

Harmonizing Resilience Research at NIH

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Office of Dietary
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Institutes of Health

Disclosure Information

The author of this presentation has no financial interests or relationships to disclose.

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A Call to Operationalize the Definition of Resilience in 1993

Development and Psychopathology, 5 (1993), 497-502. Copyright © 1993 Cambridge University Press Printed in the United States of America

EDITORIAL

Prospects and promises in the study of resilience

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Examinations of risk and psychopathology across the life course all too often portray the developmental process as somewhat deterministic, resulting in maladaptive and adverse outcomes. Studies ranging from genetic and biological predispositions to pathology, to assaults on development associated with inadequate caregiving, graphically convey the multiplicity of risks that eventuate in psychopathology. Thus, it is especially refreshing to explore the more optimistic component of the psychopathology-risk equation, namely, resilience. What individual, familial, or societal factors stem the trajectory from risk to psychopathology, thereby resulting in adaptive outcomes even in the presence of adversity? It is the answer to this query that the contributors to this Special Issue of Development and Psychopathology have directed their energies toward elucidating.

This Special Issue may well be a "first" in its presentation of a group of articles detailing research strategies and empirical findings that are focused on the construct of "resilience." Of course, a significant and il-

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The literature viewed as one f exemplars of re investigators of ordered patients derstanding mal set of patients vadaptive patter

Before the construct of resilience can truly reap the rich promise that it holds for promoting our knowledge of development and psychopathology, however, a number of caveats must be articulated. It is our hope that the articles contained in this Special Issue will serve as an impetus to fostering theoretical and research gains. Currently, the popularity of resilience as a construct has exceeded the research output associated with it. As such, resilience is at risk for being viewed as a popularized trend that has not been verified through research and, thereby, in danger of losing credibility within the scientific community. To prevent this, it is imperative that theorists in the area of resilience devote equal effort to advancing the construct empirically.

Toward this goal, a number of issues must be addressed. Perhaps first and foremost, researchers must clearly operationalize their definition of resilience. At present,

various researchers employ different definitions of resilience that can range from the absence of psychopathology in the child of a mentally ill parent to the recovery of function in a brain-injured patient. Definitional diversity results in sometimes disparate profiles of competent adaptation as well as in different estimates of rates of resilience among similar risk groups. Depending on how broad or conservative the definition of resilience is, vastly different conclusions can be drawn. While it may still be premature to agree on the definition of resilience, this may well be a future goal of investigators. In the interim, specifics on the operationalization of resilience need to be included in all research reports.



Defining a Trans-NIH Resilience Research Agenda

March 10, 2020 | Rockville, Maryland

Objectives:

Develop a consensus on a trans-NIH definition of resilience, facilitate ICO collaborations, and identify research tools, programs, and mechanisms to further the development of a trans-

NILL resilience research against

NIH resilience research agenda.



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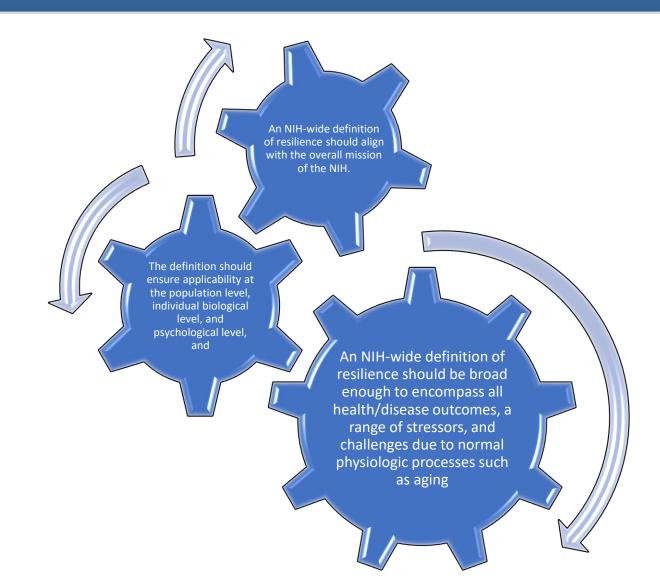
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Suggested Criteria



Defining Resilience at NIH

Resilience can be defined as a system's capacity to resist, recover, recover better (grow), or adapt in response to a challenge or stressor.



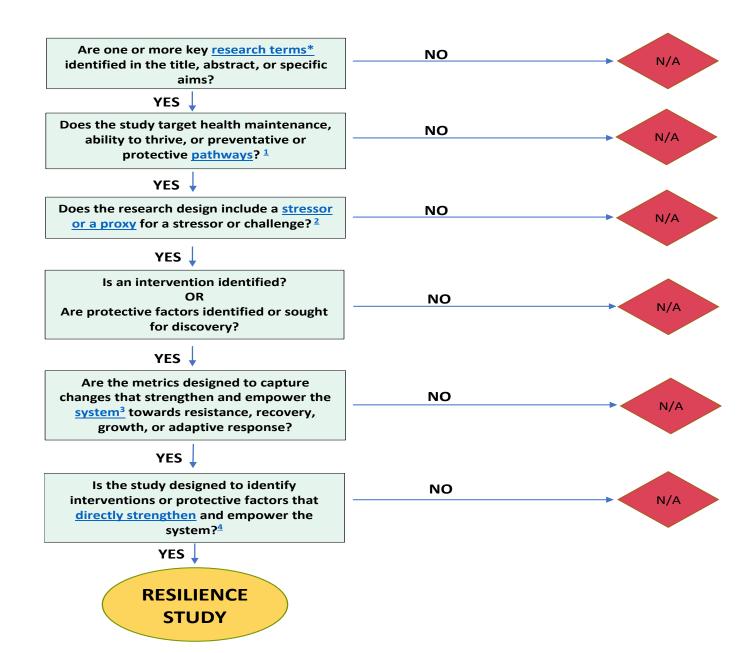


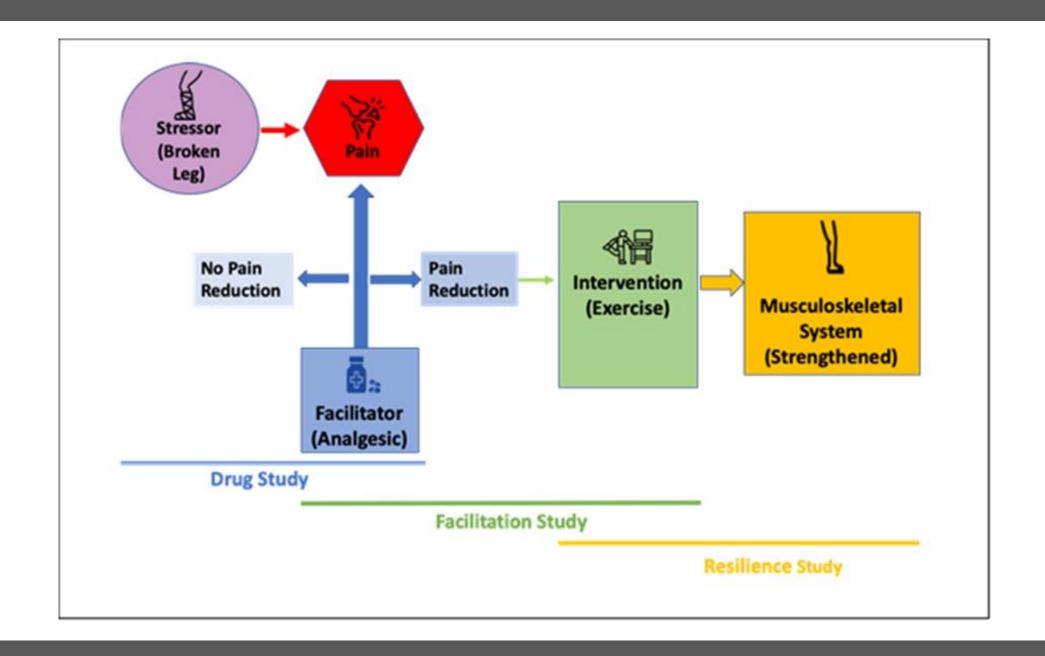
Defining and Conceptualizing Resilience at NIH

- At NIH, resilience can be defined as a system's capacity to resist, recover, recover better (grow), or adapt in response to a challenge or stressor.
 - A system can represent various domains (e.g., individual, community), levels (e.g., social, behavioral, physiological), and/or processes (e.g., aging).
 - Over time, a system's response to a challenge might show varied degrees of reactions that likely fluctuate in response to the severity of the challenge, the length of time exposed to the challenge, and/or innate/intrinsic factors.

Harmonizing Resilience Research at NIH

RESILIENCE RESEARCH DESIGN TOOL





Title	Challenge/Stressor	Outcomes	Supplement/Dietary ingredient
Preservation of Psychological Resilience Under Chronic Stress	sleep deprivation, social defeat	Adaptive response Inflammatory signaling, CNS plasticity	resveratrol, polyphenol, grape juice
Perinatal stroke: effects of bioactive lipids on immune-neurovascular axis and brain repair	perinatal stroke, acute bacterial infection	Recovery Attenuated signaling at immune- neurovascular axis (neuroinflammation, vascular inflammation)	Omega-3-fatty acids
Botanicals enhancing neurological and functional resilience in aging	Aging	Resist Neuronal activity, oxidative stress, mitochondrial function	botanicals (Centella asiatica and Withania somnifera), triterpenes and caffeoyl quinic acids
Influence of Dietary Botanical Supplements on Biological and Behavioral Resilience	stress induced models of depression/psychological impairment	Resist/adaptive response Upregulation of II-6 in response to Trier Social Stress Test	polyphenol
Spirulina oral supplement for enhancing host resilience to virus infection	respiratory viral infections	Resist	Spirulina (Braun-ty lipoproteins)

OFFICE OF DIETARY SUPPLEMENTS 2018-2020: EXAMPLES OF RESILIENCE RESEARCH



RESEARCH DESIGNTOOL



Are one or more key <u>research terms*</u> identified in the title, abstract, or specific aims?

Does the study target health maintenance, ability to thrive, or preventative or protective pathways? ¹

Does the research design include a <u>stressor</u> or a proxy for a stressor or challenge? ²

Is an intervention identified?

OR

Are protective factors identified or sought for discovery?

Are the metrics designed to capture changes that strengthen and empower the system3 towards resistance, recovery, growth, or adaptive response?

Is the study designed to identify interventions or protective factors that directly strengthen and empower the system?4

Mechanisms and active compounds in the Botanical Water Extract (BWF)

Keyword terms: enhance, reverse

In our preliminary studies, BWE reversed learning deficits in aged Tg2576 mice, a model of Alzheimer's disease (AD) with high beta amyloid (A β) plaque burden, without altering brain A β levels. This suggests that BWE can attenuate A β neurotoxicity, without altering its formation or deposition.

Using both targeted and unbiased approaches, we will explore BWE's protective effects against mechanisms of $A\beta$ toxicity.

The mechanisms to be explored in this study are relevant to age-related decline in neuronal health and cognition in general and are not limited to those associated with Aß toxicity.

We hypothesize that Aβ-modulating effects of BWE are mediated by nontriterpene, phenolic compounds working by one or more mechanisms relevant to neuronal health.



Opportunities

- Define Resilience
- Characterize the resilience outcomes explored (resist, recover, recover better, adapt, etc.)
- Attention to resilience checklist to help harmonize the science

Gaps

- Characterizing magnitude of (natural) stressors
- Characterizing magnitude of intrinsic protective factors
- Duration/ life cycle of:
 - stressors
 - Interventions
 - protective factors
 - resilience outcomes
- Measures/ metrics domain specific?





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https://ods.od.nih.gov/Research/resilience.aspx