Applying Salutogenesis in Residential Care Settings

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Introduction

This chapter provides a brief overview of research on salutogenesis in long-term care settings, including descriptive research that is needed as a basis for interventions and intervention research. The focus is on users of residential aged care, and as a comparison, some studies on aged and highly aged people in the community setting are included. By “*residential aged care*,” we understand institutions that provide comprehensive social and healthcare services to older people for whom adequate care cannot be provided in their homes. By “*community-dwelling*,” we understand aged and highly aged people who live in their own or other’s private homes, and who might need a varying degree of home-based social and healthcare services. We also use the terms “*aged*” and “*highly aged*” referring to people between 65 and 84 years, and 85 years and older, respectively. These labels are used for convenience as they correlate with the epidemiology of chronic illness and functional impairment, but of course, there is a large amount of inter-individual variation in functional versus chronological age.

To increase readability, we refer henceforth to residents of residential aged care institutions as “*residents*” and to community-dwelling aged and highly aged people as “*community dwellers*.”

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Our primary focus on residents is in accord with the focus of this part of the Handbook on curative settings. The private home may also be temporarily or permanently a curative setting, as many older persons receive health and social services delivered in the home.

The chapter starts with an introduction to the characteristics of residential aged care settings and their residents and then addresses the main concepts of the salutogenic model. Subsequently, the relevance of a salutogenic approach in residential aged care institutions is discussed. This is followed by a description of the current state of *descriptive research*, followed by an analysis of *intervention research* using salutogenesis on residents. We discuss the current state of research on community dwellers. We close with a discussion of some implications and challenges for future research on salutogenesis in this setting.

Residential Aged Care

Aged care is located at the interface of social and health care. The core function is to support the everyday living of people who are, to some degree, functionally impaired, dependent, and vulnerable. This can apply to people of all ages, but we focus on the aged as the largest group.

Settings of residential care range from large, often rather bureaucratic organizations like traditional nursing homes to small, rather informal care units, which systematically include elements of self-care, contributions from family members and other informal carers, and co-operate with external professionals (medical and professional nursing support, housekeeping, social support, etc.). Aged care organizations combine different services, adjusted to the individual needs of residents. The key outcome often is defined as good or enhanced quality of life, comprising a wide range of expert and lay perceptions about physical, mental, and social aspects of the quality of life.

There is a high prevalence of chronic diseases and chronic physical and/or cognitive functional impairments among the

residents (Horn et al., 2012), as admission to residential aged care is often caused by or dependent on multi-morbidity and dementia-related symptoms, accompanied by a varying degree of impairments in activities of daily living (Drageset et al., 2009).

Though the prevalences of diseases and the average health status of residents might vary between countries, regions, and types of care, there is a general trend that residents report worse health outcomes than community-dwelling counterparts. A study among US nursing homes found the prevalence of dementia among newly admitted residents to be 48.2% (Magaziner et al., 2000); a Norwegian study found that about 80% of residents showed some dementia-type symptoms (Nygaard et al., 2000). Even when comparing residents and community dwellers without cognitive impairment, residents have significantly worse scores on functional ability, depression, satisfaction with life, and loneliness (Rodriguez-Blazquez et al., 2012) and also on many dimensions of health-related quality of life (Drageset et al., 2008a).

Salutogenesis

Antonovsky proposed the salutogenic model in sharp opposition to the pathogenic orientation, which is prominent in western medical thinking. Starting from a perspective that the human system is inherently flawed and subject to entropic processes, Antonovsky rejected a dichotomous categorization of the health status (e.g., well vs. diseased, healthy vs. ill) as inappropriate to represent the complexity of health status. In contrast, the concept of the “*health ease/disease continuum*” (HE-DE) assumes that health is better understood as a continuum. Every person—at a given point in time—is somewhere between the health and the disease poles on this continuum. Central guiding questions in Antonovsky’s theory are “what it is that keeps people healthy?” and “what explains movement toward the health pole of the HE-DE continuum?”. According to Antonovsky, this movement cannot be accounted for by simply being low on risk factors, but complementary, “salutary” factors actively promote health (Antonovsky, 1996).

In this context, Antonovsky introduced the construct of “*generalized resistance resources*,” defined as “a property of a person, a collective or a situation which, as evidence or logic has indicated, facilitate successful coping with the inherent stressors of human existence” (Antonovsky, 1996, p. 15). Another core construct of the salutogenic theory is the “*sense of coherence*,” which is “a generalized orientation toward the world which perceives it, on a continuum, as comprehensible, manageable, and meaningful” (Antonovsky, 1996, p. 15). The sense of coherence is comprised of cognitive, behavioral, and motivational components. When confronted with a stressor, people with a strong sense of

coherence are likely to be motivated to cope (meaningfulness), to believe that they understand the challenge (comprehensibility), and to believe that coping resources are accessible (manageability) (Antonovsky, 1996).

There are various hypotheses regarding the relationship between the HE-DE continuum (health status), the sense of coherence, and generalized resistance resources (resources for health). In general, the strength of the sense of coherence is thought to determine whether the outcome of stressful life events will be noxious, neutral, or salutary (Antonovsky, 1987).

Figure 41.1 provides an overview of three basic designs of analysis, which have been used to test different assumptions of the salutogenic model in cross-sectional studies in aged and highly aged persons.

Some studies introduce the sense of coherence as an independent determinant of health outcomes, which correlates with other health determinants (Fig. 41.1a).

Sometimes the relations are mapped as the “salutogenic triangle” (Fig. 41.1b). Antonovsky stated that the sense of coherence is shaped through the repeated experience of the availability and of successful coping through general resistance resources. Then, in turn, the sense of coherence is thought to influence the individual’s health status (partly through various mechanisms like attitude/behavior change, emotions, and psychoneuroimmunology) (Antonovsky, 1996; Wiesmann & Hannich, 2010). In this context, researchers have investigated the sense of coherence as a mediator of the effects of general resistance resources on health status.

Finally, yet importantly, a strong sense of coherence might enable the person to activate and apply his/her general resistance resources appropriate for the specific stressor and thereby influence health (Antonovsky, 1996; Wiesmann & Hannich, 2010). Another assumption states that a high sense of coherence might play an especially prominent role in those people with few general resistance resources, that is, that a high sense of coherence might buffer negative effects of having few general resistance resources on health. In this context, moderation analysis is used to test further hypotheses (Fig. 41.1c).

Besides investigating these underlying mechanisms, there is also the question of whether the sense of coherence is important in general or in specific situations of vulnerable groups. Antonovsky claimed that life is inherently stressful. Thus, some researchers have investigated a general sample assuming that sense of coherence should be a relevant health determinant in all participants (independent of actual stressful life events). Antonovsky further suggested that the strength of the sense of coherence would determine whether the outcome of stressful life events would be noxious, neutral, or salutary (Antonovsky, 1987). In this context, some studies have examined the relevance of the sense of coher-

Fig. 41.1 Basic designs of analysis to test assumptions of the salutogenic model in cross-sectional studies. *SOC* sense of coherence, *GRR* general resistance resource

ence among people that recently experienced a stressful life event (e.g., accident, hospitalization, loss of a significant other, etc.).

A sound understanding of theoretical assumptions supported by empirical findings is essential to design effective health promotion interventions. Therefore, the second part of the overview concerning descriptive research will focus on research testing these complex theoretical assumptions of the salutogenic model.

Salutogenesis and Its Relevance in Residential Care Settings

Proponents of salutogenic orientation in aged care assume that the health of older adults could be enhanced by better integrating the salutogenic approach into care and health promotion practice in long-term care and related research. For example, a salutogenic orientation on health in later life would help to counteract stereotyping “the elderly” as diseased. Further, it would help to reconceptualize questions about health in later life toward why and how aged and highly aged persons stay healthy, respectively, successfully cope with chronic illness and disability (Sidell, 2009).

From a gerontological point of view, the sense of coherence can be considered as a positive resource in the process of age-dependent changes (Wiesmann & Hannich, 2008). The literature describes the salutogenic model as widely congruent with existing gerontology theories like the “model of selective optimization with compensation” or “activity/

disengagement theory.” Further, utilization of the “sense of coherence” construct might contribute to a better understanding of normal aging processes (Wiesmann et al., 2004). For example, it is of empirical interest how a strengthened sense of coherence might ease the transition of becoming a resident (Tan et al., 2014).

Salutogenesis is particularly relevant to understand the stress that many older people encounter due to an unpredictable future based on diminishing socioeconomic resources, shrinking social networks, and deteriorating health and capacities (Tan et al., 2014). In this context, residents can be considered as an especially vulnerable group. Therefore, concepts like the sense of coherence seem to be especially salient as a framework for research in residential aged care (Cole, 2007). On a practical level, there are propositions to use the sense of coherence scale as a screening instrument to identify people at risk (e.g., risk groups for rapid functional status decline). A sense of coherence assessment is proposed to form a meaningful indicator of the quality of life in residents (Cole, 2007).

In a broader context, there are some attempts to integrate the salutogenic paradigm into nursing theory, conceptualizing nursing care as a generalized resistance resource for patients (Brieskorn-Zinke, 2000; Menzies, 2000; Sullivan, 1989). There are also recommendations that nursing practice in residential aged care should be guided by the use of a salutogenic approach (Drageset et al., 2008b). In line with this, a salutogenic perspective could support refocusing aged care toward meaningful, manageable, and client-defined structures and processes (Cole, 2007). Providing professional

care sufficiently and consistently enhances comprehensibility. If staff is sensitive to the effect of care routines on residents' sense of control over their life, attempts to strengthen residents' resources (e.g., social support), and supports residents in using their resources, this enhances feelings of manageability. Support in the maintenance of close relationships, emotional support, and provision of opportunities for purposeful activities (e.g., occupational therapy, activities residents valued in their life before moving to the facility) might foster residents' sense of meaningfulness (Drageset et al. 2008b). Further, the literature proposes that salutogenic "standards" could be integrated into the design of healthcare settings including nursing homes (Dalton & McCartney, 2011; Meeyoung & Heshmati, 2014).

Finally, yet importantly, research on residents and community dwellers could provide further insight on a fundamental assumption of salutogenic theory—that the sense of coherence is stable during the adult lifespan. So far, empirical findings on the stability of the sense of coherence are inconsistent (Drageset et al., 2014).

The Current State of Research

So far, research on salutogenesis focusing on residents is very scarce. Most of it was conducted in Scandinavian countries, and some contributions originate from the United States. A significant limitation of current studies is that research has mainly been restricted to residents with no or little cognitive impairment, although cognitively impaired individuals are the majority in residential aged care.

Regarding community dwellers, the research base is considerably broader, and we could find attempts to test complex assumptions of the salutogenic model. Such research has mostly been conducted in the Scandinavian countries and Germany, but there are also contributions from the United Kingdom, Italy, Belgium, Canada, Portugal, Australia, and other countries. The researched population mainly comprises relatively younger persons (65–84 years), who are often quite healthy and active. Research on the highly aged (85+ years) is still very scarce. An exception is the Umea 85+ study from Sweden (e.g., Lövhim et al., 2013; Lundman et al., 2010; Nygren et al., 2005).

In studies on community dwellers, we did not find consistent information on their functional status and need for support. So it is challenging to identify applications of salutogenesis for those community dwellers who need assistance and compare them to the residents who more obviously all need some support. However, similar to research on residents, research on community dwellers tends to exclude the rather large segment of cognitively impaired individuals.

Descriptive Research

Table 41.1 provides an overview of *outcome measures addressed by salutogenic research with residents and community dwellers*. Researchers most often applied the salutogenic model to investigate subjective (overall) health outcomes like health-related quality of life, self-rated health as well as subjective physical and psychological/mental health. However, these concepts are often used interchangeably, though using the same instrument, the label of the outcome can differ according to the research tradition and context.

In their review, Tan, Vehiviläinen-Julkunen and Chan (2014) conclude that in general, a strong sense of coherence among older people was correlated with better physical, social, and mental health. The use of generalized resistance resources, such as appraisal, coping strategies, and social support, was correlated with their sense of coherence, perceived holistic health, and quality of life.

Although less frequently studied than subjective health, also other outcomes have been examined: Mortality, morbidity, symptom reporting, depression, adjustment to aging in later life, self-care management, mobility disability, and—of particular interest in the context of this chapter—risk of nursing home admission. Objective measures such as immune functioning are rarely in focus.

Antonovsky stated different hypotheses on how the sense of coherence might influence health status (see Fig. 41.1). So far, research testing these complex theoretical assumptions of the salutogenic model within community dwellers is scarce, and this is even more evident for research on residents (Table 41.2 provides an overview).

Comparative studies (Table 41.2) are one way to identify whether the sense of coherence plays a prominent role in a particular population (or context). Some studies have investigated if the association between sense of coherence and health outcomes varies between different populations (e.g., by comparing community-dwelling men and women).

Mediation (see also Fig. 41.1b) refers to "how" a particular independent variable (for example, a general resistance resource) might influence an outcome variable (for example, subjective health). A mediating variable (such as the sense of coherence) is introduced as a possible mechanism to explain a statistical association between the independent and the outcome variable. In this model, the independent variable causally influences the intervening and both, in turn, the outcome variable (Hayes, 2013). In the context of the salutogenic theory, this means that the sense of coherence is shaped through the repeated experience of the availability and of successful coping through general resistance resources. Subsequently, the sense of coherence is thought to influence

Table 41.1 Outcome measures addressed by research on salutogenesis with residents and with community dwellers

	Residents	Community dwellers
Subjective overall health outcomes ^a		
<i>Health-related quality of life</i>	Drageset et al., 2008b, 2009, etc.	Ekman et al., 2002; Ekwall et al., 2007, etc.
<i>Self-rated health</i>		Elovainio & Kivimäki, 2014; Forbes, 2001; Schneider et al., 2004; Söderhamn & Söderhamn, 2010, etc.
<i>Subjective physical health</i>		Nygren et al., 2005; Read et al., 2005; Wiesmann et al., 2006, 2009; Wiesmann & Hannich, 2014, 2018, etc.
<i>Subjective mental/psychological health</i>		Billings & Hashem, 2010; Nygren et al., 2005; Read et al., 2005; Wiesmann et al., 2006, 2009; Wiesmann & Hannich, 2014, 2018, etc.
<i>Satisfaction with life</i>		Dezutter et al., 2013; von Humboldt et al., 2014; Kocjan, 2017, etc.
<i>Quality of life</i>		Borglin et al., 2006; Helvik et al., 2014; Nesbitt & Heidrich, 2000, etc.
<i>Subjective well-being</i>		Elovainio & Kivimäki, 2014; Giglio et al., 2015; von Humboldt et al., 2015; Wiesmann et al., 2006; Wiesmann & Hannich, 2008, 2018, etc.
(Health) Outcomes especially relevant in aged and highly aged		
<i>Mortality</i>		Lundman et al., 2010, etc.
<i>Morbidity</i>		Elovainio & Kivimäki, 2014, etc.
<i>Diseases</i>		
Depression	Drageset et al., 2012, 2016, Rajagopal et al., 2002, etc.	Dezutter et al., 2013; Giglio et al., 2015; Lundman et al., 2010, etc.
Various other diseases (e.g., heart failure, COPD ^b , osteoarthritis)		Lundman et al., 2010, etc.
<i>Symptom reporting</i>		Rennemark & Hagberg, 1999; Wiesmann et al., 2006, 2009, etc.
<i>Post-traumatic symptoms</i>		Glück et al., 2016, etc.
<i>Functional status</i> (Impairment in ADLs ^c , mobility disability)	Cole, 2007, etc.	Avlund et al., 2003, etc.

Table 41.1 (continued)

	Residents	Community dwellers
<i>Immune functioning</i> (Natural killer cell activity; immune response to influenza vaccination)		Kohut et al., 2005; Lutgendorf et al., 1999, etc.
<i>Adjustment to aging</i>		von Humboldt et al., 2013; Kocjan, 2017, etc.
<i>Pain-coping strategies</i>		Andruszkiewicz et al., 2017, etc.
<i>Self-care management</i>		Gallagher et al., 2008; Söderhamn et al., 2011, etc.
<i>Risk of nursing home admission</i>		Thygesen et al., 2009, etc.
Concepts of the salutogenic model as outcomes		
<i>HE-DE continuum</i>		Wiesmann & Hannich, 2010, etc.
<i>Stability of SOC</i>	Drageset et al., 2014, etc.	Caap-Ahlgren & Dehlin, 2004; Forbes, 2001; Larsson et al., 1995; Lövheim et al., 2013; Wiesmann et al., 2006; Wiesmann & Hannich, 2018, etc.

^aSpecific outcome terms often used interchangeably^bChronic obstructive pulmonary disease^cActivities of daily living

the individual's health status (Antonovsky, 1996; Wiesmann & Hannich, 2010).

So far, mediating effects of the sense of coherence have been mainly examined in middle-aged adult samples (e.g. Wiesmann & Hannich, 2010); for community-dwelling aged, there are very few studies (Table 41.2).

First, findings indicate that there are complex interactions between generalized resistance resources, sense of coherence, and the HE-DE continuum. Regarding overall health measured on a HE-DE continuum, the sense of coherence has some additional explanatory power after controlling for generalized resistance resources (ibid). The sense of coherence fully mediated some effects (e.g., the effects of resources like autonomy, self-efficacy, self-esteem), other effects were partly mediated (e.g., the effects of resources like activity level, social support), and some effects were not mediated by sense of coherence (e.g., the effects of depressive mood). Furthermore, the sense of coherence has been shown to mediate the effects of physical exercise on mental health and social health (Read et al., 2005).

Second, other research has observed that the sense of coherence mediates the association between generalized resistance resources and psychological health and symptom reporting, but not physical health (Wiesmann et al., 2009).

Table 41.2 Exemplary overview of research in residents and the community dwellers testing for complex assumptions of the salutogenic model

	Residents	Community dwellers
Role of sense of coherence in a particular population—comparisons		
<i>... of the association between sense of coherence and health outcomes by means of...</i>		
... men/woman		Ciairano et al., 2008; Saevareid et al., 2007, etc.
... home-dwelling/hospitalized elderly		Ekman et al., 2002; Söderhamn & Söderhamn, 2010, etc.
... aged with/without Parkinson's disease		Gison et al., 2014, etc.
Testing assumptions on “when” and “how” sense of coherence might influence health status (in cross-sectional studies)—mediation and moderation		
<i>Sense of coherence as a mediator between general resistance resources and specific health outcomes</i>		
... HE-DE continuum		Wiesmann & Hannich, 2010, etc.
... symptom reporting, psychological and physical subjective health		Wiesmann et al., 2009, etc.
... subjective physical, mental, and social health		Read et al., 2005, etc.
... pain		Wiesmann et al., 2014, etc.
... positive aging	Wiesmann et al., 2017, etc.	Wiesmann et al., 2018, etc.
... attitudes toward retirement		Lee et al., 2020
... coping in stressful situations		Krok, 2016
<i>Well-being paradox—sense of coherence as a mediator between</i>		
... subjective psychological and physical health/quality of life and physical health limitations, etc.		Nesbitt & Heidrich, 2000; Wiesmann & Hannich, 2008, 2014, etc.
<i>Mediators/mechanisms between sense of coherence and health outcomes</i>		
... psychological resources as mediators between sense of coherence and depressive symptoms, satisfaction with life, mental health		Dezutter et al., 2013; Wiesmann & Hannich, 2014, etc.
<i>Sense of coherence as a moderator between general resistance resources and specific health outcomes</i>		
... health-related quality of life	Drageset et al., 2008b, 2009, etc.	
... depression	Drageset et al., 2012, etc.	
<i>Sense of coherence as a moderator between stressful life event and specific health outcomes</i>		
... immune functioning (Natural killer cell activity)		Lutgendorf et al., 1999, etc.
Sense of coherence as a predictor for certain health outcomes and stability of the sense of coherence—longitudinal research		
<i>Sense of coherence as a predictor for...</i>		
... subjective health		Wiesmann et al., 2006, 2018, etc.
... psychological health		Wiesmann et al., 2018, etc.
... depression		Lundman et al., 2010, etc.
... physical health		Wiesmann et al., 2018, etc.
... change of functional health status	Cole, 2007, etc.	Boeckxstaens et al., 2016, etc.
... future needs of care		Larsson et al., 1995, etc.
... risk of nursing home admission		Thygesen et al., 2009, etc.
... mortality		Boeckxstaens et al., 2016; Lundman et al., 2010, etc.
<i>Stability of sense of coherence</i>	Drageset et al., 2014, etc.	Caap-Ahlgren & Dehlin, 2004; Larsson et al., 1995; Lövhelm et al., 2013; Wiesmann et al., 2006, 2018, etc.
Enhancement of the sense of coherence (and health) status—interventions by way of...		
... physical activity		Kohut et al., 2005; Pakkala et al., 2012; Seah et al., 2017; Wiesmann et al., 2006, etc.
... resource enhancement and activation program		Tan et al., 2016, etc.
... empowering self-management intervention		Hourzad et al., 2018, etc.
... group-based health promotion program		Arola et al., 2018
... educational intervention		Musavinasab et al., 2016, etc.
... spiritually based prayers	Rajagopal et al., 2002 ^a , etc.	
... personal-centered therapy		von Humboldt & Leal, 2013, etc.
... self-care telephone calls		Sundsli et al., 2014, etc.

^aResidents of a continuing care community

Though the evidence on this topic is still very scarce, this might indicate that the sense of coherence might be more prominent to explain psychological than physical health.

Last but not least, some studies have investigated mediation effects of sense of coherence in old age to gain a new perspective on the “well-being paradox,” which is known as the paradox that old persons report positive psychological functioning despite declines in physical health (Wiesmann & Hannich, 2014). The assumption is that aged persons with a strong sense of coherence can compensate for adverse effects of declining physical health on psychological health. If an aged person can interpret age-related changes in physical health as comprehensible, manageable, and meaningful, or can compensate for this loss by concentrating on and positively valuing other life domains, the person might be able to maintain a high level of well-being and psychological health (Wiesmann & Hannich, 2014). While some evidence supports the mediating effect of sense of coherence in community dwellers (Nesbitt & Heidrich, 2000; Wiesmann & Hannich, 2008, 2014), others fail to find an association between mental and physical health in highly aged in the first place (Nygren et al., 2005).

So, findings are mixed regarding the mediating effect of sense of coherence on the relationship between subjective physical and mental health in old age. However, from the authors’ point of view, moderation might also be a promising way to investigate this phenomenon.

Moderation (see also Fig. 41.1c) means that an association between an independent and an outcome variable is influenced in its size, sign, or strength by a moderating variable (Hayes, 2013). In the context of the salutogenic theory, this refers to the hypothesis that a strong sense of coherence might enable the person to activate and apply his/her general resistance resources appropriate for the specific stressor and thereby influence health (Antonovsky, 1996; Wiesmann & Hannich, 2010).

Possible moderation effects of sense of coherence (Table 41.2) have mostly been examined in residential care settings, and these studies have failed to observe such effects. So far, no moderating effect of sense of coherence has been observed regarding the relationship of social support to health-related quality of life (Drageset et al., 2009) or depression (Drageset et al., 2012). Another study found no moderating effects of sense of coherence in the association of sociodemographic variables to health-related quality of life (Drageset et al. 2008b). However, a study on elderly persons who anticipated relocation to congregate living facilities found that sense of coherence was a moderator for immune functioning in those anticipating a move. Sense of coherence was positively associated with immune functioning in the moving but not in the non-moving group (Lutgendorf et al.,

1999), an indication that sense of coherence might only have a protective effect in situations with high stress.

In addition to the issue of possible mediating and moderating effects, some research has focused on the sense of coherence as a main independent *predictor for specific health outcomes* (Table 41.2). A study found the sense of coherence to predict care needs in hospitalized elderly, 1 month after hospital discharge (Larsson et al., 1995). On the other hand, the sense of coherence was not a significant predictor of nursing home admission/death in community-dwelling aged at a 2-year follow-up. However, some authors suggest that in the face of significant health changes in old age, moving into a residential aged care facility could be considered as a successful coping strategy (Thygesen et al., 2009). Concerning psychological health, the sense of coherence was not found to be a significant predictor of quality of life in hospitalized elderly 12 months after hospital discharge (Helvik et al., 2014), nor of depression in community-dwelling highly aged at 5-year follow-up (Lundman et al., 2010). As to mortality, the sense of coherence is a significant predictor for mortality in community-dwelling highly aged at 1-year, but not at 4-year, follow-up (Lundman et al., 2010). Research indicates that sense of coherence might predict certain outcomes in the short run; regarding long periods, there is no evidence.

In studies exploring the *stability of sense of coherence* in old age (Table 41.2), there seems to be a trend toward higher sense of coherence scores with aging. However, a significant limitation of studies on the stability of sense of coherence in community dwellers is that most of these are cross-sectional. They do not provide evidence about change in the sense of coherence in the life course.

Intervention Research

According to Billings and Hashem (2010), very few studies have applied salutogenic principles in interventions to promote positive health among older people. Some research applied concepts that relate to salutogenic principles, like coping and mobilization of resources and social support. So far, no interventions explicitly addressing and testing the sense of coherence as a mediator for health changes in residents have been conducted though there are various suggestions for interventions (Cole, 2007; Drageset et al. 2008b, 2014). However, of relevance is a small intervention study with residents with minor depression in a continuing care community setting. The spirituality-based intervention led to a significant decrease in anxiety, and there was a trend toward decreased depression. There was a non-significant trend toward an increase in the sense of coherence in the group who did individual prayers (Rajagopal et al., 2002).

There are few intervention studies in community dwellers that explicitly used and scientifically tested salutogenic principles and concepts. Small sample sizes often limit studies. A study using different types of physical activity (yoga, meditation, endurance, strength) found a significant increase in the sense of coherence, independent of the type of activity (Wiesmann et al., 2006). In addition, there was a significant increase in overall well-being, somatic well-being, and subjective psychological health, while there were no effects on subjective physical health and symptom reporting (*ibid*). In accord with these results, a study that investigated the effect of physical activity on immune response to influenza vaccination in old adults found a significant time by treatment interaction, with a slight increase in sense of coherence in the intervention group and a slight decrease in sense of coherence in the control group (Kohut et al., 2005). Moreover, improvements in the sense of coherence accounted for some of the exercise-associated increase in immune response to vaccination (*ibid*). In contrast to these findings, a study among old adults after a hip fracture found no significant effect of intensive strength training on the sense of coherence, although there were improvements in muscle strength, power, and self-reported outdoor mobility (Pakkala et al., 2012).

Besides physical activity interventions, a study using psychotherapy found an increase in participants' sense of coherence, with the most substantial effect on the comprehensibility component of the sense of coherence (von Humboldt & Leal, 2013). A resource enhancement and activation program led to an increase in the sense of coherence (Tan et al., 2016) and an empowering self-management intervention led to improved self-efficacy and sense of coherence among the retired elderly with chronic diseases (Hourzad et al., 2018). Arola et al. (2018) found a significant improvement in the sense of coherence after a group-based health promotion program at 6-month follow-up, but not at a 12-month follow-up. On the contrary, an intervention using self-care telephone talks found no effects on the sense of coherence of the participants (Sundslø et al., 2014).

Discussion: Implications and Challenges

We can see various theoretical and methodological implications for research on salutogenesis in aged and highly aged.

First, the concept "general resistance resources" is often used unsystematically and in an unquestioned way. Some have used psychological variables (e.g., psychological traits, self-complaints) as general resistance resources; others have used psychological variables as mediators between the sense of coherence and health outcomes. However, there are also considerations whether sense of coherence and some psychological traits like resilience, purpose in life, and self-

transcendence share a common "area," which could be looked upon as a person's "inner strength" (Nygren et al., 2005), which questions the usefulness of additionally using these measures as general resistance resources.

Second, a sound understanding of theoretical assumptions supported by empirical findings is essential to design effective health promotion interventions. So far, cross-sectional research on salutogenesis in aged and highly aged persons has not often considered theoretically diverging hypotheses. It would be interesting to test systematically diverging hypotheses (e.g., Wiesmann & Hannich, 2014; for example, in middle-aged samples, see Albertsen et al., 2001; Hogh & Mikkelsen, 2005).

Also, it is possible to refine the existing modalities of analysis further. One may test the theoretical assumptions of Fig. 41.1a–c, and simultaneously control whether the expected association is evident only in the group with a stressful life event, by introducing a stressful life event as (another) moderating variable (i.e., moderated mediation; two moderators). These methodologically elaborate designs test for conditional indirect effects, defined as "the magnitude of an indirect effect at a particular value of a moderator (or at particular values of more than one moderator)" (Preacher et al., 2007). As far as the authors know, such elaborate designs have not been applied in this context so far, but it would be interesting to test the theoretical assumptions on interrelations of the salutogenic concepts in cross-sectional studies.

Finally, it seems crucial that interventions in intervention studies should be designed to address the sense of coherence components. They should be need-oriented, and they should focus on the entire person (Antonovsky, 1996), rather than including the sense of coherence just as a secondary outcome.

Conclusions

So far, there is very little research applying salutogenesis in residential aged care. A significant limitation is that aged and highly aged people with cognitive impairment have mostly been excluded from the research, which raises doubt about the generalizability of the findings that are reported. The applicability of the salutogenic paradigm to guide effective health promotion intervention for older people receiving health and social services is as yet uncertain. So far, only a few intervention studies among the comparatively healthy and active community-dwelling segment of the older adult population have explicitly applied salutogenesis to promote participants' health, and these studies are often of diminished value due to small sample sizes. However, the scant literature that is available and highlighted in this chapter suggests that salutogenesis is a promising concept to guide

health promotion with care-dependent aged and highly aged people. Given the relevance of the approach and the lack of research, taking the salutogenic orientation explicitly into account in the design and testing of interventions in residential care and community settings, where frail older persons need/receive social health care, seems a worthy priority for future research.

References

- Albertsen, K., Nielsen, M. L., & Borg, V. (2001). The Danish psychosocial work environment and symptoms of stress: The main, mediating and moderating role of sense of coherence. *Work & Stress, 15*, 241–253.
- Andruszkiewicz, A., Basińska, M. A., Felsmann, M., Banaszkiewicz, M., Marzec, A., & Kędziora-Kornatowska, K. (2017). The determinants of coping with pain in chronically ill geriatric patients – the role of a sense of coherence. *Clinical Interventions in Aging, 12*, 315–323.
- Antonovsky, A. (1987). *Unraveling the mystery of health. How people manage stress and stay well*. Jossey-Bass.
- Antonovsky, A. (1996). The salutogenic model as a theory to guide health promotion. *Health Promotion International, 11*, 11–18.
- Arola, L. A., Barenfeld, E., Dahlin-Ivanoff, S., & Hägglom-Kronlöf, G. (2018). Distribution and evaluation of sense of coherence among older immigrants before and after a health promotion intervention – Results from the RCT study promoting aging migrants' capability. *Clinical Interventions in Aging, 13*, 2317–2328.
- Avlund, K., Vass, M., & Hendriksen, C. (2003). Onset of mobility disability among community-dwelling old men and women. The role of tiredness in daily activities. *Age and Ageing, 32*, 579–584.
- Billings, J., & Hashem, F. (2010). *Literature review: Salutogenesis and the promotion of positive mental health in older people*. In EU Thematic Conference: 'Mental Health and Well-being in Older People—Making it Happen', 19–20th April 2010. Madrid: European Commission Directorate-General for Health and Consumers and the Spanish Ministry of Health and Social Affairs with support of the Spanish Presidency of the European Union.
- Boeckxstaens, P., Vaes, B., De Sutter, A., Aujoulat, I., van Pottelbergh, G., Matheï, C., & Degryse, J.-M. (2016). A high sense of coherence as protection against adverse health outcomes in patients aged 80 years and older. *Annals of Family Medicine, 14*(4), 337–343.
- Borglin, G., Jakobsson, U., Edberg, A. K., & Hallberg, I. R. (2006). Older people in Sweden with various degrees of present quality of life: Their health, social support, everyday activities and sense of coherence. *Health & Social Care in the Community, 14*, 136–146.
- Brieskorn-Zinke, M. (2000). Die pflegerische Relevanz der Grundgedanken des Salutogenese-Konzepts. *Pflege, 13*, 373–380.
- Caap-Ahlgren, M., & Dehlin, O. (2004). Sense of coherence is a sensitive measure for changes in subjects with Parkinson's disease during 1 year. *Scandinavian Journal of Caring Sciences, 18*, 154–159.
- Ciairano, S., Rabaglietti, E., De Martini, R., & Giletta, M. (2008). Older people's sense of coherence: Relationships with education, former occupation and living arrangements. *Ageing & Society, 28*, 1075–1091.
- Cole, C. S. (2007). Nursing home residents' sense of coherence and functional status decline. *Journal of Holistic Nursing, 25*, 96–103.
- Dalton, C., & McCartney, K. (2011, May 23–26). *Salutogenesis: A new paradigm for pervasive computing in healthcare environments?* In Conference: 5th International Conference on Pervasive Computing Technologies for Healthcare, Pervasive Health 2011, Dublin. doi: <https://doi.org/10.4108/icst.pervasivehealth.2011.246064>.
- Dezutter, J., Wiesmann, U., Apers, S., & Luyckx, K. (2013). Sense of coherence, depressive feelings and life satisfaction in older persons: A closer look at the role of integrity and despair. *Aging & Mental Health, 17*, 839–843.
- Drageset, J., Eide, G. E., & Hauge, S. (2016). Symptoms of depression, sadness and sense of coherence (coping) among cognitively intact older people with cancer living in nursing homes—A mixed-methods study. *PeerJ, 4*, e2096.
- Drageset, J., Eide, G. E., Nygaard, H. A., Bondevik, M., Nortvedt, M. W., & Natvig, G. K. (2009). The impact of social support and sense of coherence on health-related quality of life among nursing home residents—a questionnaire survey in Bergen, Norway. *International Journal of Nursing Studies, 46*, 66–76.
- Drageset, J., Espehaug, B., Hallberg, I. R., & Natvig, G. K. (2014). Sense of coherence among cognitively intact nursing home residents—A five-year longitudinal study. *Aging & Mental Health, 18*, 889–896.
- Drageset, J., Espehaug, B., & Kirkevold, M. (2012). The impact of depression and sense of coherence on emotional and social loneliness among nursing home residents without cognitive impairment—A questionnaire survey. *Journal of Clinical Nursing, 21*, 965–974.
- Drageset, J., Natvig, G. K., Eide, G. E., Clipp, E. C., Bondevik, M., Nortvedt, M. W., et al. (2008a). Differences in health-related quality of life between older nursing home residents without cognitive impairment and the general population of Norway. *Journal of Clinical Nursing, 17*, 1227–1236.
- Drageset, J., Nygaard, H. A., Eide, G. E., Bondevik, M., Nortvedt, M. W., & Natvig, G. K. (2008b). Sense of coherence as a resource in relation to health-related quality of life among mentally intact nursing home residents—A questionnaire study. *Health and Quality of Life Outcomes, 6*, 85.
- Ekman, I., Fagerberg, B., & Lundman, B. (2002). Health-related quality of life and sense of coherence among elderly patients with severe chronic heart failure in comparison with healthy controls. *Heart & Lung, 31*, 94–101.
- Ekwall, A. K., Sivberg, B., & Hallberg, I. R. (2007). Older caregivers' coping strategies and sense of coherence in relation to quality of life. *Journal of Advanced Nursing, 57*, 584–596.
- Elovainio, M., & Kivimäki, M. (2014). Sense of coherence and social support—Resources for subjective well-being and health of the aged in Finland. *International Journal of Social Welfare, 9*, 128–135.
- Forbes, D. A. (2001). Enhancing mastery and sense of coherence: Important determinants of health in older adults. *Geriatric Nursing, 22*, 29–32.
- Gallagher, R., Donoghue, J., Chenoweth, L., & Stein-Parbury, J. (2008). Self-management in older patients with chronic illness. *International Journal of Nursing Practice, 14*, 373–382.
- Giglio, R. E., Rodriguez-Blazquez, C., de Pedro-Cuesta, J., & Forjaz, M. J. (2015). Sense of coherence and health of community-dwelling older adults in Spain. *International Psychogeriatrics, 27*(4), 621–628.
- Gison, A., Rizza, F., Bonassi, S., Dall'Armi, V., Lisi, S., & Giaquinto, S. (2014). The sense-of-coherence predicts health-related quality of life and emotional distress but not disability in Parkinson inverted question marks disease. *BMC Neurology, 14*, 193.
- Glück, T. M., Tran, U. S., Raninger, S., & Lueger-Schuster, B. (2016). The influence of sense of coherence and mindfulness on PTSD symptoms and posttraumatic cognitions in a sample of elderly Austrian survivors of World War II. *International Psychogeriatrics, 28*(3), 435–441.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Press.
- Helvik, A. S., Engedal, K., & Selbaek, G. (2014). Sense of coherence and quality of life in older in-hospital patients without cognitive impairment—A 12 month follow-up study. *BMC Psychiatry, 14*, 82.

- Hogh, A., & Mikkelsen, E. G. (2005). Is sense of coherence a mediator or moderator of relationships between violence at work and stress reactions? *Scandinavian Journal of Psychology*, 46, 429–437.
- Horn, A., Brause, M., & Schaeffer, D. (2012). Bewegungsförderung in der (stationären) Langzeitversorgung. In G. Geuter & A. Holleder (Eds.), *Handbuch Bewegungsförderung und Gesundheit* (pp. 305–318). Hans Huber.
- Hourzad, A., Pouladi, S., Ostovar, A., & Ravanipour, M. (2018). The effects of an empowering self-management model on self-efficacy and sense of coherence among retired elderly with chronic diseases: A randomized controlled trial. *Clinical Interventions in Aging*, 13, 2215–2224.
- Kocjan, J. (2017). Strong sense of coherence contributes to successful aging and higher satisfaction with life. *Journal of Education, Health and Sport*, 7(7), 537–544.
- Kohut, M. L., Lee, W., Martin, A., Arnston, B., Russell, D. W., Ekkekakis, P., et al. (2005). The exercise-induced enhancement of influenza immunity is mediated in part by improvements in psychosocial factors in older adults. *Brain, Behavior, and Immunity*, 19, 357–366.
- Krok, D. (2016). Sense of coherence mediates the relationship between the religious meaning system. *Aging & Mental Health*, 20(10), 1002–1009.
- Larsson, G., Johansson, I., & Hamrin, E. (1995). Sense of coherence among elderly somatic patients: Predictive power regarding future needs of care. *Journal of Nursing Management*, 3, 307–311.
- Lee, C., Payne, L. L., & Berdychovsky, L. (2020). The roles of leisure attitudes and self-efficacy on attitudes toward retirement among retirees: A sense of coherence theory approach. *Leisure Sciences*, 42, 152–169. <https://doi.org/10.1080/01490400.2018.1448025>
- Lövheim, H., Graneheim, U. H., Jonsen, E., Strandberg, G., & Lundman, B. (2013). Changes in sense of coherence in old age—A 5-year follow-up of the Umea 85+ study. *Scandinavian Journal of Caring Sciences*, 27, 13–19.
- Lundman, B., Forsberg, K. A., Jonsén, E., Gustafson, Y., Olofsson, K., Strandberg, G., et al. (2010). Sense of coherence (SOC) related to health and mortality among the very old: The Umea 85+ study. *Archives of Gerontology and Geriatrics*, 51, 329–332.
- Lutgendorf, S. K., Vitaliano, P. P., Tripp-Reimer, T., Harvey, J. H., & Lubaroff, D. M. (1999). Sense of coherence moderates the relationship between life stress and natural killer cell activity in healthy older adults. *Psychology and Aging*, 14, 552–563.
- Magaziner, J., German, P., Zimmerman, S. I., Hebel, J. R., Burton, L., Gruber-Baldini, A. L., et al. (2000). The prevalence of dementia in a statewide sample of new nursing home admissions aged 65 and older: Diagnosis by expert panel. Epidemiology of Dementia in Nursing Homes Research Group. *The Gerontologist*, 40, 663–672.
- Meeyoung, Y., & Heshmati, A. (2014). Healthy residential environments for the elderly. *Journal of Housing for the Elderly*, 28(1), 1–20.
- Menzies, V. (2000). Depression in schizophrenia: Nursing care as a generalized resistance resource. *Issues in Mental Health Nursing*, 21, 605–617.
- Musavinasab, M., Ravanipour, M., Pouladi, S., Motamed, N., & Barekat, M. (2016). The effect of self-management empowerment model on the sense of coherence among elderly patients with cardiovascular disease. *Educational Gerontology*, 42(2), 100–108.
- Nesbitt, B. J., & Heidrich, S. M. (2000). Sense of coherence and illness appraisal in older women's quality of life. *Research in Nursing & Health*, 23, 25–34.
- Nygaard, H. A., Naik, M., & Ruths, S. (2000). Mental impairment in nursing home residents. *Tidsskrift for den Norske Lægeforening*, 120, 3113–3116.
- Nygren, B., Alex, L., Jonsen, E., Gustafson, Y., Norberg, A., & Lundman, B. (2005). Resilience, sense of coherence, purpose in life and self-transcendence in relation to perceived physical and mental health among the oldest old. *Aging & Mental Health*, 9, 354–362.
- Pakkala, I., Read, S., Sipilä, S., Portegijs, E., Kallinen, M., Heinonen, A., et al. (2012). Effects of intensive strength-power training on sense of coherence among 60–85-year-old people with hip fracture: A randomized controlled trial. *Aging Clinical and Experimental Research*, 24, 295–299.
- Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research*, 42, 185–227.
- Rajagopal, D., MacKenzie, E., Bailey, C., & Lavizzo-Mourey, R. (2002). The effectiveness of a spiritually-based intervention to alleviate subsyndromal anxiety and minor depression among older adults. *Journal of Religion and Health*, 41, 153–166.
- Read, S., Aunola, K., Feldt, T., Leinonen, R., & Ruoppila, I. (2005). The relationship between generalized resistance resources, sense of coherence, and health among Finnish people aged 65–69. *European Psychologist*, 10, 244–253.
- Rennemark, M., & Hagberg, B. (1999). What makes old people perceive symptoms of illness? The impact of psychological and social factors. *Aging & Mental Health*, 3, 79–87.
- Rodriguez-Blazquez, C., Forjaz, M. J., Prieto-Flores, M. E., Rojo-Perez, F., Fernandez-Mayoralas, G., & Martinez-Martin, P. (2012). Health status and well-being of older adults living in the community and in residential care settings: Are differences influenced by age? *Aging & Mental Health*, 16, 884–891.
- Saevareid, H. I., Thygesen, E., Nygaard, H. A., & Lindstrom, T. C. (2007). Does sense of coherence affect the relationship between self-rated health and health status in a sample of community-dwelling frail elderly people? *Aging & Mental Health*, 11, 658–667.
- Schneider, G., Driesch, G., Kruse, A., Wachter, M., Nehen, H. G., & Heuft, G. (2004). What influences self-perception of health in the elderly? The role of objective health condition, subjective well-being and sense of coherence. *Archives of Gerontology and Geriatrics*, 39, 227–237.
- Seah, B., Kowitlawakul, Y., Chokkanathan, S., Fong, J. J. Y., Espnes, G. A., Ang, E., & Wang, W. (2017). Salutogenic Healthy Ageing Programme Embrace (SHAPE) for senior-only households: A study protocol. *Journal of Advanced Nursing*, 74(4), 946–956.
- Sidell, M. (2009). Older people's health: Applying Antonovsky's salutogenic paradigm. In C. Lloyd, L. C. Jones, & J. Douglas (Eds.), *A reader in promoting public health. Challenge and controversy* (pp. 27–32). Sage.
- Söderhamn, U., Dale, B., & Söderhamn, O. (2011). Narrated lived experiences of self-care and health among rural-living older persons with a strong sense of coherence. *Psychology Research and Behavior Management*, 4, 151–158.
- Söderhamn, O., & Söderhamn, U. (2010). Sense of coherence and health among home-dwelling older people. *British Journal of Community Nursing*, 15, 376–380.
- Sullivan, G. C. (1989). Evaluating Antonovsky's salutogenic model for its adaptability to nursing. *Journal of Advanced Nursing*, 14, 336–342.
- Sundsli, K., Söderhamn, U., Espnes, G. A., & Söderhamn, O. (2014). Self-care telephone talks as a health-promotion intervention in urban home-living persons 75+ years of age: A randomized controlled study. *Clinical Interventions in Aging*, 9, 95–103.
- Tan, K. K., Chan, S. W.-C., Wang, W., & Vehviläinen-Julkunen, K. (2016). A salutogenic program to enhance sense of coherence and quality of life for older people in the community: A feasibility randomized controlled trial and process evaluation. *Patient Education and Counseling*, 99(1), 108–116.
- Tan, K. K., Vehviläinen-Julkunen, K., & Chan, S. W. (2014). Integrative review: Salutogenesis and health in older people over 65 years old. *Journal of Advanced Nursing*, 70, 497–510.

- Thygesen, E., Saevarheid, H. I., Lindstrom, T. C., Nygaard, H. A., & Engedal, K. (2009). Predicting needs for nursing home admission—Does sense of coherence delay nursing home admission in care dependent older people? A longitudinal study. *International Journal of Older People Nursing*, 4, 12–21.
- von Humboldt, S., & Leal, I. (2013). The promotion of older adults' sense of coherence through person-centered therapy: A randomized controlled pilot study. *Interdisciplinaria Revista de Psicología y Ciencias Afines*, 30, 235–251.
- von Humboldt, S., Leal, I., & Pimenta, F. (2013). What predicts older adults' adjustment to aging in later life? The impact of sense of coherence, subjective well-being, and sociodemographic, lifestyle, and health-related factors. *Educational Gerontology*, 40, 641–654.
- von Humboldt, S., Leal, I., & Pimenta, F. (2014). Living well in later life: The influence of sense of coherence, and socio-demographic, lifestyle and health-related factors on older adults' satisfaction with life. *Applied Research in Quality of Life*, 9, 631–642.
- von Humboldt, S., Leal, I., & Pimenta, F. (2015). Sense of coherence, sociodemographic, lifestyle, and health-related factors in older adults' subjective well-being. *International Journal of Gerontology*, 9(1), 15–19.
- Wiesmann, U., Ballas, I., & Hannich, H. J. (2018). Sense of coherence, time perspective and positive aging. *Journal of Happiness Studies*, 19(3), 817–839.
- Wiesmann, U., Becker, M.-L., & Hannich, H. J. (2017). Positive aging in nursing home residents a salutogenic analysis. *GeroPsych*, 30, 71–78.
- Wiesmann, U., Dezutter, J., & Hannich, H. (2014). Sense of coherence and pain experience in older age. *International Psychogeriatrics*, 26(1), 123–133.
- Wiesmann, U., & Hannich, H. J. (2008). A salutogenic view on subjective well-being in active elderly persons. *Aging & Mental Health*, 12, 56–65.
- Wiesmann, U., & Hannich, H. J. (2010). A salutogenic analysis of healthy aging in active elderly persons. *Research on Aging*, 32, 349–371.
- Wiesmann, U., & Hannich, H. J. (2014). A salutogenic analysis of the well-being paradox in older age. *Journal of Happiness Studies*, 15, 339–355.
- Wiesmann, U., & Hannich, H. J. (2018). A salutogenic inquiry into positive aging – A longitudinal analysis. *Aging & Mental Health*, 23(11), 1562–1568.
- Wiesmann, U., Niehorster, G., & Hannich, H. J. (2009). Subjective health in old age from a salutogenic perspective. *British Journal of Health Psychology*, 14, 767–787.
- Wiesmann, U., Rölker, S., & Hannich, H. J. (2004). Salutogenese im Alter. *Zeitschrift für Gerontologie und Geriatrie*, 37, 366–337.
- Wiesmann, U., Rölker, S., Ilg, H., Hirtz, P., & Hannich, H. J. (2006). Zur Stabilität und Modifizierbarkeit des Kohärenzgefühls aktiver älterer Menschen. *Zeitschrift für Gerontologie und Geriatrie*, 39, 90–99.

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