

2014

## Conceptualising and measuring mental fitness

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**CONCEPTUALISING AND MEASURING MENTAL FITNESS**

**A thesis submitted in fulfilment of the requirements**

**for the award of the degree**

**DOCTOR OF PHILOSOPHY**

**from**

**UNIVERSITY OF WOLLONGONG**

**by**

**Paula Lesley Robinson**

**B Sc (Hons)**

**Department of Psychology**

**2014**

## DECLARATION

I, Paula Lesley Robinson, declare that this thesis, submitted in fulfilment of the requirements of the award of Doctor of Philosophy, in the Department of Psychology, University of Wollongong, is wholly my work unless otherwise referenced or acknowledged. The document has not been submitted for qualifications in any other academic institution.

**Signed by Paula Lesley Robinson**

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### Abstract

Despite the increasing use of the term *mental fitness*, there are no consistent theoretical foundations, models or reliable and valid measures to use in research and practice. By using the adjective ‘mental’ prior to fitness, mental fitness can be seen as analogous to physical fitness. Physical fitness is a better known domain and it can be used to enable people to grasp potential meanings of mental fitness.

To commence the process of defining and measuring mental fitness, a conceptual review and two studies were conducted. The purpose of the conceptual review was to explore the historical, popular and scientific meaning and use of the term mental fitness and how it could be utilised within psychology. The review provided evidence to formulate an initial definition of mental fitness and a set of four guiding principles. Further, this review suggested an example of a resource index containing existing, published psychological theories and variables that are associated to positive mental health outcomes. This example resource index was proposed within a framework based on the physical fitness analogy of strength, endurance and flexibility. Following on from the conceptual review, a Delphi study was conducted to engage an international expert panel ( $n = 25$ ) to evaluate the proposed definition and four guiding principles of mental fitness, expert consensus was achieved. Results provided an updated definition of mental fitness as being “the modifiable capacity to utilise resources and skills to flexibly adapt to challenges or advantages, enabling thriving”. Results for the four guiding principles were (1) fitness is a positive term without connotations of illness implied by mental health or mental illness; (2) mental fitness could be understood by the wider community in a similar way to physical fitness; (3) mental fitness is measurable; and (4) mental fitness can be improved, in a similar way to physical fitness. The panel also offered valuable, qualitative input and recommendations for future research and practice. The final study was conducted to provide preliminary empirical support for the concept and

measurement of mental fitness. Exploratory (EFA) and confirmatory (CFA) factor analysis ( $n = 223$ ) was used to analyse items from a selection of variables drawn from established measures. Results from the EFA identified four factors labelled *strength*, *endurance*, *flexibility*, and *team* supporting the item content and the physical fitness analogy. Results from the CFA provided preliminary evidence for a multifactorial model of mental fitness and validation for the four factors. Moreover, results provided initial validation for a mental fitness model containing the four factors subsumed by a second order factor of mental fitness. Limitations and future directions are discussed, as are the broader theoretical and empirical implications of the research. The preliminary findings suggest that the concept and model of mental fitness can provide a new and positive approach to the language and measurement of positive mental health aligned to the physical fitness analogy. This can create a broader understanding that, as in physical fitness, mental fitness requires the practice of intentional activities to create positive habits of mind that lead to higher levels of well-being, optimal functioning and quality of life outcomes.

## CHAPTER 1 – INTRODUCTION

A vision for the future:

Listen in on this conversation...

*“How’s your fitness regime going?”*

*“Right now I’m working on building my biceps and improving my mood”.*

*“Is it working?”*

*“Yes, my muscles are bigger and my brain is giving me more automatic positive thoughts now, so I have much more energy”.*

**Rationale**

The overarching objective of this dissertation is to develop the concept of *mental fitness* to provide a contribution to theory, the development of research propositions and practical interventions. To date the concept of mental fitness has no consistent theoretical foundations, construct validity or standardised measurement to research, replicate or for practitioners’ to apply. The essential premise is that the concept of mental fitness will assist psychologists, mental health professionals, medical practitioners, organisations, the wider community, policy makers and governments meet the challenge of reducing mental illness and improving mental health. It is proposed that the language of fitness is effective in the mental health context because (a) it utilises language already known and understood and is easy to relate to; (b) it reduces stigma that exists around the concept of mental health; (c) it helps to address the need for more proactive, preventative and holistic approaches to improved mental health that has consumer acceptability; (d) it progresses the idea that a fit mind and body are equally important and need regular, intentional activities and practices to build sustainable habits of mind. It is argued that the concept of mental fitness, offered in a similar framework to physical fitness, can provide a way of explaining positive mental health theory, research and activities in a non-threatening and proactive way so as to increase mental health outcomes.

**Research Questions**

To commence this process, the primary research questions for this dissertation are: (1) what is mental fitness and how should it be defined? (2) what are the components of mental fitness? and (3) what are the factors underlying current published measures, that can be used to operationalise mental fitness?

**Specific aims of the dissertation**

Specific aims of the dissertation are to:

- a) position the concept of mental fitness within Positive Psychology as a proactive, preventative and promotable approach to develop positive mental health aligned to the physical fitness analogy;
- b) conduct a conceptual review of the historical and current meaning and use of the term mental fitness in the popular and psychological literature;
- c) propose an initial definition, a conceptual framework and guiding principles for mental fitness to direct future research and practice;
- d) evaluate the definition, guiding principles and conceptual framework for mental fitness utilising a global expert panel by way of a Delphi study;
- e) examine an array of positive mental health published items and measures to identify higher-order factors that will form an initial mental fitness measure; and
- f) empirically test a preliminary factorial model of mental fitness to inform future research and practice.

Mental fitness has already been proposed in the psychological literature as a positive mental health strategy in answer to the following plea written by the distinguished behavioural

scientist and public health expert Dr. Andie Knutson, from University of California in the American Psychologist (1963):

*Positive mental health has been left on the doorstep of the public and professional community as a neglected and starving stepchild....it would be useful to have some new term to replace positive mental health...that retains the good will and enthusiastic participation of members of the mental health profession and their medical, health and welfare colleagues, and yet effectively elicits the involvement of members of the social sciences (pp. 303-304).*

An unexplored proposition in answer to Knutson's plea was published a year later by developmental psychologist Dorothea McCarthy, who suggested the term *mental fitness* to express Knutson's positive mental health concept. McCarthy (1964) suggested that this term would *serve well through the many gradations represented by the various nosological categories of clients served by community mental-health clinics, to the well-adjusted, spontaneous, natural, creative individuals who are coping with reality, making effective contributions to society and realising their intellectual, emotional and social potential. I venture to suggest the term mental fitness to express the concept, and ask the Committee on Mental Health Research and Programs of the APA to try it on for size and see how well it fits (pp. 201 -202).* McCarthy also argued that mental fitness formed an excellent counterpart for the late President Kennedy's population-based program for physical fitness, i.e. a total fitness solution that combines mental and physical fitness. Further, McCarthy expressed the need for a more positive, proactive and promotable approach to mental health for the wider community by way of the physical fitness analogy.

It could be argued that Knutson and McCarthy were pioneers in Positive Psychology as their plea was an early glimpse of the need for positive mental health and well-being to take a more prominent role in the psychological literature.

Some forty years later, upon the formal introduction of the Positive Psychology paradigm Seligman (1998a, 1998c, 1999; Seligman and Csikszentmihalyi, 2000) agreed with Knutson and McCarthy that the focus on pathology had largely dominated the field of psychology over several decades, and had unwittingly created an image of mental health as an absence of pathology.

Developmental theories and research endeavours congruent with Positive Psychology that suggest human beings have a tendency to grow towards their own potential are not new to psychology (e.g. James, 1902; Jung, 1933; Rogers, 1951; Erikson, 1959; Maslow, 1962). However, the rapidly expanding sub-field of Positive Psychology quickly offered traditional psychology and the social sciences a very specific focus on positive mental health. This approach made important theoretical and empirical contributions by viewing an individual in a new way; not just as mentally ill (presence of a mental disorder) or mentally healthy (absence of a mental disorder) but by suggesting an individual has the ability to achieve further growth towards a full and meaningful life. These higher level mental health outcomes are most often referred to in the literature by way of concepts such as well-being, optimal functioning, thriving and flourishing (Diener, 2004; Ryff & Singer, 2003; Keyes, 2007; Ryan & Deci, 2000).

Whilst it can be argued that psychology does not need any more concepts to define and research, especially considering Positive Psychology has made great strides forward within the positive mental health paradigm, it is suggested here that new and innovative terms and conceptual frameworks are, now more than ever, essential to continue to capture the attention of the wider community with a language that is easily understood and, without stigma. There is widespread evidence to support this assumption, for example:

- a) Seligman (2002) emphasises that the stance of Positive Psychology is *prevention* but that there is very little focus on *how* to educate, promote and engage the wider community in proactive positive mental health activities.
- b) Keyes (2007) concurs with Seligman in terms of *prevention* and *promotion* of positive mental health strategies and activities by suggesting they are a crucial component of any mental health initiative; Keyes further notes “the need to generate suggestions for ways to promote flourishing that could be implemented in private practice and investigated scientifically” (p. 4).
- c) Peterson and Park (2010) identified three primary challenges ahead for Positive Psychology: (a) the ability to adapt, learn and change in response to the challenges or opportunities encountered; (b) sustainability, or how to engage and maintain positive mental health outcomes; and (c) how to go beyond the individual to community wide initiatives?
- d) Luthans (2002; 2012) argued that there is a need for new positive core concepts provided they have good theoretical and empirical foundations that particularly lend themselves to development and application in multiple settings.
- e) A meta-analysis by Sin and Lyubomirsky (2009) suggested one of the most promising areas of research to improve one’s well-being is intentional activities to decrease depressive symptoms and to improve well-being. However, they concluded that motivation of the individual to engage in these activities for longer periods of time is a challenge.
- f) The World Health Organisation (WHO) also recognised that vigorous promotion of healthy behaviours are critical to decreasing the international burden of mental

illnesses and for helping people to realise their full potential but falls short of *how* this can be achieved.

- g) Seligman (2004) emphasised the need for more conceptual and empirical tools to craft and evaluate interventions.
- h) Sheldon and King (2001) highlighted the need for Positive Psychology to reconsider how to engage “the average person to find out what is right and what needs improving” (p. 216);
- i) Hillier, et. al., (2005) stressed the need for new strategies for treating wellness.
- j) Seligman and Csikszentmihalyi (2008) noted that we still know very little about *how* normal people flourish in their everyday lives.

The above summary suggests that theoretical and empirical innovation is still required to ensure that positive mental health research and practice is understood and adopted by a broader audience for both prevention of mental illness and to improve well-being outcomes.

### **Mental fitness analogous to physical fitness**

A mental fitness strategy aligned to the concept of physical fitness is already suggested as part of a positive health approach. For example, from 1948 until the present day, the World Health Organisation (WHO)’s definition of health has had a holistic approach by including physical and mental indicators together: “health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”(2007, p. 1). Bloom et. al., (2011) also uses the two concepts together by emphasising that the investment in proactive, positive mental health improvement strategies cannot be underestimated and suggests it is becoming increasingly important for the wider community to understand the importance of physical and mental health together i.e. total health. Seligman (2008) argues that a scientific discipline of

total health barely exists despite the fact that the fields of biology, chemistry, and medicine have validated many of the physical and mental health improvements obtained from regular physical exercise. Indeed there is growing evidence that mental health is associated with physical health outcomes (e.g. Richards, Campania, & Muse-Burke, 2010) but the bi-directionality of this relationship is not fully understood.

WHO also use the term *fitness* in their evidence paper on mental health promotion (see Naidoo & Wills, 2000) by stating that “health can mean the absence of disease or disability but, just as often, may refer to a state of *fitness* and ability or to a reservoir of personal resources that can be called on when needed” (p. 17). There is no dissection of mental and physical in the meaning of fitness in the above definition, suggesting fitness is a holistic term that encompasses both mental and physical components.

The concept of physical fitness is in part perceived by the wider community as a possible precursor to improvements in physical health. This is evidenced by the basic dictionary definition “physical fitness is a combination of qualities that enable individuals to be at their full potential in performing vigorous physical activities and involve (but are not limited to) *endurance, strength & flexibility*” (Microsoft Encarta Online Reference Library 2004). This definition suggests that physical fitness is an enabler towards realising one’s physical potential by way of performing a holistic range of physical activities and implicitly suggests a proactive, preventative approach to physical illness. However, mental health is not viewed in the same way. Seligman (2008) and others suggest psychology is still tied up with the medical model in the same way that medical practitioners had, for centuries, been treating disease i.e. after it occurs. Physical illness prevention approaches have only over recent years been evidenced by governments and the medical profession who, for example, use the strategy of physical fitness as an invaluable preventative measure in the fight against disease. Whilst obviously physical illness is still treated after it occurs, the concept of physical fitness has

provided a proactive and preventative strategy to support higher levels of physical health. For example, members of the community are able to go to a medical practitioner or a reputable assessment centre to ascertain their general physical fitness level and then be advised about options for improving their fitness.

Conversely, the mental health profession and government initiatives rarely advise the wider community that regular and targeted mental health activities (just like physical fitness activities) can reduce the chance of becoming depressed or anxious and improve levels of positive mental health by providing a buffering effect. Wills and Isasi (2007) suggest that buffering is a process whereby a psychological resource reduces the impact of stress on psychological well-being. An overarching preventative, and proactive approach is rarely adopted for mental health and it is suggested here that this is primarily because of the conceptual confusion surrounding many psychological terms and the stigmas associated with mental health (Cheverton, 2009).

#### **(a) Conceptual confusion**

At present, the psychological literature does not have a term that corresponds to physical fitness. Terms currently utilised vary widely in both the popular and psychological literature depending on the context in which they are being used, for example, psychological and subjective well-being, wellness, toughness, happiness and flourishing. Whilst these terms and the research underpinning them is highly valued, it is argued here that these concepts have yet to impart an understandable and parsimonious language to motivate people to engage in their own mental health improvement. It is understandable that at the community or societal level, there is some confusion and lack of engagement with the terms associated with higher levels of mental health and lack of understanding and consensus on how to improve it. This conceptual confusion suggests that there are currently no effective concepts or terms for

mental health that are similar to physical fitness that are easy to understand, have overarching community acceptability, face validity and that cut through multiple contexts (e.g. work, school, life, community, society) to engage and excite individuals about their own proactive mental health strategies and practices.

### **(b) Stigma and positive mental health promotion**

In the 1960s the focus of psychological theory, research and practice was still firmly entrenched in the deficit model i.e. how to help the mentally ill. This was largely a consequence of World War II when funding shifted to the clinical domain and although psychology has many new and proactive branches (e.g. in schools and organisations), this reactive approach created stigma for mental illness for decades to come. Unfortunately the wider community still primarily view the main role of psychologists as one of curing psychological pathology rather than preventing it.

Alignment to the physical fitness concept can reduce stigma, a barrier for psychologists and mental health workers. The premise is that whilst the term *physical health* is understood as absence of physical disease, without stigma, the term *mental health* is understood as absence of mental illness and is largely stigmatised. This is noted in a comprehensive review by Cheverton (2009) suggesting that the stigma attached to mental ill-health prevents most people from disclosing. The review suggests that the longer people leave seeking help, the more significant their ultimate call on health and social services will be. Further, they argue that because of this stigma, a multidisciplinary, population-based approach to mental health promotion is needed to be part of a broader health promotion agenda that looks beyond individual disease prevention and towards the steps that individuals and communities can take to keep them mentally healthy.

The review argues that “good mental health is created within the everyday context of people’s lives including: their homes, schools, workplaces and communities. The focus is on accessing the basic determinants of health, ways to strengthen individual competencies and build the resources of communities” (pp. 15-16). Most would agree with this statement but the question remains how can this be accomplished? The term mental fitness aligned to physical fitness, creating a total fitness approach in the community, can help to alleviate the stigma associated with mental health. This stigma is not attached to the term fitness, so the labelling may assist with higher levels of engagement and adoption of positive mental health behaviours across multiple settings (e.g. schools, organisations, individuals, groups, communities and societies). Because individuals already understand fitness by way of the physical fitness analogy, mental fitness may motivate the community to engage in regular and specific exercises with the primary goal of improving mental health and reducing the onset or severity of some forms of mental illness.

The design of effective strategies to promote positive mental health activities to the average person is a challenge as is evident in the physical fitness literature (e.g., Ory, Smith, Mier & Wernicke, 2010). Back in 1986, WHO acknowledged the role of both physical and mental health *promotion* in their charter, suggesting that both require effort by stating “to reach a state of complete physical, mental and social well-being, an individual or group must be able to identify and to realise aspirations, to satisfy needs, and to change or cope with the environment. Health is, therefore, seen as a resource for everyday life, not the objective of living. Health is a positive concept emphasizing social and personal resources, as well as physical capacities. Therefore, health promotion is not just the responsibility of the health sector, but goes beyond healthy life-styles to well-being” (p. 40).

Mental health promotion also supports personal and social development and emphasises the importance of positive mental health education and practices for prevention as well as

treatment. This approach is meaningful given evidence from the WHO (2012) suggesting that almost half of the world's population are affected in some way by a mental illness. Promoting a proactive approach to mental illness, particularly targeting prevention, is becoming important because a reactive, treatment approach is expensive from many perspectives and largely not working i.e. economically, physically and emotionally. Bloom et. al. (2011) in his report to the World Economic Forum estimated the global cost of mental illness at nearly \$2.5 trillion in 2010, with a projected increase to over \$6 trillion by 2030. This suggests society is losing the battle and new approaches and innovations are urgently needed.

*Prevention of mental illness and promotion of mental health are separate but have overlapping aims, particularly at the societal level as is evidenced in the World Health Organisation's statement "public health is the science and art of promoting health, preventing disease, and prolonging life through the organised efforts of society (1998, p.3).*

WHO (2004) suggest that "*promotion of mental health is situated within the larger field of health promotion, and sits alongside the prevention of mental disorders and the treatment and rehabilitation of people with mental illnesses and disabilities. Like health promotion, mental health promotion involves actions that support people to adopt and maintain healthy lifestyles and which create supportive living conditions or environments for health*" (p.16). Keyes (2007) suggests there are economic and social advantages for a paradigm shift towards mental health *promotion* to work in conjunction with mental illness prevention. He argues that if most government strategies continue to focus on diagnosed mental illness alone, the best they can hope for is to reduce levels of diagnosed mental illness. Moreover, this approach does not assure a mentally healthy population. Keyes suggests that mental health is a separate continuum whereby 'a languishing individual' can function at levels similar to someone with a major depressive episode i.e. there is no diagnosed mental illness but they are not mentally healthy either. Further, his view is that there is a real economic benefit for a shift to mental

health promotion, but that there is no real incentive. Alignment to a fitness analogy can assist in mental health promotion because fitness is proactive, preventative and easily understood, without stigma.

The promotion of physical fitness activities and practices to enhance adoption and in turn positive economic and health outcomes has proven a challenge given the increase in sedentary lifestyle behaviours. As in mental health and fitness, there is also an urgent need for more co-operative, integrated approaches in the physical domain, not only to increase awareness but also to improve participation in regular activities and practices. Healthy People (2010) suggests physical fitness activities are a leading health indicator and emphasise the need to increase levels of physical activity and reduce sedentary behaviour. The importance of mental health in the maintenance of good physical health and in recovery from physical illness is now well substantiated. Mental health status is a key consideration in changing the health status of a community (WHO, 2004). Therefore, to implement broad-based, effective mental fitness programs, it is important to examine what strategies and interventions have been effective in the physical health/fitness domain. For example, Healthy People (2010) recommends encouraging health care professionals, program administrators, and policy makers to assist their communities achieve these goals and use community resources efficiently. One study by Stewart et. al, (2001) examined the effectiveness of an inclusive, choice-based physical activity promotion program to increase lifetime physical activity levels of seniors. This program directed participants to choose activities that took into account their health, preferences, and abilities, offering information on ways for them to exercise safely, motivate themselves, overcome barriers, and develop a balanced exercise regimen. The program led to meaningful increases in physical activity. This study emphasizes the importance of tailored, individual programs to encourage lifestyle changes.

WHO (2004) cite the Ottawa Charter of Health Promotion, which suggested key action

strategies to promote effectively. These five action strategies identified by the Charter still today form a basic plan for health promotion in many parts of the world. They are:

1. Build healthy public policy;
2. Develop personal skills;
3. Create supportive environments;
4. Reorient health services;
5. Strengthen community action.

Further, WHO (2004) cite Puska (2002) who spent 25 years on the North Karelia case study in Finland (and other initiatives) suggests in relation to the results, the following key initiatives and framework for how to implement successful physical health promotion programs:

- Preventive community programs should pay attention to the well-established principles and rules of general program planning, implementation, and evaluation;
- Preventive community programs should be concerned with both appropriate medical/epidemiological frameworks to select the intermediate objectives and with relevant behavioural/social theories in designing the intervention program;
- Good understanding of the community (“community diagnosis”), close collaboration with various community organisations, and full participation of the people are essential;
- Community intervention programs should combine well-planned media and communication messages with broad-ranged community activities involving primary health care, voluntary organisations, food industry and supermarkets, worksites, schools, local media, and so on;
- Community intervention programs should seek collaboration and support from both formal community decision-makers and informal opinion leaders;
- Successful community intervention programs need to combine sound theoretical frameworks with dedication, persistence, and hard work;

- A major emphasis and strength of a community intervention program should be attempts to change social and physical environments in the community to be more conducive to health and healthy lifestyles;
- Major community intervention programs can be useful for a target community but can also have broader impact as a national demonstration program. For this, proper evaluation should be carried out and results disseminated;
- For national implications, the project should work in close contact with national health policy-makers throughout the program. (pp. 18-19).

The above suggestions could be very valuable and form the foundations for a mental fitness broad-based promotional initiative and support interventions.

### **In summary - mental illness prevention needs a proactive approach**

In recent years, and very slowly, the focus is shifting towards a proactive approach as the most obvious way to reduce the burden of mental illness and for prevention of mental disorders (for example, the European Union's (2008) "Pact for Mental Health", the WHO Report "Prevention of Mental Disorders" (2004) all discuss the need for a proactive approach. Seligman (2002) also indicates that the general stance of Positive Psychology is prevention. Huppert (2009) is of the view that the primary aim should be to enhance well-being instead of just reducing disorder. However, the process is slow and psychology is not, at present, impacting enough on positive and preventative mental health behaviours and policy. The concept of fitness is promotable and if the fitness strategy is well-designed and implemented the concept could provide the incentive and framework for the mental health promotion that Keyes (2007) refers to. Millions of dollars are already spent on promoting fitness with mixed outcomes, but the average person already understands this term. Primarily, fitness promotion focuses on assessment and intervention programmes and healthy exercise routines utilising

equipment, fitness centres, books, apps and DVDs. Additionally, personal trainers and coaches who come from a range of fields, for example, medicine, sport, psychology and health, will offer to improve your fitness using an array of frameworks and methodologies.

Conceptual confusion and stigma are significant barriers to advancing and promoting proactive and preventative initiatives to engage and motivate the wider community. The concept of fitness is a term that has central meaning and understanding within the wider community and emphasises the dynamic nature of levels of optimal functioning, competitive edge and that achieving fitness requires effort and motivation over time and is based on regular activities and practices. This is the communication that needs to be conveyed for mental fitness to become part of a total fitness strategy as McCarthy envisioned for President Kennedy's population-based program in 1964. This dissertation explores that foresight.

### **Structure of the Dissertation**

This dissertation is structured on three stand-alone submitted publications (see chapters 2, 3 and 4). Chapter 2 explores the first step in developing a conceptual understanding of the term mental fitness within historical and contemporary contexts with the goal of formulating an initial definition to capture what mental fitness is (and is not). This step is foundational as scientific validity essentially expresses the nature and use of concepts and, as such, to investigate the term mental fitness is a philosophical issue as well as a question of empirical inquiry and measurement.

At a metatheoretical level, the development of mental fitness has been approached from a Positivist perspective. Cohen and Crabtree (2006) suggest the assumptions and beliefs of the Positivist Paradigm are:

- realist ontology - assumes that there are real world objects apart from the human knower. In other words, there is an objective reality.
- representational epistemology - assumes people can know this reality and use symbols to accurately describe and explain this objective reality.
- Prediction and control - assumes that there are general patterns of cause and effect that can be used as a basis for predicting and controlling natural phenomenon. The goal is to discover these patterns.
- Empirical verification - assumes that we can rely on our perceptions of the world to provide us with accurate data.
- Research has been assumed to be value-free; if strict methodological protocol is followed, research will be free of subjective bias and objectivity will be achieved.

The positivist methodology relies heavily on experimental methods to ensure that there is a distance between the subjective biases of the researcher and the objective reality he or she studies and usually requires hypothesis generation and testing.

The positivist position is grounded in the theoretical belief that there is an objective reality that can be known to the researcher, if he or she uses the correct methods and applies those methods in a correct manner. Research (typically quantitative and experimental methods) is evaluated based on three criteria:

- Validity - the extent to which a measurement approach or procedure gives the correct answer (allowing the researcher to measure or evaluate an objective reality);
- Reliability - the extent to which a measurement approach or procedure give the same answer whenever it is carried out;
- Generalizability - extent to which the findings of a study can be applied externally or

more broadly outside of the study context. (p. 3515).

With the above criteria in mind, the methodology employed to examine the meaning and use of the term mental fitness included exploring the psychological roots of the term ‘fit/fitness’ and then exploring how the term is being utilised in the more current, popular literature via an English speaking global Google search and then exploring the scientific literature via the PsycInfo database. This analysis showed how the term mental fitness was perceived and constructed, rather than using an interview technique, which would produce a much smaller sample.

This approach also assists to identify key themes and patterns to formulate the wording of an initial definition and guiding principles to further develop the concept and measurement of mental fitness.

In summary, a conceptual review will reveal the following:

- a) the historical roots of the concept of fitness;
- b) the meaning/s of the concept of mental fitness;
- c) how the language of mental fitness is being used; and
- d) how these ideas are related conceptually and through time.

Chapter 2 further proposes four guiding principles as a basis for underpinning theory development, research and practice. Theories and variables in the published positive mental health literature that might contribute to a mental fitness approach are also reviewed together with an example of a resource index within a conceptual framework based on the physical fitness analogy.

Chapter 3 is a study that draws from the above conceptual review and utilises the Delphi technique to engage an international expert panel to evaluate the definition, guiding principles

and proposed conceptual framework for mental fitness. This is a qualitative and quantitative undertaking with recommendations by the expert panel for future research and practice.

Chapter 4 is a study that draws from the conceptual review and the Delphi study. This preliminary empirical study examining the measurement of mental fitness based on a constructivist approach (as is often the case in personality test formation) by utilising existing measures and theories to test a model by way of exploratory and confirmatory factor analysis.

This study empirically explores the range of established psychological measures and items that may contribute to the structure and measurement of mental fitness. The final pool of items are analysed by way of exploratory and confirmatory factor analysis to ascertain: (a) if a smaller set of higher-order factors emerge from the analysis; and (b) whether these dimensions come together under an overarching construct to represent mental fitness.

Chapter 5 reviews and discusses the overall findings and considers the implications, limitations and future directions arising from this body of work.

## CHAPTER 2 – CONCEPTUAL REVIEW: CONCEPTUALISING MENTAL FITNESS

## Abstract

Despite the increasing use of the term *mental fitness*, there are no consistent theoretical foundations or standardised measures to research and replicate or for mental health practitioners to apply. By using the term ‘mental’ prior to fitness, mental fitness can be seen as analogous to physical fitness. Physical fitness is a better known domain and it can be used to enable people to grasp potential meanings of mental fitness. This review explores the historical, popular and scientific meaning and use of the term mental fitness and how it could be justifiably utilised within Positive Psychology. The review provides evidence to formulate an initial definition of mental fitness being *the changeable capacity to utilise resources and skills to psychologically adapt to environmental challenges or advantages to meet psychological needs*. Further, drawing on the physical fitness analogy of *strength, flexibility and endurance*, an example of a conceptual framework of positive mental health concepts is also proposed. Four principles are suggested to serve as a foundation for guiding future theory development, research and practice: (1) *fitness is a positive term without connotations of illness as is implied by mental health or mental illness*; (2) *mental fitness could be understood by individuals, groups, organizations, educational institutions and the wider community in a similar way to physical fitness*; (3) *mental fitness is measurable*; and (4) *mental fitness may be improved in a way similar to physical fitness*.

The concept of mental fitness is not new to the psychological literature. The concept was proposed by McCarthy (1964) who suggested it would “serve psychology well through the many gradations represented by the various nosological categories of clients served by community mental-health clinics, to the well-adjusted, spontaneous, natural, creative individuals who are coping with reality, making effective contributions to society and realising their intellectual, emotional and social potential” (p. 202). McCarthy also suggested that mental fitness formed an excellent counterpart for the late President Kennedy’s population-based program for physical fitness, i.e. a total fitness initiative combining mental and physical fitness together.

McCarthy’s rationale of utilising the total fitness analogy may serve psychology and the wider community well in the 21<sup>st</sup> century. In particular, to assist in promoting a holistic, proactive and preventative approach to positive mental health strategies and activities without stigma. This holistic approach is congruent with the 2007 World Health Organisation’s (WHO) definition of health that includes physical and mental components: “health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (p. 1). Further, WHO chose to utilise the term fitness in their evidence paper on mental health promotion (see Naidoo & Wills, 2000) which states that “health can mean the absence of disease or disability but may refer to a state of fitness and ability or to a reservoir of personal resources that can be called on when needed” (p. 17). The American College of Sports Medicine (ACSM, 2000) also support a holistic approach to fitness. Their definition of health-related fitness developed by Pate (1988) suggests fitness is the demonstration of capacities that assist in preventing disease and promoting health.

The burden of mental illness is significant and on the increase. It accounts for between 3 and 16% of total expenditure on health across OECD countries (OECD, 2011). The challenge is how to further engage and motivate the wider community to not only become proactive in

their own positive mental health strategies and activities, but to sustain them. There is conceptual confusion and stigma surrounding many psychological concepts because they suggest there is something wrong with the person. Stigma is an important issue as noted by a comprehensive report by Cheverton (2009). Essentially, the report is of the view that the stigma attached to mental illness and mental health prevents most people from discussing it. The review suggests that the longer people leave seeking help, the more significant their ultimate call will be on health and social services.

It is suggested here that new systems and modes of delivery are necessary and a more familiar framework analogous to physical fitness is needed and would be a novel, innovative and effective strategy. This strategy would be underpinned by research and delivered via a parsimonious, easy to understand language. In addition to theoretical conceptualisation and consequent research on mental fitness, utilising the physical fitness analogy would also have relevance to the wider community. In particular this analogy would assist in educating the population that the road to improved mental health, just like physical health and fitness, requires motivation and commitment, self-awareness, self-regulation and practice for sustainability.

The term mental fitness emphasises the dynamic nature of psychological functioning and suggests improving mental fitness, requires regular activities to form positive habits. A mental fitness approach designed in a similar functional framework to physical fitness (e.g. strength, flexibility, endurance) would assist by providing a method of communicating positive mental health theory, research and sustainable practice in a non-threatening, proactive manner.

In summary, the essential proposition is that the concept of mental fitness can assist psychologists, mental health professionals, medical practitioners, organisations, the wider

community, policy makers and governments meet the challenge of improving mental health and optimal functioning by way of: (a) utilising language they already understand and relate to; (b) reducing stigma that exists around the concept of mental health; (c) using more proactive, preventative and holistic approaches to mental health that have consumer acceptability; and (d) progressing the idea that a fit mind and body are equally important and need regular activities and practice to build sustainable habits.

By reviewing the historical, popular and psychological literatures, the meaning and use of the concept of mental fitness may be garnered.

### **Historical roots of the term fitness**

From as early as the 14<sup>th</sup> century, etymology was a term used for the study of the origin of words, their meanings and how they have changed historically. Table 1 shows the early written records of the term fitness and examples of its subsequent journey across time (Etymology Dictionary, 2012).

Table 1:  
*Examples of historical roots of the word 'fit' and its derivatives*

Term	Date	Meaning
Aptitude (noun)	1500s	Fitness, noun of quality from Latin aptus joined, fitted (see apt). Meaning natural capacity to learn; that of quality of being fit (for a purpose or position).
Commodity	1500s	Fitness, adaptation, convenience, advantage.
Fitness (adj)	1570s	From fit (adj.) + -ness; adapted to an end design; adapted to the environment.
Fit (verb)	1580s	Be suitable, to be the right shape.
Propriety	1610s	Fitness, appropriateness.
Build (noun)	1660s	Physical construction and fitness of a person.
Fit (noun)	1823	The fitting of one thing to another.
Fittest (adj)	1867	Survival of the fittest.
Pilates (noun)	1920	Physical fitness regimen developed by German-born physical fitness teacher Joseph Pilates.
Ability	1940s	Word-forming element expressing ability, fitness, or capacity.
Fit	1951	Adapted, qualified, make ready, proper adjustment.
Fit	1986	In good health or condition, adapt; make competent for; adapt oneself.
Fitness	2013	Physical fitness, a general state of good health, usually as a result of exercise and nutrition. Fitness (biology), an individual's ability to propagate its genes. Fitness (magazine), a women's magazine, focusing on health and exercise. Fitness and figure competition, a form of physique training, related to bodybuilding.

By way of dictionary definitions, Table 1 shows the term fitness was historically used in several different contexts but there were unifying ideas of how the language of fitness was being expressed and developed from the 1500s to the present day. For example, fitness enables capacity to learn and to adapt, and fitness is advantageous because it facilitates achievement of purpose or position. Survival of the fittest, a well-known phrase and central component of Charles Darwin's theory of evolution (1869), suggests that the best-adapted varieties of a species have the ability to successfully survive in their environment i.e. fitness

will support competitive advantage. The term fitness continued to be viewed developmentally by way of ability and capacity, make ready to be fit, make competent for, and adapt oneself in order to function well. The term physical fitness by way of exercises, was not explicitly referred to until 1920 and then moving into the 21<sup>st</sup> century, the term fitness became more focused on function by way of exercise to achieve good health and physical fitness.

In summary, the historical meaning of the term fitness suggests it is a function and that individuals are active agents in the process by having the ability or capacity to change, develop, adapt and respond to enable them to move towards a successful fit between themselves and their environment. The concept of physical fitness didn't appear in the search until the 1920. Are these themes still relevant today and what do the psychological sciences say about the concept of fitness?

### **Contemporary meaning and use of the term fitness**

#### **(a) Popular literature**

To analyse how the English speaking internet users of the 21st century view the terms fitness and specifically, mental fitness, a Google search (2013) via their web browser was undertaken. Whilst it was virtually impossible to examine every entry, this search revealed a plethora of hits; fitness 461 million, physical fitness 86 million, mental fitness over 17 million and physical/mental fitness together revealed 6 million hits. These initial search results strongly suggested that the concept has meaning and utility in modern-day society.

As the primary purpose of the search was to investigate and further understand the term mental fitness, the next stage of analysis delved deeper into the search results. This commenced by analysing the first and following pages of each entry where the term was used then each entry was coded to a category by frequency. For example, for the term *fitness*, gym websites were the most frequent category (see Appendix 1 for detailed examples). This

allocation to a category was most often made using the information available on the Google search page as well as by viewing the source website to determine the exact nature of the site.

These category allocations were recorded, along with any additional information that provided insight into the search results. This process was repeated until either page 50 was recorded or Google automatically omitted further pages due to the similarity of results, which usually occurred from page 35 onwards. By examining the top fifty pages, content suggested five primary categories where the term was being utilised. The first category was coded as providing creditable information from websites that reflected a reputable genre e.g. health and psychological services, the second category contained more unreliable sources e.g. individuals without qualifications, private blogs, social media, etc., the third category was specifically advertising courses and programs from multiple sources, the fourth category contained either government or non-government organisations and finally a media category where the term appeared in published material, e.g. magazines. Table 2 shows each of the categories and an example of the content.

Table 2:

*Google's Primary Categories for Mental Fitness (Sept, 2013)*

Category	Example Content
Creditable Information: Websites that provided information based on reliable sources or authors. These websites most often provided information regarding the benefits of mental fitness for mental health.	"...[Mental fitness] doesn't mean training for "brain Olympics" or acing an IQ test. Rather, it refers to a series of exercises that help you slow down, decompress, and boost a flagging memory." <a href="http://www.healthline.com">www.healthline.com</a>
Informal Information: Websites that provided information based on unknown or unreliable sources or are written by unqualified authors. These websites were primarily private blogs or social websites such as Facebook, Tumblr, Pinterest or forums.	"Although I am young, I believe mental fitness is important. Thus, I have set out to challenge my mind. Here are a few ways I keep my brain in shape." <a href="http://www.voices.yahoo.com">www.voices.yahoo.com</a>
Courses & Programs: Websites that used the term mental fitness were either providing information about or advertising a course or training initiative for individuals, the workplace, or community based programs. This also included websites for fitness centres, personal trainers and DVDs.	"Are you ready to work on your mental fitness?" "If you are a busy executive or an athlete wanting to improve your mental game then this is the training for you." <a href="http://www.thebraintrainingcompany.com">www.thebraintrainingcompany.com</a>
Workforce Information: These were private and government-operated websites, which used the term in relation to topics such as personnel training, education, applicant requirements or mental health program and support information. These groups included the Army, Navy and Police Force, both from within Australia and abroad.	"Capability through mental fitness: 2011 Australian Defence Force Mental Health and Well-being Strategy" <a href="http://www.defence.gov.au">www.defence.gov.au</a>
Media: pages and articles from the websites of news groups or magazines that related to improving your mental fitness.	"Using Big Data And Game Play To Improve Mental Fitness". <a href="http://www.forbes.com">www.forbes.com</a>

The search clearly indicated that the concept of fitness is now widely used and suggested the meaning still, to some degree, reflects its foundational roots. For example, all categories highlighted that mental fitness (like physical fitness) is important; requires practice, suggests those who participate in improving their mental fitness are functioning at an optimal level and are more capable, mental fitness is a process that can be learned, indeed the primary focus

across all categories was exercises and training across multiple settings, e.g. work, life, school, mental health initiatives and government programs. Additionally, personal trainers and coaches who came from a range of fields, for example, medicine, sport, psychology and health offered to improve physical and/or mental fitness using a vast array of frameworks and methodologies including fitness centres, DVDs and self-help books. Moreover, it was evident that considerable amounts of money and time are spent on promoting mental fitness in much the same way as physical fitness. Primarily, the focus was assessment and intervention programs and tools that cross several contexts (e.g. home, work, school, community). The search also indicates that, by way of private blogs and social websites dedicated to sharing information and experiences of mental fitness, there is a growing level of interest in the concept amongst the general population. However, whilst there were commonalities between the historical and popular interpretations of mental fitness, the five categories showed differing usage of the term with no consensus on the definition, measurement or consistent development opportunities.

#### **(b) Psychological literature**

The next phase of the analysis was to search the psychological literature to ascertain if this reflected the historical and popular conceptualisations. The search was carried out in the database PsycInfo with a time range extending from 1879 to 2013. Sixty results were recovered (see Appendix 2). Results suggest mental fitness is not a robust scientific endeavour in the psychological literature. Table 3 provides examples of peer-reviewed journals and books retrieved from the search and highlights how the term mental fitness is being used in the psychological literature.

Table 3:

*Examples of the meaning and use of mental fitness from PsycInfo 1879 – 2013*

<b>Title</b>	<b>Purpose</b>	<b>Example</b>
<b><u>Peer Reviewed Journals</u></b>		
Military Review (1943)	Using planned orientation to build mental fitness for combat.	Orientation course must be executed by allocating adequate time for study, by assigning capable personnel to the program, and by close supervision and inspection.
American Psychologist (1964)	Discuss the need for a term to describe positive aspects of mental health.	Provides the definition of fitness and explains that this concept of mental fitness carries much of the connotation we are groping for.
Journal of Human Ergology (1986)	Looked at the physical training effect on relationship of physical, mental, and emotional fitness in adult men.	Mental fitness was measured by 8 tests dealing with cognitive processing.
Prevention in Human Services (1989)	Discusses the results of a private/public partnership program to promote mental fitness and self-esteem in adults and children.	At least half of the factors influencing mental and physical health result from lifestyle choices.
Educational Gerontology (2003)	explored the impact of learning on health and provides a decade-long review of the research and development of the Mental Fitness for Life program	Results illustrate...the need to promote mental fitness, like physical fitness, as a health promoting behavior that supports the progressive development of the individual across the lifespan.
European Journal of Aging (2007) Journal of Gerontology:	Cognitive adaptation in the elderly and the motivated use of social comparisons.	The direction of social and temporal comparisons for three domains (physical fitness, mental fitness, psychological resilience) were studied.
Journal of Psychosocial Nursing and Mental Health Services (2007)	Find ways to slow cognitive decline in older adults in the U.S. population.	Personal fitness training should not only focus on physical fitness, but also mental fitness.
Psychological Sciences & Social Sciences (2008)	Examined samples from The Berlin Aging Study.	Evaluative indicators (self-report & performance based) e.g. quality of social life and mental fitness.
International Journal of	Looking at factors affecting	Mental fitness for work is the

<b>Title</b>	<b>Purpose</b>	<b>Example</b>
Mental Health Systems (2009)	mental fitness for work in the mentally ill.	ability of workers to perform their work without risks for themselves or others.
IDEA Fitness Journal (2010)	Tips about improving mental health.	With mounting medical evidence pointing to the integral relationship between physical and mental health, medical experts are now promoting the importance of mental fitness.
Journal of Medical Internet Research (2012)	Assessed the effectiveness of internet-based interventions on mental fitness in medley depressed adults.	Investing in mental well-being is considered a supplement to current mental health service delivery in which the treatment and prevention of mental disorders are core components. It may be possible for people to enhance their well-being by boosting their mental fitness.
Review of General Psychology (2013)	Reviews two evolutionary viewpoints on the origins of human cognition, communication and sexual selection of human mental capacities, as well as the social brain hypothesis.	Intelligence, creativity, language, and humour are mental fitness indicators that signal an individual's quality to potential mates, rivals, and allies.
<b><u>Books</u></b>		
Darwinism and other essays (1879)	Essay discussing the concepts of materialist and atheist.	Slur on his mental fitness.
Psychiatry in war (1943)	Supports the use of psychiatry during war particularly in curing disorders and reallocating men.	While testing pilots Dr. Mira discovered the use of the three-dimensional axistereometer for measuring mental fitness.
Superyoung: The proven way to stay young forever (1998)	Looks at what it is that makes people look, act and feel younger.	Includes case histories of the most successful. Together with self-assessment quizzes and a brain plan to boost mental fitness.
The Aging Mind and Brain: Implications of Enduring Plasticity for Behavioral and Cultural Change (2006)	Discusses evidence suggesting the potential for new learning and plasticity even in the later decades of life.	New avenues to influence and shape neural processes that underlie mental fitness.
Mating Intelligence: Sex, relationships, and the	Human intelligence is sexually attractive, and	How we use mental fitness indicators – forms of human

<b>Title</b>	<b>Purpose</b>	<b>Example</b>
mind's reproductive system. (2007)	strongly predicts the success of sexual relationships. This book examines this interface.	intelligence such as creativity, humour and emotional intelligence to attract and retain sexual partners.
Managing your Mind: The mental fitness guide edition (2007)	How to attain skills and attitudes that will help you become more effective and personally fulfilled.	The key skills identified...to achieve better mental fitness.
Increasing Mental Fitness Spark: The Revolutionary New Science of Exercise and the Brain (2008)	Looks at the mental benefits of exercise.	Exercise is good for you mentally as well as physically - a regular exercise program can literally heal a troubled mind.
Claim Your Own Mental Fitness: Manage Your Mind to Overcome Addiction, Anxiety, Anger, Grief, Trauma & Depression and Form Positive Relationships (2013)	Suggests a fitness program that targets the mind, primarily through Cognitive Behavioural Therapy.	Scovill's guide suggests: Change your thinking; change your life. Conventional fitness programs strengthen the body. This one targets the mind.
Resilience: The Science of Mastering Life's Greatest Challenges. (2013)	Looks at 10 resilience factors that the authors found assisted individuals in dealing with trauma and stress.	These factors include maintaining an optimistic but pragmatic outlook; developing physical and mental fitness; seeking interpersonal connections; and upholding religious or spiritual beliefs and practices.

Despite a relatively small number of results in the psychological literature, there were a number of salient themes that emerged from the analysis. All results were reviewed and coded utilising saliency analysis which assesses the degree to which each code recurs, is highly important or both (Buetow, 2010). Salient analysis keeps visible what stands out at the data surface. This method was utilised to code the salient themes within the psychological literature. Table 3(a) shows the primary salient themes for the term mental fitness.

Table 3(a):

*Primary Salient Themes of the term 'mental fitness'*

Code	Theme	Highly Important	Recurring
1	Changeable, developmental, learned, functional	X	X
2	Capacities, Abilities (survival of the fittest)	X	X
3	Resources, Skills	X	X
4	Activities, exercises, practices, process, training	X	X
5	Adaptable, flexible	X	X
6	Intentional, goal directed, motivational, purposeful	X	X
7	Personal, Environmental	X	X
8	Cognitive, Affective, Behavioural	X	X
9	Linked to Physical	X	X
10	Psychological/physical together	X	X
11	Outcome of Wellbeing, enabler of well-being.	X	X
12	Can be used for treatment or prevention of some mental illnesses.	X	X

The above themes are also congruent with the historical and popular searches, specifically: (a) mental and physical health and fitness often appear together and involve learned, changeable skills and regular exercises to practise; (b) evolutionary theory, the processes of adaptation are prominent; (c) mental fitness includes cognitive, affective behavioural components (d) mental

fitness can be domain-specific, that is, work, life and social; (e) it is a process with well-being outcomes; (f) it has psychological resources. e.g. resilience; (g) it also assists in the reduction of some mental illnesses e.g. anxiety, anger and depression; e.g., there are treatment and prevention components; (h) it can be intentional and goal directed; (i) there are numerous mental fitness tests and indicators but they vary in explanation and content but, as revealed in the popular literature search, there are no reliable and valid measures or a consistent definition across the psychological literature.

### **Positive Psychology – an umbrella for Mental Fitness**

Positive Psychology is a division of psychology that utilizes the scientific method and applied interventions to improve human well-being. Positive Psychology aligns well with the previous conceptual review and the concept of mental fitness. For example, both share a philosophical underpinning that the focus on pathology has largely dominated the field of psychology over the past several decades, and has unwittingly created an image of mental health as an absence of pathology (Seligman 1998a, 1998c, 1999; Seligman and Csikszentmihalyi, 2000). Seligman (2008) argues that a scientific discipline of total positive health that goes beyond the absence of disease and infirmity barely exists. Positive Psychology promotes optimal functioning across the full range of the human condition, from disorder and distress to health and fulfilment. Gable and Haidt (2005) defined Positive Psychology as “the study of the conditions and processes that contribute to the flourishing or optimal functioning of people, groups, and institutions” (p. 104).

Seligman (2002) emphasises that the stance of Positive Psychology is *prevention* but there is very little focus on *how* to educate, promote and engage the wider community in proactive positive mental health activities. Keyes (2007) concurs with Seligman in terms of prevention, but adds *promotion* of positive mental health strategies and activities is a crucial component

of any mental health initiative. Sheldon and King (2001) suggest this new approach is also challenging for practitioners, asserting that “Positive Psychology is thus an attempt to urge psychologists to adopt a more open and appreciative perspective regarding human potentials, motives, and capacities. Such an endeavour is surprisingly difficult within psychology's reductionist epistemological traditions, which train one to view positivity with suspicion, as a product of wishful thinking, denial, or hucksterism” (p. 216). Peterson and Park (2010) agree there are challenges ahead for Positive Psychology and identified three primary ones: (a) an individual's ability to adapt, learn and change in response to the challenges or opportunities they encounter; (b) sustainability or how individuals engage and maintain positive mental health outcomes; and (c) how to go beyond the individual to community wide initiatives. Luthans (2002, 2012) concurs that there is a need for new positive concepts if they have good theoretical and empirical foundations that particularly lend themselves to development and application in multiple settings.

The concept of mental fitness has the potential to address the above challenges and, as the previous review found, is positioned as being an applied, process orientated, preventative approach aligned to physical fitness for ease of promotion to the wider community. Thus, mental fitness would fit as an applied Positive Psychology (APP); it is facilitative in a way that helps people to achieve their objectives utilising positive interventions. The sub-field of APP is primarily aimed at optimal functioning being a shorthand term for a broad range of psychological processes and outcomes (Linley & Joseph, 2004). Positive interventions were defined in a meta-analysis by Sin and Lyubomirsky (2009) as those primarily aimed at cultivating positive feelings, positive behaviours and/or positive cognitions. Results suggested positive interventions significantly enhanced well-being outcomes and reduced depressive symptoms. Thus mental fitness would be developmental by way of various assessment and interventions across multiple contexts i.e. the primary aim would be to implement specific,

positive interventions targeted at the level of the individual, the group, the organisation, and/or the community given that fitness is already an established concept that is linked to physical intentional activities.

### **Intentional activities aligned to mental fitness**

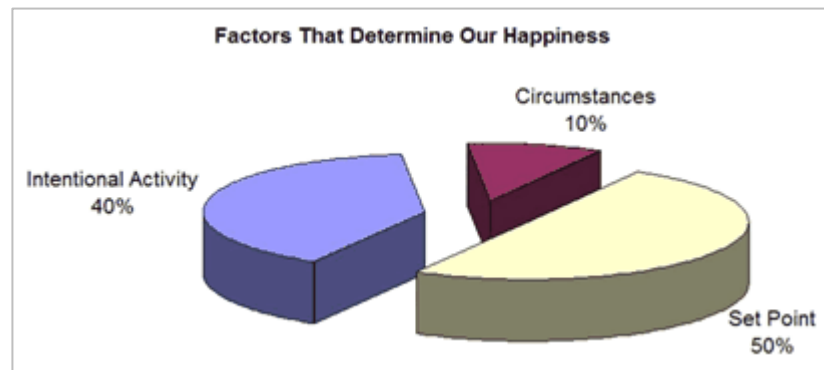
Lyubomirsky, Sheldon and Schkade (2005) found that three major factors govern a person's chronic happiness level: set point or potential range (i.e. genetic predisposition), circumstances of your life, (e.g. race, age, disability), that often cannot be changed, and intentional activities which are essentially defined as voluntary activities that you choose to participate in. A meta-analysis by Bolger et al. (2013) supports this view by showing that Positive Psychology intervention activities increase both subjective and psychological well-being outcomes. As Figure 1 shows, approximately 40% of well-being is related to intentional activities and Lyubomirsky refers to this as the most promising area to alter one's happiness level, and states that intentional activities include a wide variety of activities that involve how people think, feel and behave. Diener and Biswas-Diener (2008), in their discussions on psychological wealth, include engaging activities as part of the process of improving well-being. A further consideration in relation to the success of applying specific intentional activities was found by Lyubomirsky (2007) suggesting person-activity fit may impact how effective behaviours are in increasing levels of happiness and well-being. Emmons and McCullough (2003) also found intentional activities were associated with fewer self-reported physical complaints, more physical exercise as well as higher levels of positive and optimistic evaluation. Research by Warner and Vroman (2011) suggested that regular, positive and proactive activities predicted significant additional variance in happiness, however, they point out that research on behaviour and happiness has mostly studied activities one at a time (e.g. gratitude). They suggest that in everyday life, many activities may co-occur, however, there is a paucity of studies that look at multiple activities together. These results also suggest that the

association between happiness-inducing behaviours and perceived happiness is not moderated by gender or by personality traits.

Figure 1:

*Approximate percentage breakdown for chronic happiness level*

(Lyubomirsky, Sheldon and Schkade, 2005)



Because the previous literature reviews suggests mental fitness is a dynamic process involving activities and practices, it would be expected that mental fitness would be divergent to the genetic component (set point) of Figure 1 e.g. personality, IQ. However, the concept of mental fitness aligns exceptionally well with the actions and thoughts component as the key target area.

The process of achieving higher levels of mental fitness would utilise specific, evidence-based intentional activities with the goal of improving mental health across the whole spectrum i.e. from disorder to optimal functioning. It rests on the assumption that just because a person has a mental illness, does not mean he/she cannot learn and practice intentional activities that will improve specific components of their positive mental health. Haidt (2006) comments “*how to push a person up to the top of his/her potential range*” (p. 91).

### **Mental fitness resources and skills**

Sheldon and King (2001) ask] “what is the nature of the effectively functioning human being, who successfully applies evolved adaptations and learned skills?” (p. 216) or, as Luthans (2002) states, what are their psychological capacities?

There are numerous theories, constructs and measures that suggest converging characteristics of individuals who are functioning well, particularly in the Positive Psychology domain. As previously stated, one of Positive Psychology’s primary aims is *how* to improve and promote positive mental health strategies and practices? The overarching premise of mental fitness is that it provides a *how* solution to improve the level of positive mental health via reliable and valid assessment followed up with specific intentional activity interventions based on the results of that assessment.

There are many published psychological theories, constructs and measures related to positive mental health outcomes that could be considered as an important psychological resource for inclusion in a mental fitness model. However, there are essential criteria for inclusion. For example, research suggests the variable must be identified in peer review literature: (a) is measurable; (b) is developmental; (c) has associated interventions and intentional activities; and (d) can be utilised across multiple contexts. These variables would then be incorporated into a preliminary, exploratory conceptual framework analogous to that for physical fitness i.e. strength, flexibility and endurance to ensure a familiar language that is easy to explain. A brief overview of the conceptual framework is reviewed below:

#### **(i) Strength**

Strength is defined by the Merriam-Webster Online Dictionary (2014) as “the quality or state of being strong: capacity for exertion or endurance”. Within the mental fitness framework, strength is ‘mental muscle’ defined as the state of being psychologically strong, i.e. capacity.

For example, individuals who are psychologically strong may have the capacity of effective social support and meaning in their life.

## **(ii) Endurance**

Endurance is defined by the Merriam-Webster Online Dictionary (2014) as “the ability to withstand prolonged hardship or adversity”. Within the mental fitness framework, endurance is defined as the ability to sustain higher levels of positivity over an extended period of time. For example, individuals with psychological endurance may have high levels of resilience, positive emotions, feelings of autonomy, competence and optimism to initiate and maintain movement towards a goal or successful outcome.

## **(iii) Flexibility**

Flexibility is defined by the Merriam-Webster Online Dictionary (2014) as “a ready capability to adapt to new, different, or changing requirements”. Within the mental fitness framework, flexibility is defined as “the ability to adapt and change readily depending on the environment”. For example, individuals with psychological flexibility may have high levels of mindful awareness and acceptance.

In summary, the strength, endurance and flexibility dimensions of the mental fitness model would draw from existing theories, research and associated measures. As the concept of mental fitness is innovative and exploratory, the formation of a nomological network as identified by Cronbach and Meehl (1955) at this stage of development would be premature. However, the conceptual framework in Table 4 will assist in the development of a nomological network for future theory and measurement. The term 'resource index' is used in Table 4 as it suggests that each domain of mental fitness (e.g., strength) has a set of resources. This example resource index shows how the subcomponents might be categorised and map

onto intentional activities/practices under the physical fitness analogy. It provides an exploratory framework for empirical modeling.

Table 4: *Conceptual example of a mental fitness resource index*

<b>Strength</b>	Meaning
	Purpose
	Social support / relatedness
<b>Flexibility</b>	Mindfulness
	Acceptance
	Psychological flexibility
<b>Endurance</b>	Resiliency
	Positive emotions
	Optimism
	Autonomy, competence

In this early stage of development, the choice of variables for an initial mental fitness index would meet the previously discussed criteria and suggest that individuals who are functioning well would have the ability to utilise these capacities in a given situation or environment.

Further, it would be understood that these components were identified as important to move towards a proactive and preventative approach to positive mental health across differing contexts (e.g. work, school, life).

Positive psychological functioning is founded on a number of established theories that converge to offer a wide range of opportunities for growth and development via intentional activities. Given the holistic nature of mental fitness and the interest in examining multiple variables together in a single study, a summary of proposed higher order theories and methodologies is provided below. The combining in one study of the items associated to these variables offers the opportunity to simplify and categorise a large number of variables into a

more manageable psychological resource index. Theories and models that would inform this investigation are examined below.

#### **(a) Self Determination Theory**

First and foremost, it is important to consider motivation as a fundamental component of mental fitness as engaging in mental fitness activities first requires a level of motivation. Self-determination theory (SDT) is a theory of motivation that has evolved over the past three decades (Deci & Ryan, 1985, 2000). SDT is an approach to human motivation driven by the assumption that humans are inherently proactive, have the potential to master their inner forces (drives and emotions) and the external forces (environment). Sheldon, et al. (2002) describes five components of SDT: (a) it has a humanistic orientation supported by rigorous quantitative experimental research; (b) makes positive assumptions about human nature, while explaining how negative outcomes may also occur; (c) assumes that in order for a person to thrive, they must meet three basic psychological needs of autonomy, competence and relatedness; (d) focuses on people's struggle to feel greater self-ownership of motivated behaviour; and (e) explains how authorities and practitioners can best motivate their clients to enable them to internalise suggested behaviours and self-regulate them.

SDT distinguishes between intrinsic and extrinsic motivation, and suggests an organism is continually adapting to a changing environment. The self develops through an interaction between intrinsic needs and the environment, thus an idea very relevant to the concept of fitness, i.e. a successful person-environment fit. Understanding an individual's levels of autonomy, competence and relatedness would be viewed as foundational to the assessment and development of mental fitness. A review of SDT research and application supports the mental fitness concept given autonomous motivation would be crucial to engagement and

sustainability. SDT also supports the premise that individuals are active participants intrinsically interested in their own development via autonomous self-regulation.

### **(b) Subjective and psychological theories of well-being**

There are different frameworks and theories in relation to the study of well-being. For subjective well-being, the focus is on the hedonic characteristics, for example, positive emotions (Diener, 1984; 1994; Diener, Suh, Lucas, & Smith, 1999), whilst for psychological well-being the focus is on eudaimonic well-being, which encompasses a broader conceptualisation of well-being, for example, meaning in life, personal growth, positive relationships and acceptance (Ryff 1989; Ryff and Keyes 1995; Ryff and Singer 2008). As part of the well-being literature, Seligman asserts both hedonic and eudaimonic are essential components of well-being. In his authentic happiness theory (Seligman, 2003) he proposes three roads to the good life or higher levels of well-being; the pleasurable life, e.g. positive emotions (hedonic well-being), the engaged life, e.g. mindfulness (focused attention), and the meaningful life, e.g. purpose (eudaimonic well-being). Seligman (2011) further extended this model by adding two more components, i.e. positive relationships (e.g. social support) and achievement (e.g. achieving authentic goals).

There is a debate in the literature as to whether the two conceptualisations of well-being (psychological and subjective) are similar or distinct (Kashdan, 2008; Fang, Jing, Hayes & Lee, 2013). Results suggest that perhaps both perspectives have value, depending on the level of analysis, as some research does suggest they are statistically associated, e.g. happy individuals are more likely to feel a higher presence of meaning in life (King et al., 2006).

In the conceptual development of mental fitness it is important to note that both hedonic and eudaimonic well-being are both viewed as important to mental fitness assessment and development. Mental fitness is not an attempt to resolve the longstanding debate regarding

subjective and psychological well-being as both contain components that have developmental opportunities and elicit different activities and behaviours (see Lee & Carey, 2013).

### **(c) Hope Theory**

Hope is defined as a positive motivational state that is based on an interactively derived sense of successful agency (i.e. goal-directed energy) and pathways (i.e. planning to meet goals) (Snyder, Irving & Anderson, 1991). Hope theory, research and application suggest that an individual can develop the capacity to (a) clearly conceptualise goals; (b) develop the specific strategies to reach those goals (pathways thinking); and (c) initiate and sustain the motivation for using those strategies (agency thinking). Research suggests that high levels of hope are associated with positive outcomes e.g. academic achievement (Snyder et al, 2002) and lower levels of depression (Snyder et al, 1997; 2002). Conversely, Diener (1984) found lower levels of hope were associated with lower levels of well-being. A pathways and agency approach to mental fitness improvement would be a practical addition.

### **(d) Broaden and Build Theory**

Broaden and Build theory asserts that positive emotions evolved as psychological adaptations that increased our human ancestor's odds of survival and reproduction (Fredrickson, 1998, 2001). Positive emotions have been shown to widen the array of thoughts and actions compared to negative emotions. The benefits of broadened mindsets is that they build a variety of personal resources, for example, social connections, coping strategies, environmental knowledge, creativity and innovation i.e. reserves that can be drawn on to also manage threats or stressors. There is growing scientific evidence in relation to interventions that reliably increase positive emotions and overall happiness and well-being. Longitudinal studies suggest that positive emotions are important in the development of long-term psychological and personal resources, e.g. resilience (Fredrickson, 2004; Cohn &

Fredrickson, 2009). Further, Kok et. al., (2013) showed that cardiovascular health improved by increasing positive emotions through specific forms of mediation. Building of positive emotions would be an important component of building mental fitness.

#### **(e) Theories of Optimism**

The dynamics that underlie optimism and pessimism can be viewed within expectancy-value theories, which begin with the assumption that human behaviour is aimed at the pursuit of goals. Optimism is an important psychological construct to include when considering how to develop positive mental health. As a disposition, optimism relates to hopeful expectations in a given situation, and to general expectancies that are positive (Carver & Scheier, 1981).

However, as an explanatory style, optimism is developmental and changeable. It relates to the way individuals routinely think about the causes of both positive and negative events. It is associated with higher levels of motivation, achievement, and physical well-being and lower levels of depressive symptoms (Seligman, 1998). Further research and application of learned optimism suggests optimism is a valuable psychological resource that can be taught to both adults and children (Seligman, 1996; 2006), therefore an important component for a mental fitness model.

#### **(f) Social Learning Theory**

The concept of self-efficacy is central to Albert Bandura's influential and highly researched social learning theory. According to Bandura, self-efficacy is an individual's belief in their ability to succeed in a particular situation and is an essential part of Bandura's self-system and can be learned and developed. As Bandura and other researchers have demonstrated, self-efficacy can have an impact on psychological states, behaviour and motivation. (See Bandura, 1977; 1992; 1994; 1995). Connor (2005) found that decisions affecting health are associated with the level of self-efficacy, for example, smoking and physical exercise. Gist and Mitchell

(1992) found that individuals with high levels of self-efficacy deal better with difficulties and are more likely to be persistent in the face of failure, a valuable asset for achieving mental fitness.

**(g) Social support theories**

There are a number of theories that are linked to the importance of social support, for example, coping theory, social exchange theory and social comparison theory (see Williams, 2004). Positive relationships are associated with numerous positive mental and physical health outcomes (e.g. Dutton & Ragin, 2006; Uchino, 2009). A review of cross-national studies found that positive relationships were the one factor that consistently predicted subjective well-being in every country studied (Diener, 2005).

Stress and coping theory suggests that social support fosters adaptive appraisal and coping. Evidence for this is found in studies that observe stress buffering effects following perceived social support. Relational regulation theory suggests that the link between social support and mental health is driven by individuals regulating their emotions via conversations and shared activities. Life-span theory suggests that social support is associated with adaptive personality characteristics and attachment experiences. Lakey and Cohen (2000) suggest that social support interventions should be guided by theory to further examine how social support links to physical health outcomes. Given the plethora of research on social support and its developmental opportunities, it is viewed as an essential component of mental fitness.

**(h) Resiliency theories**

Psychological resilience has a large number of theoretical frameworks and definitions. For example, The American Psychological Association (2014) generally defined resilience as an individual's ability to properly adapt to stress and adversity. It is further defined as "good outcomes in spite of serious threats to adaptation or development" (Masten, 2001, p. 238).

Resilience is thought to promote protective factors that support positive outcomes. In the past resilience was viewed as a trait, however, more recently it is also considered to be a process defined by two factors (a) exposure to stressors or risks, and (b) demonstration of competence and successful adaptation (Luthar & Cicchetti, 2000).

Seligman and Matthews (2011) suggests resilience can be enhanced and developed within an individual. Well-being research also suggests positive emotions are more common among high-resilient individuals (Bergeman, Bisconti & Wallace, 2006). Moreover, resilience may be an important component of prevention of neuropsychiatric disease such as PTSD and depression (Vaishnavi, Connor & Davidson, 2007). Resilience was a primary feature in Seligman's master resilience training program as part of his design of a comprehensive soldier fitness intervention for the U.S. Military (Lester et al., 2011c). Importantly, in a longitudinal study by Werner and Smith (1982 and further reviewed by Masten & Reed (2002), resilience was found to develop across time. A comprehensive literature review on resilience suggests resilience needs to be put into action with the focus not on resilience per se but on the capabilities and assets that are associated to the outcome of resilience (Martin-Breen & Anderies (2011). There is evidence to support that individuals are able to learn and develop resilience (e.g. Connor & Davidson, 2003; Luthans, Norman, & Hughes, 2006).

#### **(i) Attention and awareness theories**

One of the most prominent of this array of theories is mindfulness. There has been much research on the benefits of cultivating mindfulness which is defined as "the state of being attentive to and aware of what is taking place in the present" (Brown and Ryan, 2003 p 822). Research suggests that training in mindfulness techniques enables a number of positive mental and physical health and well-being outcomes ((Piet & Hougaard, 2011; Kabat-Zinn, 1990).

Mindfulness is also prominent in Acceptance Commitment Therapy (ACT) as a therapeutic approach to increase positive mental health outcomes (e.g. Hayes et. al., 2004; Ciarrochi et al., 2010). Evidence supports physiological and psychological benefits of self-regulating human functioning for those who practice mindfulness by way of intervening with habitual, automatic thoughts and evaluating them in relation to the best response for an individual's primary goals and objectives (Alexander, Langer, & Newman, 1989; Rosch, 1997; Levesque & Brown, 2006). Thus, the self-awareness and self-regulating nature of mindfulness and its well documented interventions suggests mindfulness is an essential component of mental fitness.

#### **(j) Theories of Acceptance**

The emergence of acceptance is prominent in the psychological literature (e.g. Hayes, Strosahl, & Wilson, 2011; Linehan, 1993; Segal, Teasdale, & Williams, 2002). Hayes (1994) has defined psychological acceptance as one of the most crucial contextual change strategies. Wong (1998) concurs in his implicit theory of the good life but argues that the adaptive value of acceptance is not widely recognised in Positive Psychology. Ryff (1985) features self-acceptance in her psychological well-being scale as do Keyes and Magyar-Moe (2003) in their model of social well-being. Kashdan and Ciarrochi ((2013) provided a rare and integrated review of mindfulness, acceptance, and Positive Psychology that consider how these concepts are utilised via a number of effective intervention strategies, particularly within ACT. This suggests acceptance is a good candidate for inclusion in a mental fitness model.

#### **(k) Psychological flexibility**

Psychological flexibility is currently viewed as an important component of healthy psychological functioning and, research suggests that acceptance increases psychological

flexibility, a central construct that is also captured the ACT model. Kashdan and Rottenberg (2010) offer an insightful understanding on the concept of psychological flexibility and suggest it is difficult to define because it refers to more than one dynamic process reflected by how a person adapts to situations and flexibly configures their own mental resources to balance their competing internal and external needs, a concept congruent with the mental fitness objectives. Developing psychological flexibility as a component of mental fitness would assist individuals in developing the skill of how to flexibly respond to a negative or positive situation to achieve their goal or the best possible outcome.

### **(1) Theories of emotion regulation**

There are many theories of emotion in psychology. All agree emotion is complex, often spontaneous and difficult to control with both physical and psychological results (Solomon, 1976). The regulation of emotion has been defined as the ability to respond to the ongoing demands of experience with a range of emotions in a manner that is socially tolerable and sufficiently flexible to permit spontaneous reactions and to delay spontaneous reactions as needed (Cole, Michel & Teti, 1994). Research findings suggest there is a significant association between emotion dysregulation and symptoms of depression, anxiety, eating pathology, and substance abuse (Aldao, Nolen-Hoeksema & Schweizer, 2010).

In their process model of emotion regulation, Gross and John (1998, 2003) describe two common emotion regulation strategies, cognitive reappraisal, a form of cognitive change that involves construing a potentially emotion-eliciting situation in a way that changes its emotional impact, and expressive suppression, a form of response modulation that involves inhibiting ongoing emotion-expressive behaviour. Their research suggests that using reappraisal is associated with increased interpersonal functioning, whereas using suppression is associated with decreased interpersonal functioning. Reappraisal is also related positively to

well-being and increased positive emotions, therefore a worthwhile proposed inclusion for mental fitness.

### **(m) Theories of meaning and purpose in life**

The prominence of the concepts and development of meaning and purpose in life and positive human functioning have become a core element within Positive Psychology, and is therefore highly congruent with mental fitness. Damon (2008) suggests that purpose in life forms the answer to the ‘why’ question and McKnight and Kashdan (2009) suggest purpose is a protective factor for well-being. Purpose in life also relates to creating authentic life goals. (See King et al. 2006; Schulenberg et al. 2008; Wong & Fry, 1998).

The concept of meaning in life has been positively associated with hope, faith, love, health, and happiness, and negatively associated with depression, anxiety, and drug/alcohol use (Schulenberg, Schnetzer & Buchanan 2011; Wong 2012). Meaning research suggests meaning is developmental and positively related to happiness, well-being, life satisfaction, resilience, coping skills, hope, gratitude, health, self-esteem, and empowerment, and inversely related to depression, anxiety, posttraumatic stress, drug and alcohol use, materialism and experiential avoidance (see Schulenberg, Baczwaski & Buchanan, 2013; Steger et. al., 2006; Morgan & Farsides, 2009). Recent research also suggests that meaning and purpose in life can be developed and predict better physical health outcomes (e.g. Kim, Vaishnavi Sun, Park, Kubzansky & Peterson, 2013).

### **What is (and is not) mental fitness?**

The above summary review draws from extensive theory, research and application that suggests individuals who are functioning well psychologically, would have the capacity to

utilise one or more of the previously reviewed psychological resources. Whilst there is growing interest from researchers and practitioners to simultaneously measure a more comprehensive range of positive mental health determinants, there is a paucity of studies examining multiple variables together within a single study (e.g. Staats 1999; Sheldon & Hoon, 2007).

Examples of published models and constructs that do measure multiple variables together in a single study are the Psychological Well-being Scale, a generic measure containing six subscales of eudaimonic well-being (e.g. Ryff, 1985). PsyCap, primarily developed for the organisational context which measures four aspects of positive mental health i.e. self-efficacy, resiliency, optimism and hope (e.g. Luthans, 2002). There are several versions of a Mental Toughness scale, primarily developed for the sporting context that contain various constructs such as confidence, motivation, determination and emotional control (e.g. Clough, Earle & Sewell, 2002; Middleton et. al., 2004; Gucciardi, Gordon, & Dimmock, 2009). The Global Assessment Tool, currently being used in resilience training for the US Military that measures four dimensions of positive mental health, emotional, social, spiritual, and family (Peterson, Park & Castro, 2011).

These are examples of multiple component measures that have offered valuable research and insights into positive mental health utilising multiple variables within a single study. Whilst there are similarities and differences between these and other models, more research is needed to understand how these multiple variables interrelate and predict positive mental health outcomes. In relation to the criteria of mental fitness, which variables together would (or would not) constitute an overarching construct of mental fitness is yet to be examined empirically.

### **Guiding principles for mental fitness**

Based on the previous review and rationale in Chapter 1, four principles are proposed as foundational to guide the further development of the concept of mental fitness to ensure a theoretical and empirical contribution that supports and enables positive mental health initiatives:

1. Fitness is a positive term without connotations of illness implied by mental health or mental illness:

Principle 1 is based on the assumption that the term physical health is understood by individuals and the wider community as absence of physical disease and is without stigma. However, the term mental health is understood as absence of mental illness but largely stigmatised. Thus the underlying assumption of Principle 1 suggests that the term fitness is easily understood by the wider community; it is essentially a positive term and not stigmatised.

2. Mental fitness could be understood by individuals, groups, organisations and the wider community in a similar way to physical fitness:

Microsoft Encarta Reference Library (2004) describes *physical fitness* as a combination of qualities that enable us to be at our full potential in performing vigorous physical activities and involve (but are not limited to) *endurance, strength & flexibility*. The term *mental fitness* can employ metaphor, transposing components from one context to another e.g. *mental strength, flexibility* and *endurance*. These terms would be useful for parsimony, ease of explanation and application for mental health practitioners and the wider community. Principle 2 suggests that *physical fitness* is already understood in the wider community as a strategy for improving mental health and associated to optimal physical functioning.

3. Mental fitness is measurable

The development of a multidimensional model of mental fitness would focus on the process via a more holistic measurement approach and initially utilise the variables previously reviewed in the example mental fitness resource index. Moreover, this resource index will be helpful in synthesising key theories, research and practices within the psychological literature relating to positive mental health that remain largely disconnected.

4. Mental fitness could be improved in a way similar to physical fitness:

Principle 4 suggests that mental fitness can be learned via developmental activities, exercises and regular practice to ‘fit’ the assessed needs thus creating positive psychological habits or rituals. Evidence in Positive Psychology and neuroplasticity literature (e.g., Shaw & McEachern, 2001) support the assumption that individuals are able to learn and grow via experiences, and intentional activities. The practice of intentional activities aligns well with the concept of fitness because it is part of becoming physically fit i.e., it is a process of regular and varied exercises designed to ‘fit’ the specific criteria of each person.

### **Defining mental fitness**

Key terms within a definition of mental fitness based on the identified salient themes in the literature review, suggest mental fitness is changeable, it captures capacity, it utilises learned resources/skills, it is adaptable, it relates to environmental challenges (or advantages) and it requires motivation to participate in regular, intentional activities. Therefore, a starting point for a definition of mental fitness is *the changeable capacity to utilise resources and skills to psychologically adapt to environmental challenges (or advantages) to meet psychological needs*.

**In conclusion**

This review explored the concept of mental fitness within the historical, popular and psychological literature to formulate an initial definition and guiding principles to provide consistent theoretical foundations to allow for the development of standardised measures to research and replicate, and for mental health practitioners to apply. The review was based on the premise that new and novel approaches are needed to engage and promote positive mental health strategies and practices across multiple contexts within a language and framework that is easily understood and without the stigma. It was argued that drawing an analogy between mental fitness and physical fitness is one way to achieve this aim. The review revealed common themes and language as foundational drivers for developing an integrative concept, resources and measurement of mental fitness. Based on these findings, an initial definition and a four guiding principles were formulated to influence future research and practice. Further, a conceptual framework analogous to physical fitness (strength, flexibility and endurance) was proposed to categorise key variables that have developmental opportunities through the implementation of practical and effective interventions and intentional activities.

**Where to from here?**

Following the formulation of the initial definition, conceptual framework and four guiding principles, the next phase is to have these evaluated by an expert panel by way of a Delphi study. If consensus by the expert panel can be achieved, a preliminary empirical study will follow to determine construct validity of mental fitness and whether a higher-order factor structure is evident.

### CHAPTER 3 – CONCEPTUALISING & MEASURING MENTAL FITNESS: A DELPHI STUDY

#### Abstract

Despite the increased use of the term *mental fitness* in the popular and psychological literature, there is little consensus in relation to theory, definition and measurement. The concept of *mental fitness* could be used to engage, educate and promote proactive, positive mental health activities to the wider community, without stigma and within a language that is easily understood. This Delphi study engaged an international expert panel ( $n = 25$ ) to evaluate a definition and four guiding principles of *mental fitness*. Expert consensus was achieved supporting the definition and four guiding principles with suggested modifications.

The final definition of mental fitness is “the modifiable capacity to utilise resources and skills to flexibly adapt to challenges or advantages, enabling thriving”. The final four guiding principles are: (1) fitness is a positive term without connotations of illness implied by mental health or mental illness; (2) mental fitness could be understood by the wider community in a similar way to physical fitness; (3) mental fitness is measurable; and (4) mental fitness can be improved, in a similar way to physical fitness. The panel also offered valuable recommendations for future research and practice.

## Introduction

Mental fitness is not a new concept in the psychological literature. McCarthy (1964) suggested the concept was a solution to the following plea written by the distinguished behavioural scientist and public health expert Dr. Andie Knutson (1963):

“Positive mental health has been left on the doorstep of the public and professional community as a neglected and starving stepchild...it would be useful to have some new term to replace positive mental health...that retains the good will and enthusiastic participation of members of the mental health profession and their medical, health and welfare colleagues, and yet effectively elicits the involvement of members of the social sciences” (pp. 303-304).

McCarthy (1964) suggested the concept of mental fitness to express Knutson’s positive mental health concept. She asked the Committee on Mental Health Research Programs of the APA “to try it on for size and see how well it fits” (p. 201). Further, McCarthy suggested utilising the term mental fitness for President Kennedy’s population based fitness program by combining mental and physical fitness initiatives together i.e. a total fitness solution.

## Why Mental Fitness?

The Positive Psychology literature has supported Knutson’s proposition (e.g. Seligman & Csikszentmihalyi, 2000; Seligman, 2008) and confirms that a scientific understanding of positive mental health and effective interventions are important to build thriving individuals and communities. Whilst Seligman (2002) explains that the general stance of Positive Psychology is prevention, he confirms there is very little focus on *how* to educate, promote and engage the wider community in proactive positive mental health activities. Keyes (2007) whilst agreeing with the need to prevent illness, also argues for a need to promote positive mental health, and uses the term *flourishing*. Keyes suggests there are economic and social advantages for a paradigm shift towards mental health promotion to work in conjunction with

mental illness prevention. He argues that if most government strategies continue to focus on diagnosed mental illness alone, the best that they can hope for is to reduce levels of diagnosed mental illness. Moreover, this approach does not assure a mentally healthy population, suggesting that mental health is a separate continuum whereby 'a languishing individual' can function at levels similar to someone with a major depressive episode i.e. diagnosed as neither mentally ill nor mentally healthy. This view is consistent with the World Health Organisation's evidence paper on mental health promotion (see Naidoo & Wills, 2000) which states that health can mean the absence of disease or disability but, just as often, may refer to a state of *fitness* or to a reservoir of personal resources that can be called upon when needed. Further, they suggest that health promotion supports personal and social development and emphasise the importance of positive mental health education and practices for its own sake as well as prevention and treatment.

The challenge is how to further engage and motivate the wider community to not only become proactive in their own positive mental health strategies and activities, but to sustain them. It is suggested here that a more familiar framework underpinned by research and delivered via an easy to understand language that is not stigmatised is needed. Notwithstanding numerous anti-stigma campaigns in western nations, there remains conceptual confusion and stigma surrounding many psychological concepts because the concepts suggest that there is something wrong with the person. For example, "mental health" is often used interchangeably with "mental illness". This is not the case with the term "physical health" and "physical illness". The term "physical fitness" goes further by being viewed as a process of achieving optimal physical health. So one solution to overcome some of the stigma would be to revisit McCarthy's proposition to utilise the term *mental fitness* as a process of achieving optimal mental health.

At a foundational level and as is the case in the development of physical fitness, achieving higher levels of mental fitness would require motivation. It is useful to employ well-developed and evidenced-based theories to support such an endeavour. Research from self-determination theory suggests that the innate human needs of autonomy, competence and relatedness facilitate higher levels of motivation and provide the basic components for human growth and development. Conversely, if these needs are thwarted an unsuccessful response is probable (see Deci & Ryan, 1985, 2000; Sheldon, 2002; Baaard, Deci & Ryan, 2004). Therefore, consideration of these basic psychological needs would be important to any mental fitness model and subsequent interventions. The concept of mental fitness could also be incorporated as a component of health-related or total fitness, the American College of Sports Medicine (ACSM, 2000) support the definition of 'health-related fitness' developed by Pate (1988) who defines fitness as the demonstration of capacities that help prevent disease and promote health.

The conceptualisation of mental fitness must be a coherent combination of theory, research and practice and utilising the physical fitness analogy would also have relevance to the wider community. To commence the process, a review by Robinson, Oades and Caputi (2014a) suggests there is evidence that the term mental fitness is being increasingly utilised to engage and promote positive mental health strategies and practices.

In summary this review analysed the concept of mental fitness first by the historical use, then within popular and psychological literature. To understand in detail how the general population of the 21st century views the term fitness, the popular search was performed on Google and revealed a plethora of hits; fitness 461 million, physical fitness 86 million, mental fitness over 17 million and physical/mental fitness together revealed more than 6 million hits.

The process of analysis examined the first 50 pages of each concept and the content was allocated to a category. This allocation to a category was most often made using the information available on the search page as well as by viewing the source website to determine the exact nature of the site. Results of the primary categories calculated by frequency show the first category was coded as providing creditable information from websites that reflected a reputable genre e.g. health and psychological services, the second category contained more unreliable sources e.g. individuals without qualifications, private blogs, social media, etc., the third category was specifically advertising courses and programs from multiple sources, the fourth category contained either government or non-government organisations and finally a media category where the term appeared in published material, e.g. magazines.

The psychological literature was analysed via a PsycInfo search extending from 1879 to 2013 revealed only 60 results consisting of peer-reviewed journals and books. Despite the relatively small number of results in the psychological literature, there were a number of related and frequent themes that emerged from the analysis which were also congruent with the historical and popular searches, for example, : (a) mental and physical health and fitness often appear together and involve intentional or purposeful learned, skills that are changeable via regular exercises to practise; (b) evolutionary theory, the processes of adaptation and natural selection; (c) mental fitness includes cognitive, affective and behavioural components; (d) mental fitness can be domain-specific, that is, work, home, and social; (e) it is a process with wellbeing outcomes; (f) mental fitness has capacity and psychological resources. e.g. resilience; (g) it also assists in the reduction of some mental illnesses e.g. anxiety, anger and depression; (h) there are treatment and prevention components; (i) there are numerous mental fitness tests and indicators but they vary in explanation and content.

All search results revealed similar language and ideas across the historical, popular and psychological literature. The meaning of mental fitness suggested it is a process towards functioning well, it is goal-orientated, purposeful, adaptive, intentional and developmental. Results further suggested that individuals are active agents in the process of becoming mentally fit with the ability or capacity to change, develop, adapt and respond to enable them to move towards a successful fit between themselves and their environment. Further, the term mental fitness (like physical fitness) is viewed as important to mental health and can be learned; indeed the primary focus in the popular and psychological literature was exercise and training. However, a central finding in the review was a lack of consistent theoretical and empirical foundations, no consensus on the definition, and measurement of mental fitness for scientific investigation or for practitioners to apply.

Based on the above results, a definition and four guiding principles for the development of the term mental fitness were constructed for consideration and evaluation by an international panel of experts in the field of psychology and Positive Psychology using the Delphi technique (see summary below):

### **The Definition**

*Mental fitness is the changeable capacity to utilise resources and skills to psychologically adapt to environmental challenges or advantages to meet psychological needs.*

Key terms within the definition of mental fitness were based on the literature review suggesting it is changeable, it captures capacity, it utilises learned resources/skills, it is adaptable, it relates to environmental challenges (or advantages) and requires motivation to participate in regular, intentional activities. . It is important to note that the meaning of the term *adapt* in the context of mental fitness is drawn from the Encyclopaedia of Positive

Psychology (2009) which states “adaptability is the capacity to adjust oneself readily to fit changed circumstances”.

In summary, the definition suggests that a mentally fit person has a reserve of psychological resources and skills that could be readily utilised to increase the probability of a successful response to a negative stressor or an opportunity. Further, it suggests that a mentally fit person would be expected to have higher levels of self-awareness and self-regulation to elicit a psychologically flexible response (e.g. Kashdan & Rottenberg, 2010).

### **Principle 1**

*Fitness is a positive term without connotations of illness implied by mental health or mental illness.*

In summary, Principle 1 is based on the assumption that the term physical health is understood by individuals and the wider community as absence of physical disease, without stigma. Conversely, the term mental health is understood as absence of mental illness but largely stigmatised. Stigma is a crucial issue as noted by a comprehensive review of the literature led by Cheverton (2009). The review states that the stigma attached to mental ill-health prevents most people from disclosing. The review suggests that the longer people leave seeking help, the more significant their ultimate call on health and social services will be. Thus the underlying assumption of Principle 1 suggests that the term fitness is easily understood by the wider community, it is essentially a positive term and not stigmatised.

## Principle 2

*Mental fitness could be understood by individuals, organisations, educational institutions and the wider community in a similar way to physical fitness.*

Physical fitness is defined as a set of attributes people have or achieve relating to their ability to perform physical activity (Corbin, Pangrazi & Franks, 2000), and by Microsoft Encarta (2004) as a combination of qualities that enable us to be at our full potential in performing vigorous physical activities and involve (but are not limited to) strength, flexibility and endurance. The term mental fitness employs metaphor, transposing components from one context to another e.g. mental strength, flexibility and endurance. These terms would be useful for ease of explanation and application for mental health practitioners and the wider community.

Table 1 shows an example of a resource index of positive mental health theories and methodologies (resource index) proposed by Robinson, Oades and Caputi, (2014a), utilising the physical fitness conceptual framework.

Table 1:

*Conceptual example of a mental fitness resource index*

<b>Strength</b>	Self-efficacy
	Positive Affect
	Social support
	Emotional Management
<b>Flexibility</b>	Mindfulness
	Acceptance
	Psychological flexibility
<b>Endurance</b>	Resiliency
	Meaning
	Purpose
	Autonomy

Principle 2 suggests that physical fitness is already understood in the wider community as a strategy for illness prevention and associated to optimal physical functioning. For example, cardiac fitness achieved through exercise assists in lowering heart attacks and mortality rates (e.g. Blair et. al., 1996). It would be possible to articulate mental fitness activities and practices as preventative based on extensive research, thus creating a total fitness solution, physical and mental being of equal importance.

### **Principle 3**

#### *Mental fitness is measurable*

Principle 3 suggests that the operationalising of a mental fitness model would first require the building of a resource index. Components of a resource index would consist of evidence-based psychological variables that are developmental, changeable and understood as being a part of a proactive and preventative approach to positive mental health. There are a number of psychological theories, measures and interventions that have converging characteristics of individuals who are considered to be functioning well, for example, Warner and Vroman (2011) found that regular, positive psychological practices predicted significant additional variance in well-being. A resource index would also assist in synthesising key theories, research and activities within the psychological literature relating to positive mental health that remain largely disconnected and are primarily measured in isolation.

### **Principle 4**

#### *Mental fitness can be improved in a way similar to physical fitness.*

Principle 4 suggests that mental fitness can be learned via developmental activities, exercises and regular practice to ‘fit’ the assessed needs. Evidence in Positive Psychology and the neural plasticity literature suggests the brain has the ability to change and adapt as a result of experience and learning new behaviours throughout the lifespan. Neuroscientist Richard Davidson (2005) found via functional magnetic resonance imaging (fMRI) that individuals could regulate their emotions if they were well practiced, (also see meta-analysis Sin and Lyubormirsky, 2009; Greenwood & Parasuraman, (2010). A meta-analysis by Bolger et al. (2013) also found that Positive Psychology intervention activities increase both subjective and psychological well-being outcomes. Diener and Biswas-Diener (2008), in their discussions on psychological wealth, include engaging activities as part of the process of improving well-being.

The next step to develop the concept and measurement of mental fitness is to have the definition and principles evaluated by a global panel of experts utilising the Delphi technique.

## **Method**

### **Research Design**

The Delphi method is useful to evaluate definitions, new concepts and gathering of knowledge and opinions (Mullen & Gold, 1988; Adler & Ziglio, 1996; Buccini, Jones, Iverson & Caputi, 2009). For example, it has been used to (a) identify problems (Yell, Deno, Marston, 1992); (b) investigate theoretical and practical issues (Fish & Piercy, 1987); (c) predict trends (Cramer, 1991); (d) identify components of mental disorders (Morrison & Barratt, 2010) and (e) investigate areas that have not been articulated clearly or explored widely (Weatherman & Swenson, 1974).

The Delphi process provides researchers with a systematic methodology to organise responses and ideas that can be validated further into theory, models and measurement (Merriam, 1998; Linstone & Turoff, 1975). Moreover, it provides an efficient and effective way to involve busy experts who may not be able to come together to interact with each other to investigate theoretical and practical issues and ultimately build consensus.

Typically, in a Delphi study, a set of criteria is formulated to choose the expert panel to ensure they all demonstrate expertise in the specific domain being investigated. Martino (1972) states that the expert panel may be made up of anywhere between 15 and hundreds of panellists. However, Somers et al (1984) suggest that small panels are more advantageous to reduce the complexity of data analysis. Data are collected by asking panellists for their opinions via quantitative and/or qualitative questionnaires that are systematically organised, for example, means, medians and standard deviations and/or content analysis. Two or three rounds of communication are usually conducted and the statistical group response on the final round is used to represent group consensus (Grissom & Cochran 1986). According to McElreath (2001) key summary steps are necessary to conduct an effective Delphi study.

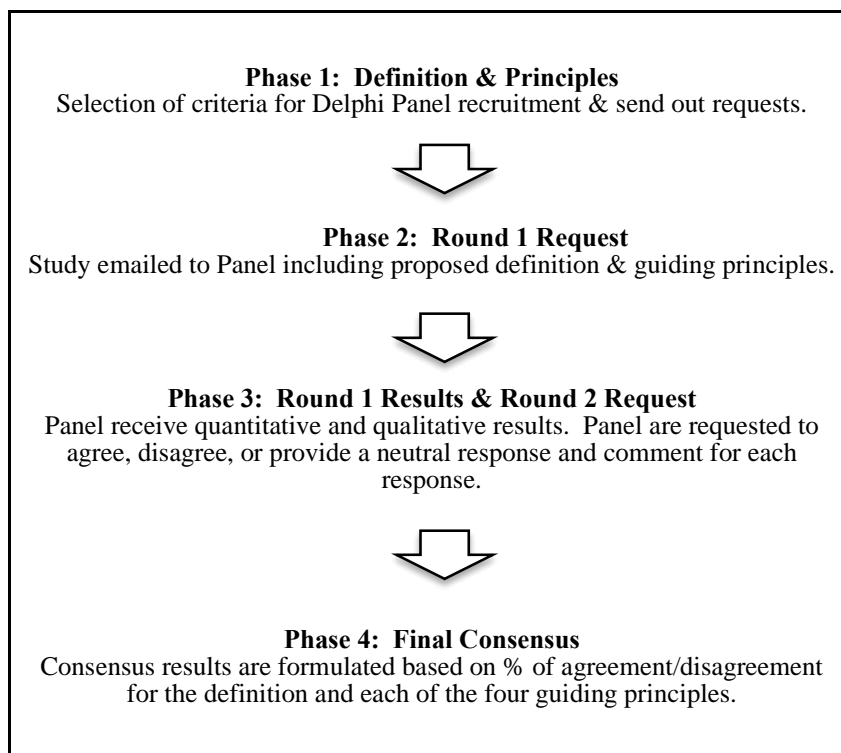
McElreath's steps followed throughout this study. A guiding assumption of the Delphi technique is that consensus of the expert panel's opinion is a good predictor of future practices (Weatherman & Swenson, 1974).

## Procedure

This study consisted of 4 phases summarised in Figure 2:

Figure 2:

*Delphi study method summary flowchart*



## Phase 1 – Participants

Lopez and Rogers (2001) suggest two of five specific criteria be applied to select the expert panellists. To further ensure the panel expertise, participants were chosen if they met three of the following five criteria:

1. Author criteria - Panellist must have at least three primary or secondary author publications related to psychological growth and development;
2. Presenter criteria - Panellist must have made two or more presentations at nationally or internationally respected psychological conferences on topics relating to psychological growth and development;
3. Academic criteria - Panellist must be an academic in the field of Psychology with a doctoral degree;
4. Practice criteria - Panellist must be a practicing psychologist registered for more than 10 years and currently working with clients on a regular basis; and
5. Positive Psychology criteria - Panellist must be specifically published in the sub-field of Positive Psychology or teaching it in an academic setting.

Each panellist was allocated a code to control for anonymity throughout the study. This also provided a more objective evaluation of each other's comments and ideas without attaching any one comment to a particular person. Given many of the panellists have high profiles in their field of expertise, anonymity also controlled for any (conscious or unconscious) bias by other panellists based on knowing the author personally or his/her work. (see Appendix 3 for a summary of expert panel criteria).

### **Phase 2 – Round 1 Request (see Appendix 4)**

Following completion of Phase 1, Round 1 Request was distributed by email to all expert panellists and contained a Participant Information Sheet, steps in the study, an explanation of the Delphi process, an abstract and specific questions (see example question in Figure 3) relating to the initial definition and four guiding principles of mental fitness. Whilst the development of the definition and principles were completed, Round 1 deliberately gave minimal information on the development of the definition and the four principles to the expert panel. The reason for this approach was twofold: (a) given their expert knowledge, it was

important to allow the panel to respond to questions without too much background information to influence or bias their initial responses; thus their responses were based on their own knowledge alone and not given to them by the researchers; (b) the second reason was to ensure the panel were focussing on the *specifics* of the questions only and not on the justification of how they were formed. The panel consisted of experts in psychology who have assumed expert knowledge based on strict criteria set in Phase 1, therefore, an important goal of the study was to have panellists respond based on their own knowledge and experience.

There were five major questions in the study; the following example illustrates the qualitative and quantitative components of each question:

Figure 3: *Example Question*

The definition provided was *the changeable capacity to utilise resources and skills to psychologically adapt to environmental challenges or advantages to meet psychological needs*.

<p><i>Generally, I agree/disagree with the definition of Mental Fitness</i></p> <p style="text-align: center;"> <i>Disagree 1      2      3      4      5      6      7 Agree</i>  <i>(Neutral)</i> </p> <p><i>Below, please write any specific comments or ideas on the definition</i></p> <p style="text-align: center;"><i>(in less than 100 words)</i></p>						
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Question 1 asked panellists to rate their agreement/disagreement and comment on the definition of mental fitness. Panellists were also supplied with summary explanations for key terms within the definition and what these key terms might mean in relation to a mentally fit person, for example, the summary explanation for the term:

*Capacity - a mentally fit person has a reserve of psychological resources and skills that could be readily deployed to improve the probability of an adaptive response to a negative stressor or a favourable circumstance or advantage.* This part of the study essentially gave the panellists the opportunity to comment on specific terms in the qualitative section but also allowed them to either agree or disagree on the definition in total in the quantitative section.

Questions 2 - 5 asked the panel to rate their agreement/disagreement and comment on each of the four guiding principles of mental fitness:

- Principle 1      *Fitness is a positive term without connotations of illness implied by mental health or mental illness.*
- Principle 2      *Mental fitness could be understood by individuals, organisations, educational institutions and the wider community in a similar way to physical fitness.*
- Principle 3      *Mental Fitness is measurable.*
- Principle 4      *Mental Fitness can be improved in a way similar to physical fitness.*

As in question 1, each principle had a brief summary explanation.

Phase 3 –Round 1 Results to Panel & Round 2 Request (see Appendix 5).

Round 2 contained a Participant Information Sheet, an abstract, method and qualitative and quantitative response results from Round 1 and were forwarded to panellists via email. In this second round, panellists were asked to rate and comment on each other's specific Round 1 responses for the definition and each of the four guiding principles of mental fitness. As this was the first time the panel viewed each other's responses, they were asked to agree or disagree with other panellists' suggestions or ideas with no response being treated as neutral. Panellists were also asked to note at the end of each question, any additional elaborations, suggestions or ideas based on the other panellists' qualitative responses.



## **Results**

### **Round 1**

The final pool of accepted panellists totalled 25 and were primarily drawn from Australia, United Kingdom and United States. Other countries represented in the study include Denmark, Canada and New Zealand. Of the panellists, 15 were males and 10 were females. Analysis shows that of the 25 respondents, 88% met author criterion, 88% met presenter criterion, 80% met academic criterion, 52% met practice criterion and 64% met Positive Psychology criterion (see detail in Appendix 3).

#### **Round 1: Quantitative results**

All 25 expert panellists completed Round 1. Averages were calculated across all panellist response items on a 7-point likert scale. Table 1 shows, mean, standard deviation, mode and median for all 5 questions. Results suggest a high level of agreement for the proposed definition and each of the four guiding principles of mental fitness. Principle 4 shows the highest level of agreement and the lowest variability.

Table 5:  
*Descriptive Statistics*

Generally, I agree/disagree with...	Level of Agreement
The Definition “Mental fitness is the changeable capacity to utilise resources and skills to psychologically adapt to environmental challenges or advantages to meet psychological needs.”	(M = 5.54, SD = 1.44), Mo = 6, Md = 6
Principle 1 “Fitness is a positive term without connotations of illness implied by mental health or mental illness.”	(M = 5.88, SD = 1.69), Mo = 7, Md = 6
Principle 2 “Mental fitness could be understood by individuals, organizations, educational institutions and the wider community in a similar way to physical fitness.”	(M = 5.83, SD = 1.59), Mo = 6, Md = 6
Principle 3 “Mental Fitness is measurable.”	(M = 5.64, SD = 1.02), Mo = 5, Md = 6
Principle 4 “Mental Fitness can be improved in a way similar to physical fitness.”	(M = 6.54, SD = 0.72), Mo = 6, Md = 6

### Round 1 - Qualitative Results

The Panel were asked to “*write any specific comments or ideas on the definition and the 4 principles of Mental Fitness (in less than 100 words)*”. The qualitative responses from all panellists were reviewed for inclusion in Round 2. Table 2 – 6, shows all responses that were included in Round 2. Qualitative comments not included in Round 2 were:

1. Panel responses where they generally agreed without offering any suggestions or changes to the definition or principles, for example:
  - a) “*I think that this is an excellent definition. The five key terms elaborate on the concept very well. I also like the way that mental fitness may be compared with physical fitness in such a way that the lay person can easily relate to*”.

- b) *“Yes, this is particularly appealing and the field of brain plasticity gives ample evidence that this is possible. It is also inherently attractive in the same way in which physical fitness is linked to health and well-being.”*
- 2. Panellists who generally disagreed but didn't include any suggestions or changes, to the *definition or principles*, for example:
  - a) *“Yes and no; can be learned if you have the right coach.”*
  - b) *“No – I don't think it is a term that is widely used.”*

In summary, the purpose of Round 1 was to: (a) quantitatively assess whether the expert panel agree or disagree with the definition and each of the 4 guiding principles of mental fitness; and (b) to offer suggestions/ideas for improvement. Quantitative results suggest a high level of agreement. Ideas put forward by the panel were collated and the results evaluated by the expert panel in Round 2.

#### Phase 4 - Round 2 Results: Consensus for definition and four guiding Principles

Twenty-two panellists responded to Round 2 by the deadline set by the researchers. The task for Round 2 was for the expert panel to respond to the qualitative suggestions/ideas proposed in Round 1 (see summary responses in Tables 3 – 5). The panel's response range consisted of “yes I agree”, “no I disagree” and a “neutral” or blank response indicating the respondents did not hold a strong view either way and were not calculated in the results. For the purpose of this study, all responses were evaluated and if less than 20% disagreed and more than 51% agreed, the definition or principle was changed according to the expert panel's recommendation & Buccini, et. al, 2009). Tables 2 to 6 summarise the expert panel's feedback.

Table 6:  
*Qualitative Responses for Definition*

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The Definition: “Mental fitness is the changeable capacity to utilise resources and skills to psychologically adapt to environmental challenges or advantages to meet psychological needs”.

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“Changeable” or perhaps “flexible” capacity?

Not clear what you mean by ‘changeable’ capacity. Is this where the flexibility and ability to respond with an appropriately adaptive response is implied?

---

Stressors/challenges are not always external but can often involve internal dialogue and self-perceptions...personal (and interpersonal) stressors/factors seem relevant and deserve specific reference.

The term “environmental” to me implies that challenges or advantages can only be external to the individual. Would a lack of confidence in being able to do well in a job interview, for example, not be recognised as some sort of challenge for an individual to overcome?

---

Mental fitness meets more than just psych needs, so perhaps this part is rather limiting....this is a sort of baseline achievement, but actually that mental fitness could help us go a lot beyond this and into the domain of true mental flourishing.

Meeting needs may imply survival, while flourishing or thriving refers to enjoying full potential... It may not capture the notion of flourishing or thriving.

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Summary results from Table 6 shows the expert panel recommends the following changes to the definition of mental fitness: (a) *internal* and *external* challenges are both viewed as important, therefore, the term challenges remains with *environmental* being removed; (b) some members questioned the use of the term *changeable*, implying that it is too general. Whilst the suggestion of flexible was mentioned as an alternative, this is not appropriate in relation to capacity. The term capacity is utilised here to refer to the size of the resources and skills available, not the nature of the resource itself. Therefore, the adjective “flexible” is added before the word adapt; (c) further, as the panel considers the term *changeable* as not being clear, this has also been considered. For this reason, the word “modifiable” has been chosen to replace changeable. Whilst the two terms are similar, modifiable is more specific than changeable, implying limits to the change, and that the change is primarily intentional,

i.e. it can increase or decrease, it can be trained, in a similar manner to physical fitness; and

(d) replacing *psychological needs* with the term *thriving*. Thus the revised definition is as follows:

*Mental fitness is the modifiable capacity to utilise resources and skills to flexibly adapt to challenges or advantages, enabling thriving.*

Table 7:  
Qualitative Responses for Principle 1

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Principle 1: Fitness is a positive term without connotations of illness implied by mental health or mental illness.

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Yes, mental fitness should be asset based, in other words that a person possesses certain desirable qualities rather than does not possess certain undesirable qualities.

Recently, mental health is also defined in terms of the presence of psychological well-being. Therefore, to further clarify the distinction between mental fitness and mental health, the former should be focusing on the process while the latter should focus on the outcome. In other words, mental fitness will imply the ability to achieve well-being and prevent or reduce mental illness.

Fitness is also understood in a biological sense as in “survival of the fittest”, and the fitness of a species for a particular environment. Hans Selye’s original research on stress spoke of fitness as a determinant of the stress response.

There is overwhelming empirical and theoretical reasons to believe that almost all well-being and human functioning is on a continuum (e.g. from anxiety to calmness). Focussing on only a positive or negative pole is one of the greatest weaknesses of psychology today. In the present case, there will be a continuum from low to high level of fitness, and only focusing on the positive pole is neither scientifically justifiable or logical.

I really like the term fitness and yes it does get away from negative connotations. It can be measured on a continuum as you can have different levels of fitness and gives the opportunity for some development and growth.

Psychological fitness should be understood as the presence of positive qualities, not the absence of negatives.

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Results from Table 7 shows Principle 1 remained unchanged with the panel suggesting it could be: (a) measured on a *continuum*; and (b) that mental fitness is a *process* with mental health and well-being as outcomes.

Table 8:  
*Qualitative Responses for Principle 2*

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Principle 2: Mental fitness could be understood by individuals, organisations, educational institutions and the wider community in a similar way to physical fitness.

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Not just illness prevention, but also wellness promotion.

My one concern would be using it in an organisational setting. It is not a term that I think managers would be able to use about an individual due to the points that I raised regarding possible connotations. I am not sure who in an organisation would be able to use this term in an organisational context without there being a potential danger of legality over the term. In an organisational context, I know words such as ‘tough mindedness’ have started to be accepted but I would be concerned about passing judgement or discussing the mental fitness of employees.

Although there are differences between physical and mental fitness I think that there are enough similarities to quickly and easily convey the meaning of the term to the broader community. Hopefully, this will also serve to strengthen the connection between mind and body, as the scientific separation of the two really makes very little practical sense.

Plenty of evidence from the sports and endurance literature I’m sure that links physical and mental toughness.

I reiterate my comments above for Principle 1. It gives scope for growth, change and is developmental by nature; not fixed at any point in time.

Total fitness could also include the concepts of stability (being calm, centred and confident) as well as speed (improvising and intuitive).

Perhaps the general community would think that mental fitness had something to do with intelligence or being smart at school. It would be important to stress that mental fitness would apply to any age, just not young who were also physically fit and it may be hard to separate the two images of physical and mental fitness. Could an older person be physically challenged but still mentally well or could a younger person be very fit but depressed?

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Results from Table 8 shows the panel recommended to *delete the organisational references* but support using the concepts of *physical and mental fitness* (total fitness) together to convey meaning to the wider community. Principle 2 was revised as follows:

*“Mental fitness could be understood by the wider community in a similar way to physical fitness.”*

Table 9:  
*Qualitative Responses for Principle 3*

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Principle 3: Mental Fitness is measurable.

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I like the fact that an individual who practices most of the key principle psychology interventions may develop mental fitness as defined here. For example, individuals who have identified their strengths and use them in the service of something bigger than themselves may develop strength (self-efficacy), flexibility (acceptance), and endurance (meaning).

Generally agree with this, although I think there are a number of ways you could cut this data. Would also be interested to see where strengths use specifically fits into this construct, as something that is associated with a wide range of positive correlates.

It would be helpful to have a definition of the terms to aid understanding. It might also make more sense to indicate if a component builds strength, flexibility or endurance, as I imagine that there is cross over between them.

I think it would be useful to operationalize exactly what you mean by strength, flexibility, and endurance.

Would need a bit more information about how ‘strength’, ‘flexibility’ and ‘endurance’ are defined within mental fitness; not entirely sure that the resource index components’ are specific to the three domains.

At some point you will need to explain why the different descriptors have been put into these categories.

I agree that in principle it is measurable, but care needs to be taken with whether it is measurable through self-report – mindfulness has been, though this has been widely criticised and the findings are not comparable with objective measures. Similarly, this is a major problem with the VIA – what does self-reported sense of humour actually mean? Particularly when we know that people have enhancement biases where most people think that they are better than average (see Sedikides’ work in this area).

Clearly some aspects of mental fitness are easy to measure. But like in physical fitness there are dimensions which are difficult to measure, dimensions like mindfulness, meaning or purpose seem to me very difficult to measure.

---

Table 9 results for Principle 3 suggest it remains unchanged but with the panel recommending:

- a) the mental fitness model components of *strength*, *flexibility* and *endurance* need a specific definition;

- b) the mental fitness model components of *strength*, *flexibility* and *endurance* will need rigorous scientific investigation;
- c) *Self-report* is viewed as limiting and specific components of mental fitness may be *difficult to measure*. The panel suggests consideration of an *objective measure*; and
- d) a further recommendation is to investigate the relationship of *strengths* and mental fitness.

Table 10:  
*Qualitative Responses for Principle 4*

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Principle 4: Mental Fitness can be improved in a way similar to physical fitness.

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I totally subscribe to this view that mental fitness can be learned and developed. See for example Fred Luthan's work on psychological capital which seems to follow a similar principle. I would be cautious about drawing the parallels too closely with physical fitness, since there may come a point where the parallel breaks down and ultimately constrains you in terms of your thinking and also how you present mental fitness to a wider audience. Just something to be aware of.

As an example, reading Todd Kashdan's book on curiosity has made me more curious, which has made me more mentally fit I would argue so yes....

I think that you can definitely improve mental fitness through training and exposure to mental exercises. I have observed people improve specific aspects of mental fitness such as: Strengths, Positivity and Hope. The only piece I wonder is if everyone can increase mental fitness, like physical fitness there maybe individual differences between people. There might also be a small percentage of people who are unable to increase their mental fitness.

Yes learned (taught) and caught from experiences - including failure – so that personal construing is possible. I feel that growth mindset research (Dweck) is key to understanding how this process can be delivered, largely from reflection.

Nice concept but for me it conjures up the notion that physical and mental health are dichotomous concepts. I think the real skill would be to develop activities that simultaneously work on mental and physical fitness. The two systems are interdependent. After I return from a good workout at the gym, I think more clearly, rationally and positively. I am sure some psychological interventions that work on self-appreciation and gratitude (e.g. for good health and life) would encourage more physically and healthy lifestyles.

Strength, flexibility and endurance seem to be useful conceptual categories for communicating the meaning of mental fitness, but I am unsure about their utility beyond that. It would be helpful to have definitions of these terms to better understand how they could be targeted.

Yes, this is particularly appealing and the field of brain plasticity gives ample evidence that this is possible. It is also inherently attractive in the same way in which physical fitness is linked to health and well-being.

Mental fitness interventions will target the components of strength, flexibility, and endurance. The theoretical underpinnings of any interventions specific to the components of "mental fitness" will have to be compared to a cognitive behavioural intervention, compared to a self-determination theory intervention, compared to an emotional intelligence theory (compared to placebo/control). If you are very specific with the

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language to describe the construct, construct factors, measurement, and the potential theoretical underpinning for applied interventions, then construct validation will also be systematic.

If clinical psychologists did not believe that a trained clinician could not increase a person's well-being (from below normal to normal), then one wonders what their mission is. Similarly, Positive Psychology interventions should effectively increase a person's well-being (from normal, or just below normal, to above normal). However one has to acknowledge that average motivation to change may be less in the latter situation, as immediate suffering is not a driver.

I'm not sure about the degree to which mental fitness is learned and increased in the same way that physical fitness is achieved. I would predict a more complex set of precursors in terms of prior emotional/psychological learning that may interact with the 'mental fitness program' and thus need to be 'targeted'. However, I endorse the idea of having a set of targeted activities and exercises based on proper assessment that would lead to increased levels of mental fitness. My questions would be around such things as 'is there a neat set of exercises to take a person from self-doubt to self-belief'. Will the parallels of 'physical and mental fitness' hold up across some variables, and not so well with others?

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Table 10 results from Principle 4 suggest it remains unchanged but with the panel recommending:

- a) caution when drawing parallels that are too close to *physical fitness*, it may differ across variables;
- b) the need to study individual differences;
- c) activities could be developed to simultaneously work on *mental* and *physical fitness*;
- d) design research to show how it *differs from other interventions*; and
- e) *motivation* to improve may be less given there is no clinical diagnosis;
- f) The development of a set of targeted activities based on proper assessment.

## Discussion

The reason for undertaking this Delphi study was to address the conceptual confusion and to commence the process of developing the concept and subsequent measurement of mental fitness. This study proposed an initial definition and four guiding principles drawn from a review of current theory. The results suggest acceptable levels of consensus were reached by the international expert panel.

Quantitative results suggest the panel generally agreed with the definition and each of the four guiding principles. Qualitative results also suggest general agreement with minor modifications but provided several constructive recommendations based on the level of agreement of the researchers. Specifically, the definition of mental fitness was updated to be *“the modifiable capacity to utilise resources and skills to flexibly adapt to challenges and opportunities, enabling thriving”*. Principle 1, 3 and 4 remained unchanged. The panel recommended Principle 2 b modified to *“mental fitness could be understood by the wider community in a similar way to physical fitness”*.

There were numerous useful suggestions and insights put forward by the panel as summarised in the results section. For example, the panel suggested that mental fitness could be viewed as a process whilst mental health and well-being be viewed as an outcome thus inferring that scientifically evaluated mental fitness practices and activities could achieve improved levels of well-being and assist in preventing or reducing mental illness. From a biological perspective, the term ‘survival of the fittest’ was noted in relation to Hans Selye’s research on stress and fitness as a determinant of the stress response. These suggestions (and others) are in line with the findings from the literature.. The components of self-determination theory (autonomy, competence, relatedness) were viewed by the panel as an important underpinning of well-being but the panel suggested the concepts of thriving and flourishing were important

within the definition. Overall, an important finding of this study is that the concept and principles of mental fitness were understood and generally accepted by the panel as a model and process worthy of scientific exploration. Further, mental fitness was viewed as a positive and effective strategy that can assist in the promotion of mental health activities to improve levels of health and well-being and reduce levels of mental illness within the wider community.

### **Limitations**

The results presented in this study do not mask the complex nature of defining, measuring and improving mental fitness. It is both a creative and scientific undertaking. This Delphi study is one step and was only based on two rounds. The study may have benefited from a third round designed to give the panel an opportunity to further collaborate. The Delphi method provides a systematic approach but not in-depth discussion and final input is limited by the predetermined cut-offs, therefore additional studies would be justified.

Another limitation is that the conceptual framework of strength, flexibility and endurance were not fully defined and each will require further investigation.

### **Future Directions and Implications**

The expert panel made numerous constructive recommendations for future research and practice. For example, they suggested mental fitness could be measured on a continuum and emphasise the need to explore the nature of individual differences and levels of motivation in the absence of a clinical diagnosis. By consensus, the panel also suggested that *strengths* could be a specific area of research to ascertain its relationship to mental fitness. The panel also suggested research designed to compare differences with other positive mental health interventions. The panel also recommendation was that a mental fitness strategy can create the opportunity to develop community-based programs and they suggested that mental fitness

activities could be developed to simultaneously work on mental and physical fitness but must be targeted based on accurate assessment. It was further suggested by the panel that an alignment to the physical fitness paradigm is parsimonious, preventative and proactive and could be more easily understood by the community, and without stigma.

The panel stressed the importance of developing both self-report and performance based measures as is the case with physical fitness assessment. Because there is a paucity of studies that have investigated how positive mental health activities and practices might interact together in a more holistic way, the panel also suggested exploring components of a mental fitness model to determine combinations that would serve as good predictors of thriving individuals.

There are also broader questions to be answered; for example, longitudinal studies would be beneficial. What happens when people engage in mental health practices and activities regularly over an extended period of time? What would change if people felt more comfortable talking about their mental fitness in a similar way to physical fitness?

Overall, the expert panel suggested that a model of mental fitness is a worthy field of study. The rationale to commence investigating a mental fitness concept is driven by the increasing but inconsistent use of the term in the psychological and popular literature that is limiting both research and practice. There is a need for more research on what mental fitness is and what it is not and in order to develop a cohesive theoretical framework, a standardised operational definition, and reliable and valid measures for future research, replication and practical application.

## CHAPTER 4 - A MULTIFACTORIAL MODEL OF MENTAL FITNESS

## Abstract

Robinson, Oades and Caputi, (2014b) define mental fitness as “the modifiable capacity to flexibly utilise resources and skills to adapt to challenges or advantages, enabling thriving” (p. 5). The aim of this present study is to provide preliminary empirical support for the concept of mental fitness. Exploratory factor analysis (EFA) was used to analyse participants’ responses to items from an array of variables drawn from established measures related to positive mental health outcomes. Results from the EFA identified four factors labeled *strength*, *endurance*, *flexibility* and *team* supporting the theoretical constructs and the physical fitness analogy. Results from the confirmatory factor analysis (CFA) provided preliminary evidence for a multifactorial model of mental fitness and validation for the four factors. Further, all four factors loaded onto a second order factor of mental fitness. This preliminary study provides initial empirical support for the concept of mental fitness and its underlying factors. The concept and model of mental fitness assists to: (a) provide a conceptual framework, analogous to physical fitness to engage and promote to the general population, without stigma; (b) provide a holistic and easy to understand approach to the measurement of positive mental health; and (c) create a broader understanding that, as in physical fitness, mental fitness requires the practice of intentional activities to create positive habits of mind that lead to higher levels of well-being, optimal functioning and quality of life outcomes.

## Introduction

### Background and rationale

The potential benefits of a concept of *mental fitness* being broadly positioned and analogous to physical fitness is not new in the psychological literature. McCarthy (1964) put forward the term *mental fitness* as a solution to the following plea by Knutson (1963) who suggested the term for President Kennedy's population based fitness program by combining *mental* and *physical fitness* initiatives together.

“Positive mental health has been left on the doorstep of the public and professional community as a neglected and starving stepchild ...it would be useful to have some new term to replace positive mental health...that retains the good will and enthusiastic participation of members of the mental health profession and their medical, health and welfare colleagues, and yet effectively elicits the involvement of members of the social sciences” (Knutson, 1963, p. 303-304).

Approximately forty years later, Seligman and Csikszentmihalyi (2000) also argued that the focus on pathology has largely dominated the field of psychology over the past several decades, and had unwittingly created an image of mental health as an absence of pathology; a view very much in line with Knutson's (1963) proposition. To counteract the focus on pathology and dysfunction and move the focus onto positive mental health, Seligman founded the now well-known field of Positive Psychology (Seligman 1998a, 1998c, 1999) which focuses on the scientific study of positive emotions, positive character and positive institutions. Gable and Haidt (2005) further defined Positive Psychology as “the study of the conditions and processes that contribute to the flourishing or optimal functioning of people, groups, and institutions” (p.104). Sheldon and King (2001) suggested Positive Psychology is essentially an attempt to urge psychologists to adopt a more open and appreciative perspective

regarding human potentials, motives, and capacities. Seligman (2002) emphasises that the stance of Positive Psychology is *prevention* but there is very little focus on *how* to educate, promote and engage the wider community in proactive positive mental health activities.

Keyes (2007), like Seligman (2002), suggests a second complementary plan that nationally supports a program on mental health promotion to complement ongoing efforts to prevent and treat mental illness is needed. Peterson and Park (2010) identified three real challenges for Positive Psychology that are aligned with Seligman (2002) and Keyes (2007): (a) adaptation - or our ability to adapt, learn and change in response to the challenges or opportunities we encounter; (b) sustainability - or how we maintain positive mental health; and (c) how we go beyond the individual to community wide initiatives. Luthans (2002, 2012) agrees there is a need for new positive concepts if they have good theoretical and empirical foundations that particularly lend themselves to development and application in multiple settings.

It is generally accepted that mental illness is on the increase and most interventions are implemented after the individual is diagnosed (WHO, 2008). The cost of mental illness to the community is very large. For example, in Australia, the Federal Government (2008) estimated the total cost to the community could be approximately A\$4.8b. In the United States, Goetzel, Hawkins, Ozminkowski and Wang, (2003) conducted a large-scale study of six large US organisations detailing the costs of various physical and mental conditions to business. Results revealed the total Health and Productivity Dollars (HPD) exceeding US\$1.3 billion, or approximately \$200 million per organisation. Further, in their report to the World Economic Forum (WEF) Bloom et. al. (2011) estimated the global cost of mental illness at nearly \$2.5 trillion in 2010, with a projected increase to over \$6 trillion by 2030 suggesting the investment in proactive, positive mental health improvement strategies cannot be underestimated.

The concept of mental fitness was developed by Robinson, Oades and Caputi (2014a; 2014b) to assist in: (a) addressing *how to* provide a process that contributes to optimal functioning and prevention of mental illness; and (b) creating strategies and activities that are engaging and sustainable by using the physical fitness analogy to engage and promote mental fitness to the wider community. Robinson et al., (2014b) conducted a Delphi study using an international expert panel ( $n = 25$ ) to provide consensus on a definition and four guiding principles of mental fitness. Results of this study supported a definition of mental fitness as *the modifiable capacity to flexibly utilise resources and skills to psychologically adapt to challenges or advantages, enabling thriving*.

The four guiding principles supported by the panel are:

**1. Fitness is a positive term without connotations of illness implied by mental health or mental illness.**

Principle 1 is based on the assumption that the term *physical health* is understood by individuals and the wider community as absence of physical disease and is without stigma. However, the term *mental health* is understood as absence of mental illness and is largely stigmatised. Stigma is a crucial issue in the mental health literature. The stigma attached to mental ill-health prevents most people from disclosing (Cheverton, 2009). The conceptual review of the literature by Robinson, Oades and Caputi, (2014a) suggested that the term mental fitness is not stigmatised.

**2. Mental fitness can be understood by the wider community in a similar way to physical fitness.**

Microsoft Encarta Reference Library (2004) describes *physical fitness* as a combination of qualities that enable us to be at our full potential in performing vigorous physical activities and involves (but is not limited to) *endurance, strength and flexibility*. Definitions for these

concepts were drawn from the Merriam-Webster Online Dictionary (2014). Endurance is “the ability to withstand prolonged hardship or adversity”; “strength is the quality or state of being strong: capacity for exertion or endurance” and flexibility is characterised by “a ready capability to adapt to new, different, or changing requirements”. The term mental fitness could transpose components from one context to another (mental strength, flexibility and endurance) as they already have meaning and relevance for the wider community.

### **3. Mental fitness is measurable.**

Principle 3 suggests that a *mental fitness* model would be helpful in synthesising key theories, research and practices that remain largely disconnected within the psychological literature relating to positive mental health. For example, meaning in life, strengths knowledge and use, resiliency, and positive emotions are all related to well-being but are currently primarily measured individually.

### **4. Mental fitness can be improved in a way similar to physical fitness.**

Principle 4 suggests that *mental fitness* can be learned via developmental intentional activities, exercises and regular practice to ‘fit’ the assessed needs thus creating positive psychological habits or rituals. Evidence in Positive Psychology and neural plasticity literature supports the assumption that throughout life individuals are able to learn and grow (Sin and Lyubormirsky, 2009; Parasuraman, 2010; Shaw & McEachern, 2001).

The Delphi study expert panel also confirmed that an alignment of the physical fitness paradigm is easy to understand, preventative and proactive and with good face validity, that provides a way of explaining positive mental health theory, research and activities in a non-threatening, preventative and proactive light that could be easily understood by the community, without stigma. They endorsed development of a holistic model of mental fitness as a worthy field of study. The panel also advocated that a mental fitness strategy creates the

opportunity to develop community-based programs and suggested that mental fitness activities could be developed to simultaneously work on mental and physical fitness but must be targeted based on accurate assessment.

There is a growing interest in the investigation of a smaller set of higher-order constructs that examine, within a single study, multiple components that are enablers of well-being/optimal functioning outcomes (Staats, 1999; Sheldon & Hoon, 2007). Although there are several multi-dimensional models that measure multiple positive mental health variables together (e.g., Ryff, 1985; Ryff & Keyes, 1995; Luthans, 2012; Glough & Earle, 2002; Gucciardi, Gordon & Dimmock, 2009) more research is needed given the majority of past research on positive mental health has predominantly measured the correlates and predictors of well-being in isolation.

Further, there is also growing evidence that specific activities and practices have a beneficial effect on well-being outcomes. Whilst twin studies by Lykken and Tellegen (1996) suggest that a stable part of happiness is accounted for by heredity, the amount of variance would decide the extent happiness is changeable. Lyubomirsky, Sheldon and Schkade (2005) examined the role of heredity and found that three major factors may govern a person's chronic happiness level: set point or potential range (i.e. genetic predisposition, heredity), life circumstances, (e.g. race, age, disability), and intentional activities, which are defined as voluntary activities that you choose to participate in. Approximate percentage breakdown of the variance of each factor in cross-sectional well-being suggests around 40% of the variance is related to intentional activities. This concept aligns well with the physical fitness analogy given the wider community already understand that to become fit, one must engage in regular and targeted activities and practices; for example, lifting weights and running. The practice of intentional activities are also important for improving mental health; for example, keeping a

thought diary, practicing mindfulness, setting and achieving authentic goals, practicing gratitude.

Lyubomirsky (2005) refers to intentional activities as the most promising area to alter one's happiness level, and argues that intentional activities include a wide variety of activities that involve how people think, feel and behave. Diener and Biswas-Diener (2008) also include engaging activities as part of the process of improving happiness. The challenge for researchers and practitioners is to identify the intentional activities and to discover how to motivate the general population to engage in these activities. The question is, as Haidt (2006) comments "how to push a person up to the top of his/her potential range" (p. 91).

The concept of mental fitness aligns well with this research on intentional activities because it is structured in a similar way to physical fitness (that is, regular and varied exercises designed to 'fit' the specific criteria of each person). Moreover, the concept of mental fitness helps to address the problem of motivating people to work on their mental fitness as part of their life activities given the analogy of physical fitness suggests that fitness is not stored. Fitness dissipates without the frequency and duration of workouts. Lyubomirsky, et al. (2005) suggest happiness for a population can be increased, but it remains unclear how long the increase would last. To motivate specific populations to participate in intentional activities regularly and over long periods of time would be advantageous to advance theory, research and practice.

### **Aims of this study**

As previously indicated, the conceptual review and the Delphi study recommendations, proposed a definition that included a range of psychological resources and skills drawn from published literature that relate to positive mental health development. These resources were incorporated in a proposed framework based on the physical fitness analogy of three

dimensions i.e., strength, flexibility and endurance (Robinson, Oades & Caputi, 2014a; 2014b). This preliminary study explores the specific psychological resources to examine if: (a) a smaller set of higher-order constructs emerges; and (b) whether these dimensions come together under an overarching construct to represent mental fitness.

### **Analysis rationale**

Exploratory factor analysis (EFA) is used in preliminary investigation when the research is relatively new and the investigators are yet to determine how observed variables operate together. EFA was particularly useful for this study as the investigators did not have evidence to (a) develop a hypothesis, (b) ascertain the number of factors, (c) identify the nature of the relationships among the variables, or (d) establish construct validity of the test scores.

Therefore, the purpose of EFA for this study was (i) for data reduction - as it assists in the elimination of overlapping or extraneous items (it selects the minimal number of factors to capture the most variance, and (ii) to produce a model to show how the measures might group into constructs i.e. an exploratory or theory building approach.

Confirmatory Factor Analysis (CFA) explores the underlying structure and tests it using statistics of fit to ascertain how well the model fits the data. In this case, CFA seeks to confirm the data structure based on the EFA model (i.e. latent variables estimated from the data) that is hypothesized to underlie the structure of mental fitness. Matsunaga's (2010) step-wise process was adopted for this study: (1) generate and screen items; (2) explore the underlying structure of the data; and (3) confirm the factor structure of the data.

The selected measures produced a large pool of items. At this preliminary stage of exploration, it was important, for two reasons, to include as many items as possible in the first stages of analysis (a) to avoid missing important components of mental fitness as

conceptualised by the researchers, and (b) to maximise the face validity of the measure (Bornstein, 1996; Nevo, 1985).

The analytical approach of this study also encompassed uni-dimensional item parcelling analysis via principal component analysis in order to: (a) reduce the number of items; and (b) examine the relationships between the variables in order to group or categorise the items. Item parcelling is a relatively common approach which is often preferred as a method to decrease large number of items into smaller, manageable numbers. It is a procedure for aggregating individual items and submitting these aggregates, rather than the individual items themselves, for analysis (see Little et al., 2002; Meade & Kroustalis, 2005).

Utilising (EFA) in the first part of the analysis, tests the correlations between all the variables under review to determine if the measured items can be reduced to a smaller number of underlying factors. The objective of the CFA is to examine statistically whether the EFA model fits the hypothesised measurement model (Bandalos, 1996) thus providing initial preliminary evidence of construct validity.

## **Method**

### **Participants**

The sample consisted of 223 students from a regional Australian University.

### **Instruments**

There are many published psychological theories and associated variables related to positive mental health development that could be considered important psychological resources for inclusion in a mental fitness model, particularly in the Positive Psychology literature.

However, following recommendations from the mental fitness review and the Delphi study (Robinson, Oades & Caputi, 2014a; 2014b) and with the objective of developing a holistic measure in mind, essential criteria for inclusion in the item pool research suggests the variable: (a) is measurable; (b) developmental; (c) it has associated interventions and intentional activities; and (d) it can be utilised across multiple contexts. The final item pool was drawn from measures of relevant psychological constructs previously published in peer-reviewed journals. The selected measures were considered to be associated to individuals who are functioning well and able to be developed via intentional activities and regular practice. A summary of the measures are listed below (see Appendix 6 for final questionnaire).

Table 11:  
*Summary of measures*

<b>Measure</b>	<b>Description</b>	<b>Author/s</b>
<b>Acceptance &amp; Action Questionnaire (AAQ-II)</b>	Measures psychological inflexibility defined as efforts to escape or avoid emotions, thoughts, and memories; unhealthy efforts to control or suppress private experience; experiential acceptance; and taking action despite uncertainty and/or distress	(Bond et al., 2011)
<b>Basic Needs Satisfaction General (BNSG)</b>	Measures the three basic psychological needs of autonomy, competence and relatedness	(Gagné, 2003)
<b>Cognitive &amp; Affective Mindfulness Scale (CAMS)</b>	Measures a broad conceptualisation of mindfulness including, attention, present-focus, awareness, and acceptance	(Feldman et al., 2007)
<b>Connor Davidson Resilience Scale (CDRISC)</b>	Measures resilience, personal competence, trust in one's instincts, tolerance of negative affect, positive acceptance of change, secure relationships and control. Higher scores reflect greater resilience	(Connor & Davidson, 2003)
<b>Depression Anxiety Stress Scale (DASS)</b>	Measures current (over the past week) symptoms of depression, anxiety, and stress	(Lovibond, & Lovibond, 1995)
<b>Emotion Regulation Questionnaire (ERQ)</b>	Measures individual differences in the use of two emotion regulation strategies, namely, cognitive reappraisal & expressive suppression	(Gross & John, 2003).
<b>Life Orientation Test (LOT)</b>	Measures generalised expectancies for positive versus negative outcomes; that is, an individual's level of optimism	(Schweizer & Koch, 2001).
<b>Meaning in Life Questionnaire (MLQ)</b>	Measures the presence of, and the search for, meaning in life	(Steger et al., 2006).
<b>Medical Outcomes Social Support Survey (MOSS)</b>	Measures ones' available social support; namely, emotional information support, positive	(Sherbourne & Stewart, 1991)

Measure	Description	Author/s
	interaction, affection	
<b>Mindfulness Attention Awareness Scale (MAAS)</b>	Measures a core characteristic of mindfulness; namely, attention to and awareness of present-moment experience in daily life	(Brown & Ryan, 2003)
<b>New General Self-Efficacy Scale (NGSE)</b>	Measures general self-efficacy; that is, one's beliefs in one's capabilities to meet situational demands	(Chen et al, 2001)
<b>Positive &amp; Negative Affect Scale (PANAS)</b>	Measures two primary dimensions of mood; namely, positive affect & negative affect. The Positive Affect Scale reflects the extent to which a person feels enthusiastic, active, and alert. The Negative Affect Scale reflects subjective distress	(Watson et al., 1988)
<b>Purpose in Life (PILT)</b>	Measures the amount of meaning a person perceives, namely, a life with purpose and goal direction	(Crumbaugh & Maholick, 1964).
<b>State Hope Scale (SHS)</b>	Measures hope 'right now' for both agency and pathways	(Snyder et al., 1996)
<b>Strengths Knowledge Scale (SKS)</b>	Measures people's awareness and recognition of their strengths	(Govindji & Linley, 2007).
<b>Strengths Use Scale (SUS)</b>	Measures how much people use their strengths in a variety of settings	(Govindji & Linley, 2007).

### Procedure

Informed consent was obtained from all participants and approval was received from the University's Human Research Ethics Committee. Volunteers completed the anonymous questionnaires either by (a) a written or (b) online survey. For the written version, participants were asked to sign an Informed Consent form and for the online version tacit response i.e. consent was given by completing the survey. As the various measures had different response scales, this was taken into account in the design of the questionnaire. Items were only randomly assigned for Likert Scales. Other scales were blocked in the questionnaire according to the instrument criteria. The online survey method was administered via the

University of Wollongong, online research participation system, SONA. Participants who volunteered to complete the survey received course credit for completion.

## **Results**

### **Sample Descriptives**

The sample of 223 participants consisted of 84 males (37.67%) and 131 females (58.74%). Missing data accounted for eight participants (3.59%) on the age/gender variable. Those cases were removed from this part of the analysis. Age range frequency results were 18-24 = 43.95%, 25-39 = 17.94%, 54 = 19.73% and 55+ = 16.59%. Approximately 2% of the subjects had missing data across the four factors. This was handled by AMOS using full information maximum likelihood estimation.

### **Item screening**

Individual items included in the analysis were examined for outliers and normality using boxplot, stem and leaf, histogram, and descriptive and extreme values analysis for all items. No outliers were found. Bar charts were examined for normality. Data based on Likert scales are usually not perfectly symmetrical but providing they are not overly skewed, it is considered acceptable (Babbie & Earl, 2005).

To ascertain how the scales relate to each other, the correlation matrix for the total scores were examined.

In summary results suggest:

CDRISC and NGSE were highly correlated ( $r = 0.93$ ). However, extensive past research suggests that the constructs of resilience and general self-efficacy are quite different.

Therefore, it was decided to include both measures in the analysis model.

The DASS and its subscales did not correlate well with any of the other scales with the size of the correlation ranging from  $r = -0.05$  to  $-0.56$ . Based on these results and in the interest of obtaining an acceptable number of items for factor analysis, The DASS was removed.

ERQ (Suppression subscale) and MLQ (Search subscale) did not correlate well with any of the other scales or subscales. ERQ (suppression) had a maximum correlation  $r = 0.49$  and MLQ (Search) had a maximum correlation  $r = 0.23$ . Therefore, these subscales were also removed from the factor analysis model.

Following examination of the correlations of total scales and subscales, the correlation matrix of the individual items were examined. The items that did not correlate well with other items were removed. The nominal criterion for item deletion is  $r > 0.3$ , however, given the large number of items, an a priori decision was made to increase this criterion to 0.5.

Item correlations were also examined to ascertain which items did not correlate too highly with other items, indicating redundancy of the item. An a priori decision was made to remove items which correlated 0.9 or above. No such items were found.

### **Exploratory Factor Analysis**

The analysis was performed using SPSS and AMOS Version 5.0.1.

The factor analysis resulted in a Kaiser-Meyer-Olkin (KMO) of 0.611, suggesting an inadequate fit to the data.

Bartlett's Test of Sphericity is used to ascertain how plausible the model is i.e. it tests the hypothesis that the correlation matrix is an identity matrix. A significant result ( $p < 0.05$ ) indicates the matrix is not an identity matrix; i.e. the variables do relate to one another. Items were removed that had an MSA coefficient of 0.5 or less.

Item communalities less than 0.4 should be eliminated from the model (Pett et al., 2003).

There were no items with communalities less than 0.4 at this stage of the analysis. The model was run again, the resulting KMO was over 0.8 and Bartlett's test was non-significant, indicating an adequate fit of the model.

### **Factor extraction**

To ascertain how many factors to extract, two methods were initially adopted; Cattell's (1966) Scree Plot and the Parallel Test (O'Connor, 2000). The Scree Plot is a graphical method for determining the number of factors whereby the eigenvalues are plotted in the sequence of the principal factors. The higher the eigenvalue the more predictive that factor is (Fabrigar et al., 1999). The plot suggested five factors can be extracted.

Studies suggest that parallel analysis is the most accurate approach to factor retention and recommends this method to researchers as the primary method to determine the number of factors (see Hayton et al., 2004; Henson & Roberts, 2006; Fabrigar et al., 1999) Results at this stage of the analysis show concordance between the Parallel Test and the Scree Test i.e. both methods suggest the number of factors to be extracted are five.

For the current run of the model oblimin rotation was utilised and items that load less than 0.4 onto a single factor are removed. Thirty-five items were removed because of high cross-loading or loading less than 0.4. Following the above reduction, the factor analysis was re-run without these items to reassess the results. There still remained items that cross-loaded. At this point it was decided to decrease the factor number from five to four. This step was based on the following rationale:

- a) the fifth factor was not stable i.e. half of its items were cross-loading, so they needed to be removed. For a factor to be stable and reliable, it must be constructed with at least three items that load highly onto the factor;

- b) the item loadings were relatively small compared to the other factors; and
- c) the scree plot for this current analysis also suggested four factors.

The resulting factor structure was much simpler and had only four items cross loading. These were removed from the analysis and the model was re run. At this step the Promax rotation was utilised as this method provides a simpler and more meaningful factor structure by removing ambiguities associated to an unrotated solution (Hair et. al., 1998). Results showed the factor structure was simple and there were no cross-loadings.

Communalities were also assessed at this stage. As mentioned, it is generally accepted to eliminate items with communality of less than 0.4 (Pett et al., 2003). All items were removed because they had communality less than 0.4 and the model was run again.

The final run resulted in four factors with high loadings. As Table 12 shows, most of the items had loadings over 0.6; there were no cross-loadings.

Table 12:  
*Factor Loadings based on a principal component analysis Promax with Kaiser normalization*

Item	Factor 1	Factor 2	Factor 3	Factor 4
SUS_9	0.876			
SUS_38	0.854			
SKS_31	0.849			
SKS_11	0.849			
SKS_40	0.838			
SUS_28	0.819			
SUS_3	0.812			
SUS_6	0.807			
SKS_25	0.801			
CDRISC21	0.786			
BNSG_5	0.755			
SKS_29	0.738			
SKS_35	0.725			
MLQ_1	0.713			
SUS_2	0.682			
SUS_37	0.682			
SUS_39	0.671			
MLQ_6	0.665			
MLQ_4	0.647			
SKS_4	0.633			
SUS_24	0.628			
SUS_18	0.613			
MLQ_5	0.553			
PILT_20	0.495			
NGSE_4	0.464			
CDRISC15		0.789		
CDRISC22		0.721		
NGSE_8		0.72		
PANAS_16		0.717		
CDRISC11		0.709		
CDRISC14		0.701		

Item	Factor 1	Factor 2	Factor 3	Factor 4
CDRISC4		0.697		
CDRISC23		0.69		
AAQ_6		0.678		
BNSG_17		0.658		
CDRISC17		0.657		
NGSE_1		0.646		
CDRISC10		0.637		
NGSE_5		0.636		
BNSG_10		0.63		
PANAS_5		0.621		
BNSG_1		0.616		
NGSE_2		0.611		
NGSE_3		0.589		
PANAS_9		0.568		
CAMS_10		0.561		
CDRISC8		0.533		
MOSS_13			0.973	
MOSS_9			0.897	
MOSS_6			0.875	
MOSS_5			0.86	
MOSS_11			0.858	
MOSS_3			0.844	
MOSS_12			0.817	
MOSS_4			0.814	
MOSS_2			0.796	
MOSS_8			0.775	
MOSS_10			0.738	
MOSS_7			0.737	
MOSS_1			0.699	
MAAS_10				0.81
MAAS_8				0.794
MAAS_7				0.752
MAAS_14				0.744

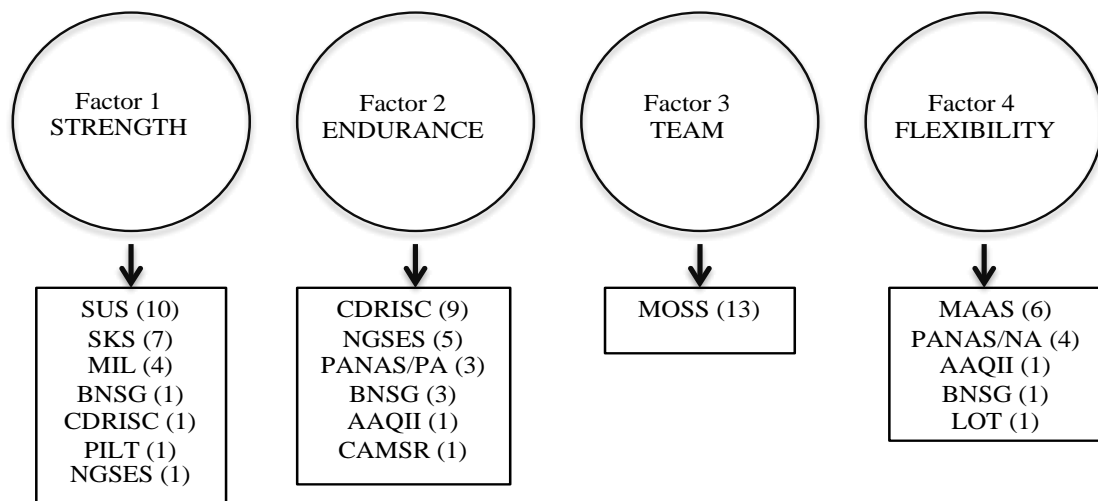
Item	Factor 1	Factor 2	Factor 3	Factor 4
MAAS_3				0.731
PANAS_7				-0.69
MAAS_5				0.689
PANAS_6				-0.657
PANAS_20				-0.647
PANAS_13				-0.608
AAQ_8R				0.474
BNSG_19R				0.463
LOT_5R				0.434

Note: Strengths Use Scale (SUS); Strengths Knowledge Scale (SKS); Meaning in Life (MIL); Basic Needs Satisfaction General (BNSG); Purpose in Life Test (PILT); New General Self-Efficacy Scale (NGSES); Connor-Davidson Resilience Scale (CDRISC); Positive and Negative Affect Scale (PANAS); Acceptance Action Questionnaire II (AAQII); Cognitive and Affective Mindfulness Scale Revised (CAMSR); Medical Outcomes Social Support Survey (MOSS); Mindfulness Attention Awareness Scale (MAAS); Life Orientation Test (LOT).

The four factors accounted for 58.8% of the total variance. Cronbach's alpha (a measure of internal consistency) was calculated for each of the factors using the reliability analysis function in SPSS. It is generally accepted that scores  $> 0.9$  are excellent, between 0.7 and 0.9 are good and scores between 0.6 and 0.7 are acceptable. Internal consistency was high for factor 1 ( $\alpha = 0.97$ ), factor 2 ( $\alpha = 0.95$ ) and factor 3 ( $\alpha = 0.96$ ) and acceptable for factor 4 ( $\alpha = 0.67$ ).

Figure 4 summarises the preliminary factor structure via the clustering of observed variables derived from psychological (latent) constructs. Each factor or latent variable is measured by items primarily derived from specific and theoretically distinct measures. The factors are labelled strength, endurance, flexibility and team, corresponding to the item content and the physical fitness analogy. Item range for all four factors are; factor 1 ( $R = 0.46 - 0.88$ , factor 2 ( $R = 0.79 - 0.53$ ), factor 3 ( $R = 0.97 - 0.70$ ) and factor 4 ( $R = 0.43 - 0.81$ ).

Figure 4:  
4-factor Structure



Note: Strengths Use Scale (SUS); Strengths Knowledge Scale (SKS); Meaning in Life (MIL); Basic Needs Satisfaction General (BNSG); Purpose in Life Test (PILT); New General Self-Efficacy Scale (NGSES); Connor-Davidson Resilience Scale (CDRISC); Positive and Negative Affect Scale (PANAS); Acceptance Action Questionnaire II (AAQII); Cognitive and Affective Mindfulness Scale Revised (CAMSR); Medical Outcomes Social Support Survey (MOSS); Mindfulness Attention Awareness Scale (MAAS); Life Orientation Test (LOT).

Factor 1 (Strength) suggests knowledge and regular use of one's strengths, the presence of both meaning and purpose in one's life and the belief of being able to succeed. Item example, "I achieve what I want by using my strengths".

Factor 2 (endurance) contains items that reflect agency. They suggest overall resilience based on self-belief that one can persevere and bounce back even in times of hardship. This factor reflects goal directed thinking together with feelings of autonomy about being able to direct one's life to obtain outcomes that are important i.e. one has a personal sense of control and acceptance of thoughts and feelings. This factor also revealed three positive emotions that are related to factor 2 and mental fitness; namely, feeling strong, enthusiastic and determined. Item example, "even when things are tough I can perform quite well".

Factor three (team) exclusively contains items of social support and reflect all four subscales of emotional, informational, affectionate and positive social interactions. Item example "someone to share you private worries and fears with".

Factor four (flexibility) contains primarily items reflecting mindful awareness and the results suggest that mindful awareness is related to low levels of four negative emotions, i.e. feeling scared, guilty, afraid and ashamed. Item example, “I find it difficult to stay focussed on what’s happening in the present”. To review all items for each factor see Appendix 7.

The EFA results suggest there is preliminary evidence that the measured variables can be reduced to four underlying factors as detailed above. Based on the EFA results, the assumption at this stage of the analysis is that the factor structure is primarily established suggesting the measurement model is largely understood.

The next stage of analysis is to perform CFA. Results below verified the four-factor model as being an acceptable fit to the data.

### **Model Fit Summary**

Model fit was assessed by methods utilised regularly in research. Whilst there is debate in the literature about the pros and cons of fit indices, for this preliminary study it is an important first step (MacCallum et al., 1996; Hu & Bentler 1999; Steiger, 2007). The indices utilised to test for model fit in the current study (see Hooper et al., 2008) were chi-square ( $\chi^2$ ), the Normed Fit Index (NFI), Tucker-Lewis Index (TLI) and Comparative Fit Index (CFI), the Root Mean-square Error of Approximation (RMSEA). Results suggest the model is a good fit  $NFI = 0.99$ ,  $TLI = 0.96$ ,  $CFI = 0.99$ .  $RMSEA = 0.73$  with the confidence intervals upper limit = 0.17. Hooper (2008) suggests that generally an upper limit should be less than 0.08. The wide confidence interval may be due to a small sample size but this result requires further investigation.

Chi Square results show the probability level is non-significant  $\chi^2 = 4.392$ ,  $p = 0.111$  suggesting the data does not significantly deviate from the proposed model.

Table 6 lists the observed correlation matrix between the factors only whilst Table 7 has the latent variable of mental fitness in the analysis as a factor in the model; hence the results vary slightly. The fit of the model is examined by how closely the observed and the implied correlations match.

Table 13:  
*Observed Correlations of Estimates Between Factors*

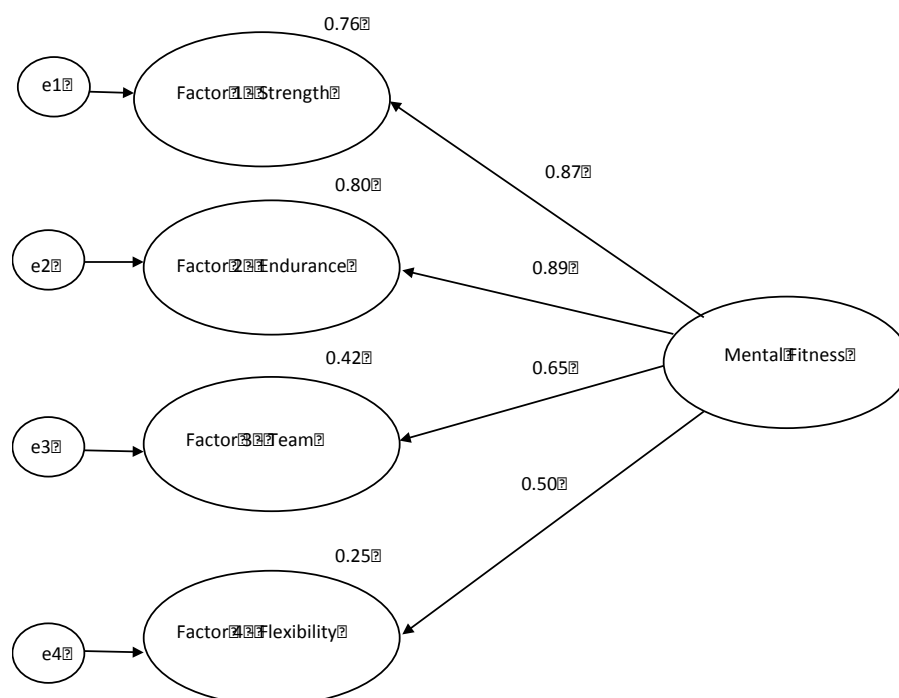
	<b>Factor 1</b>	<b>Factor 2</b>	<b>Factor 3</b>	<b>Factor 4</b>
<b>Factor 1</b>	1			
<b>Factor 2</b>	0.776	1		
<b>Factor 3</b>	0.549	0.564	1	
<b>Factor 4</b>	0.426	0.438	0.311	1

Table 14:  
*Implied (for all Variables) Correlations (Default Model)*

	<b>Mental fitness</b>	<b>Factor 2</b>	<b>Factor 1</b>	<b>Factor 3</b>	<b>Factor 4</b>
<b>Mental fitness</b>	1.000				
<b>Factor 2</b>	0.893	1.000			
<b>Factor 1</b>	0.869	0.776	1.000		
<b>Factor 3</b>	0.652	0.582	0.566	1.000	
<b>Factor 4</b>	0.496	0.443	0.431	0.323	1.000

Figure 5 graphically illustrates the 2<sup>nd</sup> order factor labelled mental fitness and suggests it is an acceptable predictor of all four factors contained in the EFA results. Factor 1 and Factor 2 of mental fitness account for 76% and 80% of the variance respectively. Factor 3 accounts for 42% and Factor 4, 25%. These results are the squared multiple correlation of each direct relationship and are regarded as the lower bound of the reliability estimate. In summary, the results above suggest that the latent variable of mental fitness predicts the four measured factors labelled strength, endurance, flexibility and team.

Figure 5:  
Results from CFA displaying Structural Model



The results for the above model suggests all four first order factors, as indicated by items in Table 13, are directly related to the second order factor of mental fitness.

## Discussion

This preliminary study was to test a theoretical model of mental fitness. A range of theoretically related variables were explored to examine if they were indicators of the concept of mental fitness and to look at the structure of that construct empirically. The results suggest there is evidence to support this aim. A four-factor structure with an overarching 2<sup>nd</sup> order latent factor of mental fitness were identified. The four factors are strength (23 items), endurance (22 items), Team (13 items) and flexibility (13 items) and results suggest they measure properties of a single underlying construct.

Following item screening, this study utilised the statistical techniques of item parceling, EFA and CFA, i.e. the four factors identified in the EFA were retained in the CFA providing initial evidence for factorial and construct validity. The results showed high correlations between the items and their corresponding factors and were supported by four out of the five fit indices representing an acceptable model fit, as measured by chi-square, CFI, NFI, TLI. However, RMSEA was slightly high. This could be a result of a small sample size and would require further investigation (see limitations section for more detail).

This study also extends theoretical and empirical research by including a broader range of variables that provide initial support for a new and innovative model. Further it provides more information about how these higher-order components might interact. The data analysed contained a number of variables that the positive mental health literature suggests are theoretically related but, importantly, this study extends the existing research by including more variables in the analysis and provided a better understand *how* the variables might be related and produced an initial mental fitness self-report questionnaire that holistically and economically assesses a broader range of theoretically applicable items relevant to positive mental health outcomes than do previous studies.

The theoretical construction of mental fitness is supported by psychological literature encompassing items reflecting important psychological resources; strengths knowledge and use, presence of meaning and purpose in life, the basic needs of autonomy, competence, social support, self-efficacy, resiliency, mindfulness, acceptance, optimism, a higher presence of specific positive emotions (feeling strong, determined and enthusiastic) and a lower presence of specific negative emotions (feeling scared, guilty, afraid and ashamed). The multidimensional model of mental fitness has revealed four factors labelled strength, endurance, team and flexibility reflecting their theoretically relevant content and the strategy of aligning mental fitness to a physical fitness analogy (see Appendix 7 for item content). As previously discussed, this study was exploratory so the number of factors that emerged from the preliminary analysis was difficult to anticipate. Whilst the terms *strength*, *flexibility* and *endurance* were discussed in previous chapters as relevant labels for the physical fitness analogy, the concept and factor label of *team* was not. The rationale of labeling the fourth factor *team* was firstly based on the items relating entirely to social support (see Appendix 7). Whilst the concept of social support was identified as important in the introduction, it was not anticipated that this would form a single factor. *Team* is defined as “a group of people organized to work together” (Dictionary.com, 2014). Jain (2009) suggests teams normally have members with complementary skills and generate synergy through a coordinated effort, which allows each member to maximize their strengths and minimize their weaknesses. He further suggests that team members need to learn how to help each other to realise their true potential. Therefore, the factor label *team* was considered consistent with the item content, the concept of social support, the above definition and guiding principle 2.

It is interesting to note that items from the Hope Scale did not appear in the final model, nor did items from the Emotion Regulation Questionnaire. It may be that Hope is an outcome of

developing mental fitness and that items of emotion relating to social support were more meaningful to the subjects, however, this would need further investigation.

### **Limitations**

Whilst the initial results on the development of the mental fitness model are promising, there are a number of limitations. As this was a preliminary study, replication is needed.

In relation to sample size, there are no strict rules regarding sample size for EFA and the expert opinion varies from recommendations as low as 100 subjects (Gorsuch, 1983) to over 1000 subjects (Comrey and Lee, 1992). Costello and Osborne (2005) conducted a survey of over 1700 studies that utilised some form of factor analysis. Their findings indicated that over 60% of the researchers performed analyses with subject to item ratios of 10:1 or less.

Moreover, almost one-sixth reported factor analyses based on subject to item ratios of only 2:1 or less. In addition, studies have revealed that appropriate sample size is a function of several aspects of the data, such as high communality and no cross loading. According to Fabrigar et al. (1999) if there are a large number of items loading strongly onto a latent variable a sample size of 100-200 is adequate. To further understand how the sample size affected these results, more studies are needed.

Items chosen for inclusion in this study were drawn from existing published measures.

However, further studies may be helpful to establish if there are other more valid items that better represent the factors underpinning the mental fitness model. Further, whilst this initial investigation provides preliminary evidence for convergent, discriminant and construct validity, further validity studies are obviously needed.

**Future Directions**

There are many and varied future research opportunities. For example, testing divergent or convergent validity with theoretically related and unrelated constructs, (flow, engagement, personality, emotional and cognitive intelligence) and determining if regular mental fitness intentional activities and practices enable sustainable positive habits of mind.

Further, the understanding of mental fitness may help to address questions that would require a longitudinal study. For example, what happens when mental fitness exercises are carried out regularly over a long period of time? The general population already understands that to remain physically fit, one needs to keep working-out regularly. Mental fitness may be similar, but this is largely unknown at this time.

From a practical perspective, the design of specific and targeted mental fitness evidence-based interventions and applications is an important future step to enable the building of positive psychological habits and rituals to improve positive mental health, well-being and quality of life.

## CHAPTER 5 – DISCUSSION AND CONCLUSIONS

This dissertation commenced with a vision for the future that the concept of mental fitness could assist in providing psychologists, mental health professionals, medical practitioners, organisations, the wider community, policy makers and governments a new and novel way to view their mental health. The overarching objective of this dissertation was to develop the concept of mental fitness to provide a contribution to theory, research propositions and practical interventions. It was argued that no consistent theoretical foundations, validity or standardised measure existed for researchers or practitioners. The sub-field of Positive Psychology (Seligman, 1998a, 1998c, 1999; Seligman and Csikszentmihalyi, 2000) argued for the need to shift the focus from pathology, which has largely dominated the field of psychology over several decades, to a positive mental health paradigm. This approach made important theoretical and empirical contributions by viewing an individual in a new way; not just as mentally ill (presence of a mental disorder) or mentally healthy (absence of a mental disorder) but by suggesting an individual has the ability to achieve further growth towards a full and meaningful life. The above assumptions are supported by a plethora of evidence (e.g., Sheldon & King, 2001; Seligman, 2002; Luthans, 2002; Seligman, 2004; Hillier et. al, 2005; Keyes, 2007; Sin & Lyubormirsky, 2009; Seligman & Csikszentmihalyi, 2008; Richards, Peterson & Park 2010; Campania & Muse-Burke, 2010; Luthans, 2012).

Under the umbrella of the Positive Psychology paradigm, this thesis suggested that the language of fitness could assist this shift because it utilises the term fitness which is already known, understood, and easier to relate to. By pairing the term mental prior to fitness, it could be viewed as analogous to physical fitness, therefore enabling people to grasp potential meanings. Further, this thesis argued that the concept could be useful to reduce the stigma that exists around the concept of mental health and mental illness. Moreover, the concept helps to address the need for more proactive and preventative approaches to positive mental

health that have consumer acceptability to assist with promotion and more open discussion about mental health. Importantly, fitness also suggests that a fit mind (similar to the body) needs regular, intentional activities and practices with the objective of building sustainable positive habits of mind i.e., a total fitness approach. This premise is also supported by the World Health Organisation's definition of health (Bloom et. al., (2011) being an holistic approach that includes physical and mental indicators together. WHO also acknowledge the role of both physical and mental health promotion in their charter.

To commence the process of utilising a mental fitness concept, three research questions were proposed: (1) what is mental fitness and how should it be defined? (2) what are the components of mental fitness? (3) what are the factors underlying current published measures, that can be used to operationalise mental fitness? Within these research questions, six aims were identified: (a) to position the concept of mental fitness within Positive Psychology to support a proactive, preventative and promotable approach to mental health; (b) to conduct a conceptual review of the historical and current meaning and use of the term mental fitness in both the popular and psychological literature; (c) propose an initial definition, a preliminary conceptual framework and guiding principles for mental fitness to direct future research and practice; (d) evaluate the definition, guiding principles and conceptual framework for mental fitness utilising a global expert panel by way of a Delphi study; (e) examine a selection of published, positive mental health items and measures to identify higher-order factors that could form an initial mental fitness measure; and (f) empirically test a preliminary factorial model of mental fitness to inform future research and practice.

These research questions and objectives were addressed utilising three stand alone publications. The first explores the meaning and use of the term mental fitness within historical and contemporary contexts with the goal of formulating a preliminary definition and set of guiding principles or assumptions to capture what mental fitness is (and is not).

Theories and variables in the published positive mental health literature are also reviewed and feature an example resource index that utilised a conceptual framework analogous to physical fitness i.e., strength, flexibility and endurance, terms well known in the physical fitness literature. The second publication draws from the conceptual review and utilised a Delphi study technique to engage an international panel to evaluate and comment on the preliminary definition and guiding principles. The final study draws from the two previous studies to explore empirically items that may contribute to the structure and measurement of mental fitness.

In this final chapter, the results, preliminary conclusions and the limitations of this body of work are discussed, and future research directions are proposed.

### **Conceptual Review – Conceptualising mental fitness**

The historical, popular and psychological literature review, assisted in the challenge of defining the meaning and use of the mental fitness concept. This review indicates how consistent ideas were related conceptually and through time.

Key themes derived from the review enabled an initial definition, four guiding principles and a proposed conceptual framework of mental fitness to be formed.

First, the summary findings from the historical review suggest the concept of fitness is functional and that individuals are active agents in the process of becoming fit by having the ability or capacity to change, develop, adapt and respond to enable them to move towards a successful fit between themselves and their environment. In summary, the concept of physical fitness didn't appear in the search until the 1920s. The popular literature indicates that concepts of fitness (both physical and mental) are now widely used and their meaning and use in the 21<sup>st</sup> century still essentially reflects the concept's historical roots. Further, the review highlights that mental fitness, similar to physical fitness, is an important concept that is

related to functional processes or activities that can be learned and contribute to higher levels of psychological functioning. Five primary categories of use were identified in the analysis and reflect: (a) creditable information from reliable sources, (b) unreliable sources, (c) advertising courses and programs from multiple sources, (d) government and non-government organisations, and (e) a media category where the term appeared in published material.

The primary focus across all five categories in the search was centred on exercises and training and it was evident that considerable amounts of money and time are being spent promoting the concept of mental fitness in much the same way as physical fitness is promoted, but to a lesser degree. Further, the search revealed inconsistency and a lack of standardisation across the five categories in the modes of assessment, the intervention programmes, tools and techniques.

The psychological literature suggests that mental fitness is a holistic process that moves towards higher levels of mental health.

The review revealed several common ideas across all searches that are useful as a first step in outlining consistent, foundational language, meaning and use to enable further development of a standardised theoretical construction with supporting measures to research, and for mental health practitioners to apply. Mental fitness was found to have some conceptual independence that provides preliminary evidence for the construct's validity and allowed for the formulation of an initial definition, guiding principles and an initial conceptual framework. Several salient themes across all searches informed the formulation of the initial definition, principles and framework. Firstly, mental and physical health and fitness often appear together and involve learned skills that can be improved with regular practice and exercise. Secondly, as with physical health and fitness, mental health is active, intentional and goal-directed, (i.e. it moves towards a purpose or outcome), it is adaptive, intentional and

developmental, hence motivation is required for an individual to engage in the process of becoming mentally fit and becoming mentally fit leads to positive mental health outcomes. In common with physical fitness, mental fitness requires psychological resources such as resiliency and optimism. Thirdly, mental fitness has cognitive, affective and behavioural components that can be domain specific (e.g. work, home, school, social and ageing). Fourthly, there are inconsistencies in the treatment and prevention methodologies and tests, and indicators of mental fitness lack consistency in explanation and content. Finally, the literature suggests that mental fitness may assist in the reduction of some mental illnesses such as anxiety, anger and depression.

Following the above findings, a selection of developmental theories and variables published in the Positive Psychology literature were chosen to provide a contribution to a mental fitness resource index. These theories and variables were then embedded into a preliminary framework aligned to physical fitness to commence the formation of a resource index to support the foundations of a testable empirical model.

### **Study 1 – Conceptualising and measuring mental fitness: a Delphi study**

By utilising a global expert panel, the aim of the Delphi study was to seek agreement on and/or modification of the proposed definition, four guiding principles, and conceptual framework of mental fitness proposed in the conceptual review. Further, this Delphi study had the benefit of feedback from the panel on their overall views of the concept and whether it was considered to be a worthwhile scientific endeavour. This study was fortunate to have high profile and respected researchers from the field of psychology and Positive Psychology who added to the richness of the results; particularly within the qualitative component.

The definition proposed to the panel was mental fitness incorporated the results of the conceptual review as “*the changeable capacity to utilise resources and skills to*

*psychologically adapt to environmental challenges or advantages to meet psychological needs*”. The four underlying principles proposed were that: (a) *fitness* is a positive term without the connotations of illness implied by the terms mental health or mental illness, (b) *mental fitness* could be understood by individuals, organisations, educational institutions and the wider community in a similar way to physical fitness, (c) *mental fitness* is measurable, and (d) *mental fitness* can be improved, in a similar way to physical fitness- (i.e., by way of regular, intentional activities and practices).

The expert panel provided minor changes to the definition and to the guiding principles. The definition of mental fitness was updated to “*the modifiable capacity to utilise resources and skills to flexibly adapt to challenges and opportunities, enabling thriving*”. Principles 1, 3 and 4 remained unchanged with the panel recommending Principle 2 modified to “*mental fitness could be understood by the wider community in a similar way to physical fitness*”.

The Delphi study also provided interesting, qualitative insights from the expert panel given the expert panel (deliberately) had not been given the results of the conceptual review. The reason for this approach was twofold: given their expert knowledge, it was important to allow the panel to respond to questions without too much background information to influence or bias their responses, and to ensure the panel focussed only on the specifics of the questions and not on the justification of how they were formed. Despite their not knowing the results of the conceptual review, the expert panel: agreed that mental fitness can be viewed as a process and mental health and well-being can be viewed as outcomes. They also agreed to include strengths knowledge in the mental fitness model and that components (autonomy, competence, relatedness) of self-determination theory were important to mental fitness for motivation. The concepts of thriving and flourishing were also focal, particularly to the definition of mental fitness. The panel were of the opinion that scientifically validated practices and activities (standard in the area of physical fitness) could also achieve improved

levels of mental health and assist in preventing or reducing mental illness, provided they were targeted accurately. In summary, the panel supported the application of the concept of mental fitness as an effective strategy that could assist in the promotion of mental health activities to improve levels of positive mental health and reduce levels of mental illness in the community.

The panel's suggestions will contribute to theory and to empirical development of mental fitness. A further significant contribution of this study is the consensus that the concept and development of a mental fitness is a worthy scientific endeavour. These results set the framework for the next stage of development; empirical investigation.

### **Study 2 – A multifactorial model of mental fitness**

Drawing from the conceptual review and the Delphi study, the aim of this study was to empirically test a factorial model of mental fitness to: (a) ascertain if a smaller set of higher-order dimensions would emerge from the analysis to validate a structure that best represents mental fitness, and (b) to determine whether there is an overarching concept of mental fitness that subsumes the dimensions.

A selection of items were drawn from published psychological variables that conceptually and empirically relate to positive mental health development. Results from exploratory and confirmatory factor analysis identified four factors subsequently labelled *strength*, *endurance*, *flexibility* and *team* reflecting the physical fitness analogy and the item content. This preliminary empirical support for a multifactorial model of mental fitness provided initial validation for the four factors. Further, all four factors loaded onto a second order factor named mental fitness.

The primary implications of this study suggest the model of mental fitness is supported by a selection of items from the positive mental health literature (i.e., from measures of strengths knowledge and use, presence of meaning and purpose in life, the basic needs of autonomy and

competence, social support, self-efficacy, resiliency, mindfulness, acceptance, optimism, the presence of higher levels of specific positive emotions (feeling strong, enthusiastic and determined) and the presence of lower levels of specific negative emotions (fear, shame and guilt).

This study also provides a preliminary self-report questionnaire (of 73 items) for further testing. This is a significant result as the self-report questionnaire holistically and economically integrates and subsumes a broader range of theoretically related constructs that are related to positive mental health outcomes. This study also suggests that growth can be achieved via targeted interventions and activities because all of the measures and items included have previous studies to support the idea that they are dynamic and developmental.

In summary, this study is an initial attempt to scientifically standardise the current meaning and use of mental fitness to support a definition and guiding principles. The preliminary model of mental fitness subsumes a number of published psychological theories and measures and commences the process of refining what mental fitness is and what it is not. Moreover, it is suggested that exploring the concept of mental fitness in a similar framework to physical fitness is a worthwhile endeavour for scientific investigation.

Utilising the notion of mental fitness can provide an effective way to explain areas of positive mental health theory, research and activities in a non-threatening, parsimonious and proactive light. Before undertaking this body of work, mental fitness had no consistent theoretical foundations or standardised measurement to research, replicate or apply. The overarching research questions for this study were: (1) what is mental fitness and how should it be defined? (2) what are the components of mental fitness? (3) what factors underlying current published measures can be used to operationalise mental fitness? The first research question was addressed in the conceptual review and the results of the Delphi study. The second and

third research questions were addressed by the theories and measures that contribute to the mental fitness model and initial self-report measure. This prepares the way for future theory building and research.

The concept and model of mental fitness provides a resource index with a conceptual framework analogous to physical fitness to engage and promote to the wider community for proactive and preventative purposes and, without the stigma sometimes associated with terms like mental health. The concept of mental fitness also paves the way for a more holistic and economic approach to research on the measurement of positive mental health. In addition, it can promote an understanding that mental fitness, as with physical fitness, requires the motivation to regularly practice intentional activities to create positive habits of mind that lead to higher levels of thriving, well-being, optimal functioning and quality of life outcomes.

### **Limitations**

To understand, define, measure and improve mental fitness is both a creative and a scientific undertaking. Whilst the initial results are promising, there are a number of limitations. The theoretical review, the Delphi study and the factorial study provide preliminary evidence for the face, construct and convergent validity of mental fitness but further studies are needed.

The Delphi study only employed two rounds. The study may have benefited from a third round designed to provide the panel an opportunity to collaborate further. The Delphi method provides a systematic approach but not in-depth discussion and final input is limited by the predetermined cut-offs, therefore additional studies would be justified. Another limitation of the Delphi study was that the sub-components of strength, flexibility and endurance were not fully defined.

Whilst the empirical study contributes to the development of mental fitness, a broader conceptualisation could have been considered on the basis of there being many and varied

psychological concepts that may have added to the depth and breadth of the model and assessment criteria. For example, character strengths such as persistence may have added to the endurance factor and open-mindedness to the flexibility factor (Peterson & Seligman, 2004). However, given the complexity of the task and limitations of a single study, this issue requires further investigation and debate. In relation to sample size, it could have been larger for a factorial study of this nature and a further study with a larger sample would be an important next step. Another limitation is that individual, one-off items that appeared in each of the four factors require further consideration to determine whether to include them in the measure or whether they would be better removed and reorganised (e.g. factor 1 had one item for competence so it could be moved to factor 2 which has three). However, deletion of any specific items means more than just a statistical outcome so this would require careful investigation.

In addition, items chosen for inclusion in this study were based on a rationale provided by the review and to build on the psychometric work of existing and established scales. Research to establish if other more valid items might better represent the factors underpinning the mental fitness model would be worthwhile. The analysed data contained a number of variables that were theoretically related in the positive mental health literature but there is a need to further investigate how these multiple variables might be inter-related. The variables that were removed in the analysis based on statistical criteria may still need further investigation to determine, for instance, if higher hope is an outcome of mental fitness improvement. Finally, the sample size was not sufficiently large enough to enable random split and the subject/item ratio was minimal but adequate to allow factor analysis. It is also important to note that the measure was quite long so there might have been some rater fatigue and a university student sample does not allow for generalisation to a broader population; ecological validity is limited therefore replication utilising different samples is required.

**Future Directions**

There are many future theory-building and research opportunities that could be conducted across multiple settings, e.g. individuals, schools, tertiary institutions, ageing, government and non-governmental sectors.

**(a) Research**

This study makes an important contribution but a number of questions remain unanswered and each is worthy of investigation: For example, how does mental fitness differ from other positive mental health models and constructs? How would identifying and utilising strengths change other components of mental fitness? What specific physical and psychological changes would occur if mental fitness activities were developed to simultaneously work with physical fitness? What would change if people felt more comfortable talking about mental fitness? As with physical fitness, would people be proud to work on mental fitness or perhaps perceive it as giving them a competitive edge? Are people who train to be mentally fit more adaptive?

As well, there is room for future research to examine the relationship of mental fitness with theoretically related and unrelated constructs; for example, well-being, flow, resiliency, personality, and emotional and cognitive intelligence.

Longitudinal studies would also be a valuable area of research to discover, for example, what happens to positive mental health when mental fitness exercises are carried out regularly over a long period of time and how levels of motivation alter in the absence of a clinical diagnosis.

**(b) Measurement**

Existing developmental measures that relate to well-being and optimal functioning outcomes identified for this empirical study are often measured in isolation or with a small number of other variables. There is a growing interest in studying multiple variables together within a

single study and the further investigation of a smaller set of higher-order constructs that could be used to predict and develop higher levels of positive mental health, remains an important area of research.

Further, it would be useful to know if mental fitness is best measured on a continuum and the combinations within the mental fitness measure that would serve as good predictors of thriving individuals. Whilst it is important to develop a reliable and valid self-report measure with norms, what would the design of a performance-based mental fitness measure include?

### **(c) Practical application and intervention design**

If the concept of mental fitness is embraced and physical fitness is understood as being analogous, then questions about training to achieve mental fitness arise and these require investigation; how would effective community-based total fitness programs be designed and implemented, how do mental fitness interventions compare to other, established interventions, and how would the design of a mental fitness interventions alter when applying in different contexts e.g. individuals, schools, work, ageing and how are the results sustained?

Overall, it is argued that mental fitness is worthy of scientific investigation and that this body of work contributes to the growing body of evidence for traditional psychology, positive psychology, positive health, mental illness prevention, and positive health promotion. The concept of mental fitness, its measurement and development may assist individuals, schools, organisations, communities and societies to understand that the road to optimal mental health requires motivation and commitment, self-awareness and self-management based on reliable and valid measures and intentional activities performed on a regular basis and tailored to individual needs. Physical fitness regimes guide and assist the participant towards optimal

levels of physical health and mental fitness regimes could do the same for mental health if designed and delivered using evidence-based practices and scientific rigour.

New and innovative terms and conceptual frameworks are now, more than ever, essential to capture the attention of the wider community within a language that is without stigma and easily understood. The development of the concept of mental fitness is suggested as one solution but the inconsistent use of the term in the psychological and popular literature has limited both research and practice. Introduction of this and other new concepts, frameworks and measures is a complex scientific and practical endeavour because it must be informed by a coherent combination of theory, science and practice and have relevance to the wider community. A measure of mental fitness must be purpose built, assist in identifying risk factors and lead to growth and development (as does the concept of physical fitness). In the face of increases in mental illness, there is an urgent need for new and creative ways to engage and promote proactive, holistic, preventative mental health strategies, activities and practices to work alongside existing, reactive mental health initiatives. It is proposed that the concept of mental fitness is one way of addressing this need.



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## APPENDICES

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## Appendix 1:

Examples of Google searches: fitness, physical fitness, mental fitness, mental + physical fitness

(a) fitness, total hits: 461,000,000

Page No.	Category	No. of Hits	Additional Info
1	Gym website	8	2 were university websites
	General info	1	Fitness Exposition
	Courses and Careers	1	
5	Gym website	6	1 university website
	General info	1	Government website
	Magazine	1	
	Media	1	
	Advertisement	1	Fitness gear
10	Gym website	7	
	Magazine	1	
	Courses and Careers	1	
	Advertisement	1	Fitness gear
15	Gym website	10	1 university website
20	Gym website	7	
	Courses & Careers	2	
	Advertisement	1	Fitness gear
25	Gym website	6	

	Media	1	
	Courses & Careers	1	
	Advertisement	2	Gumtree.com (2x)
30	Gym website	3	
	Magazine	2	
	Social (facebook, pinterest, blog, etc.)	2	
	Book	1	
	Media	1	
	Advertisement	2	Ebay
35	Media	3	
	Social	3	
	Courses & Careers	1	
	Info	1	Fitness Exposition
	Advertisement	2	App and Lotto
40	Gym website	3	
	Info	4	
	Social	2	
	Book	1	
45	Gym website	3	
	Info	3	
	Advertisement	2	'fitness games'.
	Book	1	
	Media	1	

(b) physical fitness, total hits: 86,000,000

Page No.	Category	No. of Hits	Additional Info
1	Info	8	
	Gym website	1	
	Government Occupation Info (e.g., army, police, defence force)	1	
5	Government Occupation Info	4	
	Info	3	
	Media	1	
	Gym website	1	
	Advertisement	1	Fitness gear
10	Government Occupation Info	3	
	General Info	3	
	Courses & Careers	2	
	Gym website	1	
	Media	1	
15	Courses & Careers	4	
	Government Occupation Info	2	
	General Info	2	
	Media	2	
20	Government Occupation Info	4	
	Info	4	

	Gym website	1	
	Other	1	Fitness Website
25	General Info	2	
	Gym Website	2	
	Media	2	
	Social	2	
	Government Occupation Info	1	
	Other	1	Ebay
30	Media	9	
	General Info	1	
35	General Info	4	
	Social	4	
	Gym website	1	
	Media	1	

(c) mental fitness total hits: 17,000,000

Page No	Category	No. of Hits	Additional Info
1	General Info	10	
5	General Info	6	
	Books	2	
	Magazine	1	
	Social	1	
10	Advertisement	3	Food, business (x2)
	Government Occupation Info	2	
	Social	2	
	Book	1	
	General Info	1	
	Media	1	
15	General Info	3	
	Book	2	
	Media	2	
	Advertisement	1	Business
	Legal Document	1	
	Social	1	
20	Media	4	
	General Info	3	
	Ebook	2	
	Business	1	
25	Social	5	

	Media	2	
	Advertisement	1	Resort
	Business	1	
	General Info	1	
30	General Info.	3	
	Book	2	
	Social	2	
	Advertisement	1	Vitamins
	Courses & Careers	1	
	Media	1	
35	Media	3	
	Social	3	
	Advertisement	2	App (x2)
	General Info	1	
	Gym Website	1	
40	Media	5	
	Social	4	
	Advertisement	1	Software

(d) mental fitness + physical fitness: 6,600,000

Page No.	Category	No. of hits	Additional Info
1	General Info.	7	
	Media	2	
	Social	1	
5	General Info.	3	
	Media	2	
	Book	1	
	Government Occupation Info	1	
	Other	3	Quote website (2x), brain game website.
10	General Info.	3	
	Media	3	
	Book	2	
	Gym website	1	
	Social	1	
15	General Info.	4	One mentioned in context of 'spiritual fitness'
	Media	2	
	Social	2	
	Careers & Courses	1	
	Gym website	1	
20	General Info.	7	

	Courses & Careers	2	
	Media	1	
25	General Info.	6	One mentioned in context of 'spiritual fitness'
	Courses & Careers	2	
	Media	1	
	Other	2	RSA licence application info, dog enthusiast website.
30	General Info.	5	One mentioned in context of 'spiritual fitness'
	Courses & Careers	1	
	Gym website	1	
	Media	1	
	Social	1	
	Other	1	Religious website
35	Social	3	
	General Info.	2	
	Government Occupation Info	2	
	Book	1	
	Courses & Careers	1	
	Other	1	Yoga website
40	Social	5	
	General Info.	2	

	Media	2	
	Book	1	
45	General Info.	3	
	Social	2	
	Courses & Careers	1	In the context of a 'golf fitness' course
	Government Occupation Info	1	
	Media	1	
	Other	2	App, Fitness instructor website
50	General Info.	4	
	Social	4	
	Media	2	



Appendix 2:  
PsycInfo Literature Search

Ovid Technologies, Inc. Email Service

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Search for: "Mental Fitness".mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]

Results: 60

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## Appendix 3:

## Summary of Delphi Study Expert Panel Criteria

PANELLIST NUMBER	AUTHOR CRITERIA	PRESENTER CRITERIA	ACADEMIC CRITERIA	PRACTICE CRITERIA	POSITIVE PSYCHOLOGY CRITERIA
1	X	X	X	X	
2	X	X	X		X
3	X	X	X	X	
4	X	X	X		X
5	X	X	X	X	X
6	X	X		X	X
7	X	X	X	X	X
8	X	X	X		X
9	X	X	X		X
10			X	X	X
11	X		X		X
12	X	X		X	X
13	X	X	X	X	X
14	X	X	X	X	
15	X	X	X		X
16	X	X	X		X
17	X	X		X	
18	X	X		X	
19	X	X		X	
20	X	X	X		X
21	X	X	X		
22	X	X	X		
23		X	X	X	X
24	X	X	X	X	X
25	X	X	X		X





Appendix 4:  
Delphi Study Round 1



*EXPERT PANELLIST INFORMATION SHEET*

Title:

**The Role of a Mental Fitness Construct  
within Positive Psychology**

Investigators:

**Dr. Lindsay Oades, Associate Professor Peter Caputi,  
Paula Robinson PhD Candidate  
School of Psychology  
University of Wollongong  
Australia**

This Delphi Study is a part of a PhD dissertation to explore the meaning of the term *mental fitness* and how it could be justifiably utilised within Positive Psychology. The specific purpose of this study is to review and comment on (a) the operational definition of *Mental Fitness*, and (b) the four underlying principles.

The Delphi process will provide the researchers with a systematic methodology to organise responses and ideas that can be validated further into theory, models and measurement (Merriam, 1998; Lintone & Turoff, 1975). Moreover, the Delphi method provides an efficient and effective way to involve busy experts who may not be able to come together to interact with each other to investigate theoretical and practical issues and ultimately build consensus.

You are invited to be an expert panellist in this Delphi Study because you are a respected expert in the field of Psychology and the sub field of Positive Psychology.

Only the researchers will have access to your responses. **Unless you specifically request your name to be attached to your responses, they will be coded by the researchers.** This code will assure your confidentiality throughout the study.

Your participation in this research is voluntary and you are free to withdraw from the research at any time. We would respectfully request that if you are unable to participate in this study, we would appreciate your nominating a qualified colleague that may be interested. This document is not to be forwarded onto any other parties without the written permission of at least one of the authors.

Data collected for this study will be stored securely for five years after the results have been published, after which time it will be disposed of.

If you would like to discuss this research further please contact Dr. Lindsay Oades ([loades@uow.edu.au](mailto:loades@uow.edu.au)), Associate Professor Peter Caputi ([pcaputi@uow.edu.au](mailto:pcaputi@uow.edu.au)) or Paula Robinson ([plr558@uowmail.edu.au](mailto:plr558@uowmail.edu.au)).

If you have any enquiries regarding the conduct of this research please contact the Secretary of the University of Wollongong Human Research Ethics Committee on +61 2 4221 4457.

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### # Steps in the Delphi Study:

According to McElreath (2001) the following steps are necessary to conduct an effective Delphi Study:-

1. Identify a Panel of Experts
2. A minimum of 30 participants to see patterns in responses.
3. The invitation must explain what is expected from each panel member in terms of time and effort to complete the study.
4. Prepare and distribute the initial survey.
5. Receive and analyse first responses with minimal editing.
6. Present first set of responses to expert panel within an appropriate theoretical framework.
7. Panel to clarify and rank survey items suggested in the first round.
8. Receive and analyse second set of responses.
9. Prepare and distribute a final report to all expert panel members.

The above framework will form the basis of this Delphi Study. Using email, Paula Robinson, Dr. Lindsay Oades and Associate Professor Peter Caputi will conduct a 2 round Delphi Study. The deadline for Round 1 responses will be 1 month from the date of this email.

### # Explanation of Round 1

In the first round, we ask you, as a member of the Expert Panel, to respond to the definition of *mental fitness* and each of the four underlying principles in the following way:-

(a) a quantitative response via a Likert Scale to ascertain your level of agreement/disagreement, and

(b) a qualitative response of no more than 100 words, to provide any additional comments.

### # Explanation of Round 2:

In the second round:-

1. After 4 weeks and receipt of the Round 1 responses, you will be presented with the results of the statistical analyses based on your collective responses within appropriate theoretical frameworks.
2. You will then be asked to rank and comment on the results put forward from Round 1.
3. As this will be the first time the Expert Panel will see the responses from other members, it is appropriate to ask for any additional elaborations, ideas or clarifications based on initial responses.

4. Your expert responses will again be systematically categorised and qualitative and quantitative statistical data compiled to share with you and all members of the Expert Panel in relation to the revised collective responses. As detailed in the Information Sheet, responses can be identified by your name or a code to assure anonymity.
5. A Final Report will be prepared and distributed to all Expert Panel Members.
6. Round 1 starts on the following page .....

**PLEASE MARK WITH AN “X” HOW YOU WOULD LIKE YOUR RESPONSES RECORDED:-**

1. ANONYMOUS
  2. MY NAME
-

## # Round 1 - Preamble:

## The role of a *mental fitness* construct within Positive Psychology

Despite the increasing and inconsistent use of the term *mental fitness* in the popular and psychological literature, there is no theoretically grounded reliable and valid measure. A *mental fitness* multidimensional construct would be useful in clarifying and synthesising disparate pieces of theory and research in the area of positive mental health, that at present are largely disconnected. Moreover, this concept may begin to address conceptual confusion between science and practice by way of explanation; the term *fitness* employs analogy or metaphor to transpose the term from one context into another; the context of *physical fitness* (physical strength, flexibility and endurance) to the context of *mental fitness* (psychological strength, flexibility and endurance).

Mental fitness is defined as “*the changeable capacity to utilise resources and skills to psychologically adapt to environmental challenges and advantages to meet psychological needs*”.

*Mental fitness* has four underlying principles: (1) *Mental fitness* may be understood by individuals, groups, organizations and the wider community in a similar way to physical fitness; (2) *mental fitness* is a positive term without connotations of illness implied by mental health or mental illness; (3) *mental fitness* is measurable, and (4) *mental fitness* may be improved in a way similar to *physical fitness*.

Practically applied, *mental fitness* may assist in (a) the adoption and sustainability of regular mental health activities and practices; (b) improved self-awareness and self-regulation; (c) the promotion of positive mental health perceptions and behaviours; (c) reducing the science-practitioner gap; (d) providing a proactive approach in the reduction and prevention of some forms of mental illness, and (e) moving beyond the individual to community-wide and governmentally driven *mental fitness* initiatives.

Future directions for *mental fitness* would be the design of specific and targeted developmental interventions to improve happiness, well-being and quality of work and life.

**ROUND 1:****# R1 – QUESTION 1:**

Please comment on the definition of *Mental Fitness*.

**Important:** Before giving your response, please refer to the summary explanations of key terms within the definition as detailed below.

**DEFINITION**

**Mental fitness** is “*the changeable capacity to utilise resources and skills to psychologically adapt to environmental challenges or advantages to meet psychological needs*”.

KEY TERMS WITHIN THE DEFINITION
<b>A. Capacity</b> - a mentally fit person has a reserve of psychological resources and skills that could be readily deployed to improve the probability of an adaptive response to a negative stressor or a favourable circumstance or advantage.
<b>B. Utilise Resources &amp; Skills</b> - is <i>capacity</i> in action. A mentally fit person will trigger capacity and use specific psychological resources and skills to improve the probability of an adaptive response.
<b>C. *Psychologically Adapt</b> – A mentally fit person is more likely to successfully adapt when the specific resources and skills are utilised (see Table 1 below for a simple example).
<b>D. Challenges or advantages</b> – A mentally fit person would be expected to have higher levels of self-awareness and self-regulation to elicit a psychologically flexible response dependent on the environmental challenge or advantage presented (see Table 1 below).
<b>E. Psychological needs</b> – A successful adaptive response would ensure the needs of <i>Competence</i> , <i>Autonomy</i> and <i>Relatedness</i> are being addressed.

ENVIRONMENTAL CHALLENGE		ENVIRONMENTAL ADVANTAGE	
*Adaptive Response	Maladaptive Response	*Adaptive Response	Maladaptive Response
Utilise social support	Avoid the situation	Savouring	Lack of gratitude

Table 1

\*Adaptive Responses would increase the probability of psychological needs being met.



Generally, I agree/disagree with the definition of *Mental Fitness*

Disagree 1      2      3      4      5      6      7 Agree

Neutral



Below, please write any specific comments or ideas on the definition

(in less than 100 words)

## # R1 - QUESTION 2:

Please review and comment on each of the four underlying principles of *Mental Fitness* shown below.

### Principle 1

*Fitness* is a positive term without connotations of illness implied by mental health or mental illness.

**Principle 1 is based on the following assumptions:-**

- a. **Physical health** is understood in the wider community as absence of disease.
- b. **Mental health** is understood in the wider community as absence of mental illness and largely stigmatised.
- c. **Conceptual confusion** exists in relation to many psychological terms causing a slowdown of mental illness prevention and optimal mental health promotion resulting in a lack of engagement by the general community. The term *fitness* is easily understood by the general population and not stigmatised.



**Generally, I agree/disagree with *Principle 1***

Disagree 1      2      3      4      5      6      7 Agree

Neutral



**Please write your comments on *Principle 1* (in less than 100 words)**

**Principle 2**

***Mental fitness* could be understood by individuals, organizations, educational institutions and the wider community in a similar way to physical fitness.**

- a. **Physical fitness** is understood in the wider community as a strategy for illness prevention and associated to optimal physical functioning essentially based on levels of **strength, flexibility and endurance**.

- b. ***Mental fitness*** could be understood in the wider community as a strategy for mental illness prevention and associated to optimal mental functioning using the same conceptual framework as physical fitness, i.e., **strength, flexibility and endurance**. Thus *mental fitness* could be aligned to physical fitness by way of explanation and assist in a TOTAL FITNESS solution, both physical and mental fitness being essential for optimal human functioning. There is a real need for a proactive, preventative approach to mental illness and mental health promotion as we have with physical fitness.



Generally, I agree/disagree with *Principle 2*

Disagree 1 2 3 4 5 6 7 Agree

Neutral



Please write your comments on *Principle 2* (in less than 100 words)

### Principle 3

#### ***Mental fitness is measurable.***

The operationalising of a *mental fitness* construct would first require the building of a 'resource index'. Subscales would be analogous to physical fitness i.e. **strength, flexibility and endurance** for parsimony and ease of explanation to the general population.

For example,

	EXAMPLES OF RESOURCE INDEX COMPONENTS
<b>STRENGTH</b>	<ul style="list-style-type: none"> <li>▪ Self-efficacy</li> <li>▪ Social Support</li> <li>▪ Positive Affect Ratio</li> <li>▪ Emotional Management</li> </ul>

<b>FLEXIBILITY</b>	<ul style="list-style-type: none"> <li>▪ Mindfulness</li> <li>▪ Acceptance</li> <li>▪ Psychological Flexibility</li> </ul>
<b>ENDURANCE</b>	<ul style="list-style-type: none"> <li>▪ State Resilience</li> <li>▪ Meaning</li> <li>▪ Purpose</li> <li>▪ Hope</li> </ul>



Generally, I agree/disagree with *Principle 3*

Disagree 1 2 3 4 5 6 7 Agree

Neutral



Please write your comments on *Principle 3* (in less than 100 words)

## Principle 4

***Mental fitness can be improved in a way similar to physical fitness.***

- *Mental fitness* can be learned (activities, exercises, regular practice)
- *Mental fitness* interventions could target specific components.



Generally, I agree/disagree with *Principle 4*

Disagree 1 2 3 4 5 6 7 Agree

Neutral



Please write your comments on *Principle 4* (in less than 100 words)

**THANK YOU FOR YOUR VALUED PARTICIPATION.**

**PLEASE EMAIL YOUR RESPONSES**

**BY 16<sup>TH</sup> DECEMBER 2010 TO:**

Appendix 5:  
Delphi Study Round 2



*EXPERT PANELLIST INFORMATION SHEET*

Title:

**The Role of a Mental Fitness Construct  
within Positive Psychology**

Investigators:

**Dr. Lindsay Oades, Associate Professor Peter Caputi,  
Paula Robinson PhD Candidate  
School of Psychology  
University of Wollongong  
Australia**

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purpose of this study is to review and comment on (a) the operational definition of *Mental Fitness*, and (b) the four underlying principles.

The Delphi process will provide the researchers with a systematic methodology to organise responses and ideas that can be validated further into theory, models and measurement (Merriam, 1998; Lintone & Turoff, 1975). Moreover, the Delphi method provides an efficient and effective way to involve busy experts who may not be able to come together to interact with each other to investigate theoretical and practical issues and ultimately build consensus.

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If you would like to discuss this research further please contact Dr. Lindsay Oades ( \_\_\_\_\_ ), Associate Professor Peter Caputi ( \_\_\_\_\_ ) or Paula Robinson ( \_\_\_\_\_ ).

If you have any enquiries regarding the conduct of this research please contact the Secretary of the University of Wollongong Human Research Ethics Committee on +61 2 4221 4457.

## ROUND 2 – FINAL

Thank you for agreeing to participate in Round 2 of this study. To remind you of the initial Round 1 request, expert panellists were asked to:

- (a) *quantify* their agreement/disagreement with the *definition of Mental Fitness* and the *four underlying principles* on a scale of 1 to 7;
- (b) to write any *specific comments or ideas* on the proposed definition of *Mental Fitness* and each of the *four underlying principles* (in less than 100 words).

**Tables 2 – 6** show all your responses exactly as they were received. Column 1 is the allocated expert panellist number, column 2 shows each panellists' quantitative response and column 3 shows each panellists' qualitative response.

**Selection of the Delphi Panel.** Lopez and Rogers (2001) suggest two of five specific criteria be applied to select the expert panellists. For this study, each panellist was chosen if they met **three of the following five criteria:-**

1. **Author criterion.** Panellist must have at least three primary or secondary author publications related to psychology or topics relating to psychological growth and development.
2. **Presenter criterion.** Panellist must have made two or more presentations at nationally or internationally respected psychological conferences on psychology or topics relating to psychological growth and development.
3. **Academic criterion.** Panellist must be a respected academic in the field of psychology and/or Positive Psychology with a doctoral degree.
4. **Practice criterion.** Panellist must be a practicing psychologist registered for more than 10 years and currently working with clients on a regular basis.
5. **Positive Psychology criterion.** Panellist must be specifically published in the sub-field of Positive Psychology or teaching it in an academic setting.

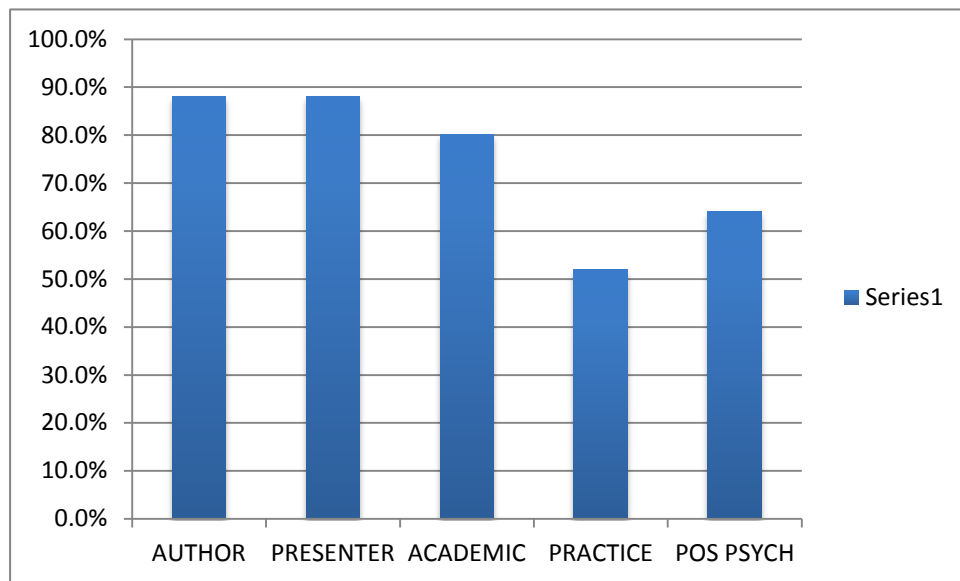
Sixty five experts were initially identified by the researchers as fitting the criteria and were sent the Delphi study request. The final pool of accepted panellists totalled 25 and were drawn from several countries including Denmark, United Kingdom, Canada, United States of America, Australia and New Zealand. Table 1 shows that each panellist was

randomly assigned a number between 1 and 25. Anonymity provided a more objective evaluation of each other's comments and perspectives without attaching any one comment to a particular person. Given many panel members have high profiles in their field of expertise, anonymity also controlled for any (conscious or unconscious) bias by other panel members based on knowing the author personally or his/her work.

PANELLIST NUMBER	AUTHOR CRITERION	PRESENTER CRITERION	ACADEMIC CRITERION	PRACTICE CRITERION	POS PSYCH CRITERION
1	X	X	X	X	
2	X	X	X		X
3	X	X	X	X	
4	X	X	X		X
5	X	X	X	X	X
6	X	X		X	X
7	X	X	X	X	X
8	X	X	X		X
9	X	X	X		X
10			X	X	X
11	X		X		X
12	X	X		X	X
13	X	X	X	X	X
14	X	X	X	X	
15	X	X	X		X
16	X	X	X		X
17				X	
18	X	X		X	
19	X	X		X	
20	X	X	X		X
21	X	X	X		
22	X	X	X		
23		X	X	X	X
24	X	X	X		X
25	X	X	X		

**TABLE 1: Summary of Panel Criteria**

Graph 1 shows percentages of each criterion that was met by the total sample of 25 respondents. 88% met author criterion 1, 88% met presenter criterion 2, 80% met academic criterion 3, 52% met practice criterion 4 and 64% met Positive Psychology criterion 5.



**Graph 1: Percentage of 25 Expert Panel Members who met each criterion.**

As a reminder, all panel members were asked to respond to the definition of *Mental Fitness* and its four underlying principles (5 questions in total) in the following ways:

**(a) Quantitative - “generally I agree/disagree” on a scale of 1 – 7 (mandatory)**

The researchers calculated the numerical responses as follows:

- 1, 2, 3 (identified as generally disagree)
- 4 (identified as neutral, neither agree or disagree)
- 5, 6, 7 (generally agree)

**(b) Qualitative - “below, please write any specific comments or ideas on the definition (in less than 100 words)”.**

The researchers agreed to only ask the expert panel members to comment on the more

## RESULTS

### Question 1. The Definition:

**Question 1** asked the panel to comment on the definition of *mental fitness* (see below).

Panellists were also supplied with summary explanations for key terms within the definition and what these key terms might mean in relation to a mentally fit person.

*“Mental fitness is the changeable capacity to utilise resources and skills to psychologically adapt to environmental challenges or advantages to meet psychological needs”.*

PANELLIST NUMBER	QUANTITATIVE RESPONSE	QUALITATIVE RESPONSE
1	7	<i>I think that this is an excellent definition. The five key terms elaborate on the concept very well. I also like the way that mental fitness may be compared with physical fitness in such a way that the lay person can easily relate to.</i>
2	5	<i>“Changeable” or perhaps “flexible” capacity...I think you may be able to be mentally fit and use this fitness to meet more than just psych needs, so perhaps this part is rather limiting...</i>
3	6	<i>I believe that mentally fit people would be more resilient and perhaps, (only perhaps) this could be included too in the definition. However, this is not a major issue.</i>
4	6	<i>This seems fine to me. I can’t think of anything more to add.</i>
5	6	<i>Two comments: By changeable capacity, do you mean that it can be changed by external circumstances and influences, or that it is developable by specific developmental actions, or both. I would suspect that both apply, although with greater mental fitness one would be better able to manage one’s responses to negative external circumstances. Second, I suspect that the outcomes and desired outcomes of mental fitness would be a lot more than just “meeting psychological needs”. It seems to me that this is a sort of baseline achievement, but actually that mental fitness could help us go a lot beyond this and into the domain of true mental flourishing. For example, a parallel with physical fitness: If I am satisfying my physical needs, at baseline I am just “not ill” but functioning okay. If I am truly physically fit, then I am operating way above baseline and have a flourishing physical existence, with all the myriad health and well-being benefits that entails – which goes far beyond basic need satisfaction.</i>
6	6	<i>I think that the definition of mental fitness is accurate. The individuals that I observe to be ‘mentally fit’ are able to respond positively under pressure and difficult circumstances. They tend to demonstrate realistic optimism, their level of positivity does not verge on denial. Several of these individuals also have a broader faith that keeps them centred and increases their capacity to respond positively and sometimes ‘bounceback’ from difficulties. I am less inclined to agree with the aspect of self-awareness. I am aware of some people who are able to demonstrate the characteristics of ‘mental fitness’ but this may due to practiced techniques being deployed such as dissociation not always because they are self-aware. I am in strong agreement the mentally fit person being psychologically adaptable and I observe this in people in a work context who are able to respond to their situations and circumstances and who are not afraid to let go of the past.</i>

PANELLIST NUMBER	QUANTITATIVE RESPONSE	QUALITATIVE RESPONSE
7	6/7	<p>.... definition of mental toughness is “the presence of some or the entire collection of experientially developed and inherent values, attitudes, emotions, cognitions, and behaviours that influence the way in which an individual approaches, responds to, and appraises both negatively and positively construed pressures, challenges, and adversities to consistently achieve his or her goals”.</p> <p>Much of your definition of mental fitness resembles the above, however, ... I feel that mt folks are doers i.e., they act on their strengths, which distinguishes mt from emotionally intelligent people who may be similarly adept but don't necessarily put these qualities into action. Not sure your mental fitness definition captures the overt display of ‘adaptation’ sufficiently? I think you want it to...?</p>
8	6	<p>The notion of mental fitness is easy to relate to, particularly with regard to the physical fitness analogy of strength, flexibility and endurance. Malleability and drawing on appropriate resources to be able to meet the SDT needs seems logical for mental fitness. I wonder however, if reference to environmental stressors is somewhat limiting. Stressors/challenges are not always external but can often involve internal dialogue and self-perceptions. Hence personal (and interpersonal) stressors/factors seem relevant and deserve specific reference since they are often major obstacles/facilitators to mental fitness.</p>
9	6	<p>I am not sure how the definition differs from similar constructs already in use, such as resilience, problem-focused coping, and positive mental health. It is a little “kitchen-sink-like.” In a way, this could be disentangled into a process model with multiple variables, including moderators and mediators, rather than summing the whole thing under one label.</p> <p>I'm also unsure how good the analogy is between mental and physical fitness. Physical fitness is muscular and cardiovascular, improved with training. Mental fitness is something else, and what would the training be?</p>
10	7	<p>The words ‘changeable’ and ‘psychologically’* and ‘to utilise resources and skills to’ seems extraneous and overly complicate the definition. I would suggest adding the word ‘successfully’ with regards to psychological needs.</p> <p>* Psychologically adapt - it seems possibly that a person may physically adapt to their environment to meet psychological needs? Don't you just want people to adapt?</p> <p>I would simplify the definition to, Mental fitness is: “the capacity to adapt to environmental challenges or advantages to successfully meet psychological needs”.</p>
11	6	<p>Overall, I agree with this definition and am particularly pleased to see the inclusion of both challenges and advantages (much like the mental toughness in sport area).</p> <p>Nevertheless, I note two points to consider:</p> <ol style="list-style-type: none"> <li>1. The term “environmental” to me implies that challenges or advantages can only be external to the individual. Would a lack of confidence in being able to do well in a job interview, for example, not be recognised as some sort of challenge for an individual to overcome?</li> <li>2. I agree with the “psychological adaptation” aspect of the definition, but I wonder whether there is room for the idea that one can maintain his or her level or capacity for extended</li> </ol>

PANELLIST NUMBER	QUANTITATIVE RESPONSE	QUALITATIVE RESPONSE
		<i>periods.</i>
12	5	<i>I like the definition but I'm curious about outcome measures. Is there a distinction between 'capacity' and 'application'? How might one know that an individual is exhibiting Mental Fitness?</i>
13	6	<i>The definition is internally consistent, and shares some similarities with Lennart Nordenfelt philosophical work. The definition by nature defines the construct, and other people may have defined it differently (e.g., by including positive well-being). But in that it is consistent both internally and with a coherent philosophical position it seems acceptable.</i>
14	7	<i>I like the definition – guess I would just add that also one may exercise the choice to respond / act.</i>
15	2	<i>I think more clarity is needed. By “changeable” you mean malleable? What sort of resources? What sort of skills? Also, it is not clear why the satisfaction of psychological needs is desirable. Why is mental fitness a good thing? The other thing is I don't think this is a term that has wide spread usage, unlike the term “mental toughness” which is used widely across sport (particularly) &amp; less so business. Given the burgeoning work in respect of the latter, I can't help wondering how mental fitness &amp; mental toughness differ (they seem quite similar in many ways).</i>
16	5	<i>First, the distinction between mental fitness and mental health is not clear in your definition. How are they conceptually and practically different? The fact that mental fitness is involved in the reduction and prevention of mental illness suggests that the concept of mental fitness is also related to mental illness. Regarding Table 1, adaptive responses should utilise appropriate resources, not just social support. Also, the advantages of an adaptive response is more than just “savouring” – it may include: gratitude in the event of help and support received to achieve success, or confidence-building in the case of achieving success through one's own ability, etc.</i>
17	6	<i>“...to meet psychological needs” This phrase is questionable:</i> <ul style="list-style-type: none"> <li><i>It may not capture the notion of flourishing or thriving</i></li> <li><i>To flourish or thrive may not be the same as meeting needs</i></li> <li><i>Meeting needs may imply survival, while flourishing or thriving refers to enjoying full potential</i></li> <li><i>“...to meet psychological needs” might be better expressed as something like “...to thrive holistically”</i></li> <li><i>Having said that.....Maslow's Hierarchy of needs is a model that includes the concept of thriving (self-actualisation); so according to this model of needs – I agree with the phrase!</i></li> </ul>
18	7	<i>The definition may also incorporate the notion of increasing psychological capital through efficacy and optimism (task and attitude).</i>
19	1	<i>If Cronbach and Meehl's (1955) process of construct validation is diligently followed for “mental fitness”, the nomological network that would arise from this definition is going to be difficult to discern and most likely be statistical noise. The various constructs that would be included in the nomological network require further construct validation anyway. On another note, the definition is similar to the definition for the BarOn Emotional Quotient Inventory (EQ-i). Ultimately, being emotionally and socially intelligent means effectively managing personal, social, and environmental change by realistically and flexibly coping with the immediate situation, solving problems, and making decisions (Bar-On, 2006).</i>
20	6	<i>The definition taps into 'potential' rather than an emotional or mental state that is 'current'.</i>

PANELLIST NUMBER	QUANTITATIVE RESPONSE	QUALITATIVE RESPONSE
21	5	<p><i>Instead of the emphasis on advantage, I expected “positive stressor” i.e. challenge. In physical arena—e.g. is if one was offered a place at a high-profile sporting competition.</i></p> <p><i>In mental arena—if one was offered a new employment position.</i></p> <p><i>Thus a positive response to either of these would be to take on the positive challenge, whereas a negative response would be to refuse/avoid it.</i></p> <p><i>“Advantage” means you likely do not have to put any work into the situation to earn or keep it. Does not seem as important of the idea of having to put effort into something.</i></p>
22	6	<p><i>Fitness is normally also regarded as a condition or a state of being. What I do not like is that fitness implies that you can train it – possibly in the same way than physical fitness. This I do not believe. Physical fitness is also understood as a kind of maintenance of – metaphorically understood – the body as a machine. I do not agree with the metaphor and I think it is even less appropriate if we speak about the psyche.</i></p>
23	6	<p><i>Definition seems fairly inclusive of all the important elements. Might it include the ability to discern and choose appropriate response to a set of circumstances? Not clear what you mean by ‘changeable’ capacity. Is this where the flexibility and ability to respond with an appropriately adaptive response in implied?</i></p>
24	6	<p><i>I think that the community still has a stigma associated with the term mental. Therefore Psychological Fitness would be preferable.</i></p> <p><i>Adaptation should be extended beyond psychological adaptation to include emotional and behavioural adaptation (this would include social adaptation).</i></p> <p><i>The term opportunities may be preferable to advantages.</i></p> <p><i>Mental fitness doesn’t just serve psychological needs but also goals and values, indeed the word psychological could well be deleted.</i></p> <p><i>Finally psychological fitness is a dynamic quality that is capable contributing to its own development so the word development could usefully be inserted.</i></p> <p><i>A revised definition would thus read: “Psychological fitness is the changeable capacity to develop and utilise resources and skills to adapt psychologically, emotionally or behaviourally to environmental challenges or opportunities in order to meet needs, goals or values”.</i></p>
25	4	<p><i>Such an overarching term is useful but I am a little concerned that there may be overtones of eugenics and that only the mentally fit are ‘worthy’.</i></p> <p><i>Can one be mentally unfit? If fitness is desirable, than what does that say about those who are not? The implication could be that is mental fitness (like physical fitness) becomes a choice, and the lack could be demonised.</i></p> <p><i>It also does not acknowledge underlying pathology or developmental delays. My other concern is the overlap with self-regulation, that someone who is able to self-regulate effectively will demonstrate many of these characteristics.</i></p>

TABLE 2: Qualitative &amp; Quantitative Responses - Definition of Mental Fitness

**Question 2. Principle 1: *Fitness is a positive term without connotations of illness implied by mental health or mental illness.***

**Principle 1 is generally based on the following assumptions:**

- d. **Physical health** is understood in the wider community as absence of disease.
- e. **Mental health** is understood in the wider community as absence of mental illness and largely stigmatised.
- f. **Conceptual confusion** exists in relation to many psychological terms causing a slowdown of mental illness prevention and optimal mental health promotion resulting in a lack of engagement by the general community. The term *fitness* is easily understood by the general population and not stigmatised.

<b>Range</b>	<b>1 to 7</b>
<b>Mean</b>	<b>5.88</b>
<b>Mode</b>	<b>7</b>
<b>Median</b>	<b>6</b>
<b>Completion %</b>	<b>100%</b>

**Table 3: Quantitative Results – Principle 1**

**Table 3 shows the expert panel is**

<b>PANELLIST NUMBER</b>	<b>QUANTITATIVE RESPONSE</b>	<b>QUALITATIVE RESPONSE</b>
1	7	<i>I very much agree with the idea that mental fitness is a better term than mental health because of the connotations with mental illness in the latter term</i>
2	2	<i>Don't agree with a) above, also the presence of positive functioning. With b) also the presence of mental illness, not just its absence. Agree with c)</i>
3	6	<i>Generally I agree with the principle in its wording. However, there is a caveat – when the word 'Mental' is added to another word such as 'fitness' I suspect that it could still be seen by a small minority of the community in a negative light. The colloquial phrase 'you're mental' is pejorative and still used. Of course, this may differ due to a number of factors including country, culture etc.</i>
4	7	<i>Well – although I personally agree strongly, what about people who are</i>

		<i>mentally tough by have some kind of biological damage to their brain – can't they be mentally tough or fit?</i>
5	7	<i>Strongly agree with this. "Health" has been taken over by the pathologist in the mind of the public, reflecting our inherent negativity bias. "Fitness" is more associated with sport and high performance, so immediately brings far more positive and desirable connotations.</i>
6	3	<i>I don't believe this term is without connotation. I think there is still a positive or negative connotation to 'fitness' if I was mentally unfit, I think this would have extremely negative connotations. I would assume an individual who was mentally unfit was experiencing mental illness</i>
7	7	<i>Agree</i>
8	7	<i>Yes, mental fitness should be asset based, in other words that a person possesses certain desirable qualities rather than does not possess certain undesirable qualities.</i>
9	4	<i>I don't see why mental health is stigmatized. Also, physical health is more than the absence of disease (the person is vital, has a glow, is strong). This strikes me as a semantic attempt to make the mental fitness concept sound even more positive than it is?</i>
10	7	<i>Yes – I very much agree! I think fitness is a term associated with optimal human functioning, as opposed to illness or absence of illness.</i>
11	7	<i>(No comment noted)</i>
12	6	<i>I think the term is a good one. Fitness is also understood in a biological sense as in "survival of the fittest", and the fitness of a species for a particular environment. Hans Selye's original research on stress spoke of fitness as a determinant of the stress response.</i>
13	1	<i>There is overwhelming empirical and theoretical reasons to believe that almost all well-being and human functioning is on a continuum (e.g. from anxiety to calmness). Focussing on only a positive or negative pole is one of the greatest weaknesses of psychology today. In the present case, there will be a continuum from low to high level of fitness, and only focusing on the positive pole is neither scientifically justifiable or logical see: insert links</i>
14	7	<i>I really like the term fitness and yes it does get away from negative connotations. It can be measured on a continuum as you can have different levels of fitness and gives the opportunity for some development and growth.</i>
15	6	<i>(No comment noted)</i>
16	6	<i>Recently, mental health is also defined in terms of the presence of psychological well-being. Therefore, to further clarify the distinction between mental fitness and mental health, the former should be focusing on the process while the latter should focus on the outcome. In other words, mental fitness will imply the ability to achieve well-being and prevent or reduce mental illness.</i>
17	7	<i>(No comment noted)</i>
18	6	<i>Fitness could also suggest as opposed to absence of illness and convey the idea of high level functioning.</i>
19	6	<i>(No comment noted)</i>
20	7	<i>(No comment noted)</i>
21	7	<i>Very much agree – and this is something that young men in particular should relate to. Which reminds me – is this a term commonly used in the Military?</i>
22	5	<i>Yes fitness is clearly associated with health, but at the same time it stigmatises the no-fit. This is in my understanding very dangerous. Fitness can become a mantra, the RIGHT state of being. The non-fit can feel as a outsider, as the wrong type of person – like the obese person in</i>

		<i>relation to the physical fit.</i>
23	7	<i>Agree that 'fitness' carries a positive connotation and is associated with positive baseline from which to build progressively higher levels.</i>
24	7	<i>Clearly Psychological Fitness should be understood as the presence of positive qualities, not the absence of negatives.</i>
25	5	<i>Fitness brings a mind a vigorous and well individual, although it may take time to separate the physical from the mental, as both types don't necessarily co-occur. As with the previous point, I'm not sure that a lack of fitness won't be stigmatised, as obesity has not been lessened by an awareness of physical fitness, rather the opposite seems to be happening.</i>

**TABLE 3: Qualitative & Quantitative Responses – Principle 1**

**Question 3. Principle 2: *Mental fitness* could be understood by individuals, organizations, educational institutions and the wider community in a similar way to physical fitness.**

- c. ***Physical fitness*** is understood in the wider community as a strategy for illness prevention and associated to optimal physical functioning essentially based on levels of **strength, flexibility and endurance**.
- d. ***Mental fitness*** could be understood in the wider community as a strategy for mental illness prevention and associated to optimal mental functioning using the same conceptual framework as physical fitness, i.e., **strength, flexibility and endurance**. Thus *mental fitness* could be aligned to physical fitness by way of explanation and assist in a TOTAL FITNESS solution, both physical and mental fitness being essential for optimal human functioning. There is a real need for a proactive, preventative approach to mental illness and mental health promotion as we have with physical fitness.

**Generally, I agree/disagree with Principle 2 – Panel responses Table 3 below:**

PANELLIST NUMBER	QUANTITATIVE RESPONSE	QUALITATIVE RESPONSE
1	7	<i>This is an excellent point. I really like the term mental fitness and I plan to start using it in my own practice</i>
2	5	<i>a) Not just illness prevention, but also wellness promotion, b) is a lot to get my head around... not really too sure.... I think I may agree.</i>
3	6	<i>It's a term that is already in use (just google it see the many webpage's devoted to it) so although it could be understood in terms of Principle 2, it is likely that individuals, organisations etc may have different views of its precise nature.</i>
4	2	<i>No – I don't think it is a term that is widely used.</i>
5	6	<i>I agree with this but also note that simply juxtaposing with mental health and illness also misses the point that mental fitness could be about not just avoiding illness and being "not ill", but also about promoting genuine high functioning and optimal health. This has been a Positive Psychology challenge from the beginning and is worth keeping in mind. It's too easy for things to slip back to baseline of "good enough" or "not ill" when there is actually a lot more we can learn from studying the optimal and the high performer. The two are not necessarily just different ends of the same spectrum – there seems to be something qualitatively, not just quantitatively different about genuine high performance and optimal flourishing.</i>
6	5	<i>I think mental fitness could be understood by individuals, organisations and educational institutions. My one concern would be using it in an organisational setting. It is not a term that I think managers would be able to use about an individual due to the points that I raised regarding possible connotations. I am not sure who in an organisation would be able to use this term in an organisational context without there being a potential dangers of legality over the term.</i>

		<i>In an organisational context, I know words such as 'tough mindedness' have started to be accepted but I would be concerned about passing judgement or discussing the mental fitness of employees.</i>
7	7	<i>Agree</i>
8	7	<i>I totally agree. There is no reason why mental fitness cannot parallel the same pathway as physical fitness. Mental fitness needs to be taken as seriously as physical fitness by the broader community. Perhaps we need to build purpose 'mental fitness centres' (imagine a centre that has physical and mental fitness activities in the one location for a TOTAL workout).</i>
9	5	<i>Not sure why "strength, flexibility and endurance" are essential aspects of psychological fitness. Why these 3 and not others? Not sure what psychological strength is (is it different from endurance? Does it involve lifting something?). The analogies with physical flexibility and endurance are better, but they still are quite different. So, not sure what "understanding in a similar way" means here, beyond a superficial analogy based on the term "fitness". There is also the problem that "fitness" has a pretty different meaning in evolutionary theorizing.</i>
10	7	<i>Although there are differences between physical and mental fitness I think that there are enough similarities to quickly and easily convey the meaning of the term to the broader community. Hopefully this will also serve to strengthen the connection between mind and body, as the scientific separation of the two really makes very little practical sense.</i>
11	7	<i>(no comment recorded)</i>
12	6	<i>Yes, I agree with this principle. Plenty of evidence from the sports and endurance literature I'm sure that links physical and mental toughness.</i>
13	6	<i>Agree, but perhaps "similar ways" needs to be spelt out more (e.g., you can't understand it very well using heart rate!). Note that some "strengths based approaches" have explicitly considered both physical and psychological strengths together.</i>
14	7	<i>I reiterate my comments above for principle 1. It gives scope for growth, change and is developmental by nature; not fixed at any point in time. So along with this comes hope – the hope for change and improvement in mental fitness and perhaps can be more measurable. (OOPS – I didn't see your next point about this term being measureable)</i>
15	6	<i>My only reservation is related to the conceptual overlap with mental toughness which (despite its masculine tone) I don't think is associated with rigidity as much as many people might argue.</i>
16	5	<i>Mental fitness should emphasise the availability and development of psychological resources as described by Wong (1993).</i>
17	7	<i>(no comment recorded)</i>
18	6	<i>Total fitness could also include the concepts of stability (being calm, centred and confident) as well as speed (improvising and intuitive)</i>
19	6	<i>The definition of "mental fitness" is parallel of physical fitness and should be the "ability to acknowledge that what I do in this moment positively influences my future wellness". Therefore measuring how well individuals are thinking about how to live their best life. The definition proposed above is still about struggling I don't get any sense of life enhancement from the definition at all. Why does mental fitness have to be about both mental challenge and advantage? Leave already developed constructer that can adequately account for challenge. Leave mental fitness as advantage. It is therefore part of continuum towards happiness/fulfilment. This definition and directional focus aligns better with principle 2.</i>
20	6	<i>The term 'physical fitness' has more of a positive association with optimal physical health than 'mental fitness' which is more aligned to the absence of mental illness or mental distress.</i>
21	7	<i>Another reason why I like this term</i>
22	1	<i>In my understand fitness is clearly a concept in regard to the individual. For me it sounds strange to use for groups, organisations etc. This</i>

		<i>strengthens even my argument given under principle 1. Only individual can be fit, organisations function – or members of an organisation work in a collaborative way.</i>
23	6	<i>Can appreciate the parallels being drawn here. This conveys that there would need to be a similar commitment to action as it is with physical fitness, moving away from some of the more passive approaches to achieving well-being. Might this also be limiting? Would need to think through the range of strategies and whether the path to mental fitness necessarily involves 'actions'; vs 'reflection on ways of being'. Not sure here.</i>
24	7	<i>Self-evident – builds on existing understanding! Appealing as the parallel is, I suspect that the factors underlying Psychological Fitness would not necessarily be called strength, flexibility and endurance, i.e. they are not necessarily the same as in physical fitness – it is after all only an analogy.</i>
25	3	<i>Perhaps the general community would think that mental fitness had something to do with intelligence or being smart at school. It would be important to stress that mental fitness would apply to any age, just not young who were also physically fit and it may be hard to separate the two images of physical and mental fitness. Could an older person be physically challenged but still mentally well or could a younger person be very fit but depressed?</i>

**TABLE 4: Qualitative & Quantitative Responses – Principle 2**

**Question 4. Principle 3:*****Mental Fitness is measurable.***

The operationalising of a mental fitness construct would first require the building of a resource index. Subscales would be analogous to physical fitness i.e. strength, flexibility and endurance for parsimony and ease of explanation to the general population.

An example was offered to the panel:

	EXAMPLES OF RESOURCE INDEX COMPONENTS
<b>STRENGTH</b>	<ul style="list-style-type: none"> <li>▪ Self-efficacy</li> <li>▪ Social Support</li> <li>▪ Positive Affect Ratio</li> <li>▪ Emotional Management</li> </ul>
<b>FLEXIBILITY</b>	<ul style="list-style-type: none"> <li>▪ Mindfulness</li> <li>▪ Acceptance</li> <li>▪ Psychological Flexibility</li> </ul>
<b>ENDURANCE</b>	<ul style="list-style-type: none"> <li>▪ State Resilience</li> <li>▪ Meaning</li> <li>▪ Purpose</li> <li>▪ Hope</li> </ul>

**Generally, I agree/disagree with *Principle 3* – Panel responses Table 4 below:**

PANELLIST NUMBER	QUANTITATIVE RESPONSE	QUALITATIVE RESPONSE
1	7	<i>I like the fact that an individual who practices most of the key principle psychology interventions may develop mental fitness as defined here. For example, individuals who have identified their strengths and use them in the service of something bigger than themselves may develop strength (self-efficacy), flexibility (acceptance), and endurance (meaning).</i>
2	6	<i>Although I think it's probably measurable, I'm not sure if this taxonomy would be the best way, even if it does have the advantage that its analogous to physical fitness... for example, one may be mentally fit when they considered all the options before deciding on action. You could say they are strong mentally for having the capacity to factor these reasons, that they are flexible for doing so, or have the time and patience to ensure to do so...</i>
3	6	<i>In terms of cognitions the thinking style is likely to be more flexible then individuals who are less 'mentally fit'. Cognitive behavioural and/or Rational emotive behaviour theory could be helpful to explain the differences between flexible vs. non-flexible thinking</i>
4	No response	<i>Once you define a term you can measure it – so it all depends on how good your definition is</i>
5	5	<i>Generally agree with this, although I think there are a number of ways you could cut this data. Would also be interested to see where strengths use specifically fits into this construct, as something that is associated with a wide range of positive correlates.</i>
6	5	<i>I agree with the three factors but I would like to see the items to fully understand how you would be measuring mental fitness. My one other observation is that each of these components are vast topic areas in their own right which often then carry their own sub components. I am wondering if you should consider narrowing the sub components of the three factors.</i>
7	6 (and) 7	<i>I wonder if attentional control/focus, optimism and a success (growth) mindset (desire for achievement and ability to act of these thoughts) is adequately reflected in the above criteria. I think your mental fitness definition imply these qualities.</i>
8	7	<i>I totally agree and I love your classifications as well. I also think that specific techniques already establish and used in the physical fitness world could also be explicitly embedded, for example, mental imagery and self-talk/affirmations</i>
9	5	<i>Very kitchen-sink-like here. What is required is a model showing a single latent factor with 3 higher-order indicators and many lower-order indicators. Hard to fit such models. This is what it would take to convince me the authors have “cleaved nature at its joints” rather than creating a purely conceptual amalgamation of nearly everything positive. I have the same criticisms of the VIA strengths inventory.</i>
10	5	<i>While this has great appeal from a communication and marketing perspective I wonder how well the subscales stand up? It would be helpful to have a definition of the terms to aid understanding. It might also make more sense to indicate if a component builds strength, flexibility or endurance, as I imagine that there is cross over between the them, e.g. [insert table]</i>
11	5	<i>Overall, I agree with the idea that you will be able to measure mental fitness. However, I think it would be useful to operationalise exactly what you mean by strength, flexibility, and endurance.</i>
12	6	<i>I wonder if pure cognitive abilities might also be included here? The ability to reason or problem-solve under duress. Some insight into the rigorous training regimes of astronauts or jet fighter pilots might provide useful some information about what sorts of characteristics describe mental toughness. The above components may appear as social</i>

PANELLIST NUMBER	QUANTITATIVE RESPONSE	QUALITATIVE RESPONSE
		<i>psychological factors only. Wisdom research recognises the contribution of intelligence to the domain of wisdom, although intelligence alone is not sufficient. Might it be expected that someone processing a high degree of mental fitness would also possess a necessary level of factor g?</i>
13	7	<i>I agree that in principle it is measurable, but care needs to be taken with whether it is measurable through self-report – mindfulness has been, though this has been widely criticised and the findings are not comparable with objective measures. Similarly, this is a major problem with the VIA – what does self-reported sense of humour actually mean? Particularly when we know that people have enhancement biases where most people think that they are better than average (see Sedikides' work in this area).</i>
14	5	<i>Agree with the <u>Strength</u> but would add coping self-efficacy rather than efficacy; there is a fairly new scale that I have used by Susan Folkman on CSE – excellent!!! Much better than just self-efficacy and <u>Flexibility</u> – do not see how mindfulness would apply; would include: act as an independent observer; open mindfulness; freedom to choose; changeable (similar to flexibility). <u>Endurance</u> – I would add mental strength; persistence; flourish (?)</i>
15	5	<i>(no comment noted)</i>
16	3	<i>This is the weakest part in terms of conceptualization and measurement. Strength should include not only character strengths but also psychological resources which include religious beliefs. Emotional management and meaning management are important aspects of self-regulation should be part of the flexibility category. Endurance is clearly related to persistence and perseverance.</i>
17	7	<i>(no comment noted)</i>
18	7	<i>(no comment noted)</i>
19	6	<i>See 100 words written on page 6 – the resource index is a big problem as the nomological network is created using constructs (see the resource index) that require further construct validation of both theory and measurement.</i>
20	5	<i>Would need a bit more information about how 'strength', 'flexibility' and 'endurance' are defined within mental fitness – not entirely sure that the resource index components' are specific to the three domains.</i>
21	5	<i>At some point you will need to explain why the different descriptors have been put into these categories. I know there has been recent work in this area, but the term "cognitive flexibility" needs some explanation. Endurance – state resilience – what is that, why was it chosen? "Hope" is futuristic, as is "purpose" to a certain extent, but "meaning" and "purpose" are soundly connected to both the past and the future. In summary, I think you need to define some of these terms with the view to giving a rationale as to why they were included under these particular categories. Then give examples of the subjective (i.e. scales) and if possible behavioural measures of these concepts.</i>
22	5	<i>Clearly some aspects of mental fitness are easy to measure. But like in physical fitness there are dimension which are difficult to measure, dimensions like mindfulness, meaning or purpose seem to me very difficult to measure.</i>
23	6	<i>Agree with the value of bringing in measures that relate to the broad constructs used with physical fitness, thus keeping the parallels evident, not to mention usefulness of establishing baselines for pre/post measures and feedback. Can see the links between 'endurance' and what we know is of importance in 'striving' here. Assume you have drawn on similar research for other resource index components? By keeping a parallel with physical fitness, are there any limitations here with respect to what</i>

PANELLIST NUMBER	QUANTITATIVE RESPONSE	QUALITATIVE RESPONSE
		<i>you then choose to measure?</i>
24	7	<p><i>Strength could include self-esteem, interpersonal/social skills and political skills (skills would vary with setting e.g. work or community service)</i></p> <p><i>Flexibility could also include open mindedness, tolerance of ambiguity and uncertainty and problem solving</i></p> <p><i>Endurance could include proactivity, optimism and vitality</i></p>
25	6	<i>Where does optimism fit into the matrix? Have you considered how Seligman's classification of strengths would fit? I like the idea of measuring mental fitness by using the three categories but does this describe someone who is coping with the challenges of life?</i>

**TABLE 5: Qualitative & Quantitative Responses – Principle 3**

**Question 5. Principle 4: Mental Fitness can be improved in a way similar to physical fitness.**

- Mental fitness can be learned (activities, exercises, regular practice).
- Mental fitness interventions could target specific components.

**Generally, I agree/disagree with Principle 4 – Panel responses Table 5 below:**

PANELLIST NUMBER	QUANTITATIVE RESPONSE	QUALITATIVE RESPONSE
1	7	<i>I very much agree</i>
2	7	<i>As an example, reading todd kashdans book on curiosity has made me more curious, which has made me more mentally fit I would argue so yes....</i>
3	7	<i>I agree that it can be improved in a similar way to physical fitness. However, not every person is able to improve due to a number of reasons. For example clients with some disorders so encounter great difficulty applying techniques and can lapse quite easily especially if the environmental pressures are very high.</i>
4	6	<i>Even though one may not have fully defined it – you can still improve it – you just may not be able to measure it as well</i>
5	7	<i>I totally subscribe to this view that mental fitness can be learned and developed. See for example Fred Luthans work on psychological capital which seems to follow a similar principle. I would be cautious about drawing the parallels too closely with physical fitness, since there may come a point where the parallel breaks down , and ultimately constrains you in terms of your thinking and also how you present mental fitness to a wider audience. Just something to be aware of.</i>
6	6	<i>I think that you can definitely improve mental fitness through training and exposure to mental exercises. I have observed people improve specific aspects of mental fitness such as: Strengths, Positivity and Hope. The only piece I wonder is if everyone can increase mental fitness, like physical fitness there maybe individual differences between people. There might also be a small percentage of people who are unable to increase their mental fitness.</i>
7	7	<i>Yes learned (taught) and caught from experiences - including failure – so that personal construing is possible. I feel that growth mindset research (Dweck) is key to understanding how this process can be delivered, largely from reflection.</i>
8	6	<i>Nice concept but for me it conjures up the notion that physical and mental health are dichotomous concepts. I think the real skill would be to develop activities that simultaneously work on mental and physical fitness. The two systems are interdependent. After I return from a good workout at the gym, I think more clearly, rationally and positively. I am sure some psychological interventions that work on self-appreciation and gratitude (e.g. for good health and life) would encourage more physically and healthy lifestyles.</i>
9	6	<i>I'd want to know how the interventions looked different from the many other positive interventions currently in existence. I am worried that we</i>

PANELLIST NUMBER	QUANTITATIVE RESPONSE	QUALITATIVE RESPONSE
		<i>need sophisticated research more than we need new positive labels. Positive Psychology has sometime been more about the former than the latter</i>
10	6	<i>I totally agree with the first idea that mental fitness can be learned.  As for the second idea – strength, flexibility and endurance seem to be useful conceptual categories for communicating the meaning of Mental Fitness, but I am unsure about their utility beyond that. It would be helpful to have definitions of these terms to better understand how they could be targeted</i>
11	7	<i>Totally agree with this principle. Would you adapt principles and procedures that have been found useful for physical fitness? Would you focus on targeting the “resource indexes” detailed on the previous page?  With my devil’s advocate hat on, I also wonder whether mental fitness is something that we can also inherit, to some degree, from our parents.</i>
12	6	<i>Yes, this is particularly appealing and the field of brain plasticity gives ample evidence that this is possible. It is also inherently attractive in the same way in which physical fitness is linked to health and well-being.</i>
13	6	<i>Again, clarity over use of “similar ways”.</i>
14	5	<i>Yes and no; Can be learned if you have the right coach and needs to be very individually targeted NOT generic/universal tasks. The individual has to recognize and need do change. Also can be learnt from early years; mentoring!!</i>
15	6	<i>(no comment noted)</i>
16	6	<i>The exclusive emphasis on activities and exercises reflects a common weakness or limitation of Positive Psychology. Being an existentially-oriented positive psychologist, I would also include such concepts as awakenings, enlightenment, attitudes, mind0sets, etc. Which emphasize the quality of the person or being rather than performance.</i>
17	7	<i>(no comment noted)</i>
18	6	<i>Need to differentiate exercise from training and the idea of regular workouts and self-monitoring</i>
19	6	<i>Mental fitness interventions will target the components of strength, flexibility, and endurance. The theoretical underpinnings of any interventions specific to the components of “mental fitness” will have to be compared to a cognitive behavioural intervention, compared to a self-determination theory intervention, compared to an emotional intelligence theory (compared to placebo/control). If you are very specific with the language to describe the construct, construct factors, measurement, and the potential theoretical underpinning for applied interventions, then construct validation will also be systematic.</i>
20	4	<i>See note on Principle 3</i>
21	6	<i>If clinical psychologist did not believe that a trained clinician could not increase a person’s well-being (from below normal to normal), then one wonders what their mission is. Similarly, Positive Psychology interventions should effectively increase a person’s well-being (from normal, or just below normal, to above normal). However one has to acknowledge that average motivation to change may be less in the latter situation, as immediate suffering is not a driver.</i>
22	6	<i>I agree, but mental fitness is not necessarily a clear indicator for happiness or well-being of the individual. The environmental factors are totally out of the picture in the fitness concept.</i>
23	6	<i>I’m not sure about the degree to which mental fitness is learned and increased in the same way that physical fitness is achieved. I would predict a more complex set of precursors in terms of prior emotional/psychological learning that may interact with the ‘mental fitness program’ and thus need to be ‘targeted’. However, I endorse the</i>

PANELLIST NUMBER	QUANTITATIVE RESPONSE	QUALITATIVE RESPONSE
		<i>idea of having a set of targeted activities and exercises based on proper assessment that would lead to increased levels of mental fitness. My questions would be around such things as 'if there a neat set of exercises to take a person from self-doubt to self-belief'. Will the parallels of 'physical and mental fitness' hold up across some variables, and not so well with others?</i>
24	7	<i>Again self-evident – just like muscular strength! PS this is a very worthwhile project. I wish you every success!</i>
25	7	<i>Psychological practice would say yes, we can increase mental fitness! Programs that are preventative before problems arise, interventions to generally address problems or specific therapies for individuals are all available now. It sounds like you are targeting a universal prevention program (with many parts) that could be delivered in work [places, schools, or in community settings. Would it need to be delivered by psychologists or could it be something that was more like self-help?</i>

TABLE 6: Qualitative &amp; Quantitative Responses – Principle 4

**THANK YOU FOR YOUR VALUED PARTICIPATION.**

**BASED ON ROUND 2, A FINAL REPORT WILL BE FORWARDED  
TO ALL PARTICIPANTS ONCE COMPLETED.**

**PLEASE EMAIL YOUR RESPONSES AT YOUR  
EARLIEST CONVENIENCE TO:**

Appendix 6:  
Mental Fitness Participant Questionnaire



***PARTICIPANT INFORMATION SHEET***

**Title: Conceptualising and Measuring Mental Fitness**

**PURPOSE OF THE RESEARCH**

This is an invitation to participate in a study being conducted by researchers at the University of Wollongong as part of a PhD dissertation. The specific purpose of this study is to explore the statistical properties of a recently developed measure of mental fitness.

**INVESTIGATORS**

Dr Lindsay Oades Sydney Business School University of Wollongong 02-4221 3694	A/Prof Peter Caputi School of Psychology University of Wollongong 02-4221 3717	Paula Robinson School of Psychology University of Wollongong
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If you choose to participate, you will be asked to answer a series of questions and respond to each question. This should take no more than 30 - 35 minutes of your time. Your involvement in the study is voluntary and you may withdraw your participation at any time.

**CONFIDENTIALITY**

Assigning a numerical code to each data set will preserve confidentiality of all participants.

**BENEFITS OF THE RESEARCH**

Your participation in the project will assist in the development of a measure of mental fitness. This measure will assist scientists and practitioners to reliably assess and develop knowledge and skills within the field of mental health.

Data collected for this study will be stored securely for five years after the results have been published, after which time it will be disposed of.

If you have any enquiries regarding the conduct of this research please contact the Secretary of the University of Wollongong Human Research Ethics Committee on

02 4221 4457.

**INFORMED CONSENT FORM**

In order to participate in this research study, it is necessary that you give your informed consent. By ticking the box below you are indicating that you understand the nature of the research study and your role in that research and that you agree to participate in the research. Please consider the following points before signing:

- **I understand that I am participating in research;**
- **I understand that my identity will not be linked with my data, and that all information I provide will remain anonymous and confidential;**
- **I understand that participation in this research is voluntary, and that, after any individual research project has begun, I may refuse to participate further without penalty.**

In addition, I understand that I may contact the Secretary of the University of Wollongong Human Research Ethics Committee on +61 2 4221 4457 if I have questions concerning my rights as a participant in this research or to report a research-related injury.

**I am also stating that I am over 18 years of age, and that I understand the above information and consent to participate in this study.**

☐ I have read the above and agree to participate in this study.

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PLEASE ANSWER THE FOLLOWING PRELIMINARY QUESTIONS ...

- 1. Are you MALE or FEMALE (please circle)
- 2. What is your age range (please circle): 18 – 24 25 – 39 40 – 54 55+
- 3. Is English your first language (please circle)? YES NO (If NO please complete question 4)
- 4. How well do you speak English (please circle)? VERY WELL WELL NOT WELL

Please respond to the following statements as truthfully and accurately as you can. Please remember that these are subjective questions and there are no right or wrong answers. Using the scale below, circle the response number that best describes you. Do not spend too much time on any statement.

1	2	3	4	5	6	7
Strongly	Disagree	Slightly	Neutral	Slightly	Agree	Strongly
Disagree		Disagree		Agree		Agree

I've been pretty successful in life	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I worry about not being able to control my worries and feelings	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I am easily distracted	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I am able to adapt to change	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I can think of many ways to get the things in life that are important to me	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
When things look hopeless, I don't give up	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

Worries get in the way of my success	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
Using my strengths is something I am familiar with	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I always play to my strengths	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
Things never work out the way I want them to	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
Compared to other people, I can do most tasks very well	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I understand my life's meaning	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

I consider the people I regularly interact with to be my friends	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
In my life I do not get much of a chance to show how capable I am	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I'm afraid of my feelings	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
It's easy for me to keep track of my thoughts and feelings	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I know when I am at my best	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I have a good sense of what makes my life meaningful	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

I know what I do best	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I am seeking a purpose or mission for my life	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
My thoughts and feelings do not get in the way of how I want to live my life	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
When I am feeling <i>positive</i> emotions, I am careful not to express them	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
Often, I do not feel very competent	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
When facing difficult tasks, I am certain that I will accomplish them	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

I can think of many ways to get out of a jam	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
My past experiences have prepared me well for my future	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I control my emotions by <i>not expressing them</i>	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
There is not much opportunity for me to decide for myself how to do things in my daily life	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I find it easy to use my strengths in the things I do	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
My painful memories prevent me from having a fulfilling life	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

I have to act on a hunch, without knowing why	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I know where to get help	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
People in my life care about me	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I always try to use my strengths	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I am searching for meaning in my life	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
Past successes gives me confidence for new challenges	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

I have a strong sense of purpose in life	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
Things happen for a reason	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
When I'm faced with a stressful situation, I make myself <i>think about it</i> in a way that helps me stay calm	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I energetically pursue my goals	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I am aware of my strengths	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I believe I can succeed at most any endeavor to which I set my mind	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

I achieve what I want by using my strengths	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
My work gives me lots of opportunities to use my strengths	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I'm always optimistic about my future	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I see the humorous side of things	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I keep my emotions to myself	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I often do not feel very capable	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

I am preoccupied by the future	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
When I want to feel less <i>negative</i> emotion, I <i>change the way I'm thinking</i> about the situation	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I am confident that I can perform effectively on many different tasks	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
Other people see the strengths that I have	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I can accept things I cannot change	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
There are lots of ways around any problem that I am facing now	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

I can tolerate emotional pain	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
At the present time, I am energetically pursuing my goals	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I think of myself as strong person	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
Most of my time is spent doing the things that I am good at doing	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I have discovered a satisfying life purpose	1 Strongly disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
When I want to feel more <i>positive</i> emotion, I <i>change the way I'm thinking</i> about the situation	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

I will be able to successfully overcome many challenges	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I know the things I am good at doing	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
Its OK if I remember something unpleasant	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I am able to use my strengths in lots of different ways	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I can handle unpleasant feelings	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
My life presents me with lots of different ways to use my strengths	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

I know my strengths well	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
Emotions cause problems in my life	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I am always looking to find my life's purpose	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
People I know tell me I am good at what I do	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
In my daily life, I frequently have to do what I am told	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I use my strengths to get what I want out of life	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

I am regularly able to do what I do best	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I am in control of my life	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I feel like I can pretty much be myself in my daily situations	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I am always searching for something that makes my life feel significant	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
People I interact with on a daily basis tend to take my feelings into consideration	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I am preoccupied by the past	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

Even when others get discouraged, I know I can find a way to solve the problem	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
There are lots of ways around any problem	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
When I am feeling <i>negative</i> emotions, I make sure not to express them	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
Sometimes fate and God can help	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
If I should find myself in a jam, I could think of many ways to get out of it	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I can usually describe how I feel at the moment in considerable detail	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

I am able to accept the thoughts and feelings I have	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
Coping with stress strengthens me	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
If something can go wrong for me, it will	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I always look on the bright side of things	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I have to think hard about what my strengths are	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I am not easily discouraged by failure	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

My life has no clear purpose	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I am able to pay close attention to one thing for a long period of time	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I use my strengths everyday	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
My painful experiences and memories make it difficult for me to live a life that I would value	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I can make unpopular or difficult decisions	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
It is easy for me to concentrate on what I am doing	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

There are not many people that I am close to	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I like challenge	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
One works to attain one's goals	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I am able to use my strengths in lots of different situations	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I am able to focus on the present moment	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
Using my strengths comes naturally to me	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

I rarely count on good things happening to me	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
Under pressure, I focus and think clearly	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
When I want to feel less <i>negative</i> emotion (such as sadness or anger), I <i>change what I'm thinking about</i>	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I'm a believer in the idea that 'every cloud has a silver lining'	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
In general, I think that I can obtain outcomes that are important to me	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I pretty much keep to myself and don't have a lot of social contacts	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

It seems like most people are handling their lives better than I am	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I try to notice my thoughts without judging them	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I am in control of my life	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I take pride in my achievements	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I tend to bounce back after illness, injury or hardship	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
At this time, I am meeting the goals that I have set for myself	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

I hardly ever expect things to go my way	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
Right now, I see myself as being pretty successful	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
My life has a clear sense of purpose	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I can deal with whatever comes	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
Most days I feel a sense of accomplishment from what I do	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I can think of many ways to reach my current goals	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

When I want to feel more <i>positive</i> emotion (such as joy or amusement), I <i>change what I'm thinking about</i>	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I get along with people I come into contact with	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
Even when things are tough, I can perform quite well	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I will be able to achieve most of the goals that I have set for myself	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
The people I interact with regularly do not seem to like me much	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I prefer to take the lead in problem solving	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

I know the things I do best	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
People are generally pretty friendly towards me	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I meet the goals that I set for myself	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I am looking for something that makes my life feel meaningful	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
In uncertain times, I usually expect the best	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I control my emotions by <i>changing the way I think</i> about the situation I'm in	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

I have close and secure relationships	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I generally feel free to express my ideas and opinions	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I really like the people I interact with	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I feel like I am free to decide for myself how to live my life	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
Best effort no matter what	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
One can achieve one's goals	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

I feel pressured in my life	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I have been able to learn interesting new skills recently	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I feel tired most of the time	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I am easily downed in an argument	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I worry about my health	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree
I usually find myself worrying about something	1 Strongly Disagree	2 Disagree	3 Slightly Disagree	4 Neutral	5 Slightly Agree	6 Agree	7 Strongly Agree

<p><b>Please read each statement below and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you <u>OVER THE PAST WEEK</u>. There are no right or wrong answers. Do not spend too much time on any statement.</b></p>	<p><b>0 = Did not apply to me at all – NEVER</b></p>	<p><b>1 = Applied to me to some degree, or some of the time - SOMETIMES</b></p>	<p><b>2 = Applied to me to a considerable degree, or a good part of the time – OFTEN</b></p>	<p><b>3 = Applied to me very much, or most of the time – ALMOST ALWAYS</b></p>
I found it hard to wind down	0 = Never	1 = Sometimes	2 = Often	3 = Almost Always
I was aware of dryness of my mouth	0 = Never	1 = Sometimes	2 = Often	3 = Almost Always
I couldn't seem to experience any positive feeling at all	0 = Never	1 = Sometimes	2 = Often	3 = Almost Always
I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)	0 = Never	1 = Sometimes	2 = Often	3 = Almost Always
I found it difficult to work up the initiative to do things	0 = Never	1 = Sometimes	2 = Often	3 = Almost Always
I tended to over-react to situations	0 = Never	1 = Sometimes	2 = Often	3 = Almost Always
I experienced trembling (e.g., in the hands)	0 = Never	1 = Sometimes	2 = Often	3 = Almost Always

I felt that I was using a lot of nervous energy	0 = Never	1 = Sometimes	2 = Often	3 = Almost Always
I was worried about situations in which I might panic and make a fool of myself	0 = Never	1 = Sometimes	2 = Often	3 = Almost Always
I felt that I had nothing to look forward to	0 = Never	1 = Sometimes	2 = Often	3 = Almost Always
I found myself getting agitated	0 = Never	1 = Sometimes	2 = Often	3 = Almost Always
I found it difficult to relax	0 = Never	1 = Sometimes	2 = Often	3 = Almost Always
I felt down-hearted and blue	0 = Never	1 = Sometimes	2 = Often	3 = Almost Always
I was intolerant of anything that kept me from getting on with what I was doing	0 = Never	1 = Sometimes	2 = Often	3 = Almost Always
I felt I was close to panic	0 = Never	1 = Sometimes	2 = Often	3 = Almost Always
I was unable to become enthusiastic about anything	0 = Never	1 = Sometimes	2 = Often	3 = Almost Always

I felt I wasn't worth much as a person	0 = Never	1 = Sometimes	2 = Often	3 = Almost Always
I felt that I was rather touchy	0 = Never	1 = Sometimes	2 = Often	3 = Almost Always
I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat)	0 = Never	1 = Sometimes	2 = Often	3 = Almost Always
I felt scared without any good reason	0 = Never	1 = Sometimes	2 = Often	3 = Almost Always
I felt that life was meaningless	0 = Never	1 = Sometimes	2 = Often	3 = Almost Always

**Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer according to what really reflects your experience rather than what you think your experience should be. Please treat each item separately from every other item.**

I could be experiencing some emotion and not be conscious of it until some time later	1 = Almost Never	2 = Very Infrequently	3 = Sometimes	4 = Somewhat Frequently	5 = Very Frequently	6 = Almost Always
I break or spill things because of carelessness, not paying attention, or thinking of something else	1 = Almost Never	2 = Very Infrequently	3 = Sometimes	4 = Somewhat Frequently	5 = Very Frequently	6 = Almost Always
I find it difficult to stay focused on what's happening in the present	1 = Almost Never	2 = Very Infrequently	3 = Sometimes	4 = Somewhat Frequently	5 = Very Frequently	6 = Almost Always
I tend to walk quickly to get where I'm going without paying attention to what I experience along the way	1 = Almost Never	2 = Very Infrequently	3 = Sometimes	4 = Somewhat Frequently	5 = Very Frequently	6 = Almost Always

I tend not to notice feelings of physical tension or discomfort until they really grab my attention	1 = Almost Never	2 = Very Infrequently	3 = Sometimes	4 = Somewhat Frequently	5 = Very Frequently	6 = Almost Always
I forget a person's name almost as soon as I've been told it for the first time	1 = Almost Never	2 = Very Infrequently	3 = Sometimes	4 = Somewhat Frequently	5 = Very Frequently	6 = Almost Always
It seems I am "running on automatic," without much awareness of what I'm doing	1 = Almost Never	2 = Very Infrequently	3 = Sometimes	4 = Somewhat Frequently	5 = Very Frequently	6 = Almost Always
I rush through activities without being really attentive to them	1 = Almost Never	2 = Very Infrequently	3 = Sometimes	4 = Somewhat Frequently	5 = Very Frequently	6 = Almost Always
I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there	1 = Almost Never	2 = Very Infrequently	3 = Sometimes	4 = Somewhat Frequently	5 = Very Frequently	6 = Almost Always

I do jobs or tasks automatically, without being aware of what I'm doing	1 = Almost Never	2 = Very Infrequently	3 = Sometimes	4 = Somewhat Frequently	5 = Very Frequently	6 = Almost Always
I find myself listening to someone with one ear, doing something else at the same time	1 = Almost Never	2 = Very Infrequently	3 = Sometimes	4 = Somewhat Frequently	5 = Very Frequently	6 = Almost Always
I drive places on 'automatic pilot' and then wonder why I went there	1 = Almost Never	2 = Very Infrequently	3 = Sometimes	4 = Somewhat Frequently	5 = Very Frequently	6 = Almost Always
I find myself preoccupied with the future or the past	1 = Almost Never	2 = Very Infrequently	3 = Sometimes	4 = Somewhat Frequently	5 = Very Frequently	6 = Almost Always
I find myself doing things without paying attention	1 = Almost Never	2 = Very Infrequently	3 = Sometimes	4 = Somewhat Frequently	5 = Very Frequently	6 = Almost Always

I snack without being aware that I’m eating	1 =  Almost Never	2 =  Very Infrequently	3 =  Sometimes	4 =  Somewhat Frequently	5 =  Very Frequently	6 =  Almost Always
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**This scale consists of a number of words that describe different feelings and emotions. Read each item and then circle the appropriate answer next to that word. Indicate to what extent you have felt this way during the past week.**

Interested	1 = Not at all	2 = A little	3 = Moderately	4 = Quite a bit	5 = Extremely
Distressed	1 = Not at all	2 = A little	3 = Moderately	4 = Quite a bit	5 = Extremely
Excited	1 = Not at all	2 = A little	3 = Moderately	4 = Quite a bit	5 = Extremely
Upset	1 = Not at all	2 = A little	3 = Moderately	4 = Quite a bit	5 = Extremely
Strong	1 = Not at all	2 = A little	3 = Moderately	4 = Quite a bit	5 = Extremely
Guilty	1 = Not at all	2 = A little	3 = Moderately	4 = Quite a bit	5 = Extremely
Scared	1 = Not at all	2 = A little	3 = Moderately	4 = Quite a bit	5 = Extremely
Hostile	1 = Not at all	2 = A little	3 = Moderately	4 = Quite a bit	5 = Extremely
Enthusiastic	1 = Not at all	2 = A little	3 = Moderately	4 = Quite a bit	5 = Extremely
Proud	1 = Not at all	2 = A little	3 = Moderately	4 = Quite a bit	5 = Extremely
Irritable	1 = Not at all	2 = A little	3 = Moderately	4 = Quite a bit	5 = Extremely
Alert	1 = Not at all	2 = A little	3 = Moderately	4 = Quite a bit	5 = Extremely

Ashamed	1 = Not at all	2 = A little	3 = Moderately	4 = Quite a bit	5 = Extremely
Inspired	1 = Not at all	2 = A little	3 = Moderately	4 = Quite a bit	5 = Extremely
Nervous	1 = Not at all	2 = A little	3 = Moderately	4 = Quite a bit	5 = Extremely
Determined	1 = Not at all	2 = A little	3 = Moderately	4 = Quite a bit	5 = Extremely
Attentive	1 = Not at all	2 = A little	3 = Moderately	4 = Quite a bit	5 = Extremely
Jittery	1 = Not at all	2 = A little	3 = Moderately	4 = Quite a bit	5 = Extremely
Active	1 = Not at all	2 = A little	3 = Moderately	4 = Quite a bit	5 = Extremely
Afraid	1 = Not at all	2 = A little	3 = Moderately	4 = Quite a bit	5 = Extremely

CIRCLE ONE NUMBER FROM 1 – 5 NEXT TO EACH STATEMENT THAT IS <u>MOST TRUE</u> FOR YOU RIGHT NOW ....	
In life I have:	<div>1                  2                  3                  4                  5</div> <div>No goals or aims    Clear goals &amp; aims</div>
My personal existence is:	<div>1                  2                  3                  4                  5</div> <div>Utterly meaningless,    Purposeful &amp; without purpose    meaningful</div>
In achieving life goals I've:	<div>1                  2                  3                  4                  5</div> <div>Made no progress    Progressed to whatsoever    complete fulfilment</div>
I have discovered:	<div>1                  2                  3                  4                  5</div> <div>No mission or    A satisfying life purpose in life    purpose</div>

**Next are some questions about the support that is available to you.**

**People sometimes look to others for companionship, assistance, or other types of support.**

**How often is each of the following kinds of support available to you if you need it? (Circle one number on each line)**

Someone to have a good time with	1 = None of the time	2 = A little of the time	3 = Some of the time	4 = Most of the time	5 = All of the time
Someone to turn to for suggestions for how to deal with a personal problem	1 = None of the time	2 = A little of the time	3 = Some of the time	4 = Most of the time	5 = All of the time
Someone who understands your problems	1 = None of the time	2 = A little of the time	3 = Some of the time	4 = Most of the time	5 = All of the time
Someone to love and make you feel wanted	1 = None of the time	2 = A little of the time	3 = Some of the time	4 = Most of the time	5 = All of the time
Someone you can count on to listen to you when you need to talk	1 = None of the time	2 = A little of the time	3 = Some of the time	4 = Most of the time	5 = All of the time
Someone to give you good advice about a crisis	1 = None of the time	2 = A little of the time	3 = Some of the time	4 = Most of the time	5 = All of the time
Someone who shows you love and affection	1 = None of the time	2 = A little of the time	3 = Some of the time	4 = Most of the time	5 = All of the time
Someone to give you information to help you understand a situation	1 = None of the time	2 = A little of the time	3 = Some of the time	4 = Most of the time	5 = All of the time
Someone to confide in or talk to about yourself or your problems	1 = None of the time	2 = A little of the time	3 = Some of the time	4 = Most of the time	5 = All of the time

Someone who hugs you	1 = None of the time	2 = A little of the time	3 = Some of the time	4 = Most of the time	5 = All of the time
Someone to get together with for relaxation	1 = None of the time	2 = A little of the time	3 = Some of the time	4 = Most of the time	5 = All of the time
Someone whose advice you really want	1 = None of the time	2 = A little of the time	3 = Some of the time	4 = Most of the time	5 = All of the time
Someone to share your most private worries and fears with	1 = None of the time	2 = A little of the time	3 = Some of the time	4 = Most of the time	5 = All of the time
Someone to do something enjoyable with	1 = None of the time	2 = A little of the time	3 = Some of the time	4 = Most of the time	5 = All of the time

Appendix 7:  
*Item Content for each Factor*

<b>Item</b>	<b>Factor 1 STRENGTH</b>	<b>Factor 2 ENDURANCE</b>	<b>Factor 3 TEAM</b>	<b>Factor 4 FLEXIBILITY</b>
SUS_9	I achieve what I want by using my strengths			
SUS_38	Using my strengths is something I am familiar with			
SKS_31	I know my strengths well			
SKS_11	I know what I do best			
SKS_40	I know when I am at my best			
SUS_28	I find it easy to use my strengths in the things I do			
SUS_3	I always play to my strengths			
SUS_6	I always try to use my strengths			
SKS_25	I am aware of my strengths			
CDRISC21	Strong sense of purpose in life			
BNSG_5	People I know tell me I am good at what I do			
SKS_29	I know the things I am good at doing			
SKS_35	I know the things I do best			
MLQ_1	I understand my life's meaning			
SUS_2	I am regularly able to do what I do best			

Item	Factor 1 STRENGTH	Factor 2 ENDURANCE	Factor 3 TEAM	Factor 4 FLEXIBILITY
SUS_37	Most of my time is spent doing the things that I am good at doing			
SUS_39	I am able to use my strengths in lots of different ways			
MLQ_6	I have discovered a satisfying life purpose			
MLQ_4	My life has a clear sense of purpose			
SKS_4	Other people see the strengths that I have			
SUS_24	My life presents me with lots of different ways to use my strengths			
SUS_18	I use my strengths to get what I want out of life			
MLQ_5	I have a good sense of what makes my life meaningful			
PILT_20	I have discovered:			
NGSE_4	I believe I can succeed at most any endeavor to which I set my mind			
CDRISC15		Prefer to take the lead in		

Item	Factor 1 STRENGTH	Factor 2 ENDURANCE	Factor 3 TEAM	Factor 4 FLEXIBILITY
		problem solving		
CDRISC22		In control of my life		
NGSE_8		Even when things are tough, I can perform quite well		
PANAS_16		Determined		
CDRISC11		One can achieve one's goals		
CDRISC14		Under pressure, focus and think clearly		
CDRISC4		Can deal with whatever comes		
CDRISC23		I like challenge		
AAQ_6		I am in control of my life		
BNSG_17		I feel like I can pretty much be myself in my daily situations		
CDRISC17		Think of self as strong person		
NGSE_1		I will be able to achieve most of the goals that I have set for myself		
CDRISC10		Best effort no matter what		
NGSE_5		I will be able to successfully overcome many challenges		
BNSG_10		I have been able to learn interesting new skills recently		
PANAS_5		Strong		
BNSG_1		I feel like I am		

Item	Factor 1 STRENGTH	Factor 2 ENDURANCE	Factor 3 TEAM	Factor 4 FLEXIBILITY
		free to decide for myself how to live my life		
NGSE_2		When facing difficult tasks, I am certain that I will accomplish them		
NGSE_3		In general, I think that I can obtain outcomes that are important to me		
PANAS_9		Enthusiastic		
CAMS_10		I am able to accept the thoughts and feelings I have		
CDRISC8		Tend to bounce back after illness, injury or hardship		
MOSS_13			Someone to share your most private worries and fears with	
MOSS_9			Someone to confide in or talk to about yourself or your problems	
MOSS_6			Someone to give you good advice about a crisis	
MOSS_5			Someone you can count on to listen to you when you need to talk	
MOSS_11			Someone to get	

Item	Factor 1 STRENGTH	Factor 2 ENDURANCE	Factor 3 TEAM	Factor 4 FLEXIBILITY
			together with for relaxation	
MOSS_3			Someone who understands your problems	
MOSS_12			Someone whose advice you really want	
MOSS_4			Someone to love and make you feel wanted	
MOSS_2			Someone to turn to for suggestions for how to deal with a personal problem	
MOSS_8			Someone to give you information to help you understand a situation	
MOSS_10			Someone who hugs you	
MOSS_7			Someone who shows you love and affection	
MOSS_1			Someone to have a good time with	
MAAS_10				I do jobs or tasks automatically, without being aware of what I'm doing
MAAS_8				I rush through activities without being really attentive to them

Item	Factor 1 STRENGTH	Factor 2 ENDURANCE	Factor 3 TEAM	Factor 4 FLEXIBILITY
MAAS_7				It seems I am “running on automatic,” without much awareness of what I’m doing
MAAS_14				I find myself doing things without paying attention
MAAS_3				I find it difficult to stay focused on what’s happening in the present
PANAS_7				Scared
MAAS_5				I tend not to notice feelings of physical tension or discomfort until they really grab my attention
PANAS_6				Guilty
PANAS_20				Afraid
PANAS_13				Ashamed
AAQ_8R				It seems like most people are handling their lives better than I am
BNSG_19R				I often do not feel very capable
LOT_5R				I hardly ever expect things to go my way

Note: Strengths Use Scale (SUS); Strengths Knowledge Scale (SKS); Meaning in Life (MIL); Basic Needs Satisfaction General (BNSG); Purpose in Life Test (PILT); New General Self-Efficacy Scale (NGSES); Connor-Davidson Resilience Scale (CDRISC); Positive and Negative Affect Scale (PANAS); Acceptance Action Questionnaire II (AAQII); Cognitive and Affective Mindfulness Scale Revised (CAMSR); Medical Outcomes Social Support Survey (MOSS); Mindfulness Attention Awareness Scale (MAAS); Life Orientation Test (LOT).

