

Self-coping complexity: Role of self-construal in relational, individual and collective coping styles and health outcomes

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Using a tripartite relational (R), individual (I) and collective (C) framework, three studies explored the health benefits of self-coping complexity (SCC). Study 1 ($N = 333$) developed and validated RIC coping scales. Study 2 ($N = 346$) identified two clusters of Australians, those with an expansive pattern of multiple self-aspects and coping styles, and those with a more restricted self-coping pattern. Both clusters reported similar stress, but the expansive high SCC cluster reported greater well-being. A culturally diverse sample ($N = 225$) in Study 3 yielded the expected high SCC RIC self-coping cluster, plus interdependent RC and independent I clusters. Cluster membership was not associated with culture or gender in these studies, but greater SCC did confer a health advantage to men and women from both Eastern and Western cultures.

Key words: coping, ill-being, self, stress, well-being.

Introduction

Self-construal is involved in stress, coping and health processes (Cross, 1995; Contrada & Ashmore, 1999), with greater self-complexity buffering against stress-related ill health (Linville, 1987); however, the conceptualization of self-complexity and its link with coping requires clarification (Rafaeli-Mor & Steinberg, 2002; Solomon & Haaga, 2003; Koch & Shepperd, 2004). Recent advances in the psychology of self provide a promising framework to reconceptualize and extend the concept of complexity to include aspects of self and coping styles. Thus, the overall aim of the present research was to examine the role of multiple self-aspects and corresponding styles of coping, or self-coping complexity, in relation to stress and health. In Study 1, new scales were developed to assess relational, individual and collective coping styles. In Study 2, clusters of Australians with differing patterns of self-coping complexity were identified and compared on stress levels and health outcomes. In Study 3, patterns of self-coping complexity, stress and health were examined among men and women from Eastern and Western cultures.

Self-complexity

Linville's (1987) influential research defined self-complexity as the number of cognitive self-representations or self-aspects endorsed by a person. Multiple self-aspects were said to buffer the ill-effects of stress. There have been

variations in the definition and measurement of self-complexity (Koch & Shepperd, 2004), with suggestions that the assessment of complexity needs refinement (Rafaeli-Mor & Steinberg, 2002; Solomon & Haaga, 2003). Many studies assume that coping effectively with stress is an implicit outcome of greater self-complexity (Koch & Shepperd, 2004); however, apart from a recent report that both self-aspects and coping skills contribute to better health outcomes (Solomon & Haaga, 2003), coping has rarely been explicitly included in self-complexity studies. The present research attempted to refine and expand the assessment of multiple self-aspects and coping styles, or self-coping complexity (SCC), to clarify the links between self, coping and health.

Self-aspects

Many theorists agree that the self comprises multiple components, or self-aspects, which coexist within an integrated system of self-representations. The tripartite model posits three fundamental self-aspects, individual, relational and collective, which reflect self-definition in terms of one's unique personal qualities, dyadic relationships, and group memberships (Kashima *et al.* 1995; Kashima & Hardie, 2000; Sedikides & Brewer, 2001). Self-complexity research has typically conceptualized self-aspects as the number of traits and roles endorsed by a person; however, these can arguably be subsumed by the three domains of the tripartite model. The individual self includes a person's unique traits and characteristics, the relational self close interpersonal roles, and the collective self roles within social groups.

Self-construal research has often focused on gender (Cross & Madson, 1997) or culture differences (Triandis, 1989; Markus & Kitayama, 1991); however, men and

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women from any culture can develop self-aspects to varying degrees in all three domains (Kashima *et al.*, 1995). The relative influence of a particular self-aspect may be context dependent (Brewer & Gardner, 1996; Holland, Roeder, van Baaren, Brandt & Hannover, 2004); however, chronic accessibility of certain self-aspects can provide an orientation which guides cognition, emotion, and behavior.

Coping with stress

Coping represents adjustment to the demands, threats or challenges of a situation which is appraised as stressful. Adjustment can include a wide range of activities, but coping has often been conceptualized as two-dimensional, using terms such as direct and indirect coping, or problem-focused and emotion-focused coping. Direct, problem-focused coping aims to adjust the situation (manage the source of stress), while indirect, emotion-focused coping aims to adjust oneself (manage the response to stress). Many theorists now agree that no particular strategy is 'better' than another. Instead, it is the effectiveness of coping activities, rather than the specific strategy, which determines stress-related health outcomes (Lazarus & Folkman, 1984; Steed, 1998; Somerfield & McCrae, 2000; Tamres, Janicki & Helgeson, 2002).

Culture, self and coping

Research within cultures, largely based on western samples, suggests that people adopt characteristic styles of coping with stress. Cross-cultural research suggests that self may guide coping styles (Weisz, Rothbaum, & Blackburn, 1984; Cross, 1995), with people from independent Western cultures preferring direct coping, while people from interdependent Eastern cultures are said to prefer indirect coping. The evidence for this distinction is equivocal, as most studies examine selected domains of self and coping. For example, Cross (1995) measured independent and interdependent self-construal in Asian and American graduate students and found that independence predicted the use of direct coping while interdependence did not. Indirect coping was not measured, so its association with interdependence was not examined. It should be noted, however, that no available scales measure independent-individual, interdependent-relational or interdependent-collective coping styles, although many existing scales measure corresponding aspects of self (Singelis, 1994; Kashima *et al.*, 1995; Kashima & Hardie, 2000).

Culture, self and health

Research linking culture, self and health has been limited. A review by Oyserman, Coon, and Kimmelmeier (2002)

suggests that studies showing an association between individual self-construal and well-being sometimes confound self with culture by 'applying Hofstede'. In this popular methodology self-construal is assumed, but not assessed. People from Western cultures are assumed to have an individual/independent self-orientation, while those from Eastern cultures are assumed to have a collective/interdependent orientation; thus cultural differences in well-being have been attributed to differences in self without actually measuring self-aspects.

A recent study assessed individual self-construal in an Australian sample and found that those with a strong individual orientation reported poorer social and psychological health (Scott, Ciarrochi, & Deane, 2004). While this monocultural study measured just one self-aspect, recent studies suggest that when multiple self-aspects are measured, many Australians have strong, well-developed individual and relational self-aspects, as well as moderately strong collective self-aspects (Kashima & Hardie, 2000; Hardie, Kashima, & Pridmore, 2005). Thus, the question of whether people within a culture possess a single self-orientation or multiple self-aspects remains open, as few studies, apart from Kashima *et al.* (1995), have addressed this issue.

The present research: Culture, gender, self-aspects, coping styles and health

There has been little systematic research on the links between self, coping and health. A connection between self-aspects and coping styles is an implicit, but largely untested assumption of Linville's (1987) original self-complexity hypothesis. A person with well-developed self-aspects in multiple domains is thought to have an expansive range of coping strategies (i.e. greater self-coping complexity), allowing them to cope effectively with stress and thereby reduce stress-related ill health.

Recent Australian research using the tripartite theoretical framework (Hardie, 2005; Hardie *et al.*, 2005) may provide an approach to the study of self, coping and health which can be applied across gender and culture. These studies identified important links between relational (R), individual (I) and collective (C) self-aspects, sources of stress, styles of coping, and health outcomes. The strength of R, I and C self-aspects was associated with a preference for parallel relational, individual and collective coping (Hardie, 2005). In turn, the correspondence between current sources of stress and coping styles was associated with better health outcomes (Hardie, 2005; Hardie *et al.*, 2005). People with strong self-aspects in multiple domains seemed better able to adjust to stress from multiple sources, suggesting a greater capacity for effective coping and, consequently, better health.

Study 1

Development of the relational, individual, and collective coping scale

While there is general agreement that effective coping requires a match between the type of stress and type of coping, there is no classification scheme for stress and coping. The tripartite RIC framework appeared promising for this purpose (Hardie, 2005; Hardie *et al.*, 2005) and was therefore applied to the development of a new scale measuring relational, individual and collective coping.

R Coping was defined as stress adjustment strategies which involve a significant other with whom one has a close interpersonal relationship, I Coping was defined as strategies which involve the individual alone, and C Coping as strategies involving a social group or collective to which the person belongs. In this study, RIC Coping Scale items were developed, the scale was given to undergraduate students, and the factor structure, reliability and validity of the new scale were examined.

Participants

Australian students ($N = 333$) participated, with an age spread (17–70 years, $M = 24.41$, $SD = 8.60$) and gender imbalance (286 females, 47 males) representative of psychology undergraduates. The majority (75%) were full-time students, the rest part-time. Most (71%) described their ethnic background as Australian, while the remainder reported European (19%), Asian (4%) or other/mixed (6%). Most were single (69%), 26% were married or living with their partner, and 5% were divorced or separated.

Scale development

In a series of pilot studies, the item content of existing coping scales (WCCL, Folkman, & Lazarus, 1980; revised WCCL, Vitaliano, Russo, Carr, Maiuro, & Becker, 1985; COPE, Carver, Scheier, & Weintraub, 1989) was examined. Most items reflected problem-focused or emotion-focused responses; however, such direct and indirect activities were considered indicative of the situation itself, not of the strategy one might habitually use to cope with stress. Activities which seemed to represent adaptive responses to any stressful situation were related to support and growth. Support strategies involve instrumental aid or emotional comfort that can be derived from various sources (e.g. one's own inner strength or support from others). Growth strategies involve gaining something from the stressful situation, whereby the experience itself can elicit positive growth (e.g. learning from the experience). These activities could potentially be applied to any type of stress, and oriented towards an individual, a relationship or a collective.

Items representing adaptive coping activities of support and growth were developed to reflect each of the three RIC coping style domains, orientation towards an individual (I Coping), an interpersonal dyad (R Coping), and a social collective (C Coping). For example, a growth activity 'I learn from the experience' exemplified an individual coping item which was modified to represent relational coping ('My partner and I learn from the experience'), and collective coping ('My group learns from the experience'). A pool of 60 items was developed and tested in a series of pilot investigations to produce the final set of 18 RIC Coping items.

Materials and procedure

RIC Coping Scale. RIC Coping items were rated on a 6-point scale (0 = never use this strategy, 5 = very frequently use this strategy), with six items representing each of the three coping styles. Instructions noted that relational items referred to close significant others such as a partner or best friend, while the term 'group' referred to membership in social collectives such as sporting clubs, work teams or ethnic groups.

RIC Self-Aspects. The 30-item RIC Self-Aspects scale (Kashima & Hardie, 2000) uses 10 sets of item triads to assess the relative strength of R Self, I Self and C Self. Items were rated on a 7-point scale (1 = not like me, 7 = very much like me), with total self-aspect scores computed by summing ratings for the 10 R items, 10 I items and 10 C items, respectively.

COPE. Six subscales of Carver *et al.*'s (1989) COPE Scale were included to assess construct validity of the new RIC Coping subscales. The Active Coping and Planning subscales of the COPE are worded as individual activities, so were expected to be positively associated with I Coping. The COPE subscales of Instrumental Support and Emotional Support reflect activities involving others, so positive correlations with R Coping and C Coping were expected. The COPE subscales of Turning to Religion and Alcohol/Drug Use were not clearly associated with individual, relational or collective activities. These COPE subscales seem more reflective of avoidance than adjustment and were therefore expected to be unrelated to all three RIC Coping subscales.

Factor structure, reliability and validity of RIC coping scale

Principal components analysis of the 18 RIC Coping Scale items was conducted using Varimax rotation. As anticipated, good factorial validity was demonstrated by the

Table 1 Study 1: items and factors loadings for the relational, individual and collective coping scale

	R Eigen 2.80 18.4%	I Eigen 2.28 15.2%	C Eigen 4.99 22.4%
I go over the situation with someone very close to me	0.47		
I seek understanding from a close friend/significant other	0.58		
I get help from my partner/close friend	0.64		
I have faith in my partner/close friend	0.76		
My partner/friend and I learn from the experience	0.78		
I seek growth with my partner/friend from the experience	0.80		
I devise possible solutions by myself		0.70	
I rely on myself for emotional comfort		0.74	
I decide on a plan of action by myself		0.60	
I have faith in myself		0.62	
I learn from the experience		0.62	
I try to grow as an individual from the experience		0.65	
I decide on a plan of action with my group			0.81
I follow the advice of my group			0.84
I get help from my group			0.81
I have faith in my group			0.77
My group learns from the experience			0.77
I seek growth with my group from the experience			0.80

Table 2 Means, standard deviations and Cronbach's alpha coefficients for RIC coping scale and RIC self-aspects in Study 1 ($N = 333$, upper diagonal) and Study 2 ($N = 346$, lower diagonal)

	R Self	I Self	C Self	R Coping	I Coping	C Coping
Mean	60.16	57.91	50.81	19.52	20.84	12.85
SD	5.91	6.23	7.49	5.88	4.14	6.20
R Self	<u>0.79/0.75</u>	0.59**	0.53**	0.44**	0.05	0.21**
I Self	0.60**	<u>0.71/0.81</u>	0.27**	0.23**	0.31**	0.09
C Self	0.61**	0.45**	<u>0.77/0.83</u>	0.22**	-0.01	0.38**
R Coping	0.37**	0.21**	0.22**	<u>0.80/0.85</u>	0.11	0.32**
I Coping	0.04	0.24**	0.10	0.17**	<u>0.74/0.63</u>	0.03
C Coping	0.17**	0.03	0.37**	0.37**	0.10	<u>0.89/0.91</u>
Mean	59.17	57.54	51.45	20.73	20.27	15.38
SD	6.44	7.51	8.44	5.96	4.10	6.88

** $p < 0.01$. Range for scores for self-aspects, 10–70; coping styles, 0–30.

Alpha coefficients are on the diagonal: Study 1/Study 2.

extraction of three factors where all items loaded (> 0.45) on their respective R, I and C factors, with no significant cross-loadings (see Table 1). Internal consistency for each factor was acceptable, as shown by the alpha coefficients in Table 2. Total scores for each factor were computed by summing item ratings.

The pattern of correlations in Table 2 generally supported the expected associations between self-aspects and coping styles. The three self-aspects were moderately correlated, as was expected given the shared content of the item triads. R and C coping styles were moderately correlated, perhaps reflecting their common focus on interdependence with others, while I coping was unrelated to R or C coping. Each aspect of self was most strongly associated

with its corresponding style of coping suggesting good construct validity (see Table 2).

On average, the sample reported moderate use of R and I Coping (above the scale mid-point), and somewhat lower use of C Coping (Table 2). This pattern of means was repeated for self-aspects, with the sample reporting strong relational and individual self-aspects and a somewhat weaker collective self-aspect. Given the Australian cultural background of the sample, this pattern of relational and individual prominence was consistent with previous research (Kashima *et al.*, 1995; Hardie *et al.*, 2005).

Further construct validity was shown by correlations between the RIC Coping subscales and selected subscales of the Carver *et al.* (1989) COPE. Two subscales, Active

Coping and Planning, showed the expected positive convergent associations with I Coping ($r = 0.47$, $r = 0.54$, respectively), but little association with R Coping ($r = 0.18$, $r = 0.21$) or C Coping ($r = 0.07$, $r = 0.14$). As predicted, Instrumental Support and Emotional Support showed positive convergent associations with R Coping ($r = 0.48$, $r = 0.53$) and C Coping ($r = 0.41$, $r = 0.35$), but were unrelated to I Coping ($r = 0.01$, $r = -0.11$).

Discriminant construct validity of the RIC scale was shown by the lack of association between Turning to Religion and R Coping ($r = 0.05$), I Coping ($r = -0.01$) and C Coping ($r = -0.09$). Similarly, no associations were found between Alcohol/Drug Use and R Coping ($r = 0.01$), I Coping ($r = -0.10$) or C Coping ($r = 0.14$).

Study 2

Exploring patterns of self-coping complexity

In Study 2 we examined the proposition that self-coping complexity would be associated with better health outcomes (Linville, 1987; Solomon & Haaga, 2003) in a sample of Australian university students. Recent findings show that Australians with a single self-orientation reported poor psychosocial health (Scott *et al.*, 2004), while those with multiple self-aspects reported enhanced well-being (Hardie *et al.*, 2005). In the present study, patterns of self-coping complexity were explored in relation to stress and health. Cluster analysis was used to identify groups of students with more expansive SCC profiles and those with more restricted SCC patterns. It was anticipated that, when faced with similar levels of stress, those with greater SCC would report greater well-being and less ill-being, while those with limited SCC would experience lower levels of well-being and greater ill-being.

Although this was a monocultural study, Australia is a multicultural society with citizens from a range of cultural backgrounds. Previous literature reports consistent cultural differences in self (Markus & Kityama, 1991) and coping (Cross, 1995), as well as systematic gender differences in self (Cross & Madson, 1997) and coping (Tamres *et al.*, 2002). Therefore, the present study assessed differences in male and female Australian students from Eastern or Western cultural backgrounds. In addition, the study aimed to replicate the three-factor structure of the RIC Coping Scale.

Sample and measures

A sample of 346 Australian students (128 male, 218 female, mean age = 28.20, $SD = 11.09$ years) participated. Most described their cultural background as Australian (74%), with 18% reporting a European background, 6% Asian and 2% other/mixed. Most were currently in a relationship

(65%), the remainder were single. Participants completed a questionnaire comprising the RIC coping and self-aspects scales (see Study 1) plus measures of stress and health.

Recent stress was assessed with the Relational, Individual and Collective Stress Scale (Hardie *et al.*, 2005). Items were rated on a 6-point scale (0 = none at all, 5 = very high) and scores were summed to reflect levels of recent stress in each domain.

Health was measured with a revised version of the Multidimensional Health States Scale (Hardie *et al.*, 2005). The 15-item Well-Being (WB) scale includes five 3-item subscales: Social WB (friendly, sociable, cheerful), Physical WB (physically fit, active, energetic), Emotional WB (calm, relaxed, content), Cognitive WB (competent, confident, capable) and Sexual WB (sensual, sexy, attractive). The 15-item Ill-Being (IB) scale includes five three-item subscales: Depression (miserable, gloomy, sad), Anxiety (tense, nervous, worried), Hostility (angry, frustrated, irritable), Physical IB (backache, muscle pain, headache), and Cognitive IB (mentally tired, lack motivation, poor concentration). Each temporary health state is rated on a 6-point scale (0 = not experienced, 5 = strongly experienced) for a specific timeframe, in this case, the past week. Each three-item subscale may be summed to yield specific scores, or the five well-being subscale scores and five ill-being subscale scores, respectively, can be totalled to provide global measures of well-being and ill-being.

Factor structure and temporal stability of the RIC coping scale

The three-factor structure of the RIC Coping Scale was replicated, with the pattern of factor loadings virtually identical to the first study. Eigenvalues of 5.26, 2.44 and 1.45 were found for C, R and I Coping, respectively; and the three-factor solution explained 58.42% of the variance. Item loadings were all above 0.50 with no cross-loadings, apart from one I Coping item with a low loading (0.29) and negative cross-loading (-0.47). Alpha coefficients were acceptable and the pattern of means was similar to Study 1 (Table 2).

A subsample of 135 students completed the RIC Coping and RIC Self-Aspects Scales on two occasions, 7 days apart. Moderate to strong temporal stability was found for coping styles, with test-retest coefficients of 0.70 for R Coping, 0.47 for I coping and 0.73 for C Coping ($p < 0.001$, all correlations). Self-aspects also showed stability, with test-retest coefficients of 0.62, 0.72 and 0.72 for R, I and C Self.

To assess gender and culture differences in self and coping, separate 2 (Male, Female) \times 2 (Eastern, Western) ANOVAs were conducted on each self-aspect and coping style. No significant gender by culture interactions was found, and no main effects were found for culture

($p > 0.05$). Students from Eastern and Western backgrounds reported similar scores for each RIC self-aspect and coping style. No gender differences were found for I and C aspects of self and coping; however, significant differences were found for R Self, with women reporting stronger relational self-aspects than men (men: $M = 57.81$, $SD = 6.78$; women: $M = 60.02$, $SD = 6.11$), $F_{1,338} = 9.58$, $p < 0.001$, $\eta^2 = 0.03$; and also for R Coping, with women reporting greater use of relational coping strategies (men: $M = 19.28$, $SD = 6.93$; women: $M = 21.57$, $SD = 5.53$), $F_{1,338} = 12.68$, $p < 0.001$, $\eta^2 = 0.04$.

Cluster analysis

Hierarchical agglomerative cluster analysis, using Squared Euclidean Distances and Ward's Method, was used to identify clusters of individuals with similar patterns of relational, individual and collective self-aspects and coping styles. As cluster analysis is highly subjective, the sample was split randomly into two subsamples, each with 173 cases. Each subsample was subjected to the same analytical procedure. The two dendograms were examined to determine the number of clusters, and followed up with MANOVAs to interpret the clusters by comparing them on the set of self and coping variables.

For subsample A, the dendogram suggested a two-cluster solution. Results of the subsequent MANOVA showed that cluster A1 ($N = 104$) differed from cluster A2 ($N = 69$) on the set of self and coping variables, $F_{6,166} = 50.78$, $p < 0.001$, $\eta^2 = 0.65$. Univariate results showed that the first cluster had stronger self-aspects in all three domains and higher levels of relational and collective coping than the second cluster (all $p < 0.001$). Both groups reported similarly high levels of individual coping.

For subsample B, the dendogram again suggested a two-cluster solution. Results of a MANOVA showed that cluster B1 ($N = 134$) differed from cluster B2 ($N = 39$) on the set of self and coping variables, $F_{6,166} = 47.10$, $p < 0.001$, $\eta^2 = 0.63$. Univariate results showed that the first cluster had stronger self-aspects in all three domains and higher levels of relational and collective coping than the second cluster (all $p < 0.001$); however, both groups reported similarly high levels of individual coping.

Given the identical results for the two subsamples, a two-cluster solution was assessed using the full sample. Two clusters were verified by examination of the dendogram and a follow-up MANOVA, confirming that participants in Cluster 1 ($N = 263$) differed from those in Cluster 2 ($N = 83$) on the basis of their profiles of self-aspects and coping styles, $F_{6,339} = 85.85$, $p < 0.001$, $\eta^2 = 0.60$. Univariate comparisons showed that the pattern of mean self-aspects and coping styles was identical to results found for the separate subsample analyses (Table 3). No significant differences were found between the two clusters in levels of recent stress,

Table 3 Study 2: Comparison of means for the two clusters

	Cluster 1 Mean ($N = 263$)	Cluster 2 Mean ($N = 83$)	$F_{1,345}$
Clustering variables			
Relational Self	61.27	52.51	176.35***
Individual Self	58.96	52.19	78.44***
Collective Self	54.83	40.73	359.63***
Relational Coping	21.93	16.91	51.33***
Individual Coping	20.44	19.70	2.10
Collective Coping	17.10	9.94	84.80***
Stress			
Relational Stress	25.29	24.93	0.05
Individual Stress	35.61	35.48	0.004
Collective Stress	21.83	20.74	0.40
Health profile variables			
Total ill-being (IB)	30.77	32.70	0.95
Depression	5.42	6.20	2.16
Physical IB	5.90	5.65	0.23
Cognitive IB	6.29	6.63	0.44
Anxiety	6.75	7.40	1.69
Hostility	6.25	7.10	3.03
Total well-being (WB)	54.94	49.83	14.83***
Social WB	12.75	11.36	22.78***
Emotional WB	10.55	9.53	7.88**
Physical WB	9.93	9.05	4.71*
Cognitive WB	11.81	10.73	11.25**
Sexual WB	9.86	9.07	3.41

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

$F_{3,342} = 0.20$, $p = 0.90$, $\eta^2 = 0.002$. Profiling of the two clusters revealed no association between cluster membership and gender, $\chi^2(1) = 2.83$, $p = 0.09$, or cultural background, $\chi^2(1) = 1.08$, $p = 0.30$.

Comparison of the clusters on well-being and ill-being revealed significant health differences, $F_{2,343} = 7.72$, $p < 0.01$, $\eta^2 = 0.04$. The more expansive high SCC cluster reported greater well-being, but both groups reported similar levels of ill-being. Univariate comparisons showed that Cluster 1 reported greater social, emotional, physical and cognitive well-being than Cluster 2, but both groups reported similar levels of sexual well-being, depression, anxiety, physical symptoms, cognitive ill-being, and hostility (Table 3).

Study 3

Self-coping complexity, culture, gender, stress and health

Study 2 showed that gender and culture were not associated with patterns of self-coping complexity in Australian stu-

dents from a range of cultural backgrounds; however, the shared Western context of being Australian may have obscured any cultural differences. Study 3 used a more culturally diverse sample which allowed for further analysis of self-coping patterns, gender and culture.

Study 2 provided support for the SCC hypothesis, demonstrating that those with an expansive profile of self-aspects and coping styles reported similar levels of stress, but greater well-being than those with a more limited self-coping profile. While those results were promising, a conceptual replication using an alternative analytical technique would provide stronger support for the SCC hypothesis. In Study 3 we used latent class cluster analysis (Goodman, 1974) to identify groups of people with different patterns of self-coping complexity in a sample of local and international male and female university students from Eastern and Western cultures.

We hypothesized that two or more distinct cluster groups would emerge. One group was expected to demonstrate the expansive pattern of high SCC identified in Study 2. A second group was expected to display a more limited self-coping pattern, which might be deemed independent, with a strong individual self-aspect and preference for individual coping. It was also possible that limited self-coping complexity groups with relational and/or collective patterns would emerge, demonstrating interdependent patterns of prominent relational and/or collective self-aspects and corresponding coping styles. The self-coping cluster groups were not expected to differ on stress levels, but it was expected that a high SCC cluster with a well-rounded RIC self-coping pattern would be distinguishable from other clusters by way of better health outcomes.

Participants and procedure

A sample of 246 local ($N=105$) and international ($N=141$) students (149 females, 95 males, 2 unspecified; aged 18–54, $M=21.89$ years, $SD=5.82$ years) enrolled at Australian universities completed an online questionnaire comprising the RIC Self-Aspects Scale, RIC Coping Scale, RIC Stress Scale, Well-Being and Ill-Being Scales as described in Study 2. Participants were contacted through student associations, web groups and message boards. Most were undergraduates (80%), the remainder postgraduates. Most were single (64%), with 36% partnered. Students from over 40 countries participated, 65% from Western cultural backgrounds (Australia, Europe and North America), 29% from Eastern cultures (Asian countries), and very small numbers from Africa, South America and Middle Eastern countries. To allow a simple cultural categorization, only the 225 students who were readily classifiable into Eastern ($N=66$) or Western ($N=159$) cultures were used in the final sample.

Sample descriptives

On average, the sample reported strong R self-aspects ($M=58.68$, $SD=7.51$), weaker but moderately strong I self-aspects ($M=56.27$, $SD=7.30$), and weaker C self-aspects ($M=51.16$, $SD=9.76$) (within-subject contrasts, $p<0.001$ for all comparisons). R Coping ($M=16.47$, $SD=7.86$) and I Coping ($M=17.53$, $SD=6.46$) were similarly strongly endorsed by the sample; however, C Coping ($M=9.82$, $SD=7.51$) had significantly weaker endorsement ($p<0.001$). The sample reported high levels of individual stress ($M=41.38$, $SD=15.82$), followed by lower relational stress ($M=25.82$, $SD=13.94$) and much lower collective stress ($M=20.68$, $SD=14.49$, $p<0.0001$ for all comparisons).

Gender and culture differences were assessed in separate 2×2 , Gender (Male, Female) by Culture (East, West) ANOVAs, treating the self-aspects and coping styles as dependent variables. While there were no significant cultural differences for I Self, there were significant culture differences for both R Self, $F_{1,216}=5.50$, $p<0.05$, $\eta^2=0.03$, and C Self scores, $F_{1,216}=9.22$, $p<0.01$, $\eta^2=0.04$. Students from Eastern cultures reported significantly stronger relational and collective self aspects (R Self: $M=59.92$, $SD=7.23$; C Self: $M=53.80$, $SD=9.54$) than those from Western cultures (R Self: $M=57.10$, $SD=7.48$; C Self: $M=49.68$, $SD=9.65$). While no significant culture effects were found for R Coping and I Coping, students from Eastern cultures ($M=12.78$, $SD=8.34$) reported higher levels of C Coping than those from Western cultures ($M=8.65$, $SD=6.84$), $F_{1,201}=13.14$, $p<0.001$, $\eta^2=0.06$. There were no significant culture by gender interactions, suggesting that the effects of culture were stable across men and women. Apart from one exception, there were also no significant gender effects. Unexpectedly, women ($M=57.29$, $SD=6.11$) reported stronger I Self scores than men ($M=54.57$, $SD=8.38$), $F_{1,216}=5.30$, $p<0.05$, $\eta^2=0.02$.

Latent class analysis

Latent class cluster analysis (Goodman, 1974) was used to explore the existence of distinct groups of participants who varied according to their self-aspects and coping styles. The three self and coping scores were used to form the clusters via LatentGold Version 3.0.1 (Vermunt & Magidson, 2000). To determine the correct number of clusters using continuous indicators, the Bayesian Information Criterion (BIC) and classification error statistics were used. As recommended by Vermunt and Magidson (2000), the simplest model with the smallest BIC value was chosen to represent the number of identified classes. Initial BIC values suggested four clusters of respondents (4-clusters: BIC = 9193.18, 3-Clusters: BIC = 9200.38).

However, the decrease in BIC values was minimal, and the classification error was larger for the 4-cluster compared to the 3-cluster solution (i.e. 0.11 and 0.10, respectively). Thus the 3-cluster solution was considered to be the best fitting and most parsimonious model. The majority of the sample was in Cluster 1 ($N = 108$; 48%), with 35% ($N = 79$) in Cluster 2, and 17% ($N = 38$) in Cluster 3. All self-aspects and coping styles varied significantly ($p < 0.001$) across the three clusters, with the pattern of means illustrated in Figure 1.

In relation to the other groups, Cluster 1 respondents reported moderately strong R and C self-aspects, and moderately high levels of R and C coping, but a relatively weak I Self and moderately low levels of I Coping (all post hoc SNK comparisons across clusters, $p < 0.001$, Table 4). This large cluster, with its interdependent focus on R and C self and coping was labelled the RC group. In contrast, Cluster 2 reported low levels of self and coping in all domains, but their strongest self-aspect and most favoured coping style was individual. This moderately sized cluster with its individual orientation was termed the I group. In Cluster 3, respondents were highest on all three RIC self-aspects and all three RIC coping styles. Like the expansive self-coping cluster found in the previous study, this modest-sized RIC

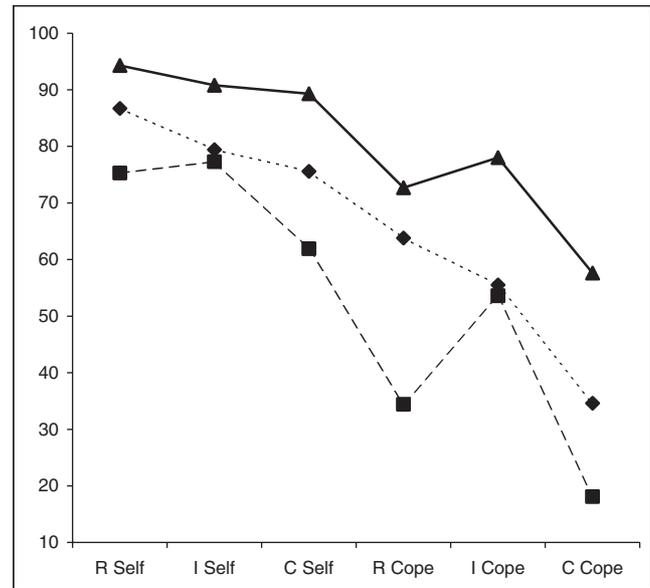


Figure 1 Study 3: Results of a Latent Class Analysis showing three cluster groups profiled according to mean scores for RIC Self-Aspects and RIC Coping Styles. Note: Scores have been transformed into percentiles. ◆, RC Cluster; ■, I Cluster; ▲, RIC Cluster.

Table 4 Study 3: Comparison of means across three clusters

	RC cluster ($N = 108$)	I cluster ($N = 79$)	RIC cluster ($N = 38$)
Cluster profiles:			
R Self***	60.69 _b (4.35)	52.71 _a (8.37)	66.03 _c (2.94)
I Self***	55.55 _a (4.23)	54.13 _a (9.57)	63.55 _b (3.45)
C Self***	52.86 _b (5.87)	43.45 _a (9.76)	62.50 _c (4.22)
R Cope***	19.15 _b (5.15)	10.32 _a (7.48)	21.82 _c (7.00)
I Cope***	16.66 _a (4.99)	16.09 _a (7.40)	23.39 _b (4.26)
C Cope***	10.39 _b (6.50)	5.44 _a (5.61)	17.29 _c (7.34)
Stress:			
Relational**	29.44 _b (12.13)	20.58 _a (13.58)	27.79 _b (16.76)
Individual	41.85 (14.87)	39.77 (17.04)	41.71 (16.22)
Collective**	22.68 _b (13.30)	16.30 _a (13.79)	23.63 _b (17.00)
Health:			
Social WB**	19.04 _b (4.00)	17.05 _a (5.19)	20.84 _c (4.40)
Physical WB**	13.12 _b (5.30)	11.03 _a (6.40)	17.34 _c (6.00)
Emotional WB	14.14 (5.05)	13.71 (6.62)	15.68 (6.24)
Cognitive WB**	15.31 _a (4.80)	13.70 _a (6.02)	19.32 _b (5.05)
Sexual WB**	14.81 _b (5.57)	10.30 _a (6.84)	16.71 _b (5.91)
Depression	10.44 (6.86)	9.92 (7.47)	12.39 (8.20)
Anxiety	12.33 (6.89)	12.84 (6.54)	13.63 (6.87)
Hostility	10.62 (6.73)	10.78 (7.43)	12.66 (7.76)
Physical IB**	7.85 _a (6.42)	7.52 _a (6.13)	11.18 _b (6.72)
Cognitive IB	12.56 (6.24)	12.48 (6.34)	11.63 (6.28)

** $p < 0.01$, *** $p < 0.001$, subscripts indicate mean differences between clusters.

$N = 225$.

IB, ill-being; WB, well-being.

group appeared to characterize the construct of interest, high self-coping complexity. There were no significant associations found between cluster membership and culture, $\chi^2(2) = 3.17, p = 0.21$; and cluster membership and gender, $\chi^2(2) = 2.91, p = 0.23$.

A between groups MANOVA comparing the three clusters on the set of R, I and C stress scores revealed differences in reported stress, $F_{6,442} = 3.46, p < 0.01, \eta^2 = 0.04$. Univariate and SNK post hoc comparisons showed that all groups reported similar levels of I stress, however, clusters differed on R stress and C stress, with the highest levels reported by the RIC and RC groups (Table 4). This finding was unexpected, but may have reflected a greater sensitivity to interpersonal and collective stressors by those with well-developed R and C orientations when compared to those with an individual orientation.

Two between-group MANOVAs were conducted to examine cluster differences in well-being and ill-being. The three clusters differed on well-being, $F_{10,438} = 6.92, p < 0.001, \eta^2 = 0.14$ and, to a lesser extent, on ill-being, $F_{10,438} = 2.42, p < 0.01, \eta^2 = 0.05$. For WB, univariate comparisons showed that all clusters reported similar levels of emotional well-being, but the RIC cluster reported the highest levels of social, cognitive and physical well-being (Table 4). The RIC and RC groups reported similarly high sexual well-being, while the I group reported the lowest levels of sexual, social and physical well-being. For IB, univariate results revealed differences only for physical ill-being. All three groups reported similar levels of depression, anxiety, hostility and cognitive ill-being; however, RC and I groups reported low levels of physical ill-being, while the RIC group reported greater physical IB (Table 4).

These findings were generally consistent with Study 2, in that the high SCC cluster reported the highest well-being, while the limited I group reported the lowest well-being. The high sexual well-being of both the RIC and RC groups in comparison to the I group may reflect a lesser orientation towards close interpersonal relationships in the latter group. Also consistent with Study 2 was the finding that clusters did not differ on mental health problems, with all groups reporting similarly high emotional wellness and similarly low depression, anxiety, cognitive deficits and hostility. The greater physical ill-being reported by the RIC cluster was unexpected. It does not seem to reflect a general response bias by this group, as their scores for other IB dimensions were not inflated. Perhaps the well-rounded RIC group engaged in more activities (e.g. sport) which contributed to increased somatic pain.

Overall, the findings of both Studies 2 and 3 showed that people with high self-coping complexity (i.e. well-developed self-aspects and corresponding coping styles in relational, individual and collective domains) can be distinguished from those with more limited self-coping patterns.

Moreover, the high SCC group seemed to experience greater well-being than the more limited groups, even when coping with multiple sources of stress.

General discussion

In the current research, three studies were conducted to explore the concept of Self-Coping Complexity (SCC). In Study 1, the RIC Coping Scale was developed to assess relational, individual and collective coping styles. The new scale was designed to complement the existing RIC Self-Aspects Scale (Kashima & Hardie, 2000) and enable assessment of SCC. Cluster analysis was used in Study 2 to identify groups of students with expansive and limited profiles of self-coping complexity. In Study 3, a conceptual replication using latent class analysis with a culturally diverse sample again identified high SCC, as well as more limited interdependent RC, and independent I clusters. In both studies, the high SCC cluster consistently reported the greatest well-being. Overall, these findings supported the proposition that self-coping complexity, as assessed by the strength of coexisting relational, individual and collective self-aspects and the endorsement of parallel coping styles, may be beneficial to health.

Measurement issues

In this research, coping was reconceptualized within a tripartite framework, and a new scale measuring relational, individual and collective coping was developed. The RIC Coping Scale demonstrated factorial validity, internal consistency, temporal reliability and construct validity. The scale may prove useful in future stress and coping research, as it allows for the examination of optimal matches between types of stress and effective coping strategies. This scale may also prove useful in cross-cultural research, where existing coping measures are limited by a Western bias for direct strategies, a majority of items reflecting individual coping activities and a relative neglect of relational and collective strategies.

Conceptual issues

While the current findings are consistent with the spirit of the self-complexity hypothesis (Linville, 1987), the assessment of multiple self-aspects and coping styles attempts to address recent concerns about how to include the implicit element of coping and how best to operationalize self-complexity (Rafaeli-Mor & Steinberg, 2002; Solomon & Haaga, 2003). The tripartite conceptualization of self and coping into relational, individual and collective domains allows for an expanded approach to assessing people's

traits and roles (self-aspects) and stress adjustment strategies (coping). This approach seems promising as it includes the previously neglected element of coping and, as demonstrated by the current results, confirms the hypothesized links between greater self-coping complexity and enhanced well-being.

Conversely, the association found between limited self-coping complexity and poorer health was consistent with previous research linking the limited orientations of unmitigated agency (UA) and unmitigated communion (UC) with decreased WB (Helgeson, 1994; Helgeson & Fritz, 1998). Independent UA and interdependent UC orientations are said to be detrimental to well-being, just as the limited self-coping orientations of I cluster and RC cluster membership were found to be associated with poorer well-being in the current research.

Health outcomes

Self-complexity theory (Linville, 1987) was originally developed in relation to stress-related ill health. Most previous self-complexity studies have not measured well-being, instead treating low levels of depression or physical illness as indicators of the health benefits of self-complexity (Linville, 1987; Solomon & Haaga, 2003). Similarly, research on UA and UC has treated well-being as the absence of psychological distress (Helgeson, 1994; Helgeson & Fritz, 1998). The present findings, showing that high SCC was associated with increased WB but not IB, highlight the danger of treating the absence of ill-being as an indicator of well-being. In line with recent calls for a more comprehensive assessment of well-being (Diener & Seligman, 2004), the current research demonstrates the importance of measuring multiple dimensions of both well-being and ill-being when assessing health outcomes.

Gender and culture

Culture and gender have long been associated with particular self-other orientations (Markus & Kityama, 1991; Cross & Madson, 1997). Mean comparisons of self and coping styles in the current research revealed typical gender differences in Study 2 and typical culture differences in Study 3. However, when clustering techniques were used and people were grouped according to their self-coping orientations, culture and gender differences were no longer apparent.

In Study 2, women generally reported stronger R self-aspects and greater use of R coping than men; however, this gender difference was not evident in the SCC cluster groups. Similar proportions of men and women were found to have greater or more limited self-coping complexity. Women generally had a strong relational orientation, but

this did not preclude the coexistence of individual and collective orientations in some women, with multiple orientations in both sexes being associated with health benefits. Consistent with this finding, previous research has suggested that a single self-orientation, such as UC (similar to relational orientation) in women or UA (individual orientation) in men, may be detrimental to health (Helgeson, 1994; Helgeson & Fritz, 1998).

Similarly, cluster membership was not associated with cultural background in Study 2. Both high and limited SCC cluster groups included similar proportions of Australians from Eastern and Western cultural backgrounds. These findings challenge the notion that a predominantly Western Australian sample tends to report an individual self-orientation and high levels of well-being (Oyserman *et al.*, 2002). The current results suggest that people in a Western culture such as Australia may gain a health benefit through strong orientations in all three domains, R, I and C. This is consistent with Scott *et al.*'s (2004) recent finding that a single orientation, a strong individual self, was associated with poorer health in a sample of Australians.

In Study 3, a culturally diverse sample of international students demonstrated traditional Eastern interdependence (Markus & Kityama, 1991) with students from Eastern cultures reporting stronger R and C self-aspects, and greater endorsement of C coping than Western students. Such culture differences were not evident in the latent cluster groups, with similar proportions of students from Eastern and Western cultures found in the interdependent RC group and the independent I group. Moreover, similar proportions from both Eastern and Western cultures were found in the high SCC RIC group, suggesting that men and women from any culture may enjoy the health benefits of greater self-coping complexity.

These findings require further investigation in non-student, representative community samples from various cultures. The crude East–West distinction of the current research needs a more fine-grained analysis within and between specific culture groups. If, as these findings suggest, multiple well-developed self-aspects are associated with a wider range of stress adjustment strategies, enabling more effective coping and better health outcomes, then such benefits are likely to span Eastern and Western cultures.

Conclusion

Taken together, these findings suggest that the tripartite RIC framework provides a promising approach to the study of self, coping and health across gender and cultures. When faced with similar levels of stress, those with high SCC reported greater well-being than those with

more limited self-coping profiles. Results did not suggest that high SCC could reduce physical symptoms or emotional problems; however, as SCC increased from a single independent I orientation to a double interdependent RC orientation, to the well-rounded, tripartite RIC orientation, there were clear health benefits in cognitive, physical, social and sexual well-being. SCC was not associated with gender or culture in the current research, suggesting that men and women from any culture may benefit from an expansion of their self-coping patterns. Further research is needed to understand how multiple self-aspects and corresponding coping styles are developed so that more people can gain a health advantage through increased self-coping complexity.

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