



# Psychometric evaluation of the English version 14-item resilience scale (RS) in an Australian outpatient population of men with prostate cancer

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## ABSTRACT

**Purpose:** Human resilience refers to the processes of positive adaptation and development in the context of perceived significant threats to an individual's life or function. This paper analyses the psychometric properties and performance of the English version 14-item Resilience Scale (RS) in an Australian outpatient sample of men ( $n = 209$ ) with advanced prostate cancer receiving androgen deprivation therapy.

**Methods:** A cross-sectional design was used to collect data from a purposive sample of men. The instrument's psychometric properties were rated against established criteria for reliability (internal consistency), construct validity (instrument dimensionality) and variability (floor and ceiling effect). Exploratory and confirmatory factor-analyses were performed.

**Results:** The English version 14-item RS demonstrated satisfactory internal consistency reliability (Cronbach's  $\alpha = 0.91$ ). A greater than 15% ceiling effect suggested limited data variability. Confirmatory factor analysis showed that items in the instrument measured primarily as a single factor with a good model of fit (RMSEA = 0.059; TLI = 0.950, CFI = 0.962).

**Conclusion:** The English version 14-item RS had satisfactory psychometric properties to capture the concept of resilience in an Australian outpatient sample of men with advanced prostate cancer, with some questions regarding detection of variability for ceiling effect. Further psychometric evaluation of the instrument in other adult clinical settings is recommended.

## 1. Introduction

The capacity to 'bounce-back' from life challenges such as cancer is increasingly recognised as providing an important contribution to the promotion and maintenance of wellbeing (Bonanno, 2004; Park and Slattery, 2014). The concept of resilience - once thought to be a rare or even pathological phenomenon among adults (Bonanno, 2004) - is believed to be a helpful strategy for adults dealing with life challenges and adversity (Walsh, 2003). While the operational definitions of resilience have been the subject of much debate during the past several decades, the concept has been summarised as a process of negotiating, managing and adapting to significant sources of stress and trauma

(Windle et al., 2011). Broadly, resilience refers to a class of phenomena characterised by good outcomes in spite of serious threats to adaptation or development (Masten, 2001). Human resilience particularly refers to the processes of positive adaptation and development in the context of perceived significant threats to an individual's life or function (Masten & O'Dougherty Wright, 2010). The study of human resilience broadly seeks to understand the individual differences in relation to adverse experiences (Masten & O'Dougherty Wright, 2010).

Historically, human resilience research has emphasised the notion that oppressive circumstances impair individuals and irrevocably restrict their development (Gillespie et al., 2007). Other assertions are that resilience does not occur in spite of adversity but because of it:

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resilience is forged from the adversity that challenges the individual (Bonanno, 2004; Waller, 2000; Walsh, 2003). Because some individuals emerge stronger when challenged by adversity - a strength that they may not have otherwise developed - resilience is viewed as a dynamic process rather than inherent process that relies on pre-existing internal strengths and capabilities and external resources (Gillespie et al., 2007; Masten & O'Doherty Wight, 2010; Windle et al., 2011). Moreover, because resilience is argued to be a dynamic process, this suggests that a person can be resilient at any point in time and under certain circumstances during their life (Masten & O'Doherty, 2010; Theis, 2006). The knowledge that resilience is a neither rare nor special quality found only in certain individuals, and can manifest throughout a person's life in response to life challenges and adversity, highlights the need for researchers to understand more fully the manifestations of resilience as used by adults living with illness adversity such as prostate cancer.

While the concept of resilience has been studied among human communities for many decades, the focus has largely been on children and adolescents (Gillespie et al., 2007). Resilience was not generally considered to be a process that emerged in adulthood - if resilience had not developed in earlier life then it's manifestation in adulthood was not only unlikely but, if present, could be indicative of unhelpful and even pathological phenomena (Bonanno, 2004; Park and Slattery, 2014). Nevertheless, while the responses to and management of stress and trauma experienced in childhood are known to play an influential role in shaping future resilience responses to adversity; exposure to significant sources of stress and trauma can occur, for the first time, at any point in time across the life continuum (Masten & O'Doherty Wright, 2010). Accordingly, resilience is becoming the focus of increasing interest in relation to its relationships with quality of life and health and well-being particularly among adults (Windle et al., 2011). Windle et al. (2011) emphasise the importance for the need to further examine resilience in adulthood by arguing that it could be the key to explaining resistance to risk, and how people of all ages deal with and bounce back from adversities such as ill health. For nursing, while the potential contribution of resilience in diverse clinical contexts is becoming a focus of increasing interest, knowledge of the use of resilience by adults experiencing a diversity of illness-related adversity, such as cancer, is either yet to be realised or still in its infancy (Gillespie et al., 2007).

One of the most widely used resilience scales among adult populations is the 25-item Resilience Scale (RS) (Wagnild and Young, 1993) (Ahern et al., 2006). The original 25-item scale was developed from a qualitative survey of 24 women who showed positive psychological adaptation from different life events (Wagnild and Young, 1990). Based on the narrative analyses of the women and a review of the literature, the authors proposed five components comprising the personal constituents of resilience: *equanimity, perseverance, self-reliance, meaningfulness, and existential aloneness* (Wagnild, 2009). Initial psychometric evaluation of the original 25-item scale in a random sample of 810 North American community dwelling older adults indicated a two-factor structure (*Personal Competence and Acceptance of Self and Life*), explaining 44% of the construct variance (Wagnild and Young, 1993). The scale has also been reported to have superior psychometric properties compared to other resilience scales (Ahern et al., 2006).

Subsequent refinement studies of the original 25-item scale led to the construction of the 14-item Resilience Scale (RS-14) (Wagnild, 2009). A validation study of the RS-14 conducted with sample of 690 middle aged and older adults showed a one-factor solution accounting for 53% of the total variance, with items ranging from 0.42 to 0.64, and a Cronbach's alpha reliability of 0.93 (Wagnild, 2011). A strong correlation ( $r = 0.97$ ,  $p < 0.001$ ) between the RS-25 and RS-14 was reported (Damásio et al., 2011).

While the translated RS-14 scale has been evaluated in a number of countries, for example, Brazil, China, Finland, Italy, Japan and Taiwan (Aiena et al., 2015; Callegari et al., 2016; Damásio et al., 2011; Losoi et al., 2013; Nashi et al., 2010); few studies have reported on the psychometric properties and performance of the English version RS-14

(Aiena et al., 2015; Yang et al., 2012). Furthermore, these few studies have used healthy, young, middle-aged and older adults as their sample populations. To date, no published studies have reported on the psychometric properties and performance of the English version RS-14 among older adults living with a chronic illness such as prostate cancer.

## 2. Aim and research question

The study aimed to assess the psychometric properties and performance of the English RS-14 in an Australian outpatient sample of men diagnosed with advanced prostate cancer receiving with the following research question: Is the RS-14 a reliable, valid and feasible scale to investigate resilience among an Australian outpatient population of men with prostate cancer receiving androgen deprivation therapy?

## 3. Methods

Based on data collected from this cross-sectional design study, the psychometric properties and performance of the English version RS-14 were investigated in terms of reliability (internal consistency), construct validity (instrument dimensionality), and variability (floor and ceiling effects). Exploratory and confirmatory factor-analysis methods were employed.

## 4. Study design, sampling, and data collection

Using a combination of purposive and convenience sampling, data were collected from men ( $n = 209$ ) with advanced prostate cancer receiving androgen deprivation therapy (ADT) attending a routine outpatient clinic appointment at an Australian tertiary hospital Men's Health Clinic. The clinic targeted men receiving hormone suppression therapy. Men receiving ADT were identified from their medical history on the day of the prescheduled and confirmed Men's Health Clinic appointment. Potentially eligible participants were approached and recruited to the study in the clinic waiting area.

The study inclusion criteria included men aged 40 years and older; diagnosed with prostate cancer and receiving ADT, were able to speak, comprehend, read and write English sufficiently to give informed consent and complete the study self-report survey. Men were excluded from the study if their presenting physical, cognitive, or emotional frailty precluded their ability to give informed consent and independently complete the survey.

After obtaining written, informed consent, data which included the English version RS-14 and sociodemographic and clinical variables were collected via an anonymous self-report survey between July 2011 and December 2013.

The RS-14 is comprised of 14-items which were scored using a seven-point Likert-type scale ranging from (1) 'strongly disagree' to (7) 'strongly agree'. Item examples include: 'I am determined' and 'my belief in myself gets me through hard times'. Graded items were added to provide a total score which could range from 14 to 98. Although no cut-off value was available to define abnormality, lower scores were indicative of less resilience, with higher scores indicative of greater resilience (Wagnild, 2009).

Consistent satisfactory internal consistency reliability (Cronbach's alpha) ranging from 0.87 to 0.91 have been previously reported for the RS-14 (Aiena et al., 2015; Callegari et al., 2016; Losoi et al., 2013; Nashi et al., 2010). Test-retest reliability for the RS-14 have previously reported scale satisfactory intra class correlation coefficient values at 12 weeks post baseline data collection,  $\alpha = 0.84$  (Nashi et al., 2010), and 5 weeks post baseline data collection,  $\alpha = 0.65$  (Callegari et al., 2016). Evidence for construct validity, based on analysis for instrument dimensionality, identifies the RS-14 as unidimensional with all item factor loadings greater than 0.30 (Aiena et al., 2015; Damásio et al., 2011; Yang et al., 2012). Confirmatory factor analysis (CFA) of the RS-14 has reported a one-factor model (Aiena et al., 2015; Yang et al.,

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