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Resilience and Aging

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Synonyms

Maintain well-being despite stressor; Reduced vulnerability for detrimental life constellations; Type of plasticity

Definition

Resilience is a constellation of risk factors and resources that predict developmental outcomes. It aims to maintain or recover subjective well-being and/or functioning in the face of developmental stressors.

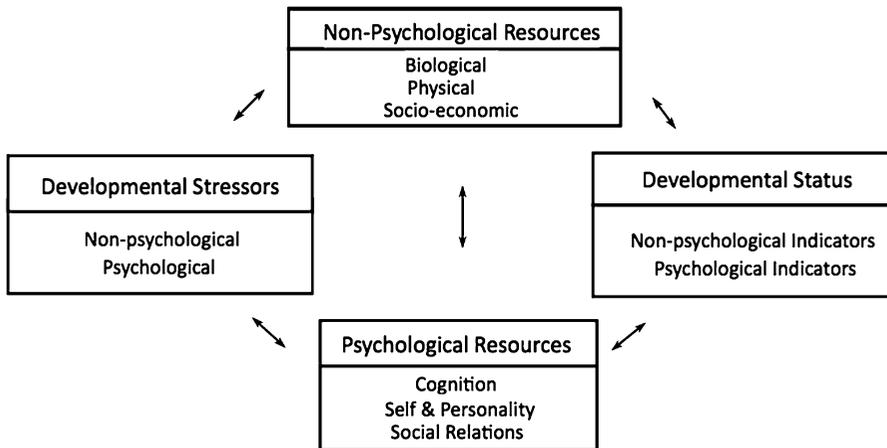
Origins and Challenges of the Concept

Resilience is most often used to convey the idea that individuals can avoid negative outcomes despite the presence of significant risk factors in their lives. It also includes the idea that individuals can regain normal levels of functioning after developmental setbacks, both with and without the help of external interventions (e.g., Garmezy

1991; Rutter 1985). When defining resilience more precisely, however, there is the challenge of not succumbing to a circular logic (Rutter 1985; Leipold and Greve 2009). Is resilience the outcome, the antecedent, or the process? Is it possible to assess resilience independently of risk and protector factors? Is it indeed a person characteristic, as notions of hardiness (Kobasa 1979), or ego resilience (Block and Block 1980) suggest?

We have proposed that it is useful to define resilience as a relational construct rather than a personality characteristic (Staudinger et al. 1995; Greve and Staudinger 2006), that is, a constellation of risk factors or stressors on the one hand and of available protective factors that are both of a psychological and nonpsychological nature, on the other (see Fig. 1). This constellation then results in a developmental outcome such as (the maintenance of) subjective well-being or a given level of performance. According to this model of resilience, certain characteristics or mechanisms are not necessarily once and for all to be considered a resource. Rather, it may vary between individuals and even within one person across time what is a resource depending on the respective constellation at hand. Of course, it is crucial to define and assess each element of the constellation independently in order to avoid circularity.

Given this conceptualization, there is overlap between resilience and coping. Coping models provide a useful framing for one type of psychological resource in the sense of mediating



Resilience and Aging, Fig. 1 Resilience as a constellation of psychological and nonpsychological resources

mechanisms connecting risks on the one and developmental outcomes on the other side (Greve and Staudinger 2006).

A LifeSpan Perspective on Resilience

It may come as a surprise, but it was not before the 1990s that the notion of “resilience” has been considered in the context of theorizing and research on aging (Staudinger et al. 1995; Ryff et al. 1998). There are at least three reasons for this: First, the concept of resilience was originally introduced for the study of child development and, more precisely even, for the study of the psychopathology of child development rather than the investigation of normal development (e.g., Rutter 1985; Masten and Garmezy 1985; Luthar 2006). Second, the study of aging only gained in prominence in these years when longitudinal studies started to reach these higher ages. Thirdly, stereotypic conceptions of late life and the process of aging have tended to see late life as a time of uniformly negative changes and losses, in other words, a period of the life span not characterized by much resilience.

Managing threats and losses in late adulthood and age can be discussed from two angles. First, it is a question of specific events and conditions to be managed in old age. Decades of research have shown that adverse problem situations begin to

accumulate in later adulthood. Physical and mental performance tend to decline, serious illness and disabilities occur with a higher probability than in younger years, the remaining years of life decrease, career goals disappear due to retirement, and important friends and relatives die (Baltes et al. 2006). The repeatedly replicated finding that indicators of well-being and psychological health do not decrease until very old age demonstrates, however, that older adults are able to cope with these adversities (e.g., Staudinger and Pasupathi 2000; Staudinger and Kessler 2009; Staudinger and Bowen 2010). The fact that problems associated with old age are characterized by a decreasing level of subjectively perceived control leads us to the second aspect: the means of coping in old age change. Adaptive reactions and processes that do not actively solve but “dissolve” the problem, i.e., reframe it, become increasingly promising and probable (Staudinger et al. 1995; Staudinger and Kessler 2009; Staudinger and Bowen 2010; Brandtstädter and Greve 1994).

From a lifespan perspective, the basic characteristic of human development and aging is its modifiability. This modifiability has been called the plasticity of human development, which is dependent on the risks and resources present in a person’s internal and external developmental contexts (Staudinger et al. 1995; Lerner 1984). The modifiability of human development is a

neutral characteristic denoting the positive as well as the negative deviation from typically observed developmental trajectories (Staudinger 2015). Resilience refers to those types of plasticity that concern the maintenance or recovery of functioning under conditions of stress. Whereas, when a typical developmental trajectory is exceeded (with or without the presence of stressors), this is called growth or thriving (Staudinger et al. 1995; Carver 1998). There is empirical evidence that resilience and growth are qualitatively different phenomena that ought to be studied separately (e.g., Staudinger and Kunzmann 2005). Two types of positive development have been distinguished to capture this difference: adjustment and growth. The former is linked with mastering the developmental tasks and challenges as they arise across the life span as well as the day-to-day hassles and maintaining one's well-being. The latter is linked with pursuing the advancement of the greater good even if that implies jeopardizing one's own well-being.

Empirical Evidence for Resilience in Later Adulthood and Old Age

Resilience as the maintenance or recovery of prior levels of functioning after the occurrence of a stressor may be further differentiated as to whether it occurs as an *endogenous* (i.e., without external intervention) part of adult development and aging or whether it requires *exogenous* (i.e., intervention-based) conditions and support (Greve and Staudinger 2006; Staudinger and Greve 2001). In the following, we will present empirical examples for both types of resilience from two different areas of psychological functioning, that is, cognition and self and personality.

Cognition

Following Fig. 1, we first need to establish the stressor, which requires a resilience constellation to unfold. The stressor in this case is the age-related decline in brain functioning such as the number of neurons, their connectivity, and the brain physiology, which is reflected in decreased

performance in indicators of the mechanics of the mind such as the speed of information processing (e.g., Baltes et al. 2006). Surprisingly, under normal conditions, this decline, which starts already around age 25–30, does not play out negatively in everyday performance and when familiar circumstances are concerned. The decline only becomes visible under conditions of time pressure and in highly novel environments. How is that possible? Research has shown that this type of *endogenous* resilience of the cognitive system is based on the knowledge and experience that we accumulate as we move through life, be it in the context of work or life in general. For instance, Salthouse (1984) demonstrated in a classical study that expertise in typing compensates for age-related changes in performance. Due to years of typing experience, older expert typists read further ahead than their younger counterparts and thereby were able to compensate for the decline in the mechanics of the brain as they concern, for instance, the speed of eye-hand coordination. Or it was shown for the expertise in chess that older chess experts compensated for age-related decline in speed of information processing by forming larger chunks of information than younger chess experts and were thus able to maintain their chess performance (Charness and Bosman 1990).

Research on *exogenous resilience* of the cognitive system has demonstrated that it is possible to recover earlier levels of performance in the mechanics of the mind if certain types of training were provided. Decades of cognitive training research have shown that it is possible to regain earlier levels of intellectual functioning through massed practice (e.g., Consensus 2014; Hertzog et al. 2008). This work has also shown, however, that the increase in cognitive performance based on massed practice or explicit strategy training is achieved through strategy acquisition, that is, acquired knowledge (i.e., cognitive pragmatics) compensates for performance losses. No reactivation of brain areas and mechanisms that have undergone age-related decline are observed, and therefore, such performance increases generally do not generalize across different kinds of cognitive tasks (Nyberg et al. 2003). In recent years, long-term intervention studies (e.g.,

12 months) that investigated the effect of aerobic exercise on cognition in old age found that performance in the cognitive mechanics was improved across a wide range of tasks and that this improvement was associated with a reactivation of brain functioning in brain areas that previously had undergone pronounced age-related decline (e.g., Voelcker-Rehage et al. 2011). Thus, it seems that there is also cognitive resilience that is based on biological reactivation and not only based on knowledge-based compensation. Currently, there is work that examines how continuous cognitive challenges in everyday life such as at work or during leisure time may also help to stimulate exogenous resilience (e.g., Bowen et al. 2010). Of course, there are many more types of exogenous resilience to be mentioned and studied such as the compensatory distribution of cognitive tasks within a long-term couple or the use of external storage devices to support memory functioning to just mention two.

Self and Personality

A number of studies indicate a high – and increasing – stability and predictability of self and personality across adulthood (Roberts and Caspi 2003). Though some approaches claim that this is indicative of the absence of personality development during adulthood (e.g., McCrae and Costa 1996), the lifespan perspective on human development argues that there is highly functional self-regulatory dynamics that supports such stability and resilience constellations (Greve and Staudinger 2006; Staudinger and Pasupathi 2000; Staudinger and Kessler 2009).

Personality change. The pattern of personality change during adulthood can be described as follows: emotional stability, conscientiousness, and agreeableness increase (Staudinger 2005). This pattern has been described as an increase in social mastery and adjustment and as such is an important component of the age-related increase in resilience in the face of developmental tasks. Similarly, using measures rooted in the personality change rather than stability literature, it has been demonstrated that environmental mastery, self-acceptance, and positive social relations

increase, as we get older (Keyes and Ryff 1999). At the same time, openness to new experiences and purpose in life and personal growth tend to decline with age in current cohorts, which is indicative of a decrease in personality growth (cf. Staudinger and Kessler 2009; Staudinger 2005). This latter finding is in line with the fact that wisdom-related insight and judgment as an indicator of psychological growth, in contrast to biological growth or maturation, does not automatically increase as we get older but resilience does (Staudinger and Glück 2011).

Self-regulatory processes. The tension between stability and change, just mentioned, extends to evaluative perspectives of (and on) the person. We tend to evaluate ourselves in an impressively stable manner (Staudinger and Pasupathi 2000); even though the balance of gains and losses tends to get worse in the second half of life and, we are indeed able to also perceive this decline quite clearly (e.g., Heckhausen et al. 1989). This pattern of results, at first glance almost “paradoxical” (Staudinger and Pasupathi 2000), highlights likewise the power of resilience constellations in reconciling stability and change in late adulthood and age.

Maintenance of one’s self can be achieved by strategic (planned) reactions as well as by automatic processes the person cannot control (as a rule, he or she is not even aware of them). Strategies of self-regulation (Brandtstädter 2006) include increased efforts of goal pursuit and attempts to receive social support. Such active forms of coping with life challenges are characterized by adherence to the standards and goal orientations under pressure. However, these problem-oriented reactions (“primary control”; Heckhausen et al. 2010) are only possible as long as appropriate problem-solving competence (e.g., social skills, physical resources) is available.

Once attempts to solve a given problem or to alleviate a stressor fail, self-regulatory adjustments can maintain or regain the individual’s sense of coherence and well-being. Adjustments of personal values and preferences, reinterpretations of stressful problem situations, changes in perspective, and deliberate (downward)

comparisons are typical examples of processes that contribute to resolving the perceived problem, thereby reducing its adverse effect on well-being and life satisfaction (Brandtstädter 2006). Although a person might be able to facilitate his or her detachment from a formerly important goal (by, say, a long journey that redirects one's thoughts), the process of actually replacing a goal (degrading the old one, upgrading a new one) is certainly beyond the individual's control (for instance, usually we have a hard time to let go of unreciprocated love). Nevertheless, the modification of one's level of aspiration or the setting of a different goal altogether makes it possible to exercise control over such newly set goals, thus regaining a level of "primary" control which had been impossible before (Brandtstädter 2006; Baltes and Baltes 1990). For instance, when faced in old age with strong physical constraints, it may be highly adaptive to give up independence, that is, move into an assisted living facility or have permanent help move in. By choosing dependence in one domain, we may free up energy that we can use for keeping up independence in others such as maintaining friendships or for pursuing other interests (Staudinger et al. 1995). The reduction of aspiration levels can be interpreted in a similar fashion. Being irreversibly unable to fulfill a specific criterion of physical fitness due to aging – for example, climbing several flights of stairs with ease – may be alleviated by a more age-appropriate criterion such as climbing one flight. Such adjustments, however, presuppose that alternate evaluations and interpretations are available and require the cognitive flexibility to revise initially preferred interpretations and assessments (Brandtstädter 2006). The availability and integration of cumulated life experiences and adjustments in emotion regulation (i.e., mastery; Staudinger and Kessler 2009) seem to facilitate these adaptive processes, as increasing resilience has been observed across the life span.

In the past two and a half decades, several developmental theories of self-regulation have been developed to describe and explain this interplay of tenacious strategies and adjusting processes (Brandtstädter 2006; Heckhausen

et al. 2010; Baltes and Baltes 1990; Freund et al. 1999). Whereas they differ, with respect to the scope of adaptive adjustment (from goal pursuit to cognitive functioning) and with respect to the methodological approaches applied, they converge in the assumption that resilience emerges from the interplay of processes in a given constellation of stressors and resources (Staudinger et al. 1995).

Resilience constellations in old age do, of course, have their limits (Baltes and Smith 1999). Health problems of later life are often not curable and are not easily reframed. Not least in very old age, there is an increasing probability of deficits and losses that no longer appear "manageable." Permanent eyesight restrictions or the loss of a long-term partner, for example, can only be compensated to a certain degree, and their emotional alleviation might prove difficult. And yet, constellations of resilience remain possible. For instance, focusing on reachable goals (e.g., being a valuable grandmother) and embracing transcendental values (e.g., prospect and hope of a reunion with the lost spouse in heaven) might contribute to a stabilization of one's quality of life, one's experience of meaning. Further, even though it seems intuitive, negative emotional reactions are not always to be evaluated as dysfunctional or a lack of resilience (Freund and Staudinger 2015). This is likely to be the case if they persist, but recognizing grief and desperation as steps in a healthy regulation process has become state of the art of resilience. It has been found that resources supporting short-term resilience can differ from mid- and long-term resources. Similarly, what has been identified a resource in dealing with a life-threatening illness may not be effective or even be dysfunctional in dealing with a marriage crisis. Also, resources supporting the maintenance of cognitive functioning differ from those that support resilience in the personality realm, notwithstanding that fact that there seem to be some wildcard resources such as internal control beliefs or physical activity (Staudinger et al. 1995).

Resilience as Integrative Concept: Theoretical and Empirical Perspectives

Besides signifying an important developmental phenomenon, the concept of resilience has a huge potential for theoretical integration of several (hitherto separately discussed) fields and issues such as self-regulation and self-stabilization, coping research, personality development, and successful aging. For instance, the focus on stability as a developmental outcome facilitates the insight that personality (i.e., the stability of the self) is, to a remarkable degree, the product of self-regulatory processes, which are not only producers, but at the same time products of developmental processes (Leipold and Greve 2009). In the following, we will outline three examples of how the concept of resilience serves this integrative function.

Resilience Constellations as an Attribute of Developmental Systems

The conceptualization of resilience as constellation is firmly grounded in lifespan psychology (Baltes et al. 2006) and converges with earlier approaches of “developmental systems” (e.g., Ford and Lerner 1992; see Masten 2014). Without going into more detail, it is important to emphasize the common claim that one particular phenomenon (e.g., developmental stability) can result from various (i.e., heterogeneous) functionally equivalent constellations. This is exactly the decisive point of the conceptualization of resilience put forward here: The fact that a certain person is able to regain the level of functioning under conditions of threat is certainly not to be explained by one and the exact same process, or condition, or constellation in each case. Rather, the specific interplay of various conditions and processes will result in resilience in different constellations (see Fig. 1). For instance, the maintenance of a sense of meaningfulness of life after retirement might be achieved by, say, continuation of working for your company (e.g., as an advisor), by offering your professional expertise to a different institution (e.g., as a volunteer in a charity organization), by refocusing your interests on your partnership or your grandchildren, or

by retrospectively downgrading the work experience (“I’m so happy that this is over!”). Accordingly, competencies or attributes that prove to be a resource in one constellation may turn out to be detrimental in others. For instance, a relatively high degree of self-esteem has been shown to be a buffer (and, thus, a resource) against stressful life conditions, but, at the same time, it poses a risk factor for antisocial behavior in adolescence (Greve and Staudinger 2006). Additionally, a certain developmental state or trajectory might be evaluated either as “crisis” or as “success” – depending on one’s personal perspective and framing (Greve 2015). In other words, resilience constellations are highly specific such that, e.g., the resources identified when using subjective well-being as an outcome have been found to differ from resources found to avoid depression as a developmental outcome (e.g., Staudinger et al. 1999).

The Ubiquity of Resilience

The often-replicated finding that the majority of people prove able to maintain well-being and quality of life throughout late adulthood and (old) age asks for an explanation given that objective circumstances in old age lead us to expect otherwise (Staudinger et al. 1995). Even under very harsh developmental conditions more often than not, and with increasing age even more so, individuals prove able to maintain or regain quality of life and adequate levels of functioning (Staudinger and Pasupathi 2000). The fact that resilience is the rule rather than exception can be explained by the substitutability of protecting and stabilizing conditions (i.e., the functional equivalence of various resources, as mentioned above). In other words, the ubiquity of resilience redirects theoretical attention on developmental processes of stabilization (over and above of processes governing change). Based on extant evidence, there is no reason to assume that mastering adversities would require special person-specific skills or conditions that are only available to certain individuals. Rather, we can assume that they are different constellations of resources that make up resilience for different persons but even for one

person across time or across different domains of functioning.

The Neurophysiology of Resilience

As in many fields of psychological inquiry, during recent decades, investigations of resilience have been expanded beyond the behavioral level to also include its (neuro)physiology (e.g., Staudinger and Pasupathi 2000; Reuter-Lorenz and Park 2010; Ryff and Singer 2000; Schindler and Staudinger 2005). For instance, there is a close association between low and variable heart rate as well as a relatively stronger resting activation of the left prefrontal cortex and a person being less inhibited, more sociable, and approach oriented and having a tendency toward positive affectivity (e.g., Schindler and Staudinger 2005). All of which can be considered resources in a resilience constellation. Furthermore, mechanisms that support flexible HPA axis deactivation have been discussed as a neurobiological wild card resource when buffering stress (Kalisch et al. 2015). The advances in understanding the neurophysiology of stress and its interindividual variability hold the potential to add further precision when deciphering resilience constellations; however, they also hold the danger of reductionism (e.g., Freund and Staudinger 2015; Kalisch et al. 2015; McEwen 2007). A person's resilience constellation is not preempted by early or even intrauterine experiences or by genetic makeup; rather, it is dynamic and in constant flux (Schindler and Staudinger 2005; Shanahan and Hofer 2011).

Future Directions

Although theories of resilience in late adulthood and old age are embedded in the lifespan perspective on human development (Baltes et al. 2006), they have rarely been connected with approaches on resilience in childhood and youth (Luthar 2006). Both for theoretical and for practical reasons, it might prove important to learn to which degree and how processes that underlie resilience constellations in old age develop earlier in life (Thomsen and Greve 2013): Aging starts early. It

may be helpful to try to predict interindividual differences in resources of resilience by focusing on early developmental trajectories. In particular, a deeper understanding of the early developmental conditions of adaptive competencies may finally make truly primary prevention possible: The seeds for the resources of resilience which are useful or even necessary in later life have probably been planted in earlier phases of development.

The better we understand the developmental conditions for resilience resources, the more effective we will be able to intervene and overcome risks and vulnerabilities in time. Although studies show that exogenous improvement of resources is possible (see above; Voelcker-Rehage et al. 2011), a systematic approach to strengthening resilience resources throughout the life span is still lacking. Certainly, at different stages of life, different interventions are appropriate or necessary (and differently so for different people). However, several "polyvalent" resources might prove useful throughout the life span (e.g., sense of control, adaptability of one's goal system, the individual's capacity to reframe, etc.). Building and replenishing resilience resources throughout the life span by incorporating biological, psychological, and social-cultural features as well as their interactions represent a major contribution to modern public health.

Cross-References

- ▶ [Activity Theory, Disengagement Theory, and Successful Aging](#)
- ▶ [Age-Related Changes in Abilities](#)
- ▶ [Cognitive Plasticity](#)
- ▶ [Cognitive Resource Theories](#)
- ▶ [Lifespan Developmental Psychology](#)
- ▶ [Lifespan Developmental Psychopathology](#)
- ▶ [Plasticity of Aging](#)
- ▶ [Stage Theories of Personality Development](#)
- ▶ [Theory of Assimilation and Accommodation Across the Adult Life](#)
- ▶ [Wisdom](#)

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Supporting Research on Resilience and Aging Unraveling the keys to staying healthy and bouncing back as we age. The National Institute on Aging has released two new funding opportunities related to resilience and aging. The Institute encourages small business concerns to apply to RFA-AG-19-025 and RFA-AG-19-026. For more information on NIA research on resilience, please read the background information below.