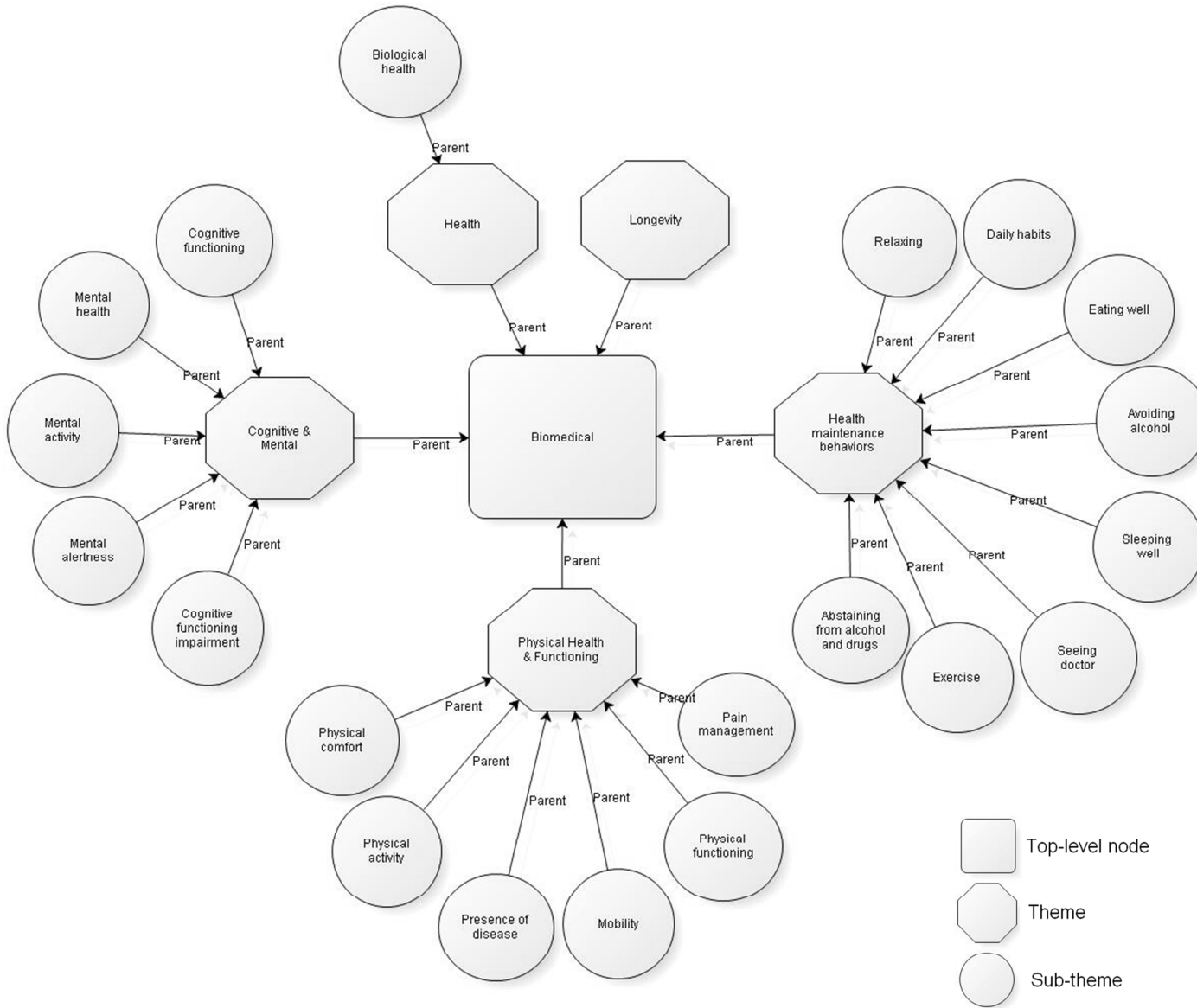


Figure 1: Inclusion flowchart

Figure 2: Biomedical themes and sub-themes

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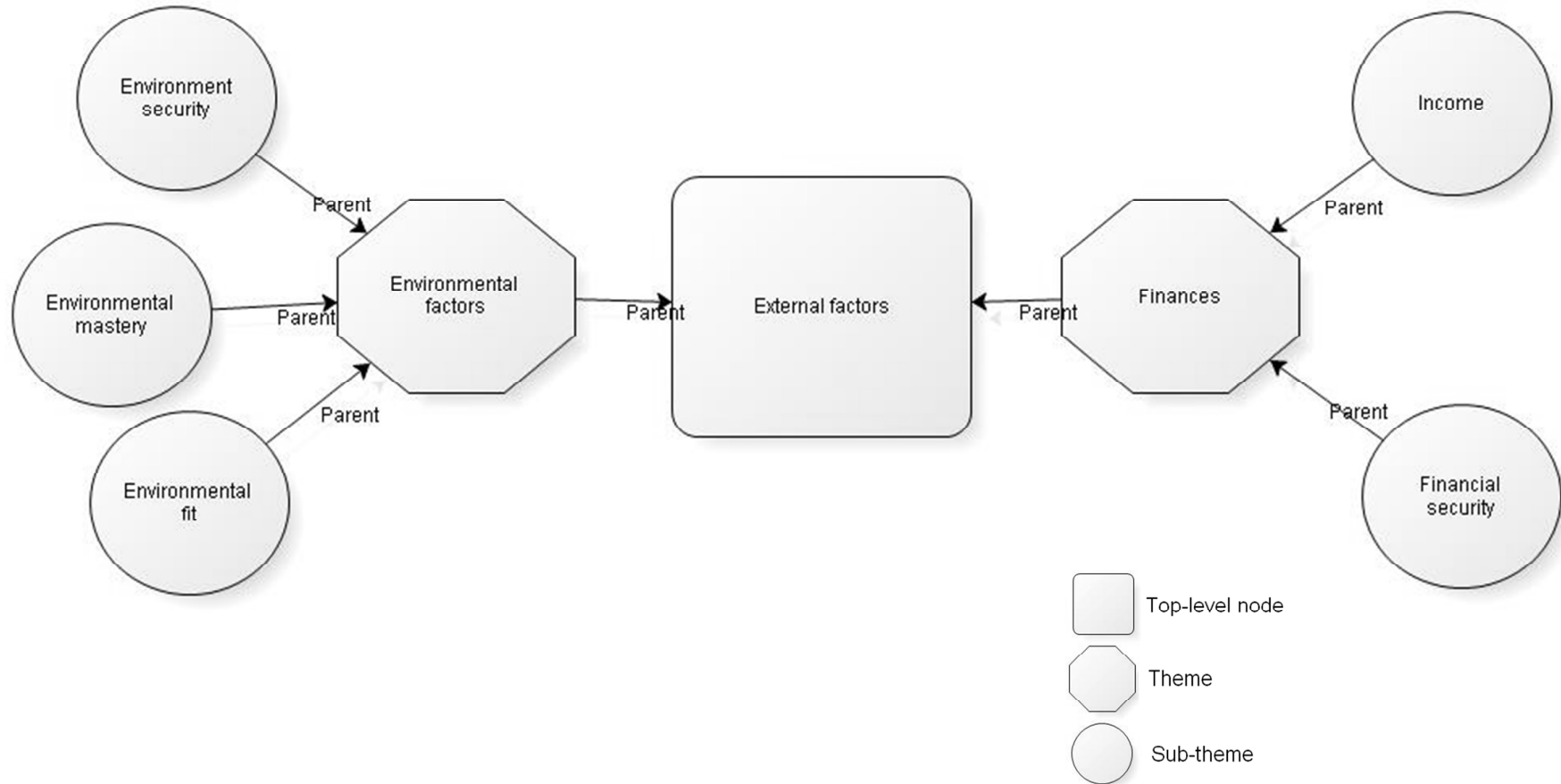


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Figure 3: External factor themes and sub-themes

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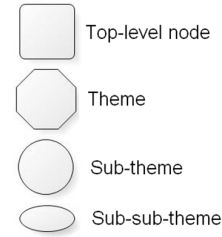
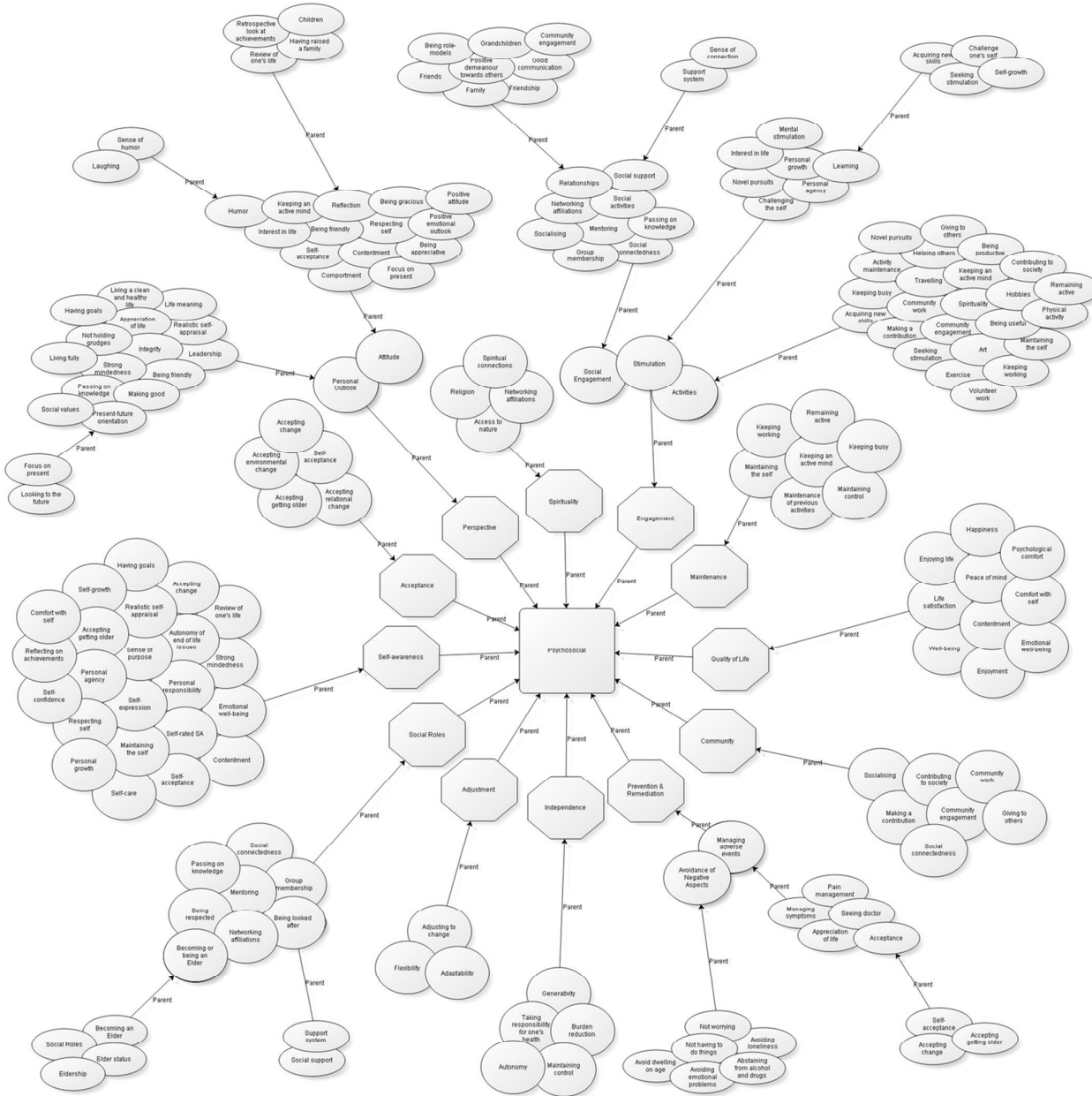


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Figure 4: Psychosocial themes and subthemes

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Lay perspectives of successful aging



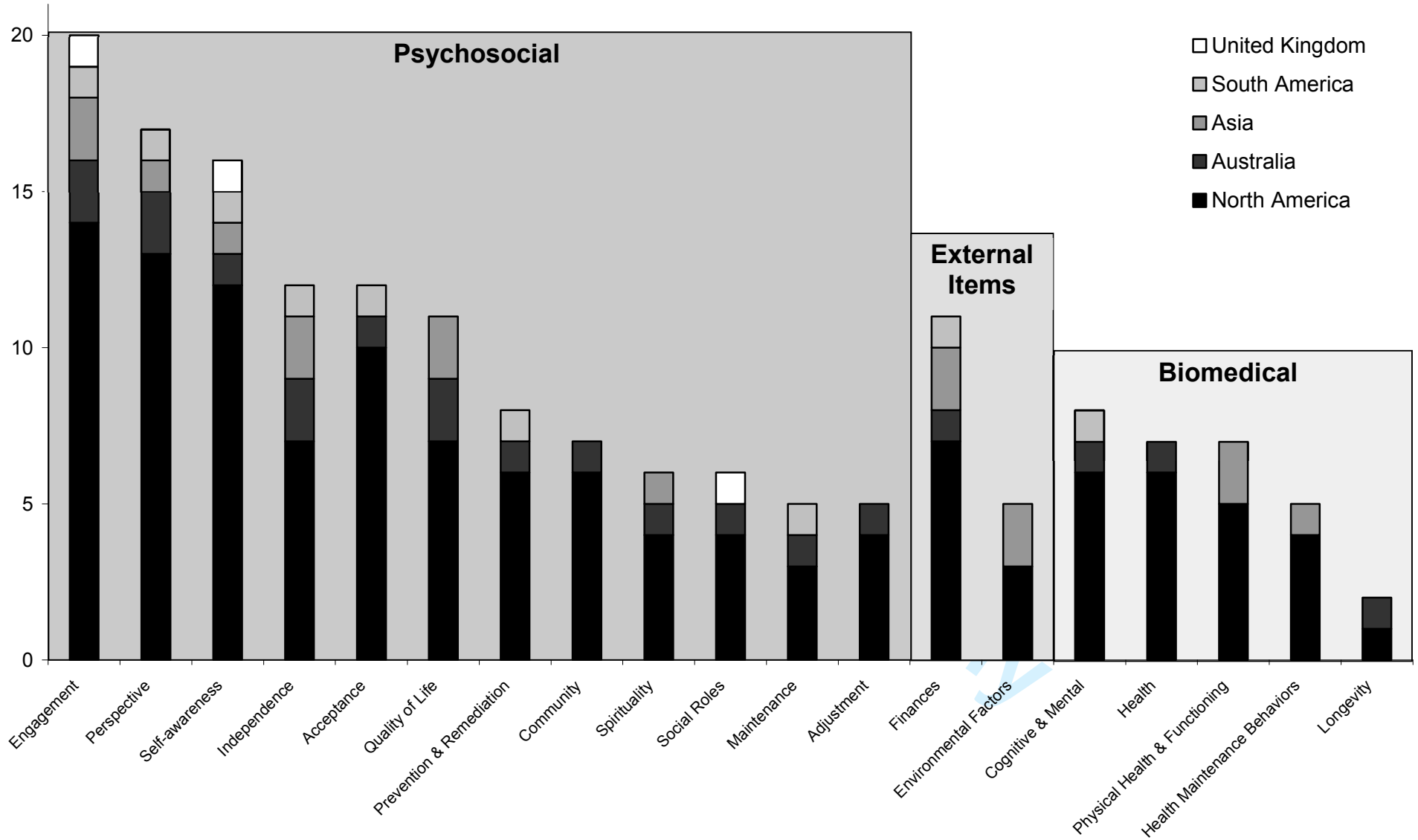
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Figure 5: Percentage of studies reporting each of the SA components, by region

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Lay perspectives of successful aging



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PRISMA 2009 Checklist

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Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	3-4
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	5-6
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	5-6
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	n/a
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	6-7
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	6-7
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	6
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	6-7
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	7
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	6-7
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	n/a
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	n/a
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2 for each meta-analysis).	6-7

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PRISMA 2009 Checklist

Page 1 of 2

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	n/a
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	n/a
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	26
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	23
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	n/a
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	n/a
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	n/a
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	n/a
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	n/a
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	10--15
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	10-11
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	14-15
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	n/a

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097

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Lay perspectives of successful ageing: A systematic review and meta-ethnography

Journal:	<i>BMJ Open</i>
Manuscript ID:	bmjopen-2013-002710.R1
Article Type:	Research
Date Submitted by the Author:	18-Apr-2013
Complete List of Authors:	Cosco, Theodore; University of Cambridge, Cambridge Institute of Public Health Prina, Matthew; University of Cambridge, Cambridge Institute of Public Health Perales, Jaime; Universitat de Barcelona, Parc Sanitari Sant Joan de Deu Stephan, Blossom; Newcastle University, Institute of Health and Society Brayne, Carol; University of Cambridge, Cambridge Institute of Public Health
Primary Subject Heading:	Public health
Secondary Subject Heading:	Geriatric medicine, Public health, Qualitative research
Keywords:	GERIATRIC MEDICINE, PUBLIC HEALTH, QUALITATIVE RESEARCH

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Manuscripts

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3 **Lay perspectives of successful ageing: A systematic review and meta-**
4 **ethnography**
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7 Theodore D Cosco¹, MSc; A Matthew Prina¹, PhD; Jaime Perales², MPH;
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9 Blossom CM Stephan³, PhD; Carol Brayne¹, MD
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45 Running head: Lay perspectives of successful ageing
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Article Focus

- Currently there is no consensus definition of successful ageing
- The current study provides a comprehensive snapshot of qualitative studies of layperson perspectives of successful ageing

Key Messages

- Successful ageing is much more complex than simply physical health
- Psychosocial (e.g. attitude), and external (e.g. finances), factors were the most frequently mentioned components of successful ageing
- Layperson perspectives advocate the inclusion of components of successful ageing that go beyond physical health

Strengths

- Article conducts a systematic review of qualitative studies

Limitations

- Meta-ethnography involves the subjective interpretation of secondary data that is, itself, a subjective interpretation
- Languages that did not have “successful ageing” in their vernacular used approximations of the term

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3 The review and search protocol was planned by TDC, BS and CB.
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5 TDC conducted the primary article review and data extraction; AMP and JP
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7 conducted second, independent, screens of the articles. TDC wrote the
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9 manuscript, which was edited and reviewed by AMP, JP, BS and CB.
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14 There is no additional data available.
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ABSTRACT

Objectives: The aim of the current study was to conduct a systematic review of lay perspectives of SA, synthesise these data using a meta-ethnographic framework and to provide a snapshot of extant lay perspectives of SA.

Design: A systematic review of layperson perspectives of SA was conducted across MedLine, PsycInfo, CINAHL, EMBASE and ISI Web of Knowledge.

Participants: Peer-reviewed studies conducting qualitative investigations of lay perspectives of SA were included. Included studies were coded and analysed using NVivo 9 to examine underlying themes of SA.

Results: The search strategy identified 7,285 articles; 26 articles met inclusion criteria. Laypersons identified psychosocial components, notably engagement (e.g. social engagement), and personal resources (e.g. attitude), as integral components of SA more often than “physiological” components, such as longevity or physical functioning. These results also highlight the profound underrepresentation of non-Western countries and the cultural homogeneity of research participants.

Conclusions: The current study reveals the importance laypersons place on incorporating psychosocial components into multidimensional models of SA as well as highlights the need for increased research with underrepresented populations.

Keywords: successful ageing, healthy ageing, lay perspectives, systematic review

INTRODUCTION

Despite an increasing focus on the improvement of quality of life throughout the life-course, there is no generally accepted definition of what it means to age well. What “successful ageing (SA)” is, or is not, is a contentious issue. Since the inception of the term, subjective interpretations of SA have generated an increase in disparate perspectives and conceptualisations. Depending on the context, objectives and sample characteristics of a study, the definition of SA has varied significantly¹. In the absence of a consensus definition, the generalisability of SA studies has been severely impeded, inhibiting cross-study comparisons.

The most popular model of SA, Rowe & Kahn’s^{2,3} conceptualisation of SA, is primarily biomedical. This and other biomedical models of SA focus on physiological or cognitive aspects of health, as captured by metrics such as the Mini Mental State Exam⁴ or the Activities of Daily Living scale⁵. Rowe & Kahn’s^{2,3} model suggests that high cognitive/physical functioning, low risk of illness, and active engagement comprise SA. This widely used model provides the theoretical underpinnings for many operational definitions of SA¹. Although these researcher-driven conceptualizations of SA are popular, they have, however, been subject to criticism due to their biomedical focus, without explicit input of layperson perspectives⁶.

The aim of the study is to provide a comprehensive review of studies examining lay perspectives of SA, in order to augment the largely quantitatively dominated SA literature with insights from qualitative research. The most recent reviews of quantitative definitions of SA⁷ and qualitative perspectives of SA⁸, reveal that there are more than twice as many studies

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3 examining operational definitions of SA as there are studies examining lay
4 perspectives of SA. However, a study examining several different SA models,
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7 i.e. biomedical, psychosocial and lay models, found the multidimensional lay
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10 model to be the strongest⁹. Through qualitative studies laypersons are given a
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12 platform to voice their opinions and perspectives on research topics¹⁰.
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14 Therefore, the incorporation of layperson perspectives expands and
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16 complements existing quantitative research, with the potential to improve both
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18 the quality and impact of research¹¹, increasing the validity and practical
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20 relevance of SA models¹². This review expands upon a previous review of
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22 lay perspectives by Hung, et al.⁸ through a broadened search strategy, an
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24 augmented temporal search span and the inclusion of non-English articles.
25
26 Further, whilst Hung, et al.⁸ focused on the umbrella concept of “healthy
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28 ageing”, which they describe as capturing, “active ageing”, “positive ageing”,
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30 “robust ageing”, “ageing well” as well as SA, the current review focusses
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32 specifically on SA.
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35 36 **METHODS**

37 38 **Search Strategy**

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40 A systematic review of the literature in PubMed, PsycInfo, ISI Web of
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42 Knowledge, EmBase and the Cumulative Index of Nursing and Allied Health
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44 Literature (CINAHL) databases was initially conducted between May 31 and
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46 June 7, 2011 and then updated on March 23, 2013; all literature published
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48 before March 23, 2013 was eligible for inclusion. The specific search strategy
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50 includes “successful ageing” along with seven SA synonyms: robust ageing,
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52 optimal ageing, positive ageing, healthy ageing, productive ageing, effective
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54 ageing and ageing well. These phrases were used with both “aging” and
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3 “ageing” spelling conventions, put in quotations, and linked via the Boolean
4 operator “OR”. Where possible, the wildcat operator “*” was inserted to
5 capture all permutations of the phrase. Furthermore, where possible, in a
6 given database, non-human studies were excluded. For example the search
7 input for the phrase “successful ageing” in PubMed was "successful* ageing"
8 OR "successful* ageing", which was searched as “successful* ageing”[All
9 Fields] OR "successful* ageing"[All Fields] AND "humans"[MeSH Terms].
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11 This process was repeated across the six databases using the seven SA
12 related phrases. Relevant articles referenced in the captured studies were
13 also included.
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25 **Study Inclusion**

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27 Peer-reviewed research articles conducting qualitative research with
28 laypersons on the components of SA were included. Studies were considered
29 to be qualitative if participants were asked open-ended or semi-open ended
30 question(s). Studies discussing synonyms of SA without specific reference to
31 SA, or components of SA, were excluded. Non-peer reviewed articles such
32 as dissertations, opinion pieces, and letters to the editor, as well as review
33 articles, were excluded.
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43 As the intent was to provide a comprehensive review of lay
44 perspectives of SA, studies were neither excluded nor weighted based on
45 study characteristics or methodological rigor, as there is no established
46 methodology for quality assessment of construct reviews¹³.
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52 **Data Extraction**

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54 Title and abstract review was conducted (TDC, AMP & JP), to identify
55 relevant articles for full-text extraction. Disagreements regarding inclusion
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3 were resolved by discussion. No language restrictions were made; non-
4
5 English articles were translated by multilingual staff at the Cambridge Institute
6
7 of Public Health, Cambridge University. Information regarding the definitions
8
9 and components of SA were extracted from authors' descriptions and
10
11 syntheses of participants' responses as well as direct quotes from study
12
13 participants. Where possible, the percentage of respondents referencing each
14
15 SA component in a given study was noted. In studies where participants
16
17 ranked the relative importance of each SA component, these data were
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19 recorded.
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25 **Synthesis**

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27 Themes created by study authors and direct quotes from study
28
29 participants were identified, coded and analyzed in NVIVO 9. The different
30
31 components of SA were analyzed using a meta-ethnographic framework.
32
33 Meta-ethnography is a method with which to synthesize qualitative studies
34
35 through an inductive analysis and integration of inter-study themes¹⁴. A
36
37 hierarchy of SA components was identified through the identification of
38
39 overarching themes and the components constituting these broad themes
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41 with progressively more specific foci.
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45 **RESULTS**

46 **Included Studies**

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48 The search strategy identified 7,285 articles. Title and abstract
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50 screening eliminated 6,834 articles and full-text screening eliminated 425
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52 articles, 26 studies met inclusion criteria (Figure 1).
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7 **Study characteristics**

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10 Qualitative studies were primarily conducted in the US (n=13) and
11 Canada (n=4) using purposive sampling with community dwelling populations
12 of Caucasian older adults. The sample size ranged from 14 to 1771, with a
13 mean of 180 (median= 46; SD=383) (Table 1).
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24 **Components of SA**

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26 All studies (n=26) included psychosocial components, 76% (n=20
27 studies) included biomedical components, and 58% (n=15 studies) included
28 external components. Psychosocial components were those that focused on
29 internal and/or social phenomena, e.g. resilience. Biomedical components
30 were those that focused on physiological phenomena, e.g. mobility. External
31 components were those that focused on phenomena external to the individual,
32 e.g. housing conditions.
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43 The biomedical components were grouped into cognitive & mental,
44 health, health maintenance behaviors, longevity, and physical health &
45 functioning. Cognitive & mental components focused on the functioning of
46 mental and cognitive faculties, e.g. “the only way not to become an old dog is
47 to learn new tricks.”¹⁵ Health components focused on non-specific notions of
48 physiological health, e.g. “health is everything”¹⁶. Health maintenance
49 behavior components focused on behaviors fostering physical and/or
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3 cognitive health, e.g. “eating right”¹⁷. Longevity components were those that
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5 focused on length of life. Physical health and functioning components were
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7 those that focused on references to physical health, e.g. “able to move
8
9 anywhere”¹⁸. (Figure 2).
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14 <INSERT FIGURE ABOUT HERE>
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18 External components were grouped into environmental factors, e.g.
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20 “having a satisfactory living environment” and finances, e.g. “[being] financially
21
22 self-supported”¹⁹ (Figure 3).
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27 <INSERT FIGURE ABOUT HERE>
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32 Psychosocial factors were grouped into acceptance, adjustment,
33
34 maintenance, spirituality, community, social roles, quality of life,
35
36 independence, prevention & remediation, self-awareness, perspective, and
37
38 engagement. Acceptance components focused on coming to terms with
39
40 change in one’s life, e.g. “we need to accept our older age”²⁰. Adjustment
41
42 components focused on the ability to adapt to change in one’s life, e.g.
43
44 “keeping up with the changing things around you”²¹. Maintenance
45
46 components focused on continuing previous behaviors, e.g. “there is one
47
48 person I know who is quite old and they’re still hunting and everything”²².
49
50 Spirituality components focused on the presence of a higher being or
51
52 connection to a force greater than oneself, e.g. “it is important to live with faith
53
54 and appreciate that we are protected each day”²³. Community components
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3 focused on connectedness or contributing to a social sphere, e.g. “I’m active
4 in the community. Very helpful to my neighbors in any way that I can”¹⁵.
5
6 Social role components focused on one’s position or function within a social
7 sphere, e.g. “being able to talk to young people, people younger than I who
8 have a long life ahead of them”²⁴. Quality of life components focused on life
9 satisfaction, e.g. “leading a simple but happy life”¹⁹. Independence
10 components focused on autonomy, e.g. “having the freedom to express
11 myself freely and naturally”²⁵. Prevention & remediation components
12 focused on the management or avoidance of negative influences, e.g.
13 abstaining from drugs and alcohol²⁶. Self-awareness components focused on
14 personal resources, e.g. “being able to look back on my life and see personal
15 development”²⁵. Perspective components focused on personal outlook and
16 attitude, e.g. “Having a positive outlook on life”²⁷. Engagement components
17 focused on social involvement, stimulation and/or participation in various
18 activities, e.g. “I like to be out around my friends talking, you know, what’s
19 going on in this place and finding out things, being involved”²⁸ (Figure 4).
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A comparison of the percentage of respondents reporting each of the constituent components of SA revealed engagement was mentioned most frequently, followed by perspective and self-awareness. Longevity was mentioned in two studies; in one of these studies mentioning longevity, 2 of 60 respondents mentioned longevity¹⁶ (Figure 5). North American studies (n=20) most often mentioned engagement (95%, n=19), perspective (90%, n=18) and

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3 self-awareness (80%, n=16). Australian studies (n=2) mentioned engagement
4 (100%, n=2), perspective (100%, n=2), independence (100%, 2) and quality of
5 life (100%, n=2) most often. All Asian studies (n=2), mentioned engagement,
6 independence, and quality of life, finances, environment and physical health.
7
8 The South American study (n=1) mentioned engagement, perspective, self-
9 awareness, independence, acceptance, finances, environment and health.
10
11 The British study mentioned engagement, perspective, self-awareness,
12 acceptance, quality of life, adjustment, finances, environment, cognitive &
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14 mental and health maintenance behaviors.
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25 <INSERT FIGURE ABOUT HERE>
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29 DISCUSSION

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31 The components of SA identified by the qualitative studies captured in
32 this review reflect a divergence from traditional biomedical conceptualizations
33 of SA, highlighting the multidimensionality and psychosocial emphasis of SA.
34
35 In contrast to operational definitions captured in the most recent review SA
36 which posit primarily biomedical models ⁷, attitudinal and engagement
37 components were found to be the most frequently mentioned. Furthermore,
38 external factors, such as finances and environment, which are absent in the
39 majority of SA conceptualizations ⁷, were also frequently mentioned. This
40 review highlights the importance of psychosocial and external factors in SA
41 definitions as well as emphasizes the multidimensional nature of SA. These
42 results suggest that the incorporation of psychosocial and extrinsic
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3 components identified by laypersons into a multidimensional model of SA is a
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5 prudent means with which to augment biomedical conceptualisations of SA.
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8 Limitations in the current study include the subjective nature of meta-
9 ethnography and issues with the translation of SA. Meta-ethnography involves
10 the interpretation and integration of researchers' interpretations of primary
11 data ¹⁴ that may result in bias. Where possible, direct quotes from
12 respondents were coded; however, researchers' interpretive themes were
13 coded, primarily. A further limitation was the translation of the phrase
14 "successful ageing". Non-English studies used phrases the authors felt were
15 equivalent to SA. For example, Hsu ¹⁸ notes that there is no word that directly
16 translates to SA in Taiwanese. The authors then used (what translates into
17 English as) "ideal or satisfactory life in old age"; a phrase they identified as
18 being roughly equivalent to SA in a pilot study.
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32 Psychosocial components of SA were the most frequently mentioned
33 aspects of SA, highlighting the advantages of expanding conceptualizations of
34 SA beyond physiologically-based models. Traditional models of SA often
35 suggest that an individual's physiological health is the sole indicator of one's
36 SA, which is, as the current study suggests, a parochial perspective of a
37 multifaceted construct. Psychosocial components were suggested by
38 laypersons in all of the included studies, providing strong evidence for the
39 inclusion in prospective models of SA. Furthermore, the breadth of the
40 psychosocial components mentioned by laypersons highlights the
41 multidimensionality of SA.
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54 Using a meta-ethnographic framework, 12 psychosocial subthemes
55 were identified: social roles, self-awareness, acceptance, perspective,
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3 engagement, spirituality, maintenance, quality of life, community, prevention &
4 remediation, independence, and adjustment. It is important to note the
5 heterogeneity of these components even within this psychosocial umbrella,
6 with components ranging from internal (e.g. spirituality) to inter-personal (e.g.
7 social roles). This breadth of psychosocial components in SA has not been
8 illuminated to this degree in previous studies, providing invaluable insight into
9 the complexity of layperson perspectives of SA.
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19 With such a variety of psychosocial components mentioned in the
20 current review, including every aspect of layperson perspectives into models
21 of SA becomes increasingly difficult. It would be unrealistic to expect a study
22 to touch on every nuance of SA that has been captured in the current review;
23 however, there are a number of emergent themes that would be possible to
24 capture. Most significantly is the prominence of psychosocial factors, notably
25 engagement, perspective and self-awareness. These themes are then broken
26 down into separate subthemes. This theoretical complexity manifests itself in
27 attempts to quantify these psychosocial components of SA. There are a
28 myriad of metrics that may be used to capture these phenomena, ranging
29 from, for example, frequency of social interaction to self-confidence,
30 highlighting another area where further research is needed. Identifying
31 appropriate metrics for capturing psychosocial SA phenomena presents a
32 unique challenge for researchers: translating a nebulous concept into a
33 quantifiable and practically relevant construct.
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51 A component of SA identified in approximately two-thirds of the studies,
52 but rarely examined in quantitative studies of SA, was extrinsic factors, i.e.
53 environment and finances. Financial security was found to be important
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3 across all age bands in Charbonneau-Lyons' study ²⁹, in all permutations of
4 gender, education and income, aside from females in no/low
5 education/income group in Nagalaginam's study ³⁰, and by all the respondents
6 in the study by Lin ³¹. Environment and finances are typically excluded from
7 current models ^{3 32} and the identification of these factors in such a large
8 number of studies is therefore a unique finding. Further research is needed to
9 explore these factors cross-culturally and along biomedical components of SA.

10
11 The SA component that was least frequently identified as being
12 important was longevity. This contrasts with biomedical approaches in SA
13 research that typically focus on the extension of life. There have been
14 previous suggestions that extreme longevity, in the form of centenarians, is a
15 representative model of SA ^{33 34}; however, these models have been met with
16 opposition ³⁵. Surviving to 100 is not necessarily indicative of holistic wellbeing
17 and is often accompanied by great losses and/or physical deficits ³⁵. The
18 results from the current study support these assertions; elderly laypersons do
19 not value simply living a long time as an integral component of SA. This
20 departure from biomedical models supporting mere longevity aligns closely
21 with the "adding life to years, not just years to life" ethos.

22
23 Many of the components identified by layperson as being important
24 (e.g. engagement, self-awareness, perspective, etc.) present the opportunity
25 for the implementation of specific interventions for modifiable behaviors. For
26 example, aiding individuals in, decreasing depressive symptomology, social
27 engagement, invoking coping and resilience training, could augment and
28 compliment physical remediation strategies in the pursuit of SA. In contrast,
29 proponents of strictly biomedical models suggest that psychosocial
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3 components should not be included in models of SA, excluding possibility for
4 remediation or improvement of these factors closely linked to what it means to
5 be SA in the real world. It is necessary to look beyond the scope of biomedical
6 models to areas of the lived life that have not been covered by traditional
7 models of SA.
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14 There are important research and policy implications associated with
15 the identification and acknowledgement of lay perspectives of SA. These data
16 have the potential to provide invaluable information to researchers planning to
17 conduct studies of SA through the incorporation of psychosocial variables into
18 otherwise biomedical models. For example, if a researcher plans to use SA as
19 an outcome variable, they have the opportunity to include psychosocial
20 components in addition to physiological components. SA ageing is clearly not
21 simply a physiological construct, so it seems intuitive that psychosocial
22 components should be included into otherwise biomedical models of SA.
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34 The distribution of the various SA components across regions
35 reasserts the prevalence of psychosocial and external factors as components
36 of successful ageing. The only components that were represented in all five
37 regions (North America, South America, Asia, Australia, United Kingdom)
38 were engagement and self-awareness. Given the profound
39 overrepresentation of North American studies and studies conducted in
40 Caucasian populations, it is hard to discern whether any cultural variations
41 exist. These results highlight the need for further research to be conducted to
42 augment and incorporate the influence of psychosocial components and
43 cross-cultural perspectives of SA.
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3 The current review reinforces the multidimensional nature of SA and
4 emphasizes the importance of psychosocial aspects of SA. Components of
5 engagement and personal resources were identified by laypersons in more
6 studies than biomedical components, representing a divergence from
7 traditional (biomedical) models of SA and highlighting the need for the
8 inclusion of psychosocial components. Of particular note was the poor
9 representation of longevity amongst lay perspectives of SA. Although the
10 current study provides insights into the concept of SA, it must be
11 acknowledged that the included studies represent a strong Anglophone bias.
12 Through the collection and synthesis of layperson perspectives, the current
13 study provides a comprehensive examination of layperson conceptualisations
14 of SA.
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GRAPHICS

Table 1: Included study characteristics

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Author	n	Population	Age				Country	Ethnicity	Marital Status			
			Mean	SD	Min	Max		Caucasian	Married	Single	Divorced/ Separated	Widowed
Bowling (2006) ³⁶	854	Community dwelling	64		50	94	UK		72.0%	5.0%	9.0%	14.0%
Collings (2001) ²⁴	38	Inuit			23	86	Canada					
Cupertino, et al. (2007) ³⁷	501	Community dwelling	72.65	8.08	60	93	Brasil					
Duay, et al. (2006) ¹⁵	18	Community dwelling	72.6		60	86	USA	94.4%				
Dionigi, et al. (2011) ³⁸	21	Community dwelling women	83.3		75	92	Canada	100.0%	14.3%	4.8%	0.0%	81.0%
Ferri, et al. (2009) ³⁹	53	Community dwelling	78	8.2	61	90	USA	96.2%	32.1%	3.8%	11.3%	52.8%
Fisher (1995) ²⁷	40	Community dwelling, foster grandparents	72.65		61	92	USA	97.5%	2.5%		10.0%	97.5%
Fisher & Specht (1999) ²⁵	36	Community dwelling artists	73.75		60	93	USA	97.2%	66.7%	5.6%	5.6%	22.2%
Fisher, (1992) ²¹	19	Seniors activity center	75		62	85	USA	100.0%	47.4%	5.3%		47.4%
Guse & Masesar(1999) ⁴⁰	32	Long-term care					Canada		34.0%	3.0%	16.0%	47.0%
Hilton, et al. (2009) ⁴¹	65	Caregivers of elderly individuals	51.8		29	72	USA	81.5%	59.4%			
Hilton, et al. (2012) ⁴²	60	Community dwelling Latinos	61		50	84	USA	0.0%	48.3%	16.7%	20.0%	16.7%
Hsu (2007) ¹⁸	584	Community dwelling					Taiwan					
Iwasama & Iwasaki (2011) ²³	77	Community dwelling Japanese-Americans	78.3	8.5	55	96	USA		37.7%	3.9%	11.7%	46.8%
Knight & Ricciardelli (2003) ¹⁶	60	Community/retirement village dwelling	80.05		70	101	Australia					
Lee (2009) ¹⁹	109	Living-alone, low SES					China		5.5%	17.4%	8.3%	68.8%

Lay perspectives of successful aging

Lewis (2010) ²⁰	15	Alaska natives	56		26	84	USA						
Lewis (2011) ⁴³	26	Alaska natives			61	93	USA	53.8%					46.2%
McCann et al. (2008) ⁴⁴	14	Spiritually affiliated women			60	89	Australia						
Reichstadt et al. (2007) ⁴⁵	72	Retirement communities			60	99	USA						
Reichstadt et al. (2010) ²⁸	22	Retirement communities/seniors housing/seniors learning center	80	9.1	64	96	USA	86.0%					
Rossen, et al. (2008) ⁴⁶	31	Community dwelling women	78		61	90	USA	20.0%	12.0%				65.0%
Stevens-Ratchford & Cebulak (2004) ⁴⁷	14	Community dwelling with osteo- or rheumatoid arthritis	67		61	87	USA	100.0%					
Tate, et al. (2003) ⁴⁸	177	World War II veterans	78				Canada						
Troutman, et al. (2011) ⁴⁹	100	Community dwelling African-Americans	74.4	6	61	89	USA	0.0%					
Troutman, et al. (2013) ⁵⁰	52	Community dwelling self-identified "successful agers"	77.1	7.02	60	89	USA	44.0%	25.0%	15.4%	3.8%		53.8%

Figure 1: Inclusion Flowchart

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Lay perspectives of successful aging

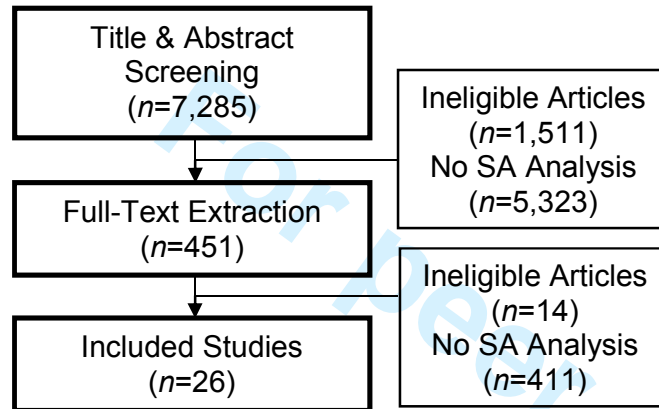
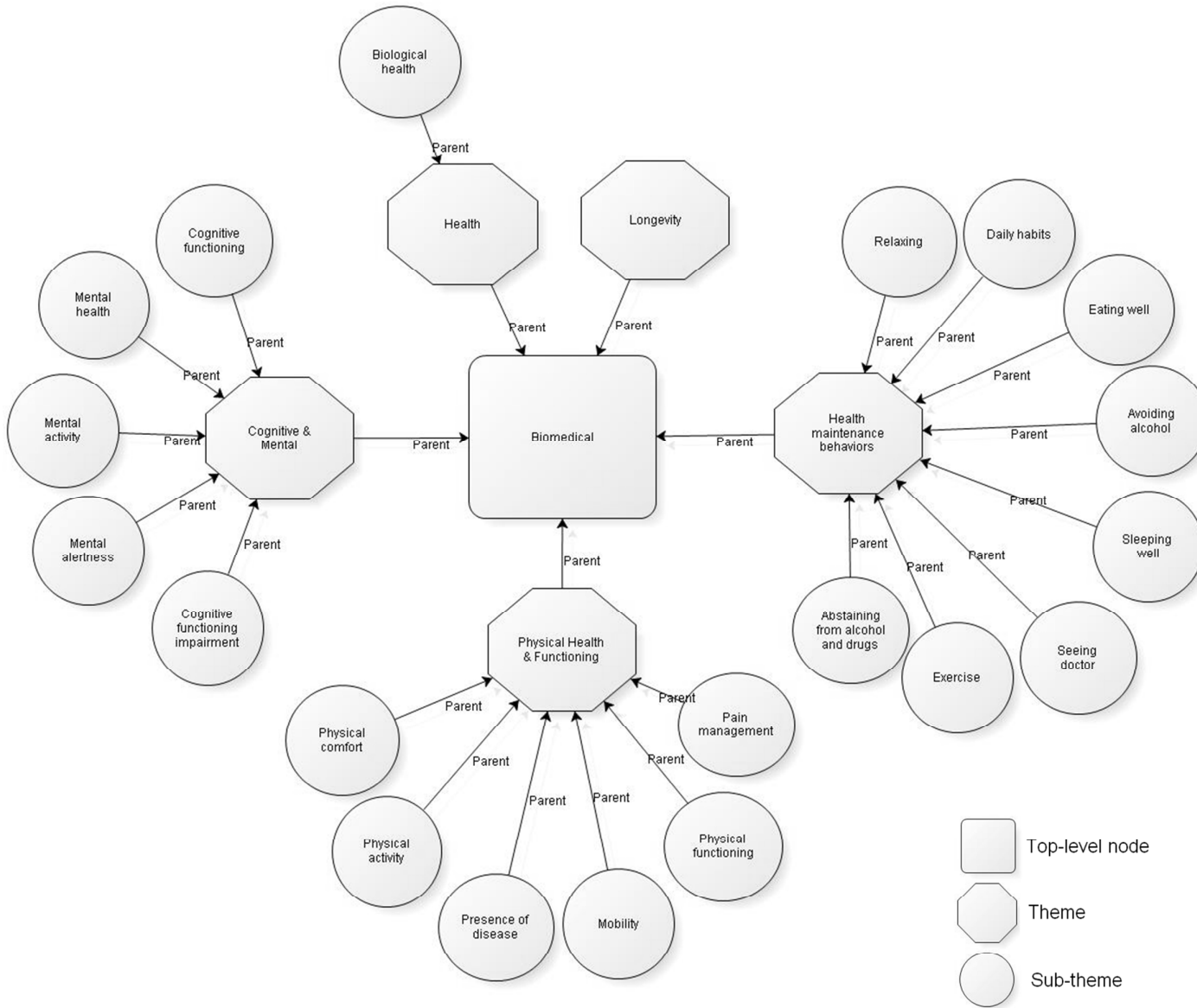


Figure 1: Inclusion flowchart

Figure 2: Biomedical themes and sub-themes

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Lay perspectives of successful aging

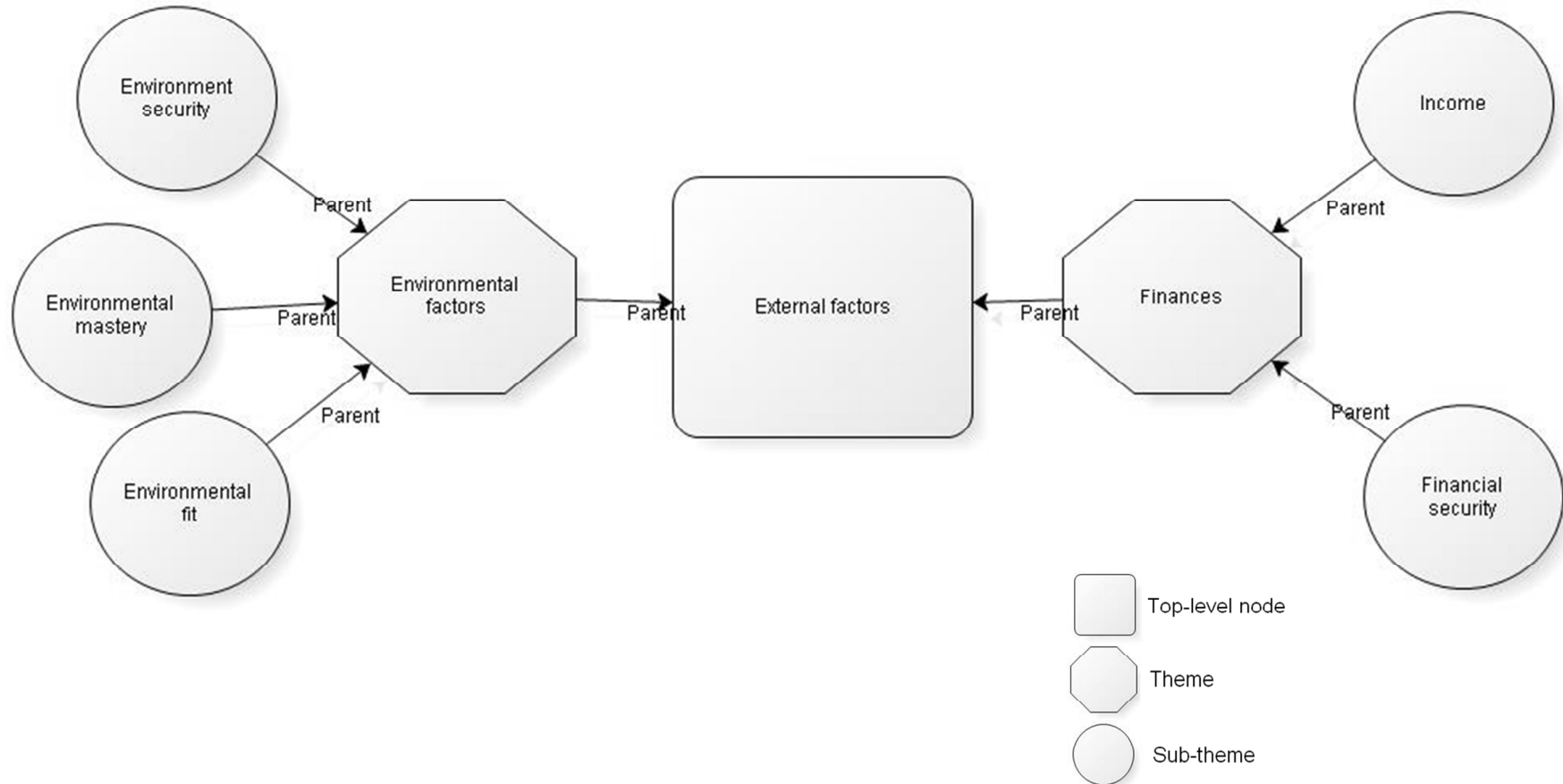


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Figure 3: External factor themes and sub-themes

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Lay perspectives of successful aging

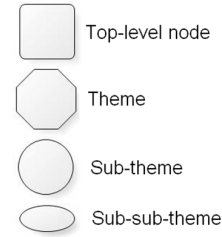
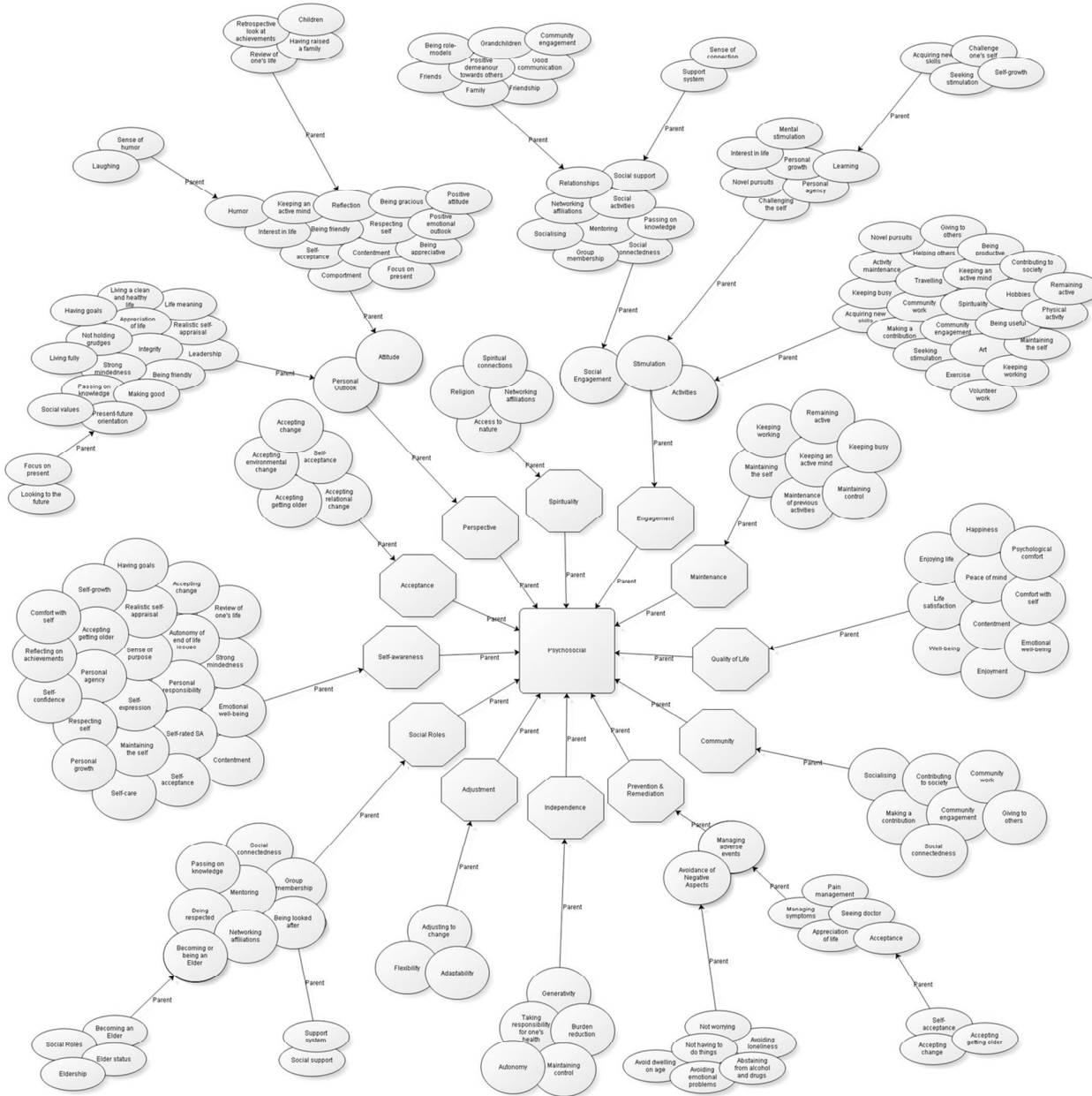


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Figure 4: Psychosocial themes and subthemes

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Lay perspectives of successful aging



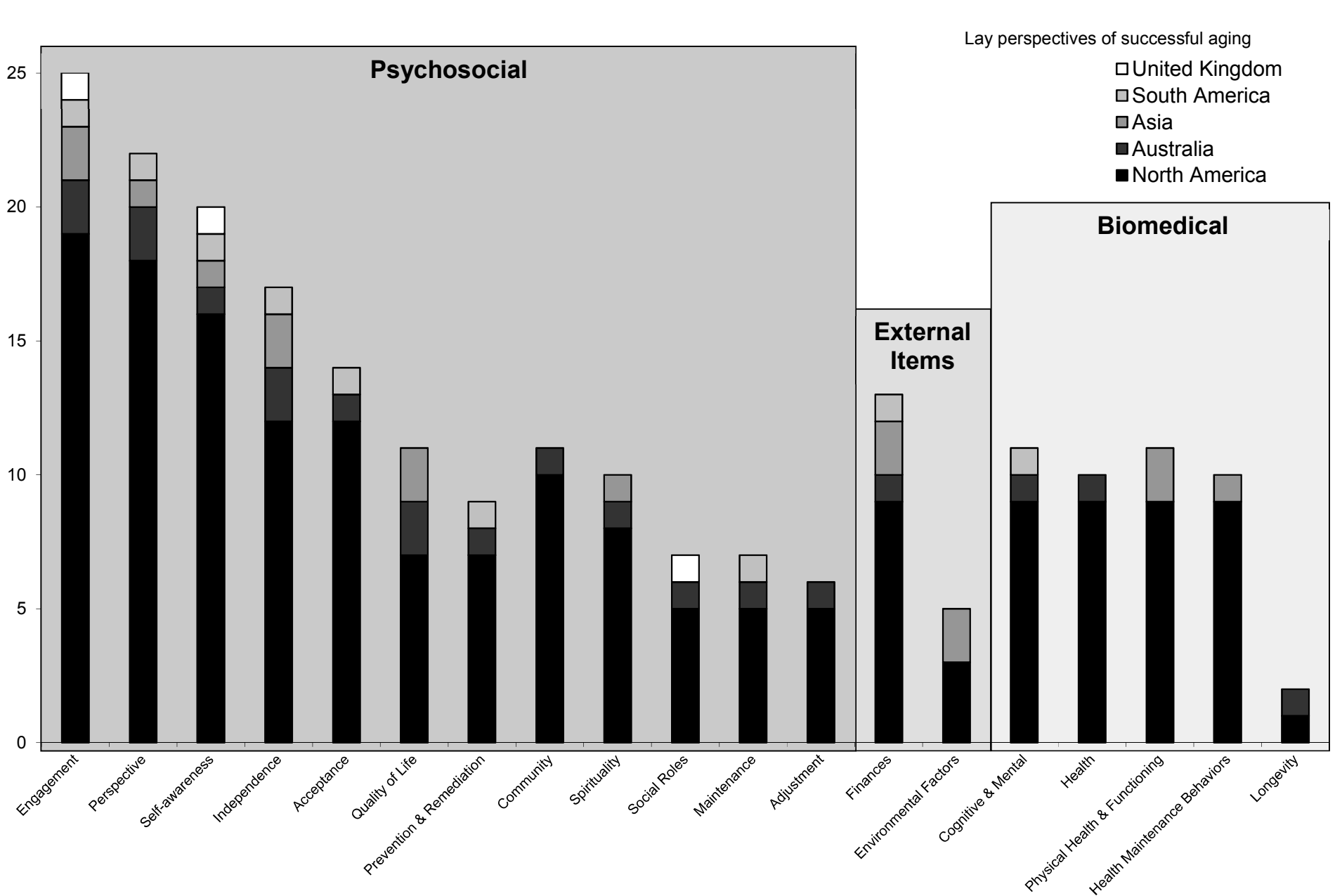
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Figure 5: Frequency of studies reporting each of the SA components, by region

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PRISMA 2009 Checklist

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Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	3-4
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	5-6
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	5-6
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	n/a
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	6-7
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	6-7
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	6
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	6-7
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	7
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	6-7
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	n/a
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	n/a
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2 for each meta-analysis).	6-7

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Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	n/a
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	n/a
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	26
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	23
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	n/a
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	n/a
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	n/a
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	n/a
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	n/a
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	10--15
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	10-11
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	14-15
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	n/a

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit: www.prisma-statement.org.

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3 **Lay perspectives of successful ageing: A systematic review and meta-**
4 **ethnography**
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8
9 Blossom CM Stephan³, PhD; Carol Brayne¹, MD
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45 Running head: Lay perspectives of successful ageing
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Article Focus

- Currently there is no consensus definition of successful ageing
- The current study provides a comprehensive snapshot of qualitative studies of layperson perspectives of successful ageing

Key Messages

- Successful ageing is much more complex than simply physical health
- Psychosocial (e.g. attitude), and external (e.g. finances), factors were the most frequently mentioned components of successful ageing
- Layperson perspectives advocate the inclusion of components of successful ageing that go beyond physical health

Strengths

- Article conducts a systematic review of qualitative studies

Limitations

- Meta-ethnography involves the subjective interpretation of secondary data that is, itself, a subjective interpretation
- Languages that did not have “successful ageing” in their vernacular used approximations of the term

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3 The review and search protocol was planned by TDC, BS and CB.

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5 | TDC conducted the primary article review and data extraction; [AMP and JP](#)
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7 | conducted second, independent, screens of the articles. TDC wrote the
8
9 | manuscript, which was edited and reviewed by [AMP, JP](#), BS and CB.
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ABSTRACT

Objectives: The aim of the current study was to conduct a systematic review of lay perspectives of SA, synthesise these data using a meta-ethnographic framework and to provide a snapshot of extant lay perspectives of SA.

Design: A systematic review of layperson perspectives of SA was conducted across MedLine, PsycInfo, CINAHL, EMBASE and ISI Web of Knowledge.

Participants: Peer-reviewed studies conducting qualitative investigations of lay perspectives of SA were included. Included studies were coded and analysed using NVivo 9 to examine underlying themes of SA.

Results: The search strategy identified 7,285 articles; 26 articles met inclusion criteria. Laypersons identified psychosocial components, notably engagement (e.g. social engagement), and personal resources (e.g. attitude), as integral components of SA more often than biomedical components, such as longevity or physical functioning. These results also highlight the profound underrepresentation of non-Western countries and the cultural homogeneity of research participants.

Conclusions: The current study reveals the importance laypersons place on incorporating psychosocial components into multidimensional models of SA as well as highlights the need for increased research with underrepresented populations.

Keywords: successful ageing, healthy ageing, lay perspectives, systematic review

INTRODUCTION

Despite an increasing focus on the improvement of quality of life throughout the life-course, there is no generally accepted definition of what it means to age well. What “successful ageing (SA)” is, or is not, is a contentious issue. Since the inception of the term, subjective interpretations of SA have generated an increase in disparate perspectives and conceptualisations. Depending on the context, objectives and sample characteristics of a study, the definition of SA has varied significantly¹. In the absence of a consensus definition, the generalisability of SA studies has been severely impeded, inhibiting cross-study comparisons.

The most popular model of SA, Rowe & Kahn's^{2,3} conceptualisation of SA, is primarily biomedical. This and other biomedical models of SA focus on physiological or cognitive aspects of health, as captured by metrics such as the Mini Mental State Exam⁴ or the Activities of Daily Living scale⁵. Rowe & Kahn's^{2,3} model suggests that high cognitive/physical functioning, low risk of illness, and active engagement comprise SA. This widely used model provides the theoretical underpinnings for many operational definitions of SA¹. Although these researcher-driven conceptualizations of SA are popular, they have, however, been subject to criticism due to their biomedical focus, without explicit input of layperson perspectives⁶.

The aim of the study is to provide a comprehensive review of studies examining lay perspectives of SA, in order to augment the largely quantitatively dominated SA literature with insights from qualitative research.

The most recent reviews of quantitative definitions of SA⁷ and qualitative perspectives of SA⁸, reveal that there are more than twice as many studies

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3 examining operational definitions of SA as there are studies examining lay
4 perspectives of SA. However, a study examining several different SA models,
5 i.e. biomedical, psychosocial and lay models, found the multidimensional lay
6 model to be the strongest⁹. Through qualitative studies laypersons are given a
7 platform to voice their opinions and perspectives on research topics¹⁰.

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14 Therefore, the incorporation of layperson perspectives expands and
15 complements existing quantitative research, with the potential to improve both
16 the quality and impact of research¹¹, increasing the validity and practical
17 relevance of SA models¹². This review expands upon a previous review of lay

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23 perspectives by Hung, et al.⁸ through a broadened search strategy, an
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25 augmented temporal search span and the inclusion of non-English articles.

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27 Further, whilst Hung, et al.⁸ focused on the umbrella concept of “healthy
28 ageing”, which they describe as capturing, “active ageing”, “positive ageing”,
29 “robust ageing”, “ageing well” as well as SA, the current review focusses
30 specifically on SA.

31 32 33 34 35 36 **METHODS**

37 38 39 **Search Strategy**

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41 A systematic review of the literature in PubMed, PsycInfo, ISI Web of
42 Knowledge, EmBase and the Cumulative Index of Nursing and Allied Health
43 Literature (CINAHL) databases was initially conducted between May 31 and
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45 June 7, 2011 and then updated on March 23, 2013; all literature published
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47 before March 23, 2013 was eligible for inclusion. The specific search strategy
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49 includes “successful ageing” along with seven SA synonyms: robust ageing,
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51 optimal ageing, positive ageing, healthy ageing, productive ageing, effective
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53 ageing and ageing well. These phrases were used with both “aging” and
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3 “ageing” spelling conventions, put in quotations, and linked via the Boolean
4 operator “OR”. Where possible, the wildcat operator “*” was inserted to
5 capture all permutations of the phrase. Furthermore, where possible, in a
6 given database, non-human studies were excluded. For example the search
7 input for the phrase “successful ageing” in PubMed was "successful* ageing"
8 OR "successful* ageing", which was searched as “successful* ageing”[All
9 Fields] OR "successful* ageing"[All Fields] AND "humans"[MeSH Terms].
10 This process was repeated across the six databases using the seven SA
11 related phrases. Relevant articles referenced in the captured studies were
12 also included.
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25 Study Inclusion

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27 Peer-reviewed research articles conducting qualitative research with
28 laypersons on the components of SA were included. Studies were considered
29 to be qualitative if participants were asked open-ended or semi-open ended
30 question(s). Studies discussing synonyms of SA without specific reference to
31 SA, or components of SA, were excluded. Non-peer reviewed articles such
32 as dissertations, opinion pieces, and letters to the editor, as well as review
33 articles, were excluded.
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43 As the intent was to provide a comprehensive review of lay
44 perspectives of SA, studies were neither excluded nor weighted based on
45 study characteristics or methodological rigor, as there is no established
46 methodology for quality assessment of construct reviews¹³.
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52 Data Extraction

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54 Title and abstract review was conducted (TDC, AMP & JP), to identify
55 relevant articles for full-text extraction. Disagreements regarding inclusion
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3 were resolved by discussion. No language restrictions were made; non-
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5 English articles were translated by multilingual staff at the Cambridge Institute
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7 of Public Health, Cambridge University. Information regarding the definitions
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9 and components of SA were extracted from authors' descriptions and
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11 syntheses of participants' responses as well as direct quotes from study
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13 participants. Where possible, the percentage of respondents referencing each
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15 SA component in a given study was noted. In studies where participants
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17 ranked the relative importance of each SA component, these data were
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19 recorded.
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25 Synthesis

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27 Themes created by study authors and direct quotes from study
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29 participants were identified, coded and analyzed in NVIVO 9. The different
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31 components of SA were analyzed using a meta-ethnographic framework.
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33 Meta-ethnography is a method with which to synthesize qualitative studies
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35 through an inductive analysis and integration of inter-study themes¹⁴. A
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37 hierarchy of SA components was identified through the identification of
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39 overarching themes and the components constituting these broad themes
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41 with progressively more specific foci.
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45 RESULTS

46 Included Studies

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48 The search strategy identified 7,285 articles. Title and abstract
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50 screening eliminated 6,834 articles and full-text screening eliminated 425
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52 articles, 26 studies met inclusion criteria (Figure 1).
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<INSERT FIGURE ABOUT HERE>

Study characteristics

Qualitative studies were primarily conducted in the US (n=13) and Canada (n=4) using purposive sampling with community dwelling populations of Caucasian older adults. The sample size ranged from 14 to 1771, with a mean of 180 (median= 46; SD=383) (Table 1).

<INSERT TABLE ABOUT HERE>

Components of SA

All studies (n=26) included psychosocial components, 76% (n=20 studies) included biomedical components, and 58% (n=15 studies) included external components. Psychosocial components were those that focused on internal and/or social phenomena, e.g. resilience. Biomedical components were those that focused on physiological phenomena, e.g. mobility. External components were those that focused on phenomena external to the individual, e.g. housing conditions.

The biomedical components were grouped into cognitive & mental, health, health maintenance behaviors, longevity, and physical health & functioning. Cognitive & mental components focused on the functioning of mental and cognitive faculties, e.g. “the only way not to become an old dog is to learn new tricks.”¹⁵. Health components focused on non-specific notions of physiological health, e.g. “health is everything”¹⁶. Health maintenance behavior components focused on behaviors fostering physical and/or

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3 cognitive health, e.g. “eating right”¹⁷. Longevity components were those that
4 focused on length of life. Physical health and functioning components were
5 those that focused on references to physical health, e.g. “able to move
6 anywhere”¹⁸. (Figure 2).

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18 External components were grouped into environmental factors, e.g.
19 “having a satisfactory living environment” and finances, e.g. “[being] financially
20 self-supported”¹⁹ (Figure 3).

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32 Psychosocial factors were grouped into acceptance, adjustment,
33 maintenance, spirituality, community, social roles, quality of life,
34 independence, prevention & remediation, self-awareness, perspective, and
35 engagement. Acceptance components focused on coming to terms with
36 change in one’s life, e.g. “we need to accept our older age”²⁰. Adjustment
37 components focused on the ability to adapt to change in one’s life, e.g.
38 “keeping up with the changing things around you”²¹. Maintenance
39 components focused on continuing previous behaviors, e.g. “there is one
40 person I know who is quite old and they’re still hunting and everything”²².
41
42 Spirituality components focused on the presence of a higher being or
43 connection to a force greater than oneself, e.g. “it is important to live with faith
44 and appreciate that we are protected each day”²³. Community components
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focused on connectedness or contributing to a social sphere, e.g. "I'm active in the community. Very helpful to my neighbors in any way that I can" ¹⁵.

Social role components focused on one's position or function within a social sphere, e.g. "being able to talk to young people, people younger than I who have a long life ahead of them" ²⁴. Quality of life components focused on life satisfaction, e.g. "leading a simple but happy life" ¹⁹. Independence components focused on autonomy, e.g. "having the freedom to express myself freely and naturally" ²⁵. Prevention & remediation components focused on the management or avoidance of negative influences, e.g. abstaining from drugs and alcohol ²⁶. Self-awareness components focused on personal resources, e.g. "being able to look back on my life and see personal development" ²⁵. Perspective components focused on personal outlook and attitude, e.g. "Having a positive outlook on life" ²⁷. Engagement components focused on social involvement, stimulation and/or participation in various activities, e.g. "I like to be out around my friends talking, you know, what's going on in this place and finding out things, being involved" ²⁸ (Figure 4).

<INSERT FIGURE ABOUT HERE>

A comparison of the percentage of respondents reporting each of the constituent components of SA revealed engagement was mentioned most frequently, followed by perspective and self-awareness. Longevity was mentioned in two studies; in one of these studies mentioning longevity, 2 of 60 respondents mentioned longevity¹⁶ (Figure 5). North American studies (n=20) most often mentioned engagement (95%, n=19), perspective (90%, n=18) and

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3 self-awareness (80%, n=16). Australian studies (n=2) mentioned engagement
4 (100%, n=2), perspective (100%, n=2), independence (100%, 2) and quality of
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6 life (100%, n=2) most often. All Asian studies (n=2), mentioned engagement,
7
8 independence, and quality of life, finances, environment and physical health.
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10 The South American study (n=1) mentioned engagement, perspective, self-
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12 awareness, independence, acceptance, finances, environment and health.
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14 The British study mentioned engagement, perspective, self-awareness,
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16 acceptance, quality of life, adjustment, finances, environment, cognitive &
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18 mental and health maintenance behaviors.
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25 <INSERT FIGURE ABOUT HERE>
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29 DISCUSSION

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31 The components of SA identified by the qualitative studies captured in
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33 this review reflect a divergence from traditional biomedical conceptualizations
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35 of SA, highlighting the multidimensionality and psychosocial emphasis of SA.
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38 In contrast to operational definitions captured in the most recent review SA
39 which posit primarily biomedical models⁷, attitudinal and engagement
40 components were found to be the most frequently mentioned. Furthermore,
41 external factors, such as finances and environment, which are absent in the
42 majority of SA conceptualizations⁷, were also frequently mentioned. This
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44 review highlights the importance of psychosocial and external factors in SA
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46 definitions as well as emphasizes the multidimensional nature of SA. These
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48 results suggest that the incorporation of psychosocial and extrinsic
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components identified by laypersons into a multidimensional model of SA is a prudent means with which to augment biomedical conceptualisations of SA.

Limitations in the current study include the subjective nature of meta-ethnography and issues with the translation of SA. Meta-ethnography involves the interpretation and integration of researchers' interpretations of primary data¹⁴ that may result in bias. Where possible, direct quotes from respondents were coded; however, researchers' interpretive themes were coded, primarily. A further limitation was the translation of the phrase "successful ageing". Non-English studies used phrases the authors felt were equivalent to SA. For example, Hsu¹⁸ notes that there is no word that directly translates to SA in Taiwanese. The authors then used (what translates into English as) "ideal or satisfactory life in old age"; a phrase they identified as being roughly equivalent to SA in a pilot study.

Psychosocial components of SA were the most frequently mentioned aspects of SA, highlighting the advantages of expanding conceptualizations of SA beyond physiologically-based models. Traditional models of SA often suggest that an individual's physiological health is the sole indicator of one's SA, which is, as the current study suggests, a parochial perspective of a multifaceted construct. Psychosocial components were suggested by laypersons in all of the included studies, providing strong evidence for the inclusion in prospective models of SA. Furthermore, the breadth of the psychosocial components mentioned by laypersons highlights the multidimensionality of SA.

Using a meta-ethnographic framework, 12 psychosocial subthemes were identified: social roles, self-awareness, acceptance, perspective,

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3 engagement, spirituality, maintenance, quality of life, community, prevention &
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5 remediation, independence, and adjustment. It is important to note the
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7 heterogeneity of these components even within this psychosocial umbrella,
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9 with components ranging from internal (e.g. spirituality) to inter-personal (e.g.
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11 social roles). This breadth of psychosocial components in SA has not been
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13 illuminated to this degree in previous studies, providing invaluable insight into
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15 the complexity of layperson perspectives of SA.
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19 With such a variety of psychosocial components mentioned in the
20
21 current review, including every aspect of layperson perspectives into models
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23 of SA becomes increasingly difficult. It would be unrealistic to expect a study
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25 to touch on every nuance of SA that has been captured in the current review;
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27 however, there are a number of emergent themes that would be possible to
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29 capture. Most significantly is the prominence of psychosocial factors, notably
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31 engagement, perspective and self-awareness. These themes are then broken
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33 down into separate subthemes. This theoretical complexity manifests itself in
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35 attempts to quantify these psychosocial components of SA. There are a
36
37 myriad of metrics that may be used to capture these phenomena, ranging
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39 from, for example, frequency of social interaction to self-confidence,
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41 highlighting another area where further research is needed. Identifying
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43 appropriate metrics for capturing psychosocial SA phenomena presents a
44
45 unique challenge for researchers: translating a nebulous concept into a
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47 quantifiable and practically relevant construct.
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52 A component of SA identified in approximately two-thirds of the studies,
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54 but rarely examined in quantitative studies of SA, was extrinsic factors, i.e.
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56 environment and finances. Financial security was found to be important
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3 across all age bands in Charbonneau-Lyons' study ²⁹, in all permutations of
4 gender, education and income, aside from females in no/low
5 education/income group in Nagalaginam's study ³⁰, and by all the respondents
6 in the study by Lin ³¹. Environment and finances are typically excluded from
7 current models ^{3 32} and the identification of these factors in such a large
8 number of studies is therefore a unique finding. Further research is needed to
9 explore these factors cross-culturally and along biomedical components of SA.
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14 The SA component that was least frequently identified as being
15 important was longevity. This contrasts with biomedical approaches in SA
16 research that typically focus on the extension of life. There have been
17 previous suggestions that extreme longevity, in the form of centenarians, is a
18 representative model of SA ^{33 34}; however, these models have been met with
19 opposition ³⁵. Surviving to 100 is not necessarily indicative of holistic wellbeing
20 and is often accompanied by great losses and/or physical deficits ³⁵. The
21 results from the current study support these assertions; elderly laypersons do
22 not value simply living a long time as an integral component of SA. This
23 departure from biomedical models supporting mere longevity aligns closely
24 with the "adding life to years, not just years to life" ethos.
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43 Many of the components identified by layperson as being important
44 (e.g. engagement, self-awareness, perspective, etc.) present the opportunity
45 for the implementation of specific interventions for modifiable behaviors. For
46 example, aiding individuals in, decreasing depressive symptomology, social
47 engagement, invoking coping and resilience training, could augment and
48 compliment physical remediation strategies in the pursuit of SA. In contrast,
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3 components should not be included in models of SA, excluding possibility for
4 remediation or improvement of these factors closely linked to what it means to
5 be SA in the real world. It is necessary to look beyond the scope of biomedical
6 models to areas of the lived life that have not been covered by traditional
7 models of SA.
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14 There are important research and policy implications associated with
15 the identification and acknowledgement of lay perspectives of SA. These data
16 have the potential to provide invaluable information to researchers planning to
17 conduct studies of SA through the incorporation of psychosocial variables into
18 otherwise biomedical models. For example, if a researcher plans to use SA as
19 an outcome variable, they have the opportunity to include psychosocial
20 components in addition to physiological components. SA ageing is clearly not
21 simply a physiological construct, so it seems intuitive that psychosocial
22 components should be included into otherwise biomedical models of SA.
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34 The distribution of the various SA components across regions
35 reasserts the prevalence of psychosocial and external factors as components
36 of successful ageing. The only components that were represented in all five
37 regions (North America, South America, Asia, Australia, United Kingdom)
38 were engagement and self-awareness. Given the profound
39 overrepresentation of North American studies and studies conducted in
40 Caucasian populations, it is hard to discern whether any cultural variations
41 exist. These results highlight the need for further research to be conducted to
42 augment and incorporate the influence of psychosocial components and
43 cross-cultural perspectives of SA.
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3 The current review reinforces the multidimensional nature of SA and
4 emphasizes the importance of psychosocial aspects of SA. Components of
5 engagement and personal resources were identified by laypersons in more
6 studies than biomedical components, representing a divergence from
7 traditional (biomedical) models of SA and highlighting the need for the
8 inclusion of psychosocial components. Of particular note was the poor
9 representation of longevity amongst lay perspectives of SA. Although the
10 current study provides insights into the concept of SA, it must be
11 acknowledged that the included studies represent a strong Anglophone bias.
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23 Through the collection and synthesis of layperson perspectives, the current
24 study provides a comprehensive examination of layperson conceptualisations
25 of SA.
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GRAPHICS

Table 1: Included study characteristics

For peer review only

Lay perspectives of successful ageing

Author	n	Population	Age				Country	Ethnicity	Marital Status			
			Mean	SD	Min	Max		Caucasian	Married	Single	Divorced/ Separated	Widowed
Bowling (2006) ³⁶	854	Community dwelling	64		50	94	UK		72.0%	5.0%	9.0%	14.0%
Collings (2001) ²⁴	38	Inuit			23	86	Canada					
Cupertino, et al. (2007) ³⁷	501	Community dwelling	72.65	8.08	60	93	Brasil					
Duay, et al. (2006) ¹⁵	18	Community dwelling	72.6		60	86	USA	94.4%				
Dionigi, et al. (2011) ³⁸	21	Community dwelling women	83.3		75	92	Canada	100.0%	14.3%	4.8%	0.0%	81.0%
Ferri, et al. (2009) ³⁹	53	Community dwelling	78	8.2	61	90	USA	96.2%	32.1%	3.8%	11.3%	52.8%
Fisher (1995) ²⁷	40	Community dwelling, foster grandparents	72.65		61	92	USA	97.5%	2.5%		10.0%	97.5%
Fisher & Specht (1999) ²⁵	36	Community dwelling artists	73.75		60	93	USA	97.2%	66.7%	5.6%	5.6%	22.2%
Fisher, (1992) ²¹	19	Seniors activity center	75		62	85	USA	100.0%	47.4%	5.3%		47.4%
Guse & Masesar(1999) ⁴⁰	32	Long-term care					Canada		34.0%	3.0%	16.0%	47.0%
Hilton, et al. (2009) ⁴¹	65	Caregivers of elderly individuals	51.8		29	72	USA	81.5%	59.4%			
Hilton, et al. (2012) ⁴²	60	Community dwelling Latinos	61		50	84	USA	0.0%	48.3%	16.7%	20.0%	16.7%
Hsu (2007) ¹⁸	584	Community dwelling					Taiwan					
Iwasama & Iwasaki (2011) ²³	77	Community dwelling Japanese-Americans	78.3	8.5	55	96	USA		37.7%	3.9%	11.7%	46.8%
Knight & Ricciardelli (2003) ¹⁶	60	Community/retirement village dwelling	80.05		70	101	Australia					
Lee (2009) ¹⁹	109	Living-alone, low SES					China		5.5%	17.4%	8.3%	68.8%

Lay perspectives of successful ageing

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Lewis (2010) ²⁰	15	Alaska natives	56		26	84	USA					
Lewis (2011) ⁴³	26	Alaska natives			61	93	USA	53.8%				46.2%
McCann et al. (2008) ⁴⁴	14	Spiritually affiliated women			60	89	Australia					
Reichstadt et al. (2007) ⁴⁵	72	Retirement communities			60	99	USA					
Reichstadt et al. (2010) ²⁸	22	Retirement communities/seniors housing/seniors learning center	80	9.1	64	96	USA	86.0%				
Rossen, et al. (2008) ⁴⁶	31	Community dwelling women	78		61	90	USA	20.0%	12.0%			65.0%
Stevens-Ratchford & Cebulak (2004) ⁴⁷	14	Community dwelling with osteo- or rheumatoid arthritis	67		61	87	USA	100.0%				
Tate, et al. (2003) ⁴⁸	177	World War II veterans	78				Canada					
Troutman, et al. (2011) ⁴⁹	100	Community dwelling African-Americans	74.4	6	61	89	USA	0.0%				
Troutman, et al. (2013) ⁵⁰	52	Community dwelling self-identified "successful agers"	77.1	7.02	60	89	USA	44.0%	25.0%	15.4%	3.8%	53.8%

Figure 1: Inclusion Flowchart

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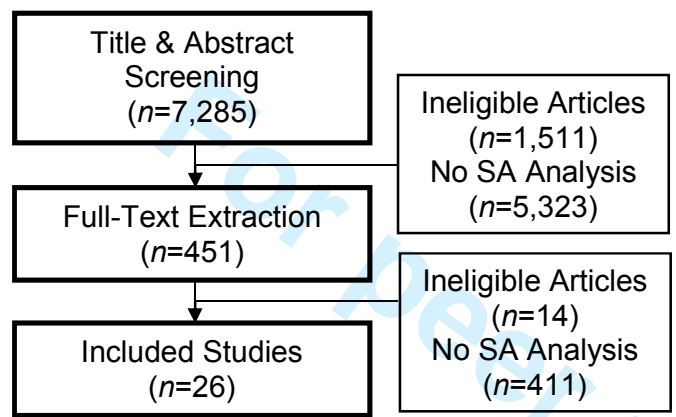


Figure 1: Inclusion flowchart

Figure 2: Biomedical themes and sub-themes

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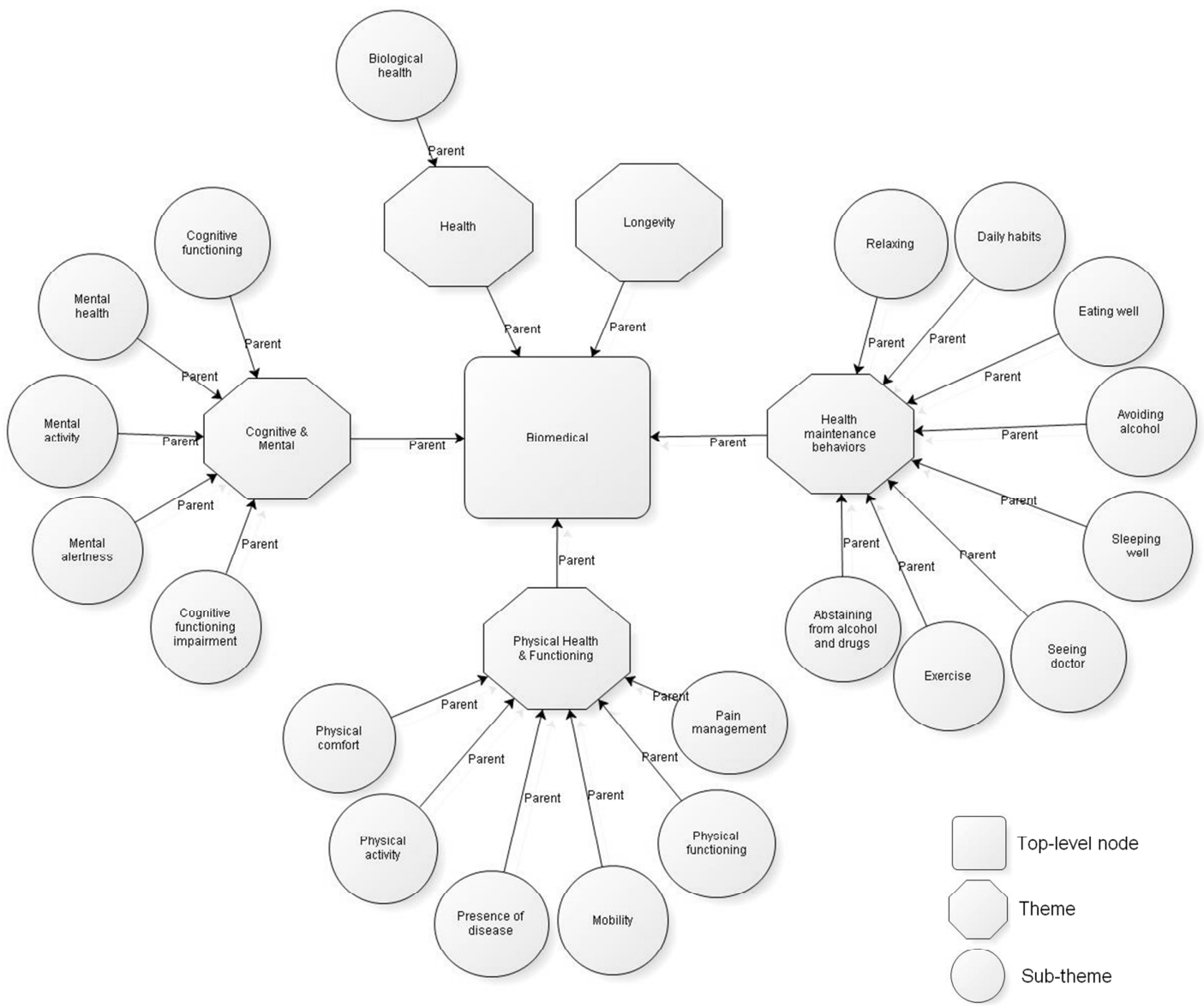
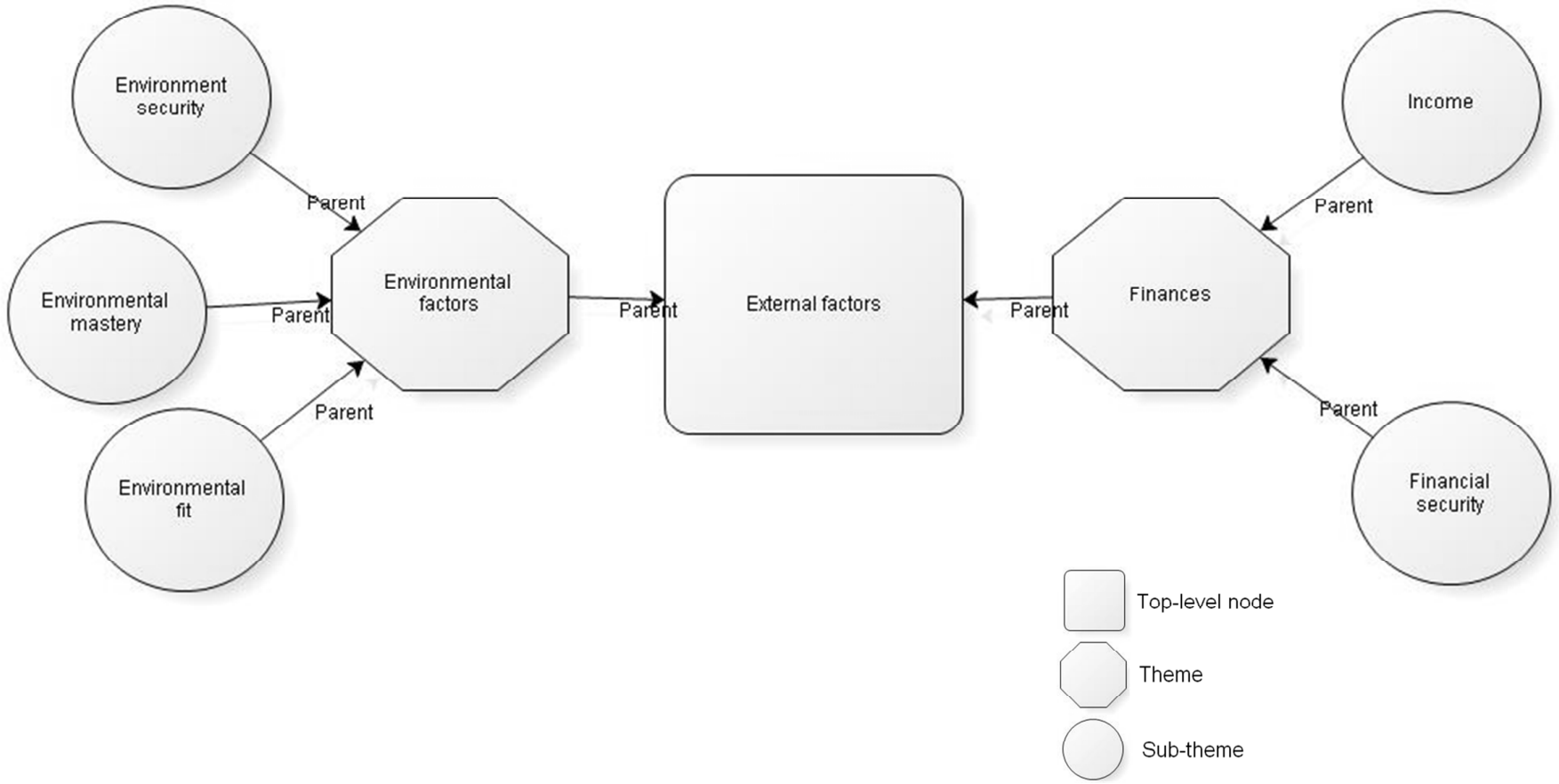


Figure 3: External factor themes and sub-themes

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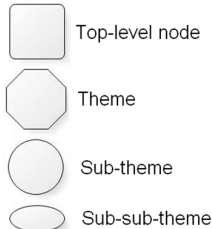
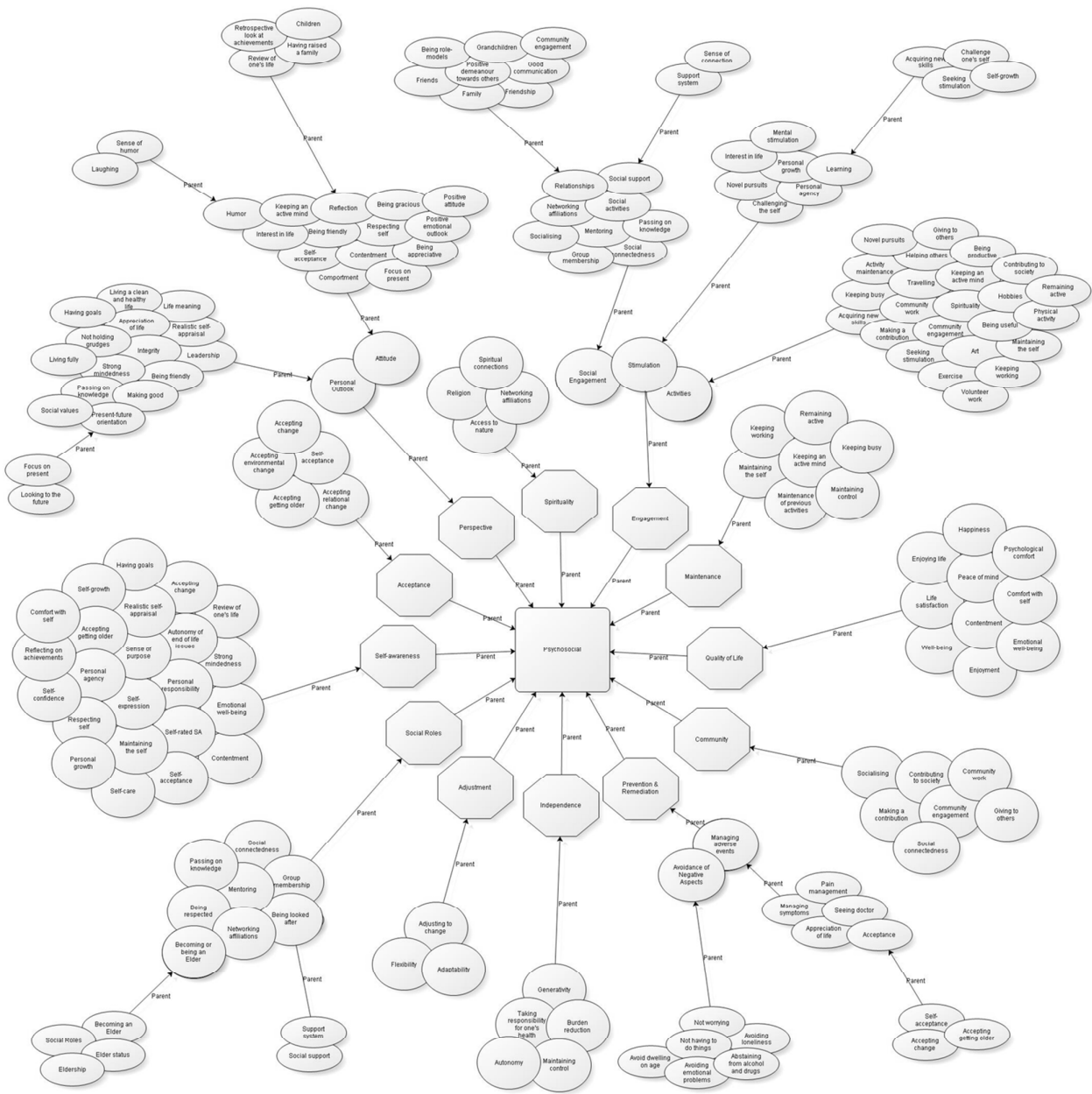
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Figure 4: Psychosocial themes and subthemes

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Lay perspectives of successful ageing



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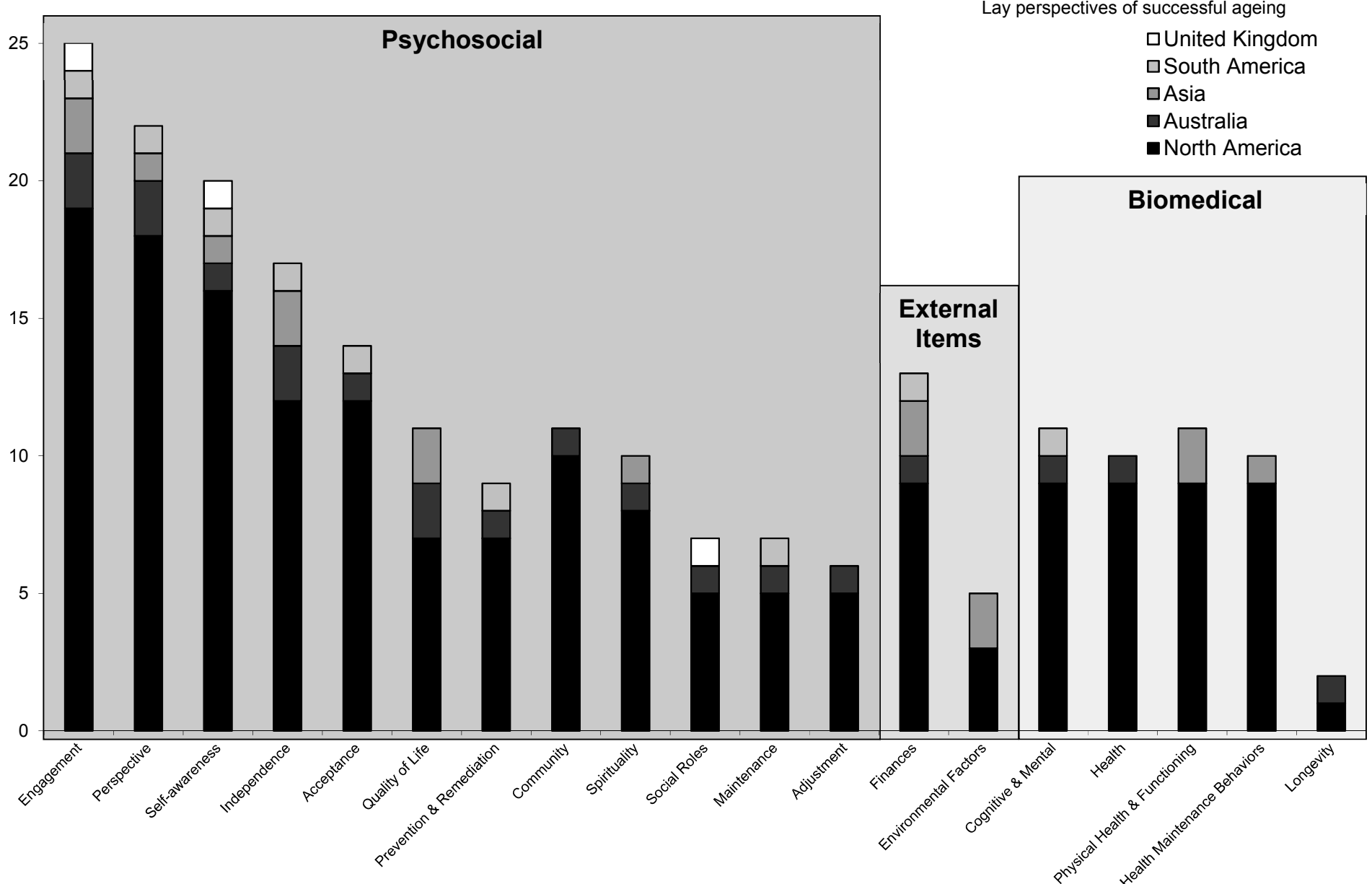
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| Figure 5: [Frequency of studies reporting each of the SA components, by region](#)

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Lay perspectives of successful ageing

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Lay perspectives of successful ageing: A systematic review and meta-ethnography

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Keywords:	GERIATRIC MEDICINE, PUBLIC HEALTH, QUALITATIVE RESEARCH

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Manuscripts

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3 **Lay perspectives of successful ageing: A systematic review and meta-**
4 **ethnography**
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45 Running head: Lay perspectives of successful ageing
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Article Summary

Article Focus

- Currently there is no consensus definition of successful ageing
- The current study provides a comprehensive snapshot of qualitative studies of layperson perspectives of successful ageing

Key Messages

- Successful ageing is much more complex than simply physical health
- Psychosocial (e.g. attitude) factors were the most frequently mentioned components of successful ageing
- Layperson perspectives advocate the inclusion of components of successful ageing that go beyond physical health

Strengths

- Article conducts a systematic review of qualitative studies

Limitations

- Meta-ethnography involves the subjective interpretation of secondary data that is, itself, a subjective interpretation
- Languages that did not have “successful ageing” in their vernacular used approximations of the term

ABSTRACT

Objectives: The aim of the current study was to conduct a systematic review of lay perspectives of successful ageing (SA), synthesise these data using a meta-ethnographic framework and to provide a snapshot of extant lay perspectives of SA.

Design: A systematic review of layperson perspectives of SA was conducted across MedLine, PsycInfo, CINAHL, EMBASE and ISI Web of Knowledge.

Participants: Peer-reviewed studies conducting qualitative investigations of lay perspectives of SA were included. Included studies were coded and analysed using NVivo 9 to examine underlying themes of SA.

Results: The search strategy identified 7,285 articles; 26 articles met inclusion criteria. Laypersons identified psychosocial components, notably engagement (e.g. social engagement), and personal resources (e.g. attitude), as integral components of SA more often than “physiological” components, such as longevity or physical functioning. These results also highlight the profound underrepresentation of non-Western countries and the cultural homogeneity of research participants.

Conclusions: The current study reveals the importance laypersons place on incorporating psychosocial components into multidimensional models of SA as well as highlights the need for increased research with underrepresented populations.

Keywords: successful ageing, healthy ageing, lay perspectives, systematic review

INTRODUCTION

Despite an increasing focus on the improvement of quality of life throughout the life-course, there is no generally accepted definition of what it means to age well. What “successful ageing (SA)” is, or is not, is a contentious issue. Since the inception of the term, subjective interpretations of SA have generated an increase in disparate perspectives and conceptualisations. Depending on the context, objectives and sample characteristics of a study, the definition of SA has varied significantly¹. In the absence of a consensus definition, the generalisability of SA studies has been severely impeded, inhibiting cross-study comparisons.

The most popular model of SA, Rowe & Kahn’s^{2,3} conceptualisation of SA, is primarily biomedical. This and other biomedical models of SA focus on physiological or cognitive aspects of health, as captured by metrics such as the Mini Mental State Exam⁴ or the Activities of Daily Living scale⁵. Rowe & Kahn’s^{2,3} model suggests that high cognitive/physical functioning, low risk of illness, and active engagement comprise SA. This widely used model provides the theoretical underpinnings for many operational definitions of SA¹. Although these researcher-driven conceptualisations of SA are popular, they have, however, been subject to criticism due to their biomedical focus, without explicit input of layperson perspectives⁶.

The aim of the study is to provide a comprehensive review of studies examining lay perspectives of SA, in order to augment the many researcher-driven conceptualisations of SA with insights from qualitative research. The most recent reviews of operational definitions of SA¹ and qualitative perspectives of SA⁷, reveal that there are more than twice as many studies

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positing operational definitions of SA as there are studies examining lay perspectives of SA. However, a study examining several different SA models, i.e. biomedical, psychosocial and lay models, found the multidimensional lay model to be the strongest⁸. Through qualitative studies laypersons are given a platform to voice their opinions and perspectives on research topics⁹. Therefore, the incorporation of layperson perspectives expands and complements researcher-driven conceptualisations of SA, with the potential to improve both the quality and impact of research¹⁰, increasing the validity and practical relevance of SA models¹¹. This review expands upon a previous review of lay perspectives by Hung, et al.⁷ through a broadened search strategy, an augmented temporal search span and the inclusion of non-English articles. Further, whilst Hung, et al.⁷ focused on the umbrella concept of “healthy ageing”, which they describe as capturing, “active ageing”, “positive ageing”, “robust ageing”, “ageing well” as well as SA, the current review focusses specifically on SA.

METHODS

Search Strategy

A systematic review of the literature in PubMed, PsycInfo, ISI Web of Knowledge, EmBase and the Cumulative Index of Nursing and Allied Health Literature (CINAHL) databases was initially conducted between May 31 and June 7, 2011 and then updated on March 23, 2013; all literature published before March 23, 2013 was eligible for inclusion. The specific search strategy includes “successful ageing” along with seven SA synonyms: robust ageing, optimal ageing, positive ageing, healthy ageing, productive ageing, effective ageing and ageing well. These phrases were used with both “aging” and

Lay perspectives of successful aging

“ageing” spelling conventions, put in quotations, and linked via the Boolean operator “OR”. Where possible, the wildcat operator “*” was inserted to capture all permutations of the phrase. Furthermore, where possible, in a given database, non-human studies were excluded. For example the search input for the phrase “successful ageing” in PubMed was "successful* ageing" OR "successful* ageing", which was searched as “successful* ageing”[All Fields] OR "successful* ageing"[All Fields] AND "humans"[MeSH Terms].

This process was repeated across the six databases using the seven SA related phrases. The SA related terms were included to capture studies that, for example, listed “ageing well” in their keywords, but asked “What is your definition of successful ageing?” in interviews with participants. If only “successful ageing” had been used in the search strategy it would have been missed. Therefore, in an effort to capture every SA instance the seven SA related terms were used in the search strategy. Relevant articles referenced in the captured studies were also included.

Study Inclusion

Peer-reviewed research articles conducting qualitative research with laypersons on the components of SA were included. Studies were considered to be qualitative if participants were asked open-ended or semi-open ended question(s). Studies discussing synonyms of SA without specific reference to SA, or components of SA, were excluded. Non-peer reviewed articles such as dissertations, opinion pieces, and letters to the editor, as well as review articles, were excluded.

As the intent was to provide a comprehensive review of lay perspectives of SA, studies were neither excluded nor weighted based on

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3 study characteristics or methodological rigor, as there is no established
4 methodology for quality assessment of construct reviews¹².
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7 8 **Data Extraction**

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10 Title and abstract review was conducted (TDC, AMP & JP), to identify
11 relevant articles for full-text extraction. Disagreements regarding inclusion
12 were resolved by discussion. No language restrictions were made; non-
13 English articles were translated by multilingual staff at the Cambridge Institute
14 of Public Health, Cambridge University. Information regarding the definitions
15 and components of SA were extracted from authors' descriptions and
16 syntheses of participants' responses as well as direct quotes from study
17 participants. Where possible, the percentage of respondents referencing each
18 SA component in a given study was noted. In studies where participants
19 ranked the relative importance of each SA component, these data were
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38 **Synthesis**

39 Themes created by study authors and direct quotes from study
40 participants were identified, coded and analysed in NVIVO 9. The different
41 components of SA were analysed using a meta-ethnographic framework.
42 Meta-ethnography is a method with which to synthesise qualitative studies
43 through an inductive analysis and integration of inter-study themes¹³. A
44 hierarchy of SA components was identified through the identification of
45 overarching themes and the components constituting these broad themes
46 with progressively more specific foci.
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56 **RESULTS**

Included Studies

The search strategy identified 7,285 articles. Title and abstract screening eliminated 6,834 articles and full-text screening eliminated 425 articles, 26 studies met inclusion criteria (Figure 1).

<INSERT FIGURE ABOUT HERE>

Study characteristics

Qualitative studies were primarily conducted in the US (n=13) and Canada (n=4) using purposive sampling with community dwelling populations of Caucasian older adults. The sample size ranged from 14 to 1771, with a mean of 180 (median= 46; SD=383) (Table 1).

<INSERT TABLE ABOUT HERE>

Components of SA

All studies (n=26) included psychosocial components, 76% (n=20 studies) included biomedical components, and 58% (n=15 studies) included external components. Psychosocial components were those that focused on internal and/or social phenomena, e.g. resilience. Biomedical components were those that focused on physiological phenomena, e.g. mobility. External components were those that focused on phenomena external to the individual, e.g. housing conditions.

The biomedical components were grouped into cognitive & mental, health, health maintenance behaviors, longevity, and physical health &

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3 functioning. Cognitive & mental components focused on the functioning of
4 mental and cognitive faculties, e.g. “the only way not to become an old dog is
5 to learn new tricks.”¹⁴. Health components focused on non-specific notions of
6 physiological health, e.g. “health is everything”¹⁵. Health maintenance
7 behavior components focused on behaviors fostering physical and/or
8 cognitive health, e.g. “eating right”¹⁶. Longevity components were those that
9 focused on length of life. Physical health and functioning components were
10 those that focused on references to physical health, e.g. “able to move
11 anywhere”¹⁷. (Figure 2).
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30 External components were grouped into environmental factors, e.g.
31 “having a satisfactory living environment” and finances, e.g. “[being] financially
32 self-supported”¹⁸ (Figure 3).
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44 Psychosocial factors were grouped into acceptance, adjustment,
45 maintenance, spirituality, community, social roles, quality of life,
46 independence, prevention & remediation, self-awareness, perspective, and
47 engagement. Acceptance components focused on coming to terms with
48 change in one’s life, e.g. “we need to accept our older age”¹⁹. Adjustment
49 components focused on the ability to adapt to change in one’s life, e.g.
50 “keeping up with the changing things around you”²⁰. Maintenance
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Lay perspectives of successful aging

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3 components focused on continuing previous behaviors, e.g. “there is one
4 person I know who is quite old and they’re still hunting and everything” ²¹.
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6 Spirituality components focused on the presence of a higher being or
7 connection to a force greater than oneself, e.g. “it is important to live with faith
8 and appreciate that we are protected each day” ²². Community components
9 focused on connectedness or contributing to a social sphere, e.g. “I’m active
10 in the community. Very helpful to my neighbors in any way that I can” ¹⁴.
11
12 Social role components focused on one’s position or function within a social
13 sphere, e.g. “being able to talk to young people, people younger than I who
14 have a long life ahead of them” ²³. Quality of life components focused on life
15 satisfaction, e.g. “leading a simple but happy life” ¹⁸. Independence
16 components focused on autonomy, e.g. “having the freedom to express
17 myself freely and naturally” ²⁴. Prevention & remediation components
18 focused on the management or avoidance of negative influences, e.g.
19 abstaining from drugs and alcohol ²⁵. Self-awareness components focused on
20 personal resources, e.g. “being able to look back on my life and see personal
21 development” ²⁴. Perspective components focused on personal outlook and
22 attitude, e.g. “Having a positive outlook on life” ²⁶. Engagement components
23 focused on social involvement, stimulation and/or participation in various
24 activities, e.g. “I like to be out around my friends talking, you know, what’s
25 going on in this place and finding out things, being involved” ²⁷ (Figure 4).
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3 A comparison of the percentage of respondents reporting each of the
4 constituent components of SA revealed engagement was mentioned most
5 frequently, followed by perspective and self-awareness. Longevity was
6 mentioned in two studies; in one of these studies mentioning longevity, 2 of 60
7 respondents mentioned longevity¹⁵ (Figure 5). North American studies (n=20)
8 most often mentioned engagement (95%, n=19), perspective (90%, n=18) and
9 self-awareness (80%, n=16). Australian studies (n=2) mentioned engagement
10 (100%, n=2), perspective (100%, n=2), independence (100%, 2) and quality of
11 life (100%, n=2) most often. All Asian studies (n=2), mentioned engagement,
12 independence, and quality of life, finances, environment and physical health.
13 The South American study (n=1) mentioned engagement, perspective, self-
14 awareness, independence, acceptance, finances, environment and health.
15 The British study mentioned engagement, perspective, self-awareness,
16 acceptance, quality of life, adjustment, finances, environment, cognitive &
17 mental and health maintenance behaviors.

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42 **DISCUSSION**

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44 The components of SA identified by the qualitative studies captured in
45 this review reflect a divergence from traditional biomedical conceptualisations
46 of SA, highlighting the multidimensionality and psychosocial emphasis of SA.
47 In contrast to operational definitions captured in the most recent review of SA
48 which posit primarily biomedical models¹, attitudinal and engagement
49 components were found to be the most frequently mentioned. Furthermore,
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external factors, such as finances and environment, which are absent in the majority of SA conceptualisations¹, were also frequently mentioned. This review highlights the importance of psychosocial and external factors in SA definitions as well as emphasises the multidimensional nature of SA. These results suggest that the incorporation of psychosocial and extrinsic components identified by laypersons into a multidimensional model of SA is a prudent means with which to augment biomedical conceptualisations of SA.

Limitations in the current study include the subjective nature of meta-ethnography and issues with the translation of SA. Meta-ethnography involves the interpretation and integration of researchers' interpretations of primary data¹³ that may result in bias. Where possible, direct quotes from respondents were coded; however, researchers' interpretive themes were coded, primarily. A further limitation was the translation of the phrase "successful ageing". Non-English studies used phrases the authors felt were equivalent to SA. For example, Hsu¹⁷ notes that there is no word that directly translates to SA in Taiwanese. The authors then used (what translates into English as) "ideal or satisfactory life in old age"; a phrase they identified as being roughly equivalent to SA in a pilot study.

Psychosocial components of SA were the most frequently mentioned aspects of SA, highlighting the advantages of expanding conceptualisations of SA beyond physiologically-based models. Traditional models of SA often suggest that an individual's physiological health is the sole indicator of one's SA, which is, as the current study suggests, a parochial perspective of a multifaceted construct. Psychosocial components were suggested by laypersons in all of the included studies, providing strong evidence for the

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3 inclusion in prospective models of SA. Furthermore, the breadth of the
4 psychosocial components mentioned by laypersons highlights the
5 multidimensionality of SA.
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10 Using a meta-ethnographic framework, 12 psychosocial subthemes
11 were identified: social roles, self-awareness, acceptance, perspective,
12 engagement, spirituality, maintenance, quality of life, community, prevention &
13 remediation, independence, and adjustment. It is important to note the
14 heterogeneity of these components even within this psychosocial umbrella,
15 with components ranging from internal (e.g. spirituality) to inter-personal (e.g.
16 social roles). This breadth of psychosocial components in SA has not been
17 illuminated to this degree in previous studies, providing invaluable insight into
18 the complexity of layperson perspectives of SA.
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30 With such a variety of psychosocial components mentioned in the
31 current review, including every aspect of layperson perspectives into models
32 of SA becomes increasingly difficult. It would be unrealistic to expect a study
33 to touch on every nuance of SA that has been captured in the current review;
34 however, there are a number of emergent themes that would be possible to
35 capture. Most significantly is the prominence of psychosocial factors, notably
36 engagement, perspective and self-awareness. These themes are then broken
37 down into separate subthemes. This theoretical complexity manifests itself in
38 attempts to quantify these psychosocial components of SA. There are a
39 myriad of metrics that may be used to capture these phenomena, ranging
40 from, for example, frequency of social interaction to self-confidence,
41 highlighting another area where further research is needed. Identifying
42 appropriate metrics for capturing psychosocial SA phenomena presents a
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Lay perspectives of successful aging

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3 unique challenge for researchers: translating a nebulous concept into a
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5 quantifiable and practically relevant construct.
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8 A component of SA identified in approximately two-thirds of the studies,
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10 but rarely examined in quantitative studies of SA, was extrinsic factors, i.e.
11 environment and finances. Financial security was found to be important
12 environment and finances. Financial security was found to be important
13 across all age bands in Charbonneau-Lyons' study ²⁸, in all permutations of
14 gender, education and income, aside from females in no/low
15 education/income group in Nagalaginam's study ²⁹, and by all the respondents
16 in the study by Lin ³⁰. Environment and finances are typically excluded from
17 current models ^{3 31} and the identification of these factors in such a large
18 number of studies is therefore a unique finding. Further research is needed to
19 explore these factors cross-culturally and along biomedical components of SA.
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22 The SA component that was least frequently identified as being
23 important was longevity. This contrasts with biomedical approaches in SA
24 research that typically focus on the extension of life. There have been
25 previous suggestions that extreme longevity, in the form of centenarians, is a
26 representative model of SA ^{32 33}; however, these models have been met with
27 opposition ³⁴. Surviving to 100 is not necessarily indicative of holistic wellbeing
28 and is often accompanied by great losses and/or physical deficits ³⁴. The
29 results from the current study support these assertions; elderly laypersons do
30 not value simply living a long time as an integral component of SA. This
31 departure from biomedical models supporting mere longevity aligns closely
32 with the "adding life to years, not just years to life" ethos.
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35 Many of the components identified by layperson as being important
36 (e.g. engagement, self-awareness, perspective, etc.) present the opportunity
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3 for the implementation of specific interventions for modifiable behaviors. For
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5 example, aiding individuals in, decreasing depressive symptomology, social
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7 engagement, invoking coping and resilience training, could augment and
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9 compliment physical remediation strategies, as identified by biomedical
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11 models, in the pursuit of SA. Therefore, it is prudent to augment the scope of
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13 biomedical models to areas of the lived life that have not been covered by
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15 traditional models of SA.
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19 There are important research and policy implications associated with
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21 the identification and acknowledgement of lay perspectives of SA. These data
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23 have the potential to provide invaluable information to researchers planning to
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25 conduct studies of SA through the incorporation of psychosocial variables into
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27 otherwise biomedical models. For example, if a researcher plans to use SA as
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29 an outcome variable, they have the opportunity to include psychosocial
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31 components in addition to physiological components. SA ageing is clearly not
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33 simply a physiological construct, so it seems intuitive that psychosocial
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35 components should be included into otherwise biomedical models of SA.
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39 The distribution of the various SA components across regions
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41 reasserts the prevalence of psychosocial and external factors as components
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43 of successful ageing. The only components that were represented in all five
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45 regions (North America, South America, Asia, Australia, United Kingdom)
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47 were engagement and self-awareness. Given the profound
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49 overrepresentation of North American studies and studies conducted in
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51 Caucasian populations, it is hard to discern whether any cultural variations
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53 exist. These results highlight the need for further research to be conducted to
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Lay perspectives of successful aging

augment and incorporate the influence of psychosocial components and cross-cultural perspectives of SA.

The current review reinforces the multidimensional nature of SA and emphasises the importance of psychosocial aspects of SA. Components of engagement and personal resources were identified by laypersons in more studies than biomedical components, representing a divergence from traditional (biomedical) models of SA and highlighting the need for the inclusion of psychosocial components. Of particular note was the poor representation of longevity amongst lay perspectives of SA. Although the current study provides insights into the concept of SA, it must be acknowledged that the included studies represent a strong Anglophone bias. The current study updates and expands a previous review by Hung, et al. ⁷, collecting, synthesising, and providing a comprehensive examination of layperson conceptualisations of SA.

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7 Contributorship: The review and search protocol was planned by TDC, BS
8 and CB. TDC conducted the primary article review and data extraction; AMP
9 and JP conducted second, independent, screens of the articles. TDC wrote
10 the manuscript, which was edited and reviewed by AMP, JP, BS and CB.
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20 Data sharing: no additional data available.
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GRAPHICS

Table 1: Included study characteristics

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Author	n	Population	Age				Country	Ethnicity	Marital Status			
			Mean	SD	Min	Max		Caucasian	Married	Single	Divorced/ Separated	Widowed
Bowling (2006) ³⁵	854	Community dwelling	64		50	94	UK		72.0%	5.0%	9.0%	14.0%
Collings (2001) ²³	38	Inuit			23	86	Canada					
Cupertino, et al. (2007) ³⁶	501	Community dwelling	72.65	8.08	60	93	Brasil					
Duay, et al. (2006) ¹⁴	18	Community dwelling	72.6		60	86	USA	94.4%				
Dionigi, et al. (2011) ³⁷	21	Community dwelling women	83.3		75	92	Canada	100.0%	14.3%	4.8%	0.0%	81.0%
Ferri, et al. (2009) ³⁸	53	Community dwelling	78	8.2	61	90	USA	96.2%	32.1%	3.8%	11.3%	52.8%
Fisher (1995) ²⁶	40	Community dwelling, foster grandparents	72.65		61	92	USA	97.5%	2.5%		10.0%	97.5%
Fisher & Specht (1999) ²⁴	36	Community dwelling artists	73.75		60	93	USA	97.2%	66.7%	5.6%	5.6%	22.2%
Fisher, (1992) ²⁰	19	Seniors activity center	75		62	85	USA	100.0%	47.4%	5.3%		47.4%
Guse & Masesar(1999) ³⁹	32	Long-term care					Canada		34.0%	3.0%	16.0%	47.0%
Hilton, et al. (2009) ⁴⁰	65	Caregivers of elderly individuals	51.8		29	72	USA	81.5%	59.4%			
Hilton, et al. (2012) ⁴¹	60	Community dwelling Latinos	61		50	84	USA	0.0%	48.3%	16.7%	20.0%	16.7%
Hsu (2007) ¹⁷	584	Community dwelling					Taiwan					
Iwasama & Iwasaki (2011) ²²	77	Community dwelling Japanese-Americans	78.3	8.5	55	96	USA		37.7%	3.9%	11.7%	46.8%
Knight & Ricciardelli (2003) ¹⁵	60	Community/retirement village dwelling	80.05		70	101	Australia					
Lee (2009) ¹⁸	109	Living-alone, low SES					China		5.5%	17.4%	8.3%	68.8%

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Lewis (2010) ¹⁹	15	Alaska natives	56		26	84	USA						
Lewis (2011) ⁴²	26	Alaska natives			61	93	USA	53.8%					46.2%
McCann et al. (2008) ⁴³	14	Spiritually affiliated women			60	89	Australia						
Reichstadt et al. (2007) ⁴⁴	72	Retirement communities			60	99	USA						
Reichstadt et al. (2010) ²⁷	22	Retirement communities/seniors housing/seniors learning center	80	9.1	64	96	USA	86.0%					
Rossen, et al. (2008) ⁴⁵	31	Community dwelling women	78		61	90	USA	20.0%	12.0%				65.0%
Stevens-Ratchford & Cebulak (2004) ⁴⁶	14	Community dwelling with osteo- or rheumatoid arthritis	67		61	87	USA	100.0%					
Tate, et al. (2003) ⁴⁷	177	World War II veterans	78				Canada						
Troutman, et al. (2011) ⁴⁸	100	Community dwelling African-Americans	74.4	6	61	89	USA	0.0%					
Troutman, et al. (2013) ⁴⁹	52	Community dwelling self-identified "successful agers"	77.1	7.02	60	89	USA	44.0%	25.0%	15.4%	3.8%		53.8%

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6 Figure 1: Inclusion flowchart
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8 Figure 2: Biomedical themes and sub-themes
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10 Figure 3: External factor themes and sub-themes
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12 Figure 4: Psychosocial themes and subthemes
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14 Figure 5: Frequency of studies reporting each of the SA components, by
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6 **Lay perspectives of successful ageing: A systematic review and meta-**
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8 **ethnography**

9
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Running head: Lay perspectives of successful ageing

Lay perspectives of successful aging

Article Focus

- Currently there is no consensus definition of successful ageing
- The current study provides a comprehensive snapshot of qualitative studies of layperson perspectives of successful ageing

Key Messages

- Successful ageing is much more complex than simply physical health
- Psychosocial (e.g. attitude), and external (e.g. finances), factors were the most frequently mentioned components of successful ageing
- Layperson perspectives advocate the inclusion of components of successful ageing that go beyond physical health

Strengths

- Article conducts a systematic review of qualitative studies

Limitations

- Meta-ethnography involves the subjective interpretation of secondary data that is, itself, a subjective interpretation
- Languages that did not have “successful ageing” in their vernacular used approximations of the term

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The review and search protocol was planned by TDC, BS and CB.
TDC conducted the primary article review and data extraction; AMP and JP
conducted second, independent, screens of the articles. TDC wrote the
manuscript, which was edited and reviewed by AMP, JP, BS and CB.

There is no additional data available.

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ABSTRACT

Objectives: The aim of the current study was to conduct a systematic review of lay perspectives of SA, synthesise these data using a meta-ethnographic framework and to provide a snapshot of extant lay perspectives of SA.

Design: A systematic review of layperson perspectives of SA was conducted across MedLine, PsycInfo, CINAHL, EMBASE and ISI Web of Knowledge.

Participants: Peer-reviewed studies conducting qualitative investigations of lay perspectives of SA were included. Included studies were coded and analysed using NVivo 9 to examine underlying themes of SA.

Results: The search strategy identified 7,285 articles; 26 articles met inclusion criteria. Laypersons identified psychosocial components, notably engagement (e.g. social engagement), and personal resources (e.g. attitude), as integral components of SA more often than “physiological” components, such as longevity or physical functioning. These results also highlight the profound underrepresentation of non-Western countries and the cultural homogeneity of research participants.

Conclusions: The current study reveals the importance laypersons place on incorporating psychosocial components into multidimensional models of SA as well as highlights the need for increased research with underrepresented populations.

Keywords: successful ageing, healthy ageing, lay perspectives, systematic review

Lay perspectives of successful aging

INTRODUCTION

Despite an increasing focus on the improvement of quality of life throughout the life-course, there is no generally accepted definition of what it means to age well. What “successful ageing (SA)” is, or is not, is a contentious issue. Since the inception of the term, subjective interpretations of SA have generated an increase in disparate perspectives and conceptualisations. Depending on the context, objectives and sample characteristics of a study, the definition of SA has varied significantly¹. In the absence of a consensus definition, the generalisability of SA studies has been severely impeded, inhibiting cross-study comparisons.

The most popular model of SA, Rowe & Kahn’s^{2,3} conceptualisation of SA, is primarily biomedical. This and other biomedical models of SA focus on physiological or cognitive aspects of health, as captured by metrics such as the Mini Mental State Exam⁴ or the Activities of Daily Living scale⁵. Rowe & Kahn’s^{2,3} model suggests that high cognitive/physical functioning, low risk of illness, and active engagement comprise SA. This widely used model provides the theoretical underpinnings for many operational definitions of SA¹. Although these researcher-driven conceptualisations of SA are popular, they have, however, been subject to criticism due to their biomedical focus, without explicit input of layperson perspectives⁶.

The aim of the study is to provide a comprehensive review of studies examining lay perspectives of SA, in order to augment ~~the largely quantitatively dominated~~ the many researcher-driven SA conceptualisations of SA literature with insights from qualitative research. The most recent reviews of ~~quantitative operational~~ definitions of SA^{1,7} and qualitative perspectives of

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SA⁷, reveal that there are more than twice as many studies **examining** **positing** operational definitions of SA as there are studies examining lay perspectives of SA. However, a study examining several different SA models, i.e. biomedical, psychosocial and lay models, found the multidimensional lay model to be the strongest⁸. Through qualitative studies laypersons are given a platform to voice their opinions and perspectives on research topics⁹. Therefore, the incorporation of layperson perspectives expands and complements ~~existing quantitative~~ **researcher-driven conceptualisations of SA research**, with the potential to improve both the quality and impact of research¹⁰, increasing the validity and practical relevance of SA models¹¹. This review expands upon a previous review of lay perspectives by Hung, et al.⁷ through a broadened search strategy, an augmented temporal search span and the inclusion of non-English articles. Further, whilst Hung, et al.⁷ focused on the umbrella concept of “healthy ageing”, which they describe as capturing, “active ageing”, “positive ageing”, “robust ageing”, “ageing well” as well as SA, the current review focusses specifically on SA.

METHODS

Search Strategy

A systematic review of the literature in PubMed, PsycInfo, ISI Web of Knowledge, EmBase and the Cumulative Index of Nursing and Allied Health Literature (CINAHL) databases was initially conducted between May 31 and June 7, 2011 and then updated on March 23, 2013; all literature published before March 23, 2013 was eligible for inclusion. The specific search strategy includes “successful ageing” along with seven SA synonyms: robust ageing, optimal ageing, positive ageing, healthy ageing, productive ageing, effective

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ageing and ageing well. These phrases were used with both “aging” and “ageing” spelling conventions, put in quotations, and linked via the Boolean operator “OR”. Where possible, the wildcat operator “*” was inserted to capture all permutations of the phrase. Furthermore, where possible, in a given database, non-human studies were excluded. For example the search input for the phrase “successful ageing” in PubMed was "successful* ageing" OR "successful* ageing", which was searched as “successful* ageing”[All Fields] OR "successful* ageing"[All Fields] AND "humans"[MeSH Terms].

This process was repeated across the six databases using the seven SA related phrases. The SA related terms were included to capture studies that, for example, listed “ageing well” in their keywords, but asked “What is your definition of successful ageing?” in interviews with participants. If only “successful ageing” had been used in the search strategy it would have been missed. Therefore, in an effort to capture every SA instance the seven SA related terms were used in the search strategy. Relevant articles referenced in the captured studies were also included.

Study Inclusion

Peer-reviewed research articles conducting qualitative research with laypersons on the components of SA were included. Studies were considered to be qualitative if participants were asked open-ended or semi-open ended question(s). Studies discussing synonyms of SA without specific reference to SA, or components of SA, were excluded. Non-peer reviewed articles such as dissertations, opinion pieces, and letters to the editor, as well as review articles, were excluded.

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As the intent was to provide a comprehensive review of lay perspectives of SA, studies were neither excluded nor weighted based on study characteristics or methodological rigor, as there is no established methodology for quality assessment of construct reviews¹².

Data Extraction

Title and abstract review was conducted (TDC, AMP & JP), to identify relevant articles for full-text extraction. Disagreements regarding inclusion were resolved by discussion. No language restrictions were made; non-English articles were translated by multilingual staff at the Cambridge Institute of Public Health, Cambridge University. Information regarding the definitions and components of SA were extracted from authors' descriptions and syntheses of participants' responses as well as direct quotes from study participants. Where possible, the percentage of respondents referencing each SA component in a given study was noted. In studies where participants ranked the relative importance of each SA component, these data were recorded.

Synthesis

Themes created by study authors and direct quotes from study participants were identified, coded and analysed in NVIVO 9. The different components of SA were analysed using a meta-ethnographic framework. Meta-ethnography is a method with which to synthesise qualitative studies through an inductive analysis and integration of inter-study themes¹³. A hierarchy of SA components was identified through the identification of

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overarching themes and the components constituting these broad themes with progressively more specific foci.

RESULTS

Included Studies

The search strategy identified 7,285 articles. Title and abstract screening eliminated 6,834 articles and full-text screening eliminated 425 articles, 26 studies met inclusion criteria (Figure 1).

<INSERT FIGURE ABOUT HERE>

Study characteristics

Qualitative studies were primarily conducted in the US (n=13) and Canada (n=4) using purposive sampling with community dwelling populations of Caucasian older adults. The sample size ranged from 14 to 1771, with a mean of 180 (median= 46; SD=383) (Table 1).

<INSERT TABLE ABOUT HERE>

Components of SA

All studies (n=26) included psychosocial components, 76% (n=20 studies) included biomedical components, and 58% (n=15 studies) included external components. Psychosocial components were those that focused on internal and/or social phenomena, e.g. resilience. Biomedical components were those that focused on physiological phenomena, e.g. mobility. External

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components were those that focused on phenomena external to the individual, e.g. housing conditions.

The biomedical components were grouped into cognitive & mental, health, health maintenance behaviors, longevity, and physical health & functioning. Cognitive & mental components focused on the functioning of mental and cognitive faculties, e.g. “the only way not to become an old dog is to learn new tricks.”¹⁴. Health components focused on non-specific notions of physiological health, e.g. “health is everything”¹⁵. Health maintenance behavior components focused on behaviors fostering physical and/or cognitive health, e.g. “eating right”¹⁶. Longevity components were those that focused on length of life. Physical health and functioning components were those that focused on references to physical health, e.g. “able to move anywhere”¹⁷. (Figure 2).

<INSERT FIGURE ABOUT HERE>

External components were grouped into environmental factors, e.g. “having a satisfactory living environment” and finances, e.g. “[being] financially self-supported”¹⁸ (Figure 3).

<INSERT FIGURE ABOUT HERE>

Psychosocial factors were grouped into acceptance, adjustment, maintenance, spirituality, community, social roles, quality of life, independence, prevention & remediation, self-awareness, perspective, and

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6 engagement. Acceptance components focused on coming to terms with
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8 change in one's life, e.g. "we need to accept our older age"¹⁹. Adjustment
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10 components focused on the ability to adapt to change in one's life, e.g.
11
12 "keeping up with the changing things around you"²⁰. Maintenance
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14 components focused on continuing previous behaviors, e.g. "there is one
15
16 person I know who is quite old and they're still hunting and everything"²¹.
17
18 Spirituality components focused on the presence of a higher being or
19
20 connection to a force greater than oneself, e.g. "it is important to live with faith
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22 and appreciate that we are protected each day"²². Community components
23
24 focused on connectedness or contributing to a social sphere, e.g. "I'm active
25
26 in the community. Very helpful to my neighbors in any way that I can"¹⁴.
27
28 Social role components focused on one's position or function within a social
29
30 sphere, e.g. "being able to talk to young people, people younger than I who
31
32 have a long life ahead of them"²³. Quality of life components focused on life
33
34 satisfaction, e.g. "leading a simple but happy life"¹⁸. Independence
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36 components focused on autonomy, e.g. "having the freedom to express
37
38 myself freely and naturally"²⁴. Prevention & remediation components
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40 focused on the management or avoidance of negative influences, e.g.
41
42 abstaining from drugs and alcohol²⁵. Self-awareness components focused on
43
44 personal resources, e.g. "being able to look back on my life and see personal
45
46 development"²⁴. Perspective components focused on personal outlook and
47
48 attitude, e.g. "Having a positive outlook on life"²⁶. Engagement components
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50 focused on social involvement, stimulation and/or participation in various
51
52 activities, e.g. "I like to be out around my friends talking, you know, what's
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54 going on in this place and finding out things, being involved"²⁷ (Figure 4).
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Lay perspectives of successful aging

<INSERT FIGURE ABOUT HERE>

A comparison of the percentage of respondents reporting each of the constituent components of SA revealed engagement was mentioned most frequently, followed by perspective and self-awareness. Longevity was mentioned in two studies; in one of these studies mentioning longevity, 2 of 60 respondents mentioned longevity¹⁵ (Figure 5). North American studies (n=20) most often mentioned engagement (95%, n=19), perspective (90%, n=18) and self-awareness (80%, n=16). Australian studies (n=2) mentioned engagement (100%, n=2), perspective (100%, n=2), independence (100%, 2) and quality of life (100%, n=2) most often. All Asian studies (n=2), mentioned engagement, independence, and quality of life, finances, environment and physical health. The South American study (n=1) mentioned engagement, perspective, self-awareness, independence, acceptance, finances, environment and health. The British study mentioned engagement, perspective, self-awareness, acceptance, quality of life, adjustment, finances, environment, cognitive & mental and health maintenance behaviors.

<INSERT FIGURE ABOUT HERE>

DISCUSSION

The components of SA identified by the qualitative studies captured in this review reflect a divergence from traditional biomedical conceptualisations of SA, highlighting the multidimensionality and psychosocial emphasis of SA.

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In contrast to operational definitions captured in the most recent review SA which posit primarily biomedical models²⁸, attitudinal and engagement components were found to be the most frequently mentioned. Furthermore, external factors, such as finances and environment, which are absent in the majority of SA conceptualisations²⁸, were also frequently mentioned. This review highlights the importance of psychosocial and external factors in SA definitions as well as emphasises the multidimensional nature of SA. These results suggest that the incorporation of psychosocial and extrinsic components identified by laypersons into a multidimensional model of SA is a prudent means with which to augment biomedical conceptualisations of SA.

Limitations in the current study include the subjective nature of meta-ethnography and issues with the translation of SA. Meta-ethnography involves the interpretation and integration of researchers' interpretations of primary data¹³ that may result in bias. Where possible, direct quotes from respondents were coded; however, researchers' interpretive themes were coded, primarily. A further limitation was the translation of the phrase "successful ageing". Non-English studies used phrases the authors felt were equivalent to SA. For example, Hsu¹⁷ notes that there is no word that directly translates to SA in Taiwanese. The authors then used (what translates into English as) "ideal or satisfactory life in old age"; a phrase they identified as being roughly equivalent to SA in a pilot study.

Psychosocial components of SA were the most frequently mentioned aspects of SA, highlighting the advantages of expanding conceptualisations of SA beyond physiologically-based models. Traditional models of SA often suggest that an individual's physiological health is the sole indicator of one's

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SA, which is, as the current study suggests, a parochial perspective of a multifaceted construct. Psychosocial components were suggested by laypersons in all of the included studies, providing strong evidence for the inclusion in prospective models of SA. Furthermore, the breadth of the psychosocial components mentioned by laypersons highlights the multidimensionality of SA.

Using a meta-ethnographic framework, 12 psychosocial subthemes were identified: social roles, self-awareness, acceptance, perspective, engagement, spirituality, maintenance, quality of life, community, prevention & remediation, independence, and adjustment. It is important to note the heterogeneity of these components even within this psychosocial umbrella, with components ranging from internal (e.g. spirituality) to inter-personal (e.g. social roles). This breadth of psychosocial components in SA has not been illuminated to this degree in previous studies, providing invaluable insight into the complexity of layperson perspectives of SA.

With such a variety of psychosocial components mentioned in the current review, including every aspect of layperson perspectives into models of SA becomes increasingly difficult. It would be unrealistic to expect a study to touch on every nuance of SA that has been captured in the current review; however, there are a number of emergent themes that would be possible to capture. Most significantly is the prominence of psychosocial factors, notably engagement, perspective and self-awareness. These themes are then broken down into separate subthemes. This theoretical complexity manifests itself in attempts to quantify these psychosocial components of SA. There are a myriad of metrics that may be used to capture these phenomena, ranging

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from, for example, frequency of social interaction to self-confidence, highlighting another area where further research is needed. Identifying appropriate metrics for capturing psychosocial SA phenomena presents a unique challenge for researchers: translating a nebulous concept into a quantifiable and practically relevant construct.

A component of SA identified in approximately two-thirds of the studies, but rarely examined in quantitative studies of SA, was extrinsic factors, i.e. environment and finances. Financial security was found to be important across all age bands in Charbonneau-Lyons' study ²⁹, in all permutations of gender, education and income, aside from females in no/low education/income group in Nagalaginam's study ³⁰, and by all the respondents in the study by Lin ³¹. Environment and finances are typically excluded from current models ^{3 32} and the identification of these factors in such a large number of studies is therefore a unique finding. Further research is needed to explore these factors cross-culturally and along biomedical components of SA.

The SA component that was least frequently identified as being important was longevity. This contrasts with biomedical approaches in SA research that typically focus on the extension of life. There have been previous suggestions that extreme longevity, in the form of centenarians, is a representative model of SA ^{33 34}; however, these models have been met with opposition ³⁵. Surviving to 100 is not necessarily indicative of holistic wellbeing and is often accompanied by great losses and/or physical deficits ³⁵. The results from the current study support these assertions; elderly laypersons do not value simply living a long time as an integral component of SA. This

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departure from biomedical models supporting mere longevity aligns closely with the “adding life to years, not just years to life” ethos.

Many of the components identified by layperson as being important (e.g. engagement, self-awareness, perspective, etc.) present the opportunity for the implementation of specific interventions for modifiable behaviors. For example, aiding individuals in, decreasing depressive symptomology, social engagement, invoking coping and resilience training, could augment and compliment physical remediation strategies, as identified by biomedical models, in the pursuit of SA. ~~In contrast, proponents of strictly biomedical models suggest that psychosocial components should not be included in models of SA, excluding possibility for remediation or improvement of these factors closely linked to what it means to be SA in the real world. Therefore,~~ it is necessary-prudent to augment~~look beyond~~ the scope of biomedical models to areas of the lived life that have not been covered by traditional models of SA.

There are important research and policy implications associated with the identification and acknowledgement of lay perspectives of SA. These data have the potential to provide invaluable information to researchers planning to conduct studies of SA through the incorporation of psychosocial variables into otherwise biomedical models. For example, if a researcher plans to use SA as an outcome variable, they have the opportunity to include psychosocial components in addition to physiological components. SA ageing is clearly not simply a physiological construct, so it seems intuitive that psychosocial components should be included into otherwise biomedical models of SA.

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The distribution of the various SA components across regions reasserts the prevalence of psychosocial and external factors as components of successful ageing. The only components that were represented in all five regions (North America, South America, Asia, Australia, United Kingdom) were engagement and self-awareness. Given the profound overrepresentation of North American studies and studies conducted in Caucasian populations, it is hard to discern whether any cultural variations exist. These results highlight the need for further research to be conducted to augment and incorporate the influence of psychosocial components and cross-cultural perspectives of SA.

The current review reinforces the multidimensional nature of SA and emphasises the importance of psychosocial aspects of SA. Components of engagement and personal resources were identified by laypersons in more studies than biomedical components, representing a divergence from traditional (biomedical) models of SA and highlighting the need for the inclusion of psychosocial components. Of particular note was the poor representation of longevity amongst lay perspectives of SA. Although the current study provides insights into the concept of SA, it must be acknowledged that the included studies represent a strong Anglophone bias.

~~The current study updates and expands a previous review by Hung, et al.⁷, collecting, synthesising, and proving a comprehensive~~ Through the collection and synthesis of layperson perspectives, the current study provides a comprehensive examination of layperson conceptualisations of SA.

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Lay perspectives of successful aging

GRAPHICS

Table 1: Included study characteristics

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Lay perspectives of successful aging

Author	n	Population	Age				Country	Ethnicity	Marital Status			
			Mean	SD	Min	Max			Caucasian	Married	Single	Divorced/ Separated
Bowling (2006) ³⁶	854	Community dwelling	64		50	94	UK		72.0%	5.0%	9.0%	14.0%
Collings (2001) ²³	38	Inuit			23	86	Canada					
Cupertino, et al. (2007) ³⁷	501	Community dwelling	72.65	8.08	60	93	Brasil					
Duay, et al. (2006) ¹⁴	18	Community dwelling	72.6		60	86	USA	94.4%				
Dionigi, et al. (2011) ³⁸	21	Community dwelling women	83.3		75	92	Canada	100.0%	14.3%	4.8%	0.0%	81.0%
Ferri, et al. (2009) ³⁹	53	Community dwelling	78	8.2	61	90	USA	96.2%	32.1%	3.8%	11.3%	52.8%
Fisher (1995) ²⁶	40	Community dwelling, foster grandparents	72.65		61	92	USA	97.5%	2.5%		10.0%	97.5%
Fisher & Specht (1999) ²⁴	36	Community dwelling artists	73.75		60	93	USA	97.2%	66.7%	5.6%	5.6%	22.2%
Fisher, (1992) ²⁰	19	Seniors activity center	75		62	85	USA	100.0%	47.4%	5.3%		47.4%
Guse & Masesar(1999) ⁴⁰	32	Long-term care					Canada		34.0%	3.0%	16.0%	47.0%
Hilton, et al. (2009) ⁴¹	65	Caregivers of elderly individuals	51.8		29	72	USA	81.5%	59.4%			
Hilton, et al. (2012) ⁴²	60	Community dwelling Latinos	61		50	84	USA	0.0%	48.3%	16.7%	20.0%	16.7%
Hsu (2007) ¹⁷	584	Community dwelling					Taiwan					
Iwasama & Iwasaki (2011) ²²	77	Community dwelling Japanese-Americans	78.3	8.5	55	96	USA		37.7%	3.9%	11.7%	46.8%
Knight & Ricciardelli (2003) ¹⁵	60	Community/retirement village dwelling	80.05		70	101	Australia					
Lee (2009) ¹⁸	109	Living-alone, low SES					China		5.5%	17.4%	8.3%	68.8%

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Lay perspectives of successful aging

Lewis (2010) ¹⁹	15	Alaska natives	56		26	84	USA						
Lewis (2011) ⁴³	26	Alaska natives			61	93	USA	53.8%				46.2%	
McCann et al. (2008) ⁴⁴	14	Spiritually affiliated women			60	89	Australia						
Reichstadt et al. (2007) ⁴⁵	72	Retirement communities			60	99	USA						
Reichstadt et al. (2010) ²⁷	22	Retirement communities/seniors housing/seniors learning center	80	9.1	64	96	USA	86.0%					
Rossen, et al. (2008) ⁴⁶	31	Community dwelling women	78		61	90	USA	20.0%	12.0%			65.0%	
Stevens-Ratchford & Cebulak (2004) ⁴⁷	14	Community dwelling with osteo- or rheumatoid arthritis	67		61	87	USA	100.0%					
Tate, et al. (2003) ⁴⁸	177	Community dwelling World War II veterans	78				Canada						
Troutman, et al. (2011) ⁴⁹	1	Community dwelling African-Americans	74.4	6	61	89	USA	0.0%					
Troutman, et al. (2013) ⁵⁰	52	Community dwelling self-identified "successful agers"	77.1	7.02	60	89	USA	44.0%	25.0%	15.4%	3.8%	53.8%	

Lay perspectives of successful aging

Figure 1: Inclusion Flowchart

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Lay perspectives of successful aging

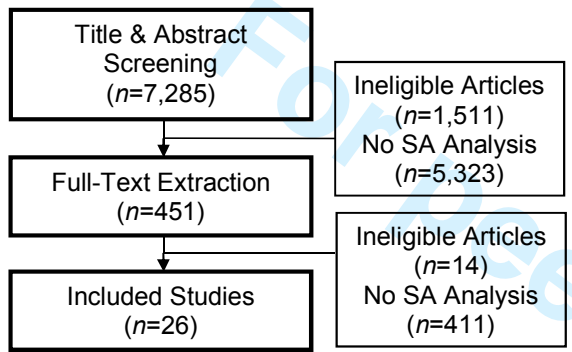


Figure 1: Inclusion flowchart

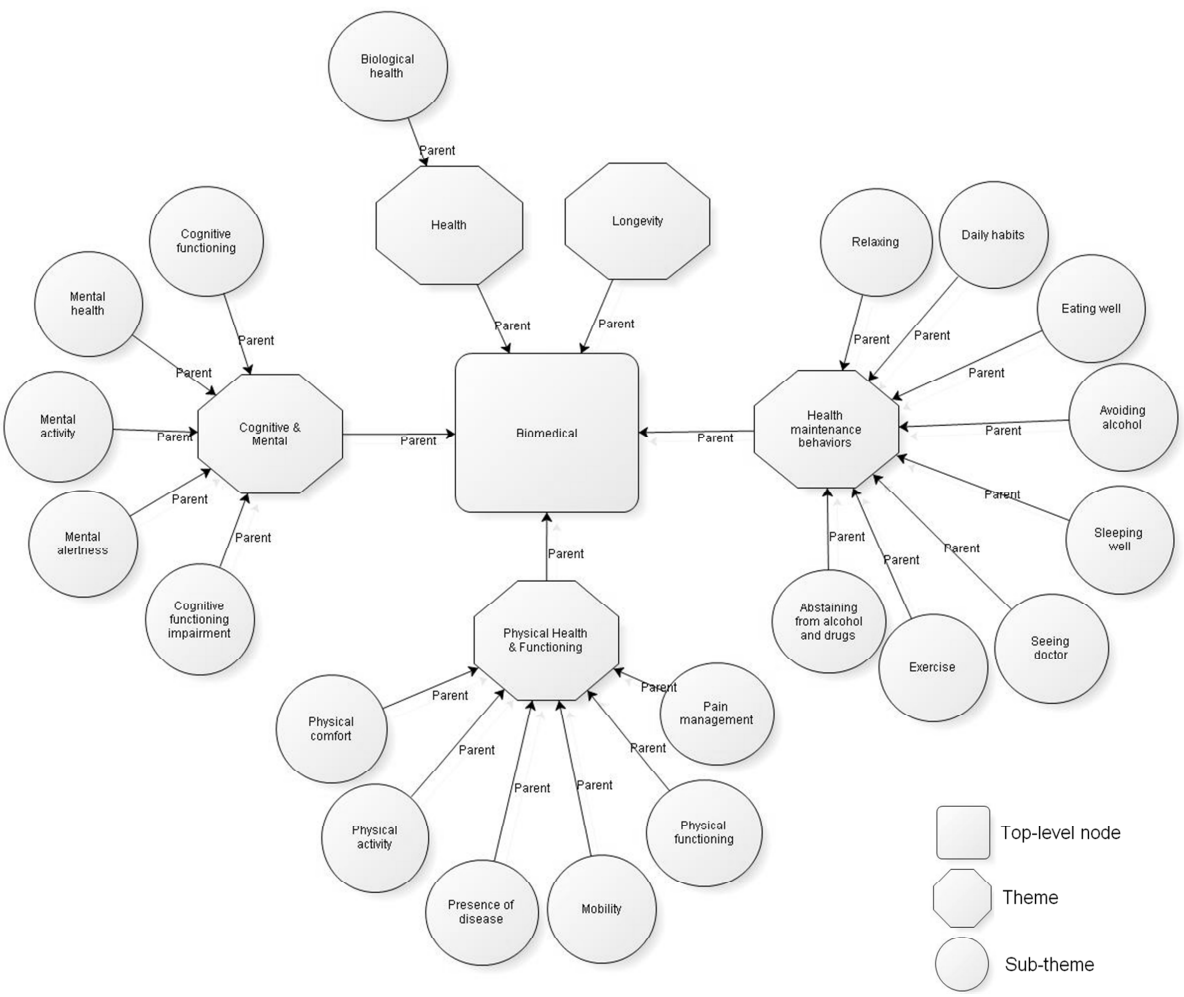
Lay perspectives of successful aging

Figure 2: Biomedical themes and sub-themes

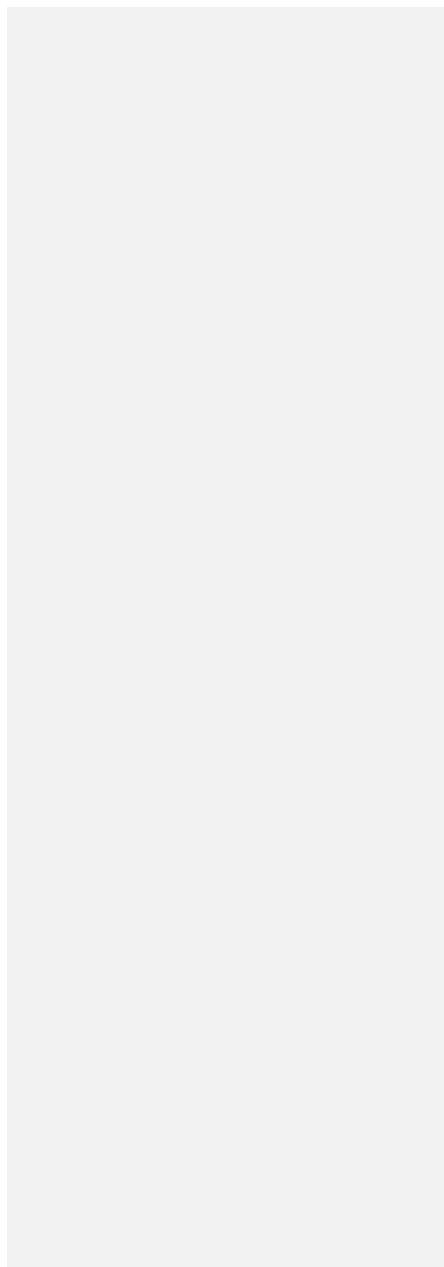
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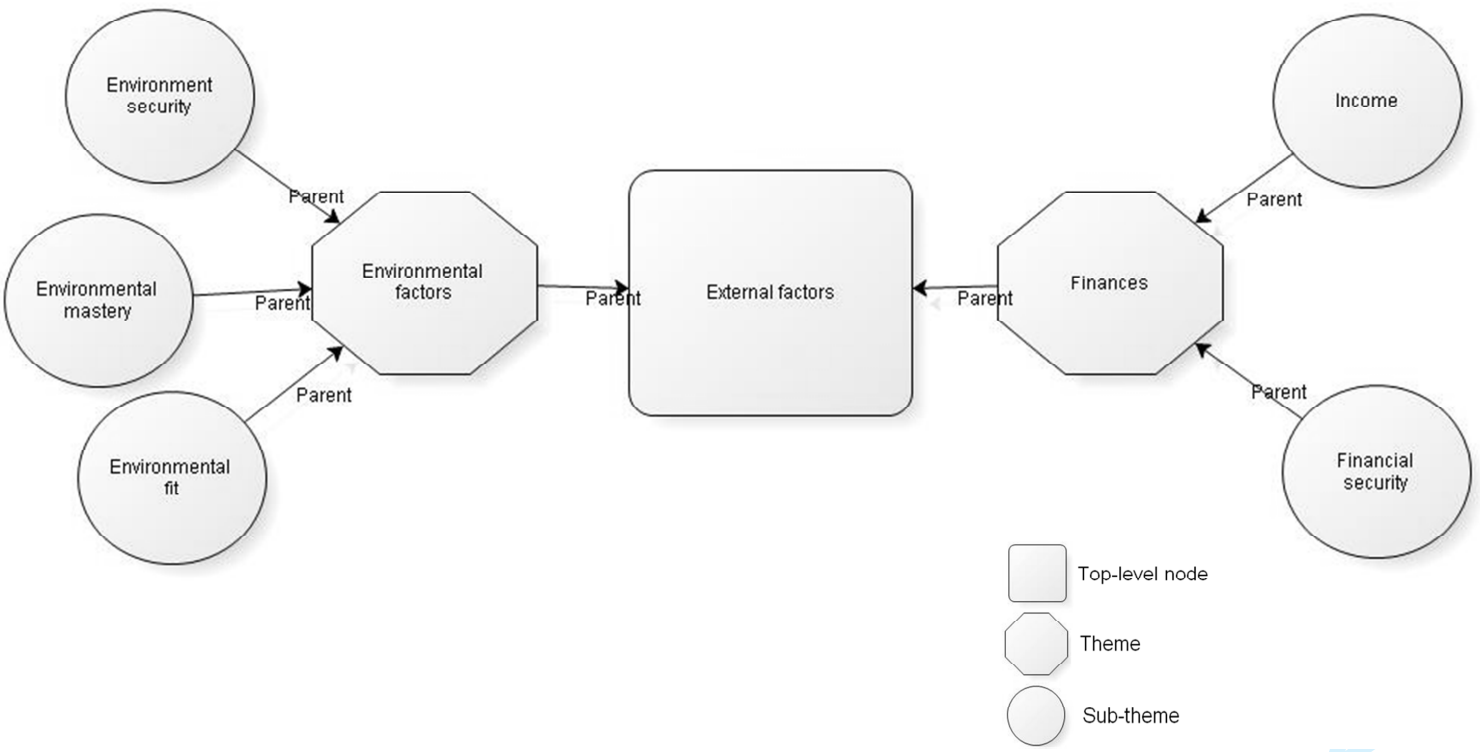
Lay perspectives of successful aging

Figure 3: External factor themes and sub-themes

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Lay perspectives of successful aging

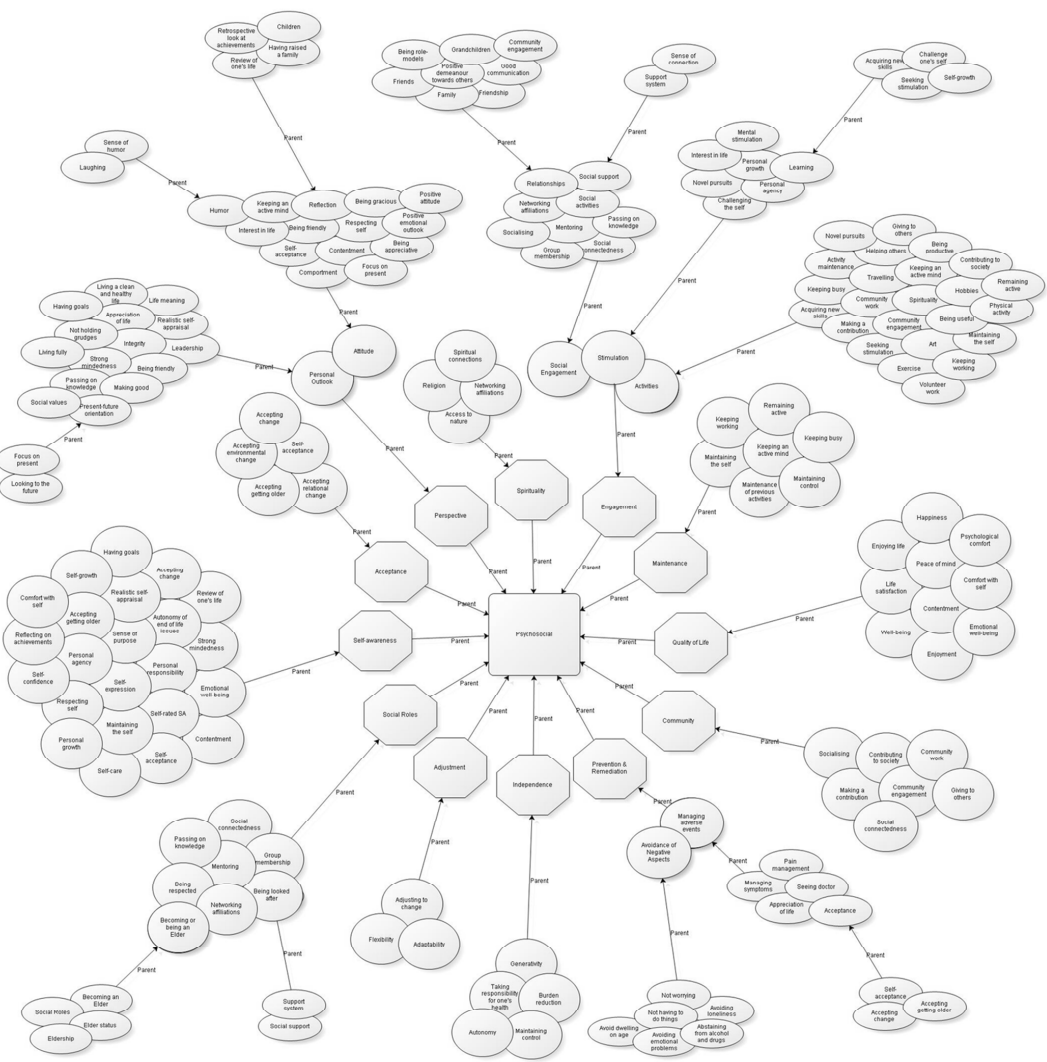
Figure 4: Psychosocial themes and subthemes

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Lay perspectives of successful aging



- Top-level node
- Theme
- Sub-theme
- Sub-sub-theme

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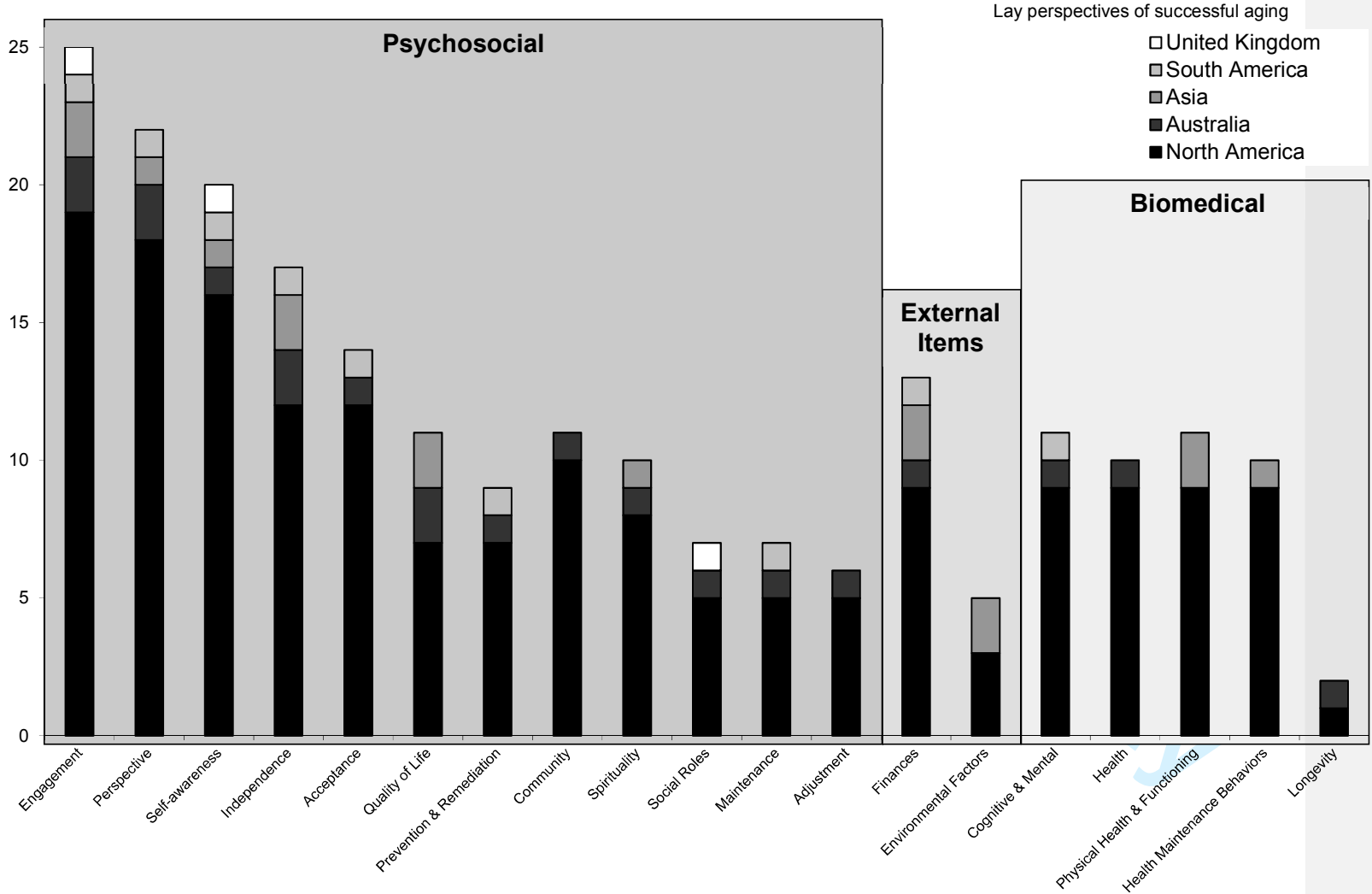
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Figure 5: Frequency of studies reporting each of the SA components, by region

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Lay perspectives of successful aging

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PRISMA 2009 Checklist

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Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	3-4
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	5-6
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	5-6
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	n/a
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	6-7
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	6-7
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	6
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	6-7
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	7
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	6-7
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	n/a
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	n/a
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2 for each meta-analysis).	6-7

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PRISMA 2009 Checklist

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Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	n/a
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	n/a
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	26
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	23
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	n/a
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	n/a
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	n/a
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	n/a
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	n/a
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	10--15
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	10-11
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	14-15
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	n/a

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097

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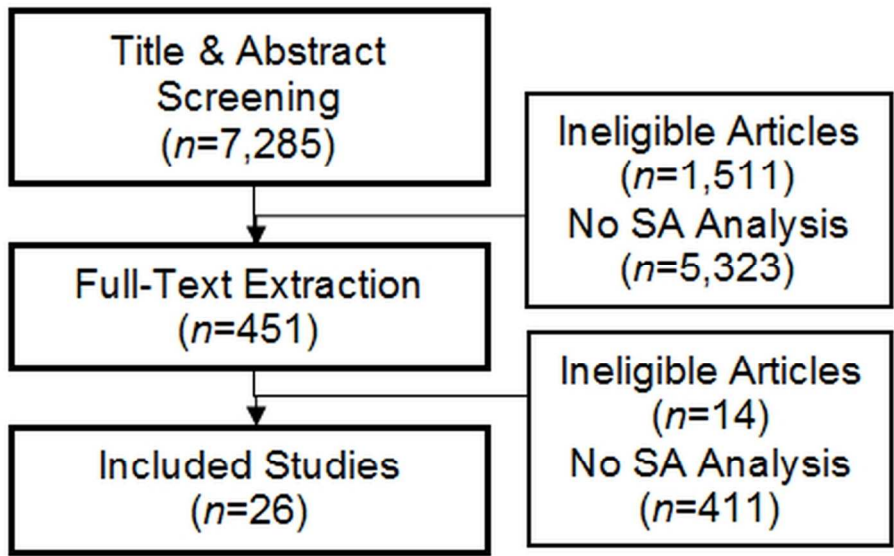


Figure 1: Inclusion flowchart

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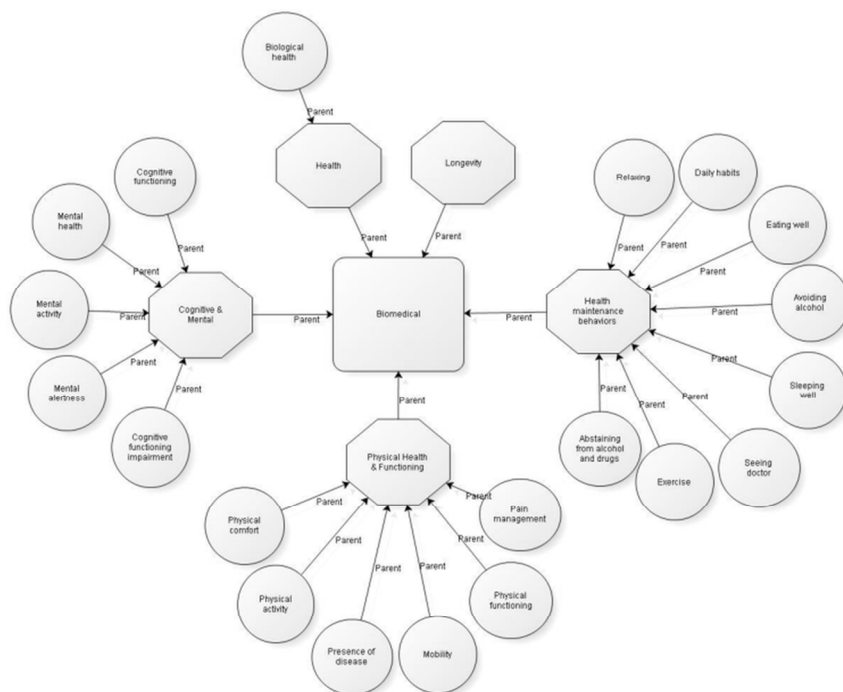


Figure 2: Biomedical themes and sub-themes

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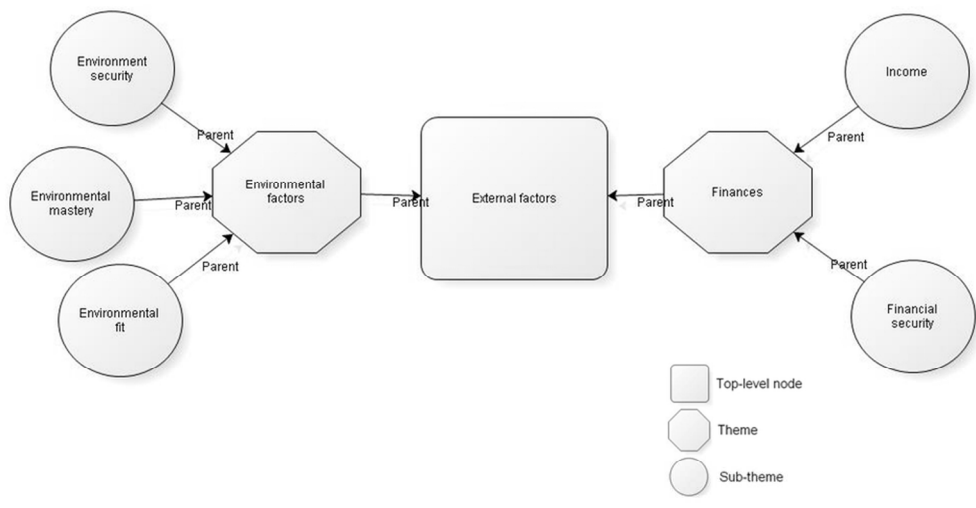
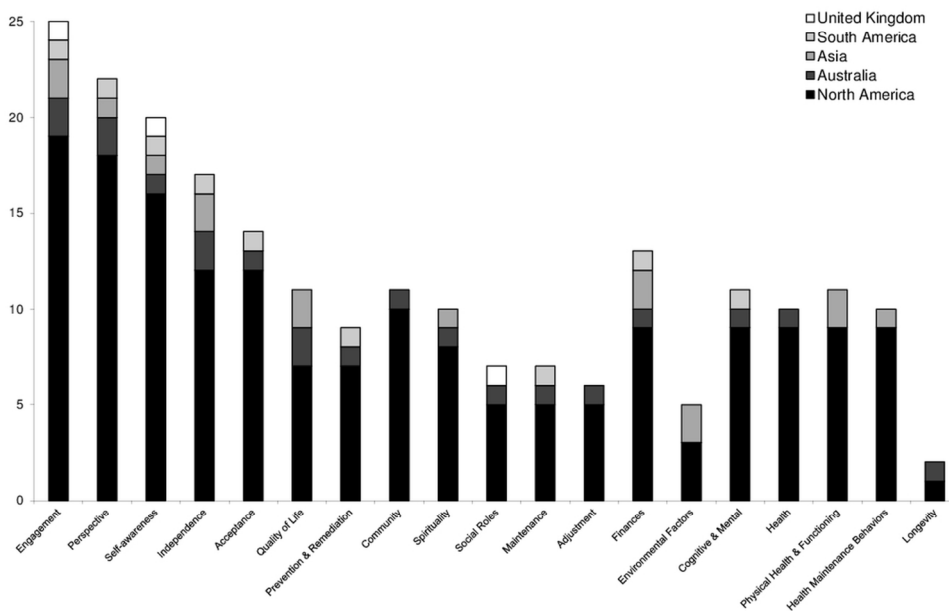


Figure 3: External factor themes and sub-themes

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