Measuring generalized expectancies for negative mood regulation in Japan: the Japanese language NMR scale

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Abstract: Substantial research over the last 20 years supports the reliability and validity of the English language measure of negative mood regulation expectancies (NMRE) – the NMR scale. Framed within Rotter’s (1954) social learning theory, NMRE represent people’s confidence that they can alleviate the negative moods they experience. NMRE predict adaptive coping and buffer the effects of stress, resulting in less negative affect. Addressing the need for Japanese language individual difference measures related to coping, we created the Japanese version of the NMR scale – the NMR-J. The NMR-J represents a culturally sensitive translation of the original English scale, with items added to assess interpersonal aspects of mood regulation that are a fundamental element of Japanese society. We conducted four studies assessing the reliability and preliminary validity of the NMR-J. Over 950 Japanese men and women of diverse ages and from a range of regions participated. The NMR-J correlated positively with coping and negatively with psychological and somatic symptoms, including anxiety and depression. It was modestly correlated with social desirability. Results support the reliability and initial validity of the NMR-J as a culturally valid measure of Japanese people’s mood regulation expectancies.

Keywords: Japan; mood regulation; depression; coping; culture; measurement.


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1 Introduction

In recent years, Japanese society has been changing in ways that have increased the stress of Japanese people, while at the same time, depriving them of traditional sources of support and comfort. The economy’s prolonged struggles have made life-long jobs a thing of the past. Women’s roles have been changing, so that many work outside the home yet remain largely responsible for homemaking. The divorce rate is rising, children are more likely to be raised by a single parent, and people less commonly live with extended family (Japan Ministry of Health, Labor and Welfare, 2010). Japanese culture values individuals’ striving to play meaningful roles in social networks (Kitayama et al., 2004; Sumi, 2006). But, the traditional social structures that promoted healthy functioning have been eroding: as social networks erode, an individual’s sense of his or her meaningful, interconnected self erodes. This leaves Japanese people vulnerable to developing psychopathology.

There are many signs of increasing strain in Japanese society. From 1988 to 2005, there was a six-fold increase in the number of Japanese diagnosed with depression. The suicide rate increased by 50% from 1980 to 2003 (Japan Ministry of Health, Labor and Welfare, 1997, 2003). The incidence of child abuse has increased nearly four-fold in the last ten years (Japan Ministry of Health, Labor and Welfare, 2011). Kawakami et al. (2005) reported that 8.8% of Japanese have been diagnosed with a psychological disorder. But psychotherapy is still uncommon in Japan: only 19% of those diagnosed had received treatment of any kind during the previous 12 months.

Japanese tend to worry about the consequences of feeling and expressing strong emotions – both in terms of internal discomfort and social disapproval (Komiya et al., 2000). Japanese are socialised to internalise stress, to repress feelings, and to try to solve problems on their own (Narikiyo and Kameoka, 1992). Tolerating one’s difficulties, making sacrifices, and enduring adversity are seen as virtues (Marsella, 1993). At the same time, Japanese frequently cope by seeking social support, rather than engaging in individual problem solving (Morling et al., 2003). Suicide has traditionally been viewed as an acceptable means of preserving face, honoring one’s family, and removing financial or emotional burdens from family members (Kageyama et al., 2005; Lester, 1997).

In Japan, psychological research on how people function rarely examines individual difference characteristics that might explain why one person remains healthy in stressful circumstances while another person is overwhelmed and develops pathology. However, one area in which individual differences have been researched is coping style.
In general, Asians tend to use passive coping strategies such as avoidance, minimising problems, withdrawal, wishing symptoms would go away, and accepting one’s fate (Kung, 2004). Some individuals’ passive coping may be adaptive, but for others these passive strategies may compound emotional problems. Japanese, in particular, tend to rely on distraction to cope with stressful situations. Distraction appears adaptive for Japanese as a method of regulating one’s mood, if used in moderation. But if distraction is the primary way of coping with stress, it is less effective (Oikawa, 2003, 2004).

In the West, coping through avoidance or suppression of negative emotions leads to poorer outcomes (Hayes and Gifford, 1997). Barlow et al. (2004) have posited that engaging in adaptive emotional regulation makes it less likely that individuals will attempt to suppress negative emotions. They propose that suppression leads to “a vicious cycle of increased emotional arousal, leading to more unsuccessful attempts at suppression, which in turn contributes to growing psychological distress” (p.217). Cloitre et al. (2008) echo the view that failures in negative mood regulation play a central role in the development and maintenance of emotional disorders.

It seems likely that assessing an individual difference variable that predicts adaptive regulation of emotions, rather than their avoidance or suppression, may hold a key to understanding contemporary Japanese people’s stress, coping and mental health. In particular, it will be important to understand characteristics that make people more resilient when faced with stress. One such characteristic that has been studied in the West is generalized expectancies for negative mood regulation.

2 Negative mood regulation expectancies

Negative mood regulation expectancies (NMRE) are conceptualised in Rotter’s (1954) social learning theory as people’s beliefs that they can do something to alleviate the negative moods they experience (Catanzaro and Mearns, 1990, 1999). According to social learning theory, to predict behaviour one must take into account both people’s beliefs and their motivations.

The probability of engaging in a particular behaviour is known as behavior potential (BP). Two factors combine to determine BP. Expectancy (E) is the probability that a behaviour will result in an outcome; the higher the expectancy, the more confident one is the outcome will occur. The desirability of the outcome is its reinforcement value (RV); a preferred outcome has a high RV. Rotter combined these variables into a behavioural prediction formula, $BP = (E \& RV)$: the likelihood of engaging in a particular behaviour is determined by one’s confidence that the behaviour will result in an outcome and the favourability of that outcome.

Generalized expectancies are broader, cross-situational forms of E. NMRE are generalized expectancies. Thus, NMRE represent relatively stable, cross-situational beliefs that one has the capacity – through thought or action – to terminate or moderate the unpleasant moods one experiences. It is important to note the distinction between Rotter’s (1954) expectancy construct and similar constructs like self-efficacy. Self-efficacy is only the belief that one is able to emit a particular behaviour, regardless of the likelihood that the behaviour will lead to an outcome (Williams, 2010). In contrast, expectancy is a broader construct: to have a strong expectancy, one must believe both that one is capable of doing a behaviour and that the behaviour will lead to an outcome.
According to Rotter’s (1954) model, one’s likelihood of attempting to regulate a negative mood (BP) will be determined by the strength of one’s belief that these attempts will be successful – NMRE. People who are confident they can deal with negative moods will make attempts at mood repair. However, people with weak NMRE are likely to cope passively with negative moods and put forth little effort to moderate their dysphoria.

NMRE are thought to influence mood regulation via two pathways. First, there is an indirect pathway through coping behaviour. Individuals with strong NMRE should have a high BP for adaptive coping behaviour, resulting in more effort to cope. Second, there appears to be a direct effect of NMRE on mood regulation: simply believing that one can regulate one’s mood results in improved mood. This direct effect can be explained by classifying NMRE as response expectancies, which have self-confirming qualities (Kirsch, 1985). Experimental evidence shows that people with strong NMRE quickly begin to generate positive cognitions after being induced into a bad mood, while people with weak NMRE experience mood-congruent negative cognitions (Smith and Petty, 1995).

Catanzaro and Mearns (1990) created the 30-item negative mood regulation scale to measure NMRE among English-speakers. It is important to note that NMRE represent what people believe they can do, rather than what they actually do. All items complete the statement, “When I’m upset, I believe that...” Examples are, “I’ll feel better when I understand why I feel bad” and “I won’t be able to get myself to do anything about it.” Over the last 20 years, substantial research supports the reliability and validity of the NMR Scale: individuals with strong NMRE tend to cope in more active ways when under stress, and they report experiencing less intense negative affect (NA), such as depression and anxiety (Mearns et al., 2009). The NMR Scale also has shown discriminant validity from measures of locus of control, social desirability, coping, optimism/pessimism and depression (Catanzaro et al., 2000). Longitudinal studies have shown NMRE to predict later coping and mood (Catanzaro and Greenwood, 1994; Mearns, 1991).

NMRE also predict behavioural outcomes. Catanzaro (1996) found that NMRE interacted with anxiety to predict how college students performed on an exam. Low NMRE participants who experienced more anxiety performed less well, whereas high NMRE participants actually showed enhanced performance when they were anxious.

Experimental studies have demonstrated that individual differences in NMRE moderate the relation between mood and cognition. For example, Rusting and DeHart (2000) induced a negative mood and then instructed participants either to focus on the negative mood or to engage in positive reappraisal, a mood-repair strategy. They then asked participants to generate memories. Only high NMRE participants successfully used the positive reappraisal strategy, resulting in fewer mood-congruent memories. The authors concluded that participants needed to believe in their ability to regulate a negative mood to benefit from mood repair strategies. This finding offers an explanation for the role NMRE play in the psychotherapy process. Cloitre et al. (2008) and Backenstrass et al. (2006) have demonstrated that increases in NMRE early in psychotherapy enhance later therapeutic outcome. Participants were trauma survivors (Cloitre et al., 2008) and depressed individuals (Backenstrass et al., 2006) who received cognitive-behaviour therapy. Those whose NMRE increased more during the first weeks of therapy had fewer symptoms when therapy ended and at follow-up.

Among European-based societies, there is evidence for the cross-cultural validity of NMRE as predictors of coping and negative mood. German and Spanish translations of
the scale have performed similarly to the original English language measure (Backenstrass et al., 2010; Pfeiffer et al., 2012). It seems likely that measuring NMRE among Japanese should be possible and should provide benefits of predicting how Japanese people deal with the stressful situations they experience.

3 Creating the Japanese negative mood regulation scale (NMR-J)

The German and Spanish versions of the NMR Scale are direct translations of the original 30 English items. Many Japanese psychological measures are literal translations of US scales, following an *imposed-etic* approach (Benet-Martinez, 2007). But, because of differences between Japanese and American cultures, we believed it was crucial to go beyond direct translation to create a culturally relevant Japanese NMRE measure, integrating an *emic* approach. For the NMR-J truly to be a valid Japanese measure, it would have to assess aspects of mood regulation that Western NMRE scales do not.

Several factors led to this judgement. First, Western culture’s focus on individual independence differs greatly from the Japanese value of ‘harmonious interconnectedness’ in which ‘both the expression and the experience of emotions…may be significantly shaped and governed by a consideration of the reaction of others’ [Markus and Kitayama, (1991), pp.224–225]. In Japan, mood regulation may be to a large extent a social obligation, rather than just a way to make oneself feel better. One must avoid being a burden on and upsetting others, and one is highly motivated to avoid public shame and disapproval. Japanese coping tends to be social, rather than individual (Morling et al., 2003).

Other indicators of differences between Japanese and Western cultures are common idioms related to affect, such as ‘kanjou o korosu’, which means literally ‘murder the feeling’. This is not an uncommon approach to dealing with NA in Japanese culture, where stoical endurance (*gaman*) and pragmatic fatalism (*shikata ga nai*) are respected ways of handling adversity. These idioms reveal societal pressures to resolve unpleasant affect in ways that are approved of by others, but potentially at a cost to one’s individual self. Finally, there are types of socially-linked psychopathology in Japan that do not exist in the West. An example of this is *jiko-shisen-kyoju*, ‘fear of one’s glance’ (Iwata et al., 2011). Individuals with this disorder become hyperaware of themselves and their potential to give offense to others, which causes a debilitating level of social anxiety.

Simply making a direct translation of the US NMR scale would be grossly inadequate, for it would fail to measure crucial aspects of affect regulation as a social phenomenon in a highly interdependent society. Support for this strategy is provided by Matsumoto (2006), who found that cultural differences between the USA and Japan are expressed in differences in emotion regulation. Matsumoto (2006) also suggested that it is important to assess individual difference personality variables as mediators of such cultural differences.

3.1 The translation process

A bi-cultural, bi-lingual team translated the original 30 NMR scale items and generated an additional 25 new items representing ways Japanese may regulate mood that differ
from how Americans do. These included items about social obligations and concerns about social judgement related to negative mood. Examples of new items are ‘I will be more depressed if I think about my responsibilities within my family’ and ‘I can improve my mood if I focus on how others depend on me’.

The translation process posed problems related to language. First, English NMR Scale items complete the stem, ‘When I’m upset, I believe that ….’ In English, ‘upset’ refers to a general negative affective state of arousal, which encompasses a variety of specific emotions. People who are upset could be angry, sad or afraid. Japanese, however, does not have a word that corresponds to a generic state of being ‘upset’. We chose to use ‘mildly depressed or frustrated’ as the best approximation of ‘upset’. The Japanese stem is: ‘Watashi wa, ochikon da toki ya iraira shita toki….’ The second, less troublesome problem was that verbs in Japanese come at the end of sentences, rather than near the beginning, as they are in English. Thus, each completion of the stem would need to contain the words, ‘I believe’.

After we translated the original items and created new items, all items were back-translated by a bi-lingual, bi-cultural individual who was not involved in the original translation. Minor discrepancies and ambiguities in wording were revealed and corrected. At this point it was possible to assess the reliability of the new 55-item NMR-J.

4 Pilot test

As a preliminary pilot test of the items, we collected data from a sample of 52 Japanese individuals via the internet. Participants were 60% women, with a mean age of 39.81 (SD = 14.69). For this small sample, the NMR-J had a Cronbach’s alpha of 0.90. Four of the 55 items had means and response frequencies that were highly skewed, meaning that respondents did not use the full range of answer choices for them. We adjusted the intensity of these four items, by adding or altering modifiers, to affect the ease with which people could agree or disagree with the items.

In the following pages, we report results for the NMR-J from five samples from diverse regions in Japan and representing individuals of different ages.

5 Study 1

As a preliminary test of the psychometric properties of the new 55-item NMR-J (with the four adjusted items), we collected two convenience samples of college students in Japan. One was from a rural setting and the other from a large city. As validity criteria, we included measures of coping and psychological distress. We also used a measure of socially desirable (SD) responding to assess the extent to which participants’ answers were influenced by their motive for social approval.

We expected the NMR-J to have good internal consistency. Evidence for validity would be significant positive correlations with coping and significant negative correlations with symptoms. Discriminant validity would be demonstrated by a correlation with social desirability below 0.30.
5.1 Method

5.1.1 Participants and procedure

Sample 1 comprised 359 students at a rural university: 56% were women. Their mean age was 19.86 ($SD = 3.06$). Sample 2 comprised 315 Japanese students at a large urban university: 50% were women. Their mean age was 18.84 ($SD = 1.00$). All participants completed the NMR-J. Participants in Sample 1 also completed measures of coping, symptoms and SD responding. Participants in Sample 2 also completed a depression scale and a measure of self-injury. Questionnaires were administered in a single session during regularly scheduled classes.

5.1.2 Measures

- **NMRE**. The 55 NMR-J items complete the stem, ‘When I’m mildly depressed or frustrated ….’ Completions represent statements of belief that cognitive and behavioural strategies will reduce an unpleasant mood. Responses range from 1 (strongly disagree) to 5 (strongly agree).

- **Coping**. Ozeki (1993, cited in Hori and Matsui, 2001) developed a revised Japanese coping scale. This scale contains 14 items using a four-point scale, from 0 (never) to 3 (always). There are three subscales: problem-focused (5 items), emotion-focused (3 items), and avoidant (6 items). Examples include, ‘I try to change the current situation’ and ‘I just let the time pass by’. Hori and Matsui (2001) reported internal consistency for these scales of 0.75, 0.66 and 0.72, respectively. In the present study, subscales displayed poor internal consistency (alpha = 0.60, 0.57 and 0.65, respectively). All three subscales correlated positively with each other; to increase reliability, we combined all coping items into one scale with an alpha of 0.69.

- **Symptoms**. The Hopkins Symptom Checklist (HSCL) measures psychological symptoms. The Japanese version of the HSCL contains 30 items, comprising three symptom dimensions: somatisation, depression and anxiety (Sumi, 1997). Respondents report on the frequency with which they have experienced each on a five-point scale, ranging from 0 (never) to 4 (very often). Examples include ‘headaches’, ‘crying easily’, and ‘feeling lonely’. Sumi (1997) reported that subscales have good internal consistency: alpha of 0.81 for somatisation, 0.84 for depression, and 0.84 for anxiety. In the present study, reliability was good: alpha = 0.83, 0.88 and 0.84, respectively.

- **SD responding**. High scores on the Martin-Larsen approval motivation (MLAM) scale show a strong desire to please others and to avoid social rejection. Ueda and Yoshimori (1990) translated the MLAM into Japanese. The MLAM has 20 items, which are rated from 1 (disagree strongly) to 5 (agree strongly). An example item is ‘In order to get along and be liked, I tend to be what people expect me to be’. The alpha was 0.72. Cronbach’s alpha in the present study was 0.71.

- **Depression**. On the short version of the Center for Epidemiological Studies-Depression (CES-D) scale (Andresen et al., 1994), respondents indicate their frequency of experiencing 10 depressive symptoms during the past week using a scale from 0 (less than 1 day) to 3 (5–7 days). Examples are ‘I felt lonely’ and ‘I felt
hopeful about the future’. Shima et al. (1985) created the Japanese translation, reporting an alpha of 0.79. In the current study, the alpha also was 0.79.

- **Self-injury.** The deliberate self-harm inventory (DSHI; Gratz, 2001) asks participants whether they have ever intentionally injured themselves using 17 different actions. If the answer is yes, they are asked about the frequency of that action. The DSHI was translated into Japanese for this study using a back-translation method. Examples are ‘Have you ever intentionally cut your wrist or any other part of your body (without intending to kill yourself)?’ and ‘Have you ever intentionally burned yourself with a cigarette?’

5.2 Results and discussion

5.2.1 Reliability

We combined samples 1 and 2 and conducted a reliability analysis. The NMR-J had a Cronbach’s alpha of 0.87. We redid this analysis separately by sex and found strong internal consistency for both men (alpha = 0.88) and women (0.86). We examined corrected item-whole correlations, inter-item correlations, and correlations with criterion measures for all items, both combined and separately by sex. Fifteen of the items had low correlations with the rest of the scale or with the criterion measures: 5 items translated from the original English scale, and 10 items created for the NMR-J. We deleted those weak items, leaving a 40-item scale.

The new 40-item scale had an alpha of 0.88. Item endorsement means ranged from 1.97 to 3.87 with a mean of 3.05. Corrected item-whole correlations ranged from 0.19 to 0.58 with a mean of 0.37 ($SD = 0.11$). Inter-item correlations ranged from –0.09 to 0.59, with a mean of 0.16, indicating modest overlap in item content. The revised scale correlated very highly with the original 55-item scale ($r = 0.98$, $p < 0.01$). Mean total scores for the 40-item measure were 123.69 ($SD = 19.78$) for men and 120.32 ($SD = 18.09$) for women. This difference was significant ($F(1, 668) = 5.32$, $p < 0.05$) but similar to what is found for the US NMR scale. All items correlated significantly with at least one validity criterion.

5.2.2 Validity

The 40-item NMR-J correlated significantly but at a low level with SD responding ($r = 0.19$, $p < 0.01$). Several items correlated significantly with SD, the highest correlation being 0.29. All items had larger correlations with other criterion variables than their item-SD correlation. Thus, participants’ responses do not appear unduly influenced by an attempt to gain approval, suggesting the NMR-J has discriminant validity from social desirability.

All other correlations of the 40-item NMR-J were significant at the 0.01 level: coping ($r = 0.34$), HSCL somatic symptoms ($r = –0.29$), HSCL depression ($r = –0.51$), HSCL anxiety ($r = –0.35$), CES-D depression ($r = –0.50$), and DSHI self-injury ($r = –0.19$). The negative correlation with self-injury parallels the findings of Tresno et al. (2012) among Indonesians: stronger NMRE were associated with less self-injury. Interestingly, while NMRE correlated significantly with coping and symptom scales, coping did not significantly correlate with symptoms. This pattern of correlations suggests discriminant
validity of the NMR-J from measures of pathology: the NMR-J is measuring a construct related to pathology, but is not merely a measure of pathology.

We recalculated the intercorrelations separately by sex. All correlations were significant, except the NMR-J did not correlate significantly with social desirability for men ($r = 0.11$). Only one of seven pairs of correlations was significantly different ($p < 0.001$): men’s NMR-J scores were correlated with self-injury frequency ($r = -0.27$), whereas women’s scores were not ($r = -0.03$). Given these results, we concluded that the NMR-J appears to predict most criteria similarly for men and women.

Overall, these results from a diverse sample of Japanese college students support the initial reliability and validity of the 40-item Japanese language NMR scale. The scale showed strong internal consistency, significant correlations in expected directions with criterion measures of coping and distress, and a modest correlation with SD responding. Reliability and validity coefficients were comparable for men and women, suggesting the scale works equally well with both sexes. These findings are consistent with those for the US NMR scale. That the final version of the NMR-J comprised a blend of translated original US items and new items created to measure NMRE in Japan validates the appropriateness of our emic approach to scale translation, which sought to create a Japanese measure that is culturally relevant. (See Appendix for a sample of items in Japanese and English. The full NMR-J is available from the authors.)

6 Study 2

We were interested in how the 40-item NMR-J related to two other variables: comfort with expressing affect and suicidal ideation. In general, Asian cultures emphasise controlling strong emotions, which people try to avoid or suppress (Narikiyo and Kameoka, 1992). Whether this avoidance or suppression is adaptive or maladaptive needs further investigation. In addition, in Japan suicide is increasingly used as a way of escaping life stress (Japan Ministry of Health, Labor and Welfare, 2003). Suicide might be considered the literal, ultimate method of kanjou o korosu. Tresno et al. (2012) found that stronger NMRE were associated with fewer suicide attempts among Indonesians. We expected NMRE to correlate positively with comfort with expressing affect and negatively with suicidal ideation.

6.1 Method

6.1.1 Participants and procedure

Participants were 68 female freshman students attending a small metropolitan Japanese college training them to become nursery school teachers. Their mean age was 18.51 years ($SD = 0.72$). Participants answered self-report questionnaires in a regularly scheduled class.

6.1.2 Measures

We administered the 40-item NMR-J and the Japanese MLAM. Participants completed two additional scales.
• Comfort with expressing affect. The positive and negative affect schedule (PANAS) assesses the experience of positive affect (PA) and NA. PA represents the extent to which one feels enthusiastic, active and alert. NA corresponds to aversive mood states such as anger, contempt, and fear. Sato and Yasuda (2001) developed a 16-item Japanese version of the PANAS with internal consistencies of 0.90 for PA and 0.91 for NA. Instructions for the PANAS ask participants to ‘indicate to what extent you generally feel this way’. For the current study, instructions were modified to have participants rate how comfortable they feel expressing each affect: ‘Indicate to what extent you generally feel comfortable expressing this emotion’. Cronbach’s alphas for comfort expressing PA and NA in the current study were 0.67 and 0.77, respectively.

• Suicidal ideation. The scale for suicide ideation (SSI) measures the intensity and duration of people’s wishes and plans to commit suicide. Otsuka et al. (1998) developed a 13-item Japanese SSI. They reported a Cronbach’s alpha of 0.85, which was what we found for the current study.

6.2 Results and discussion

NMR-J scores ranged from 81 to 175, with a mean of 125.13 (SD = 19.63). This is quite similar to the mean for Study 1. The NMR-J’s alpha was 0.90. The overall mean endorsement for items was near the middle of the five-point response scale: 3.13 (SD = 0.47). Endorsement means ranged from 2.20 to 4.17; only two items had means above 4.00. Corrected item-whole correlations ranged from 0.15 to 0.64 (M = 0.41; SD = 0.14). Only two items had item-whole correlations below 0.20. Inter-item correlations ranged from –0.26 to 0.61 with a mean of 0.18.

Correlational analyses showed the NMR-J was significantly related to comfort with expressing PA (r = 0.43, p < 0.01) and suicidal ideation (r = –0.37, p < 0.01). The correlation with comfort with expressing NA approached significance (r = 0.23, p = 0.07). The NMR-J did not correlate with social desirability (r = 0.07). These results confirm that the 40-item NMR-J has good internal consistency and correlates in expected directions with variables related to affect and suicidal ideation. Up to this point, though, all data were derived from college student populations.

7 Study 3

The goal of Study 3 was to collect data from non-college student participants.

7.1 Method

7.1.1 Participants and procedure

Data were collected via the internet. We recruited participants through on-line postings and snowball sampling. A total of 119 individuals completed the study: 47 were women and 69 were men; three participants did not specify their sex. The participants’ ages ranged from 22 to 75, with a mean of 42.72 (SD = 12.42). All participants were Japanese nationals, however 6% were residing in the USA.
7.1.2 Measures

We administered the NMR-J and the Japanese HSCL. In addition, participants completed:

- **Daily hassles scale (DHS).** The DHS measures daily stress that is irritating, frustrating, and distressing. The Japanese version of DHS has 34 items, asking participants to rate the daily irritation caused by various problems (Munakata et al., 2004). Respondents rate how irritating each item is on a three-point scale, with 1 being very, 2 being somewhat, and 3 being not at all. Cronbach’s alpha is 0.92. High scores mean more irritation. Alpha for the current study was 0.91.

7.2 Results and discussion

In general, mean scores were higher for this sample than they were for Studies 1 and 2. The mean for the NMR-J was 136.43 (SD = 17.08). This finding is consistent with research using the US scale, in which older participants report higher scale means than do college students (e.g., Catanzaro et al., 1995). The means for HSCL symptoms were also higher: somatic (M = 22.21; SD = 8.13), depression (M = 23.01; SD = 7.97) and anxiety (M = 20.64; SD = 8.03).

Internal consistency for the NMR-J was again strong: alpha = 0.90. Item mean endorsements ranged from 2.64 to 4.05, with an overall mean endorsement of 3.41 (SD = 0.41). The mean corrected item-whole correlation was 0.42 (SD = 0.15). One item had an item-whole correlation of 0.04. Otherwise, item-whole correlations ranged from 0.16 to 0.71. Inter-item correlations ranged from –0.24 to 0.80 with a mean of 0.19.

Correlational analyses showed the NMR-J to relate significantly negatively to the four criteria (all p < 0.01): HSCL somatic symptoms (r = –0.26), HSCL depression (r = –0.68), HSCL anxiety (r = –0.56), and DHS hassles (r = –0.61). Because the measures correlated highly with each other, we next conducted partial correlations between NMRJ and symptoms, controlling for hassles. Correlations were attenuated; however, NMRJ still correlated significantly with depression (r = –0.49) and anxiety (r = –0.26) (both p < 0.01). The partial correlation with somatic symptoms was not significant (r = –0.11).

The results of Study 3 demonstrate that the NMR-J is reliable for older participants. In addition, there is evidence for the scale’s validity in this population, based on significant negative correlations with somatic and psychological symptoms, as well as irritations caused by daily hassles. The relationship of NMRJ with depression and anxiety could not be explained by shared variance with hassles. This suggests the NMR-J is not merely measuring hassles or symptoms, but is measuring a separate, related construct.

8 Study 4

Research with the English NMR scale has examined how NMRE relate to how individuals cope with stress. Some of this research has focused on those with stressful careers, like police officers and teachers (Mearns and Cain, 2003; Mearns and Mauch, 1998). Other research has assessed how individuals cope with the burden of caring for ill
or disabled family members. For example, Brashares and Catanzaro (1994) assessed women caring for a loved one with Alzheimer’s dementia.

A substantial number of children and adults in Japan suffer from an intellectual disability severe enough that they are not able to care for themselves. These children typically reside in the home, and 95% are cared for by parents or other family members (Japan Cabinet Office, 2010). Several studies outside Japan have found that parents of children with an intellectual disability are at increased risk of depression compared to parents of children without such a disability (e.g., Glidden and Schoolcraft, 2003). Study 4 sought to assess the NMR-J in an adult population at risk for stress-related symptomology: parent-caregivers.

8.1 Method

8.1.1 Participants and procedure

Participants were 105 Japanese parents who had a child with an IQ less than 70. These parents were recruited through non-profit organisations serving people with intellectual disabilities and their families and child-guidance centres in a metropolitan area. Only one parent per family participated. They filled out questionnaires during a parenting group meeting.

Parents’ mean age was 56.70 (SD = 9.59), with a range from 29 to 81. They had been caring for their children for a mean of 24.02 years (SD = 11.41; range = 2 to 65 years). Most were women (90.6%) and married (92.5%). Children were severely or profoundly intellectually disabled for 72.6% of parents, and 56.6% had another disorder in addition to intellectual disability.

8.1.2 Measures

Participants filled out the NMR-J; Ozeki’s coping scale; and the HSCL measure of somatic symptoms, depression and anxiety. Alpha coefficients for the criterion measures were 0.79 for problem-focused, 0.60 for emotion-focused, and 0.73 for avoidant coping; and 0.81 for somatisation, 0.90 for depression, and 0.82 for anxiety.

8.2 Results and discussion

The NMR-J mean score was comparable to that of the sample of older adults in Study 3 (M = 137.64, SD = 16.70, range = 86 to 178). However, symptom totals were much lower: somatic (M = 9.83; SD = 7.10), depression (M = 9.18; SD = 7.52) and anxiety (M = 7.79; SD = 5.94). Alpha for the NMR-J was 0.87. Item means ranged from 2.36 to 3.84, with an overall mean of 3.41 (SD = 0.34). Corrected item-whole correlations ranged from –0.17 to 0.68, with a mean of 0.35 (SD = 0.19). Inter-item correlations ranged from –0.41 to 0.69 with a mean of 0.14.

Correlations revealed that the NMR-J significantly correlated with HSCL symptoms (all p < 0.01): somatic (r = –0.40), depression (r = –0.38), and anxiety (r = –0.41). However, in this population, the NMR-J correlated close to 0.00 with all three dimensions of coping. Coping was also positively, though not significantly, correlated with depression. It is unclear whether this lack of relationship is due to the NMR-J, the coping measure, or something unique about this population.
Study 4’s results replicate the findings of previous studies, by showing that the NMR-J has good reliability. The scale worked well for an older population, correlating significantly negatively with symptoms of pathology, replicating findings with the English scale (Brashares and Catanzaro, 1994). However, the NMR-J did not correlate as expected with coping. This result is similar to the findings of Brashares and Catanzaro (1994), who found that among caregivers NMRE did not correlate with active coping.

9 General discussion

This paper presents four studies with over 950 participants from a variety of regions in Japan. The data provide strong evidence that the NMR-J is a reliable, internally consistent measure (alpha = 0.87 to 0.90) for a diverse range of Japanese individuals: men and women, young adults and older. Of the 40 items of the final scale 36 showed strong corrected item-whole correlations above 0.30 for at least two of the four studies; 1 item had an item-whole correlation above 0.30 for only one sample. Three items were weaker: two (items 11 and 35) had item-whole correlations between 0.25 and 0.30 for two samples; item 27 had an item-whole correlation between 0.20 and 0.25 for one sample. These three items were retained because they reflected diverse aspects of a broad construct and correlated at acceptable levels with criterion measures. Thus, as a whole and as individual items, the NMR-J performed well.

Of particular note is that the additional items generated for the Japanese scale were as integral as the items translated from English. This validates our emic approach to scale construction: blending new items for the Japanese population with items from the original NMR Scale created a highly internally consistent measure.

Our results also give preliminary evidence for the validity of the NMR-J. The scale consistently correlated significantly negatively with symptoms of pathology, including anxiety, suicidal ideation, self-injurious behaviour, and two measures of depression. The correlations with pathology are consistent with a large amount of research linking NMRE and symptoms in the West (Catanzaro and Mearns, 1999). Further, the NMR-J appears to predict most criteria at a similar level for men and women.

Results were mixed for coping: in Study 1, the NMR-J correlated significantly with overall coping. However, in Study 4, the NMR-J was uncorrelated with coping. This may be due to problems with the coping scale, however, because coping also did not significantly correlate with symptoms. In the future, a different coping measure than Ozeki’s should be used. Finally, correlations with social desirability were consistently modest, suggesting discriminant validity of the NMR-J from social approval motivation.

There are limitations of the current research. In particular, validity criteria have been limited to self-report questionnaires. It will be important to collect non-self report data in future validity studies. Most fruitful would be to replicate in Japanese samples Smith and Petty’s (1995) and Rusting and DeHart’s (2000) work, which demonstrates that cognitions of individuals with stronger NMRE are less influenced by negative mood. In addition, ratings from friends or family can be used as validity criteria (e.g., Mearns et al., 2009). Another limitation is that all four of the present studies were cross-sectional: all data were collected in a single session. Longitudinal research is needed to demonstrate that NMRE predict pathology independent of mood. Initial first steps could be replicating Mearns (1991) and Catanzaro (1996) in Japan.
Another area of research to pursue is the impact of NMRE on the effects of occupational stress. Mearns and Mauch (1998) and Mearns and Cain (2003) demonstrated that NMRE interacted with job stress, producing a buffering effect: high NMRE protected people from job stress, whereas those low in NMRE experienced increasingly deleterious effects of stress as their stress level rose. Particularly in Japan where the ethos is to expect overwork, investigating the effect of NMRE on the occupational stress-distress relationship should be fruitful.

Finally, growing evidence suggests that NMRE play a role in psychotherapeutic progress: enhancement of NMRE early in therapy predicts greater reduction in symptoms later (Backenstrass et al., 2006; Cloitre et al., 2010). It would be useful to replicate these studies in Japan, to see whether changes in NMRE over time predict therapy outcomes.

10 Summary and conclusions

We presented four studies with data from over 950 diverse Japanese participants. There is strong evidence for the reliability and preliminary evidence for the validity of the 40-item NMR-J. Results support our strategy to create a culturally valid measure of NMRE in Japan, with the addition of items assessing social aspects of mood regulation. The NMR-J should have applications for personality, clinical and industrial/organisational psychology. The NMR-J can be used in Japan to help predict why certain individuals are more resilient when experiencing stress, while others are more vulnerable to developing pathology. We predict that strong NMRE will act in Japan as they have in studies in the West: NMRE will buffer the effects of stress. Measuring NMRE as an individual difference variable in Japan should enhance prediction of a range of psychological constructs related to adaptation and health.

Acknowledgements

The authors thank Setsue Shibata for assistance with back-translation and Masayo Yamamoto for help with data collection.

References


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Notes
1 Keiko Kono, Tetsuo Sato, Emaka Takashima and Fiona Tresno contributed equally to this research. The order of their authorship is alphabetical.

Appendix

Sample NMR-J items

Below are sample items from the NMR-J in Japanese, *romaji* and English.

All items complete the stem:

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私は、落ち込んだ時やイライラした時…
Watashi wa, ochikon da toki ya iraira shita toki…
When I’m mildly depressed or frustrated, I believe that…
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4. もっと楽しい時のことを考えると大丈夫に思えてくると思う。
Motto tanoshii toki no koto wo kangaeru to daijyoubu ni omoe te kuru to omou.
I’ll feel okay if I think about more pleasant times.

16. リラックスする方法を見つけることができると思う。
Rirakkusu suru houhou wo mitsukeru koto ga dekiru to omou.
I can find a way to relax.

28. 仕方がないと思うと少しは気分がよくなると思う。
Shikata ga nai to omou to sukoshi wa kibun ga yoku naru to omou.
I can improve my mood a little by just realizing there is nothing I can do.

36. 同じような困難の中でより頑張っている人を見ると、自分も頑張ろうと思う。
Onaji you na konnan de yori ganbatte iru hito wo miru to, jibun mo ganbarou to omou.
I will be encouraged to do my best if I find someone who is doing his/her best in a more difficult situation.

Please contact the authors to obtain the full NMR-J.