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Exploring the Hierarchical Structure of Pacific Identity and Wellbeing

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Abstract To understand outcomes for Pacific peoples in New Zealand we need to further our psychological knowledge of the relationship between Pacific identity and wellbeing. We map the hierarchical organization of Pacific identity and wellbeing using a novel top-down factor analytic approach applied to the Pacific Identity and Wellbeing Scale (PIWBS; N = 586). Analyses indicated that Pacific identity experiences were organized within two broad dimensions reflecting Identity Engagement and Cultural Wellbeing. Critically, our analysis showed that Religious Centrality and Embeddedness emerged jointly from these dual broad domains. Religious identification provides a bridging link between identity and wellbeing for Pacific peoples. Identifying the relationships of Pacific identity and wellbeing factors, and how religious identification emerges jointly from these two broad domains, provides valuable information in how the Pacific self may be cognitively organized and may assist in future research directions in this area. We assert that this general statistical model provides broad conceptual insights into how Pacific peoples experience their identity and culture, and how this relates to various social indicators of health and wellbeing at a broad, theoretical level. In particular, we offer a conceptual analysis of possible insights from our hierarchical model of identity and wellbeing for understanding Pacific suicide in New Zealand.

Keywords Pacific nations · Identity · Wellbeing · Hierarchical structure · Scale development

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1 Introduction

Pacific peoples in New Zealand (NZ) are well known for their rich cultural diversity, languages and identities. In addition, Pacific peoples are one of the fastest growing ethnic groups in NZ (Statistics New Zealand 2006). However, our understanding of the psychology of Pacific peoples is limited. What we do know is that Pacific peoples are overrepresented in statistics on negative mental health, gambling and addictions (Oakley-Browne et al. 2006). Whilst this paper does not seek to completely solve these issues, we argue that furthering our understanding of the cognitive structure of identity and evaluations of subjective wellbeing for Pacific peoples can help research eventually achieve this goal.

Pacific people in New Zealand are often referred to, and analyzed in various datasets, as a combined group. According to data from the 2006 New Zealand census, Pacific peoples as a whole make up approximately 7 % of the New Zealand population (Statistics New Zealand 2006). However, this broad group is made up of many more specific groups tracing their origin to different islands in the South Pacific. The seven largest Pacific groups that comprise this broad category have origins from Samoa (47 %), Cook Islands (21 %), Tonga (18 %), Niue (8 %), Fiji (4 %), Tokelauans (2 %) and Tuvalu (1 %) (Statistics New Zealand 2006). Pacific people as broad group are the most religious ethnic group in New Zealand. In an analysis of national probability sample collected in 209, Hoverd and Sibley (2010) reported that 67 % of Pacific peoples in New Zealand were religious and identified with a Christian faith (a further 8.7 % were religious but did not identify with a Christian faith specifically. In contrast, a lower proportion of Europeans, Maori and Asian peoples in New Zealand identified as religious (43, 49.1, 59.5 %, respectively). Similarly, according to the 2006 New Zealand Census 83 % of Pacific peoples indicated that they had a religion, with 97 % of those identifying with a Christian religion (Statistics New Zealand 2006).

Pacific people as a broad group are at risk of negative health and wellbeing outcomes across a variety of indicators. For example, Pacific people have a median income of $20,500, lower than that of national median income of $24,400 (Statistics New Zealand 2006). In terms of health, Pacific peoples have a high prevalence of preventable and chronic illnesses such as Type 2 diabetes (Health Partners Consulting Group 2012). Pacific peoples, along with Asian peoples, show significantly higher levels of non-specific psychological distress (indexed by the Kessler 6) relative to their European and Maori counterparts (Krynen et al. 2013). Finally, a pressing concern that has been felt by the Pacific community in New Zealand recently is issues surrounding suicide. Statistics on suicide and suicidal behaviour show that Pacific peoples, along with Maori, have a higher rate of suicidal behaviour and suicide attempts relative to other ethnic groups (Oakley-Browne et al. 2006). When adjusting for sociodemographic factors, Pacific peoples show higher rates of suicide planning and suicide attempts (Beautrais et al. 2006). Critiques of Western mental health explanations suggest that there may be a lack of focus on culturally relevant issues that may influence suicidal behaviours (Henare and Ehrhardt 2005). The factors behind the disproportionate representation of Pacific peoples in these social indices are complex. However, there may be cultural barriers and cultural differences in health beliefs that can influence healthy lifestyle choices and health care seeking behaviour (Health Partners Consulting Group 2012). One way towards improving these statistics is to increase our understanding of the ethnic identity and wellbeing of Pacific peoples and how this may apply to positive health behaviour and positive health outcomes.

We know from sociological and anthropological research that family, religion and society are influential in the identity and wellbeing of Pacific peoples (Anae 1998; Mila-Schaaf 2010; Tiatia 1998). These two core aspects of Pacific identity and wellbeing also form the basis for empirical research in the area, and are operationalized in the Pacific Identity and Wellbeing Scale (PIWBS: Manuela and Sibley 2013). However, questions remain about how the different facets of Pacific identity and wellbeing are related to each other. Are there broad domains of identity and wellbeing that can be split into more specific domains? Are there some aspects of identity and wellbeing that are totally distinct or are some dimensions more strongly related than others? In other words, how is Pacific identity and experiences of wellbeing cognitively organized for Pacific peoples?

Here we explore the structure of Pacific identity and wellbeing by applying the top-down factor analytic method proposed by Goldberg (2006) in the study of the structure of personality factors. Using Goldberg's (2006) novel approach, we examine how the factors of the PIWBS are hierarchically organized in terms of broader, abstract domains down to more fine-grained aspects of identity and wellbeing. Modeling identity and wellbeing in this way is directly relevant for entire areas of Pacific research as it sheds new light on the relationship between identity and wellbeing. To highlight how this may inform future Pacific research, we will apply the proposed hierarchical model of Pacific identity and wellbeing to one solemn issue facing Pacific communities in NZ today—suicide. We will show how the proposed hierarchical representation conceptually fits with research on Pacific suicide as a way of modeling understanding of the Pacific self. We focus on suicide to highlight how understanding the factor structure of a model in this way can be applied to Pacific research in other areas.

1.1 Pacific Identity and Wellbeing

Before outlining the details of our quantitative model of Pacific identity, and its hierarchical structure, we offer a brief review of previous conceptual models and research of Pacific identity and wellbeing upon which our empirical approach is based.

From a traditional psychological perspective, ethnic identity can be described as a general phenomenon where one identifies their self as belonging to a particular ethnic group. Such identification entails a sense of belonging to that group, positive attitudes towards that group, and participation in the group's cultural practices (see Phinney 1990 for a review). Wellbeing, in contrast, relates to one's subjective evaluation of their happiness and satisfaction with life (Diener 2006) and has three hallmarks: it is subjective; it includes positive measures; and it is a global assessment of all aspects of one's life (Diener 2009). Ethnic identity and wellbeing are often viewed separately in psychology. Nevertheless, much research has been conducted examining the relationship between the two constructs (see Smith and Silva 2011 for a review). Adopting this perspective of ethnic identity and wellbeing, we can say that ethnic identity represents part of the self-concept and that wellbeing is a subjective state to which it can be related. However, when viewing identity and wellbeing through a Pacific lens, a different picture emerges.

From a Pacific perspective, the self is viewed holistically, with various related components intertwined in a reciprocal relationship. Aspects of identity and wellbeing are generally not viewed separately, but rather, as seen as integral parts of the overall self. Various indigenous Pacific models show these relationships using physical structures to metaphorically reflect the Pacific self. One such example is the Fonofale Model (Crawley et al. 1995), a Pacific model of health and wellbeing that reflects the overall Pacific self as a *fale* (traditional meeting house; see Manuela and Sibley 2013 for an illustration of this

model). The different components of the fale represent different aspects that comprise the Pacific self. The foundation represents family, which is the foundation of Pacific cultures and a fundamental system for Pacific social organization. The roof represents culture and values that are the shelter for life. Connecting the foundation (family) and roof (culture) are four posts that represent (1) spirituality, (2) physical wellbeing, (3) mental wellbeing and (4) various other aspects including: gender, sexual orientation, age, social class, employment and education. Surrounding the fale is a cocoon that represents the environment, time and contexts that have direct or indirect influences on each other.

Because of the way the fale is constructed, if one component is out of balance, the rest of the structure will be affected (e.g., a poor foundation may not provide enough support to hold the posts and roof in place during a storm). The same is considered for a Pacific individual, if one aspect of the life is out of balance, it can affect the overall self (e.g., the state of one's relationship with their family may have effects on aspects of wellbeing, cultural values, behaviors and identity). Focusing on the more specific aspects of the overall Pacific self, the literature highlights five important areas: family, society, religion, positive affirmation and a sense of belonging (Crawley et al. 1995; Tiatia 1998; Anae 1998).

The influence of family on a Pacific individual is indicative of the collectivist orientation of Pacific peoples. In a Pacific context, family generally refers to the wider extended family as opposed to the nuclear family. As discussed above, family is represented as a foundation for Pacific cultures and a basis of social organization. Other models of Pacific health highlight the role family plays where values, beliefs, traditions and wisdom are shared (Kupa 2009). Furthermore, Pacific research has identified family as a key mechanism through which social support is gained (Anae 1998; Pene et al. 2009; Poland et al. 2007; Tiatia 1998).

Pacific models of health identify society as an essential component to the overall wellbeing of Pacific peoples. For example, the Fonofale model reflects society as a cocoon that encapsulates an individual that has either direct or indirect influence on their wellbeing (Crawley et al. 1995). Other Pacific models highlight society as an essential system to ensure that individuals and families are well supported (Kupa 2009). Furthermore, as a minority group in NZ, Pacific peoples are likely to face social pressures in relation to differences in their own culture and predominant Western influences (Tamasese et al. 1997; Manuela and Sibley 2012). In contrast, other research suggests that Pacific migration to NZ can provide benefits to mental health in the short term (Stillman et al. 2009).

The influence of religion and spirituality on the identities and wellbeing of Pacific peoples is not unique to this population. Nevertheless, religion remains an important facet of Pacific identity. Typically, Western models of identity and wellbeing do not include aspects of religion or spirituality (Phinney 1990). However, there are examples of ethnic-specific identity models that do include them (see Houkamau and Sibley 2010; Sibley and Houkamau 2013). Specifically, religion has a huge influence on the many Pacific communities that reside in NZ (Taule'ale'asusumai 2001) with approximately 83 % of Pacific peoples identifying with a religious group in NZ according to the last census (Statistics New Zealand 2006). Early research suggests that religion can play a role in both Pacific identities and wellbeing. For example, Macpherson (1996) notes that church can be viewed as a village away from the islands where families can attain social connections, social support and fulfill their religious needs. In addition, Pacific models of health include religion and spirituality as a force that drives one forward (Kupa 2009). On the other hand, religious aspects have been identified as inextricably linked to one's Pacific culture, thus playing a key role in exploring cultural aspects that influence Pacific identity formation

(Anae 1998; Tiatia 1998). Furthermore, religion and spirituality have been identified in Pacific models of health as a connection between one's family and one's culture (Crawley et al. 1995).

1.2 The Pacific Identity and Wellbeing Scale (PIWBS)

The PIWBS (Manuela and Sibley 2013) is a culturally appropriate self-report measure that assesses a five-factor model of Pacific identity and wellbeing within a New Zealand context. It provides a quantitative representation of the holistic, psychological experience of identity and wellbeing for Pacific peoples. The PIWBS (Manuela and Sibley 2013) was derived through an integration of psychological and Pacific research on identity and wellbeing. Items for the initial scale were developed and the underlying factor structure of the large set of items was examined via exploratory factor analysis (EFA). Analyses supported a five-factor model with 31 items. The model was further substantiated using confirmatory factor analysis (CFA) of an independent sample, which indicated that a model with five correlated dimension fit the data well—and far better than many alternative solutions, including a two-factor model of identity and wellbeing. Each of the five factors represents a unique and culturally relevant aspect of identity and wellbeing. The factors that were identified include:

Group Membership Evaluation (*GME*): This factor indexes the subjective evaluation of one's perceived membership within the Pacific group. It includes both an evaluation of positive affect derived from one's self-perceived membership within the Pacific group, and the notion of one's Pacific identity as a centrally defining aspect of the self-concept.

Pacific Connectedness and Belonging (*PCB*): This factor indexes one's sense of belonging and connectedness with Pacific others and the Pacific group as a whole. It indicates a personal investment in the extent to which one feels that they are an integral part of the Pacific group. It is framed around how one perceives their connections with Pacific others and their sense of belonging with the Pacific group at a general level.

Religious Centrality and Embeddedness (*RCE*): This factor represents one's subjective evaluation of the extent to which religion is a centrally defining aspect of the Pacific self, and intertwined with one's Pacific culture. It is reflected through the lived experiences associated with one's religion within Pacific communities, connections and the interwoven nature of religion and Pacific cultures.

Perceived Societal Wellbeing (*PSW*): This factor represents one's perceived satisfaction with the support they receive from New Zealand society and is framed around one's position as a Pacific person in NZ. This is assessed at various levels ranging from local communities to the national government. It indicates the extent to which one perceives their self to be accepted and supported by NZ society at large.

Perceived Familial Wellbeing (*PFW*): This factor represents one's perceived satisfaction within the domain of their family. Familial wellbeing is reflected through a combination of Pacific values of respect and observance of *tapu* (sacred) relationships, and other values of happiness and security in relation to one's family.

The PIWBS (Manuela and Sibley 2013) is the first quantitative model of Pacific identity and wellbeing that we are aware of. The strength of the PIWBS lies within its unique take on how ethnic identity and wellbeing are conceptualized within a quantitative model. Traditionally, Pacific research on identity and wellbeing is of a qualitative nature that conceptualizes identity and wellbeing as interrelated aspects of a conceptual whole. The PIWBS reflects this indigenous standpoint by including domains of culturally relevant wellbeing and identity within a single model as opposed to creating separate models for

identity and wellbeing. Alternatively, we could explore ethnic identity and wellbeing for Pacific people separately. For example, there is the Multigroup Ethnic Identity Measure (Phinney 1992) that assesses ethnic identity as a general phenomenon. This is useful for comparisons *across* ethnic groups. In the case of intra-cultural research with Pacific people, however, the MEIM is unable to capture some of the more culturally specific aspects associated with Pacific identities (such as the influence of religion).

The PIWBS is reflective of the Fonofale model and, in a way, compliments such a model. However, whilst the Fonofale model provides an explanation of how the various components of Pacific health and wellbeing are related, there is currently no such explanation for the PIWBS. Theoretically, one would expect the factors of the PIWBS to be related in a similar manner. We suspect that, as the Fonofale model and extant literature suggests (Crawley et al. 1995; Pene et al. 2009; Poland et al. 2007), Family will play a major role and be one of the overarching constructs within the identity and wellbeing hierarchy. We also expect to see a link between broad dimensions of identity and wellbeing, most likely via a religious component; the RCE factor. To examine how the factors are related to each other, we employ a top-down factor analytic method to construct a hierarchical structure of Pacific identity and wellbeing.

1.3 Hierarchical Factor Analysis: Exploring the hierarchal structure of the PIWBS

Although Manuela and Sibley (2013) showed that the PIWBS indexed five reliable and distinct factors, they did not assess whether these factors might exist within a more complex hierarchically organized representational structure. One way to assess this would have been to specify higher-order factors within a CFA. Goldberg (2006), however, recently presented a more exploratory approach that does not rely on an a priori hypothesized factor structure. Goldberg's (2006) method explores how factors are organized in terms of broader and more abstract domains at higher levels of the hierarchy, to more specific domains at lower levels. This is achieved by conducting a series of EFAs with an orthogonal rotation, starting with one factor and increasing the number of factors in each analysis. Following this, we can calculate the part-whole correlations between broader dimensions and more specific dimensions residing below. We can then construct a hierarchical structure that allows us to see how specific factors within the model are related to each other at various levels, by observing the pattern of significant correlations between the broad and narrow dimensions at each level.

Applying this method to data used in developing the PIWBS will allow us to explore the ways in which global and abstracted dimensions of Pacific identity and wellbeing emerge and continue to split into the already validated, narrow-bandwidth (or more specific) five-factor model outlined by Manuela and Sibley (2013). As Goldberg (2006) commented, one can think of this analysis as providing a representation 'akin to a flow chart of factor emergence' (p. 356) in which the part-whole correlations between factor scores extracted at different 'levels' are akin to path coefficients from factors at one level predicting those at the next more specific level of emergence. Thus, these correlations could show how the specific dimensions of Pacific identity and wellbeing in the PIWBS are organized at a more general or global level.

Goldberg (2006) originally applied this method to understand the structure of personality. Subsequently, additional research has applied Goldberg's (2006) method to further understand other phenomena such as musical preferences (Rentfrow et al. 2011), impulsivity (Kirby and Finch 2010) and national character (Sibley et al. 2011). Houkamau and Sibley (2010) have shown how Goldberg's (2006) method can be particularly useful for

understanding the content and structure of identity. They showed that specific dimensions of their Māori identity model were subsumed under more abstract dimensions at higher levels. For example, two factors of Māori identity (namely, Group Membership Evaluation and Socio-Political Consciousness) emerged jointly and evenly from a broader dimension of Self-Identification as Māori in a Socio-political Context. They argue that this model indicates that identification as Māori exists within a socio-political context, where to identify as Māori is to also identify with a particular social milieu where one's ethnic group is located within a context of relations between Māori and Pākehā (NZ European) in NZ.

Interestingly, the different levels of the hierarchical structure of related factors provide a way to focus attention on specific factors of a model that will benefit particular research goals. For example, Houkamau and Sibley (2010) suggested that the third level of their model provides the most interesting information as it shows how the six factors of the model are subsumed under three broader categories. So, should one wish to explore Enculturated Experiences of Māori Identity Traditions (one of the factors at the third level), one could focus on two factors that are subsumed under this, Spirituality and Cultural Efficacy and Active Identity Engagement. Guiding research in this way provides a strong theoretical basis for expected outcomes and can help understand complex findings. The same principle can be applied to the PIWBS, where it is possible that the conceptual insights that this analysis may provide, in terms of understanding Pacific identities and culture, can assist in areas of urgent research such as Pacific suicide and suicidal behaviours in New Zealand.

Given that Goldberg's (2006) method has provided insight into the structure of identity for Māori, how might the identity and wellbeing of Pacific peoples be structured? Given the holistic conceptualization of the Pacific self, as suggested by qualitative models and research, how might we expect the different levels of the hierarchical structure of Pacific identity and wellbeing to appear? Most importantly, how might the different factors of Pacific identity and wellbeing be related?

1.4 Overview of the Present Study and Hypotheses

Manuela and Sibley (2013) presented extensive analyses showing that the PIWBS assessed five distinct dimensions of Pacific identity and wellbeing. Here, we extend this analysis to examine the hierarchical structure of the scale, that is, to identify the broader grouping structure under which specific aspects of Pacific identity and wellbeing are organized. We do this by applying Goldberg's (2006) hierarchical factor analysis method to the PIWBS. The data we analyze here were generated by combining data from two previous independent samples reported in Manuela and Sibley (2013), which were originally collected to develop the PIWBS scale. Aspects of the data are also reported in Manuela and Sibley (2012), examining the identification and wellbeing of multi-ethnic versus mono-ethnic Pacific peoples. As far as we are aware, this is the largest sample of Pacific peoples in New Zealand to be collected that focuses specifically on psychological aspects of identification and wellbeing. Manuela and Sibley (2013) used these data to examine the reliability of the scale and to identify the initial factors, but the hierarchical structure of the scale has never been examined. As such, the analysis of the hierarchical structure of the PIWBS we report here represents a novel contribution to the literature that has not been previously reported.

As the name of our model suggests, we expect to see two broad dimensions to emerge from our data: Pacific identity on the one hand, and wellbeing on the other. We argue that these are the two broad and centrally organizing dimensions of our model, and everything else that splits at lower levels are more specific expressions of identity and wellbeing. One of those specific expressions that we expect to see at a higher level of the hierarchical

structure is the perceived familial wellbeing (PFW) factor. Given the collective nature of Pacific cultures, and the large influence of familial relations in the daily lives of Pacific peoples, we expect to see the PFW factor emerge quite early as a more specific expression of a broader sense of wellbeing.

Religious aspects are highlighted as playing a role in both constructing and maintaining identity and wellbeing (Anae 1998; Macpherson 1996), whilst making no clear distinction between the two. It is possible that religion plays a role in both identity and wellbeing, thus acting as a link between the two within the holistic conceptualization of the Pacific self. In addition, the Fonofale model highlights religion and spirituality as one of the links between family (a source of wellbeing according to the PIWBS) and culture (as represented by the identity factors of the PIWBS). Thus, we predict that the Religious Centrality and Embeddedness factor of the PIWBS will emerge jointly from two broader factors of identity and wellbeing.

Finally, from Phinney's (1990) conceptualization of ethnic identity as a general phenomenon, we expect to see the two factors group membership evaluation (GME) and Pacific connectedness and belonging (PCB) emerge as more specific expressions of a general sense of ethnic identity.

2 Methods

2.1 Participants and Procedure

Participants were 586 (197 male, 386 female, 3 unspecified) members of the New Zealand public who identified with a Pacific Nation and had a mean age of 26.41 years (SD = 9.72). The data for this study is a reanalysis of the combined data used in two studies in the development of the PIWBS (Manuela and Sibley 2013). Participants responded to an email advertisement inviting them to be part of a study to develop a measure of Pacific identity and wellbeing. The email was sent to a variety of Pacific groups and organizations including Pacific student associations at major tertiary institutes in New Zealand, Pacific organizations and other Pacific community networks. Members of the public were also approached in public settings and invited to complete a paper version of the Pacific Identity and Wellbeing Scale. All participants were entered into a draw to win $250 worth of grocery vouchers.

2.2 Measures

Participants completed the Pacific Identity and Wellbeing Scale (Manuela and Sibley 2013). The scale asks respondents to rate on a 7-point Likert Scale (1 = completely dissatisfied to 7 = completely satisfied) how satisfied they are in various areas of their lives. The scale also asks respondents to rate on a 7-point Likert Scale (1 = completely disagree to 7 = completely agree) how much they agree with statements related to Pacific ethnic identity.

3 Results

Following the method outlined by Goldberg (2006), we conducted a series of Varimax-rotated Maximum Likelihood Exploratory Factor Analyses extracting 1–5 factors. The

first unrotated factor was extracted and participants' scores were saved for this unidimensional solution. We then calculated and saved factor scores for a (Varimax-rotated) two-factor solution. Following this, three (Varimax-rotated) factors were extracted for the third level. This process was continued until the same five-factor solution was reached as already validated by Manuela and Sibley (2013). To model the structure of the PIWBS hierarchically, we then correlated the saved factor scores at the highest level (a single factor) with those for the next level down (two factors). The factor scores for a two factor solution were then correlated with factor scores of a three factor solution at the next level down. This process of correlating factor scores at one level with the level below it was continued until the four factor solution was correlated with the already validated five-factor solution.

Factor loadings for the five-factor solution are presented in Table 1. A scree plot of the eigenvalues (eigenvalues: 8.65, 4.05, 2.74, 2.35, 1.41, 1.12, .82, .76, .69, .63), and those of a parallel analysis (mean eigenvalues that would occur by chance: 1.45, 1.39, 1.35, 1.31, 1.27, 1.24, 1.21, 1.18, 1.15, 1.13) support the five factor model. The hierarchical structure of Pacific identity and wellbeing derived using Goldberg's (2006) method of analysis is presented in Fig. 1, where the length of each box represents eigenvalues for each factor at each level. As shown in Fig. 1, a single factor reflecting a broad and generic overall Pacific psychological experience split into two dimensions which summarized factors relating to engagement with one's Pacific ethnic identity (path coefficient = 0.72) and culture-specific aspects of wellbeing (path coefficient = 0.72). We labeled these factors, Identity Engagement and Cultural Wellbeing, respectively.

At the third level of extraction, we see that Perceived Familial Wellbeing emerges as a distinct facet of Cultural Wellbeing (path coefficient = 0.52) and remains consistent at the fourth and fifth levels (as indicated by path coefficients of 0.99). We labeled the other aspect of Cultural Wellbeing at this level as Societal and Religious Embeddedness (path coefficient = 0.87).

At the fourth level of extraction, Perceived Societal Wellbeing emerges as a distinct facet of Societal and Religious Embeddedness (path coefficient = 0.99) and remains consistent at the fifth level. Also at the fourth level, Religious Centrality and Embeddedness emerged jointly from Identity Engagement (path coefficient = 0.42) and Societal and Religious Embeddedness (path coefficient = 0.13), and remained consistent at the fifth level. We labeled the other content dimension at this level as Pacific Identity and Cultural Connectedness.

Finally, at the fifth level of extraction, Group Membership Evaluation (path coefficient = 0.68) and Pacific Connectedness and Belonging (path coefficient = 0.81) both emerged from the broader Pacific Identity and Cultural Connectedness dimension.

In summary, the hierarchical structure of Pacific identity and wellbeing is presented with five distinct levels. The first level represents a broad and generic factor capturing a Pacific psychological experience. This splits into two broad dimensions at the second level, representing two centrally organizing themes of Identity Engagement and Cultural Wellbeing. The Cultural Wellbeing dimension then splits into two more specific expressions at the third level, showing the Perceived Familial Wellbeing factor in its final specific form, and a broader Societal and Religious Embeddedness dimension. The broader Identity Engagement dimension remains as is at the third level. At the fourth level, the specific dimension of Religious Centrality and Embeddedness emerges jointly from the broader dimensions of Identity Engagement and Societal and Religious Embeddedness.

Table 1 Item content and factor loadings for the five-factor solution of the PIWBS using maximum likelihood exploratory factor analysis with varimax rotation

		Factor				
		1	2	3	4	5
Perceived Familial Wellbeing (PFW)						
PFW01	Your relationship with your parents	**0.80**	0.10	−0.01	0.07	0.12
PFW02	Your position in your family	**0.72**	0.17	0.09	0.10	0.04
PFW03	Communication with your family	**0.74**	0.17	0.09	0.08	0.06
PFW04	The respect you give for your parents	**0.74**	0.10	0.07	0.05	0.09
PFW05	The respect you receive from your family	**0.73**	0.12	0.10	0.12	0.11
PFW06	Your family's happiness	**0.73**	0.21	0.08	0.03	0.12
PFW07	Your family's security	**0.62**	0.31	0.13	−0.06	0.12
Perceived Societal Wellbeing (PSW)						
PSW01	Support provided by the New Zealand government to you as a Pacific Islander	0.02	**0.77**	0.04	0.02	0.04
PSW02	Your position in New Zealand as a Pacific person	0.22	**0.71**	0.10	0.08	0.07
PSW03	The support you receive as a Pacific Islander in New Zealand	0.14	**0.79**	0.06	0.07	0.03
PSW04	Your personal needs being met by New Zealand	0.11	**0.80**	0.07	0.02	0.01
PSW05	Your relationship with New Zealand society	0.17	**0.68**	0.07	0.06	0.13
PSW06	The support you receive in the community you live in	0.26	**0.65**	0.13	0.13	0.01
PSW07	The support you receive as a Pacific Islander in the community you live in	0.24	**0.65**	0.14	0.11	0.10
Religious Centrality and Embeddedness (RCE)						
RCE01	Going to church is part of my culture and religion	0.10	0.07	**0.79**	0.11	0.11
RCE02	God has a strong connection to my culture	0.04	0.11	**0.78**	0.15	0.16
RCE03	Religion is not important for my culture	0.09	−0.01	**0.46**	0.08	0.10
RCE04	Our religion is the centre of our culture as Pacific Islanders	0.05	0.11	**0.69**	0.05	0.11
RCE05	Religion is the root of our Pasifika culture	0.10	0.13	**0.64**	0.11	0.07
RCE06	Part of being a Pacific Islander is having a connection with God	0.05	0.11	**0.61**	0.12	0.11
Pacific Connectedness and Belonging (PCB)						
PCB01	I feel at home around other Islanders, even if they are not from my island	0.04	0.08	0.13	**0.76**	0.13
PCB02	I feel connected to other Pacific people in general	0.09	0.09	0.18	**0.75**	0.23
PCB03	I feel connected to people from a different Pacific island to myself	0.09	0.08	0.15	**0.75**	0.17
PCB04	I feel comfortable in places with lots of other Pacific people	0.06	0.09	0.14	**0.65**	0.28
PCB05	I feel most comfortable in Pacific communities	0.06	0.04	0.24	**0.53**	0.18
PCB06	I don't get along with other Island groups	0.03	0.04	−0.06	**0.30**	0.20
Group Membership Evaluation (GME)						
GME01	The fact that I am an Islander is an important part of my identity	0.11	0.01	0.26	0.31	**0.68**
GME02	Being an Islander is an important part of how I see myself	0.07	0.06	0.30	0.29	**0.60**
GME03	Being a Pacific Islander gives me a good feeling	0.16	0.12	0.16	0.34	**0.66**
GME04	I am glad to be a Pacific Islander	0.20	0.12	0.20	0.26	**0.72**
GME05	I am proud to be a Pacific Islander	0.15	0.07	0.10	0.23	**0.68**

Factor loadings >.30 are printed in bold

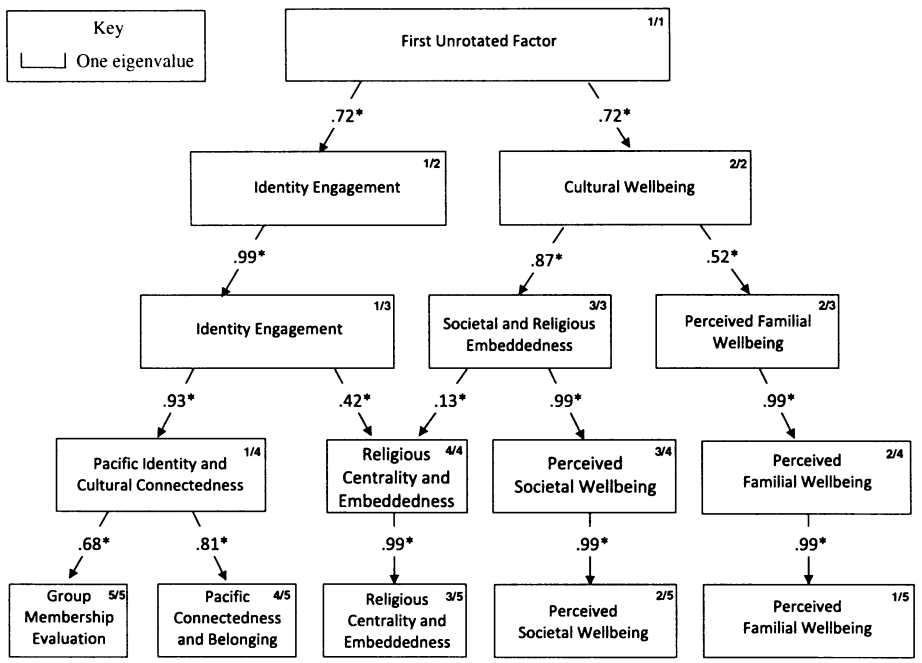

Fig. 1 Hierarchical structure of the PIWBS using Varimax-rotated Maximum Likelihood Exploratory Factor Analysis. Only path coefficients [part-whole correlations] between factors >0.10 are shown. Factors are labeled by their size at each level, for example, 1/2 and 2/2. Box widths are expressed in Eigenvalue units and therefore represent relative factor sizes in terms of proportions of explained variance

4 Discussion

The empirical measurement of distinct aspects of Pacific identity and wellbeing is a new and emerging area of research. We have recently developed a scale assessing five distinct dimensions of Pacific identity and wellbeing (known as the PIWBS; Manuela and Sibley 2013). However, the scale is in its early days of development, and there remains much work to do in order to understand how Pacific identity and wellbeing are cognitively structured, and how these dimensions may predict a myriad of outcomes for Pacific peoples in different contexts. Here, we explored the hierarchical structure of the PIWBS using a top-down factor analytic method. This allowed us to see how the factors of the scale were related to one another at broader levels of abstraction. In doing so, this provided new information on how different aspects of the holistic conceptualization of the Pacific self are interrelated.

Our results indicated that at the second level of extraction, the PIWBS assesses two global dimensions of identity and wellbeing. These are named Identity Engagement and Cultural Wellbeing, respectively. This finding is consistent with our hypothesis of the model assessing two broad dimensions of identity and wellbeing and we argue that this is what distinguishes our model from other models. Identity and wellbeing are usually assessed using separate models or scales. Here, we incorporate both aspects in a single model. One could possibly argue that because there are two broad categories at the most abstract level, the PIWBS is actually assessing two distinct dimensions in the first place. However, previous analyses have indicated that a two-factor model of identity and

wellbeing fit the data considerably worse than the current, validated five-factor model (Manuela and Sibley 2013). In essence, the two factors presented at the second level indicate that a centrally organizing theme for the Pacific self-concept is the relationship between one's identity and the culturally specific aspects of wellbeing. This is consistent with Pacific views of the holistic self, where, if we draw parallels to the Fonofale model (Crawley et al. 1995) these broad dimensions represent both the foundation (family, a source of wellbeing) and the roof (culture or identity).

At the third level of extraction, we see that Cultural Wellbeing splits into two more specific dimensions; one reflecting Societal and Religious Embeddedness with the other being the Perceived Familial Wellbeing factor (PFW). The PFW factor remained consistent at lower levels within the hierarchical structure, indicating that it was the first factor to emerge in its final form. We argue that this highlights the significant influence of family in Pacific cultures. The early emergence of the PFW factor indicates that even at broad levels of self-conceptualization, family maintains considerable influence on the overall wellbeing of Pacific peoples. This supports Pacific research highlighting the importance of family in the overall wellbeing of Pacific peoples (Crawley et al. 1995; Kupa 2009).

At the fourth level of extraction, we see that the Societal and Religious Embeddedness dimension split into two factors; one reflecting satisfaction with NZ society, the Perceived Societal Wellbeing (PSW) factor. The other dimension to emerge was the Religious Centrality and Embeddedness (RCE) factor, which also emerged jointly from the broader Identity Engagement dimension from the second level. This particular factor warrants further theoretical attention. The RCE factor was the only one to emerge jointly from two higher dimensions. As such, this appears to be the only dimension that contains overlapping aspects derived from both engagement with one's identity and perceived satisfaction with society in general. This is consistent with previous Pacific research that highlights religion as both a source of social support (Macpherson 1996) and a key aspect in the formation of Pacific ethnic identities (Anae 1998). It appears that religion acts as a bridge between identity and wellbeing for Pacific peoples at a general, broad level.

We argue that this finding is analogous to the Spirituality post of the Fonofale model (Crawley et al. 1995). The Fonofale model depicts Spirituality (represented by RCE in our model) as a link between the foundation, or family (Family being a source of wellbeing as depicted in the second level in our model and its relationship to Societal and Religious Embeddedness in the third level) and the roof, or culture (The Identity Engagement factor in the third level of our model). This suggests that the extent to which one considers a Christian-based religion as an integral aspect of their Pacific identity is nested within both societal satisfaction and engagement with one's Pacific identity.

Finally, the last factors to be extracted in their final forms were the GME and PCB factors. These two factors both split from a more abstract dimension that appeared to be reflecting Pacific Identity and Cultural Connectedness. This is consistent with Phinney's (1990) conceptualization of ethnic identity that emphasizes the components of positive affirmation and a sense of belonging to one's ethnic group. However, in contrast to Phinney's Multigroup Ethnic Identity Measure (MEIM: 1992) that assesses ethnic identity as a general phenomenon, our model delves deeper into the components identified as important to ethnic identity, and in a way that is culturally relevant to Pacific peoples. Whilst the MEIM (Phinney 1992) provides a more parsimonious model, our multi-factor model assessed the various ethnic components separately and allows us to identify the relationships between them. Furthermore, given that these two factors are the last to emerge from our model, we argue that this supports Phinney's (1990, 1992) conceptualization of ethnic identity as a general phenomenon. If these two components were fully

distinct and unrelated aspects of identity, we would expect to see them emerge in something close to their final form at a higher level of extraction. As such, our model suggests that positive evaluations of one's perceived ethnic group membership and a sense of belonging to one's ethnic group are nested together at broader levels of abstraction, thus reflecting Phinney's (1990) conceptualization of ethnic identity as a general phenomenon.

4.1 The Benefits of Hierarchical Factor Analysis

Goldberg's (2006) method provides us with a means to see how the factors of the PIWBS are hierarchically organized and structured from broader to specific aspects of identity and wellbeing. Other Pacific models that represent the Pacific self, such as the Fonofale model (Crawley et al. 1995), are indigenous representations of understanding the self. These are not strict models developed following a strict scientific process. Rather, these models utilize indigenous knowledge and perspectives. The PIWBS is an attempt at integrating indigenous Pacific knowledge with Western methods. We did not seek to test other Pacific models against our exploration of the structure of Pacific identity and wellbeing; however, what we have found does support them.

It is possible that the resulting model reflects how the holistic conceptualization of the Pacific self is cognitively organized and structured. This is a critical point that suggests that to understand Pacific peoples, it is best to adopt a Pacific lens when viewing the self-concept. Say for example a non-Pacific clinical psychologist was dealing with a strongly identified Pacific client, knowledge of how the client may understand their self-concept can aid cultural competency during an assessment. It may be beneficial to know that a Pacific individual may view him or herself holistically, despite various identifiable aspects of the self. Furthermore, it is important for clinicians to understand that religion and spirituality (regardless of one's religious status) could have an influence on a Pacific individual's identity and wellbeing due the intertwined nature of religion, Pacific cultures and Pacific societies.

The structure of identity and wellbeing according to the hierarchical PIWBS model provides valuable information that can assist in theory building and future research. As Houkamau and Sibley (2010) point out, this method of analysis provides one with a quantitative model in which research questions, evaluations or interventions can be assessed by particular dimensions of the model. For example, if one were interested in researching ethnic-specific behaviors, such as Pacific language use and maintenance, our model would suggest that utilizing the factors subsumed underneath the broad Identity Engagement factor in the third level would be the best course of action. This would mean focusing on areas as indexed by the three factors that fall underneath it (PCB, GME and RCE). Alternatively, if one were interested in, say, developing a particular clinical therapy technique for Pacific peoples wellbeing, our model suggests utilizing factors subsumed underneath the broad Cultural Wellbeing factor in the third level would be most effective. This would mean focusing on areas as indexed by PFW, PSW and RCE. Indeed, prior research on therapy for Pacific clients has suggested these factors can be beneficial (Te Pou 2010).

4.2 A general comment on the application of the hierarchical model to Pacific suicide research

Why is knowing about the cognitive structure of Pacific identity and wellbeing important? We think it can help answer many research questions and generate directions for future

research on important applied and theoretical areas in a number of Pacific disciplines. To further highlight the potential that a hierarchical model of Pacific identity and wellbeing provides, we briefly apply our model to research on Pacific suicide. We choose suicide as it is a social problem that is disproportionately affecting Pacific communities in NZ. We argue that our hierarchical model fits with existing research on risk and protective factors surrounding suicide for Pacific peoples and can be used as a basis for future research in this area.

Currently, Māori and Pacific peoples have a disproportionately higher rate of suicidal behaviour, suicide ideation and suicide attempts in comparison to other ethnic groups in NZ (Oakley-Browne et al. 2006). In 2010, there were 21 Pacific suicides with an age standardized rate of 33.5 per 100,000 amongst the Pacific population (Ministry of Health 2012). Numbers are expected to increase with the growing population, particularly if the Pacific communities continue to show a youthful age structure (Ministry of Health 2012). These rates are also nested within a paradigm that focuses on Westernized mental health explanations for suicidal behaviours, which may not be suitable for Pacific populations in NZ (Tiatia 2003). Furthermore, a Western focus on issues surrounding Pacific suicide may distract from culturally relevant aspects that influence suicidal behaviors, such as relational factors (Henare and Ehrhardt 2005). Western measures and models of ethnic identity and wellbeing also show deficits in terms of culturally important aspects of identity and wellbeing that are important for Pacific peoples. As such, our model provides a culturally relevant and holistic assessment tool that can help understand and predict risk factors of suicide at a larger group-based level.

Pacific research has indicated that risk factors of suicidal behaviour can include familial pressures, parental conflicts, lack of communication with parents, acculturative stress, cultural expectations and obligations, and conflicts between Pacific and NZ cultures (Faleafa et al. 2007). Furthermore, research by Tiatia (2003) found that in 2000, 63 % of suicide attempts by young Samoans were preceded by familial or partner conflict.

In regards to protective factors against suicide that are culturally relevant to Pacific peoples, research suggests that family, friends and social support can act as protective factors for Samoan youth (Tiatia 2003). This is supported by Henare and Ehrhardt (2005) who further postulate that strong links with one's community can also act as a protective factor. Finally, religious beliefs have been identified as both a protective factor against suicide (Faleafa et al. 2007) and also as a mechanism through which interventions, preventions, or treatment programs can be made culturally relevant to Pacific peoples (Tiatia 2003).

As the small amount of research reviewed here shows, factors such as family, church and societal views can act as a double-edged sword in regards to suicide. On one hand, they can act as a source of conflict, whilst on the other they can act as a source of protection and support (Beautrais et al. 2005).

There appears to be an over-arching socio-cultural theme regarding the protective and risk factors of suicide for Pacific peoples in NZ in the literature reviewed here. Although it is not always certain what may lead an individual to consider suicide, applying the hierarchical model to this research may help identify who are potentially at risk in a population by assessing both social and cultural aspects and the relationship between the two (in conjunction with other useful measures and demographic information).

We know from the hierarchical model presented here that the two broad dimensions of Identity Engagement and Cultural Wellbeing are linked through the Religious Centrality and Embeddedness factor. Focusing on the Identity Engagement side first, the factors subsumed under this broad dimension (PCB, GME and RCE) may provide information

about the identified risk factors of cultural expectations, conflicts between NZ and Pacific cultures, and/or the identified protective factors of support from friends, community and religious beliefs. On the other hand, the factors subsumed under the Cultural Wellbeing dimension (PFW, PSW and RCE) may provide information about the identified risk factors of familial conflict and acculturative stress, as well as potential protective factors of familial support, social and community support and religious beliefs. Furthermore, our model supports Tiatia's (2003) position that religion may serve as a mechanism to make interventions or treatments culturally relevant as evidenced by the RCE factor acting as a link between engagement with one's Pacific identity and wellbeing. Tiatia (2003) argues that the inclusion of religious or spiritual components in suicide is something that is missing from Western prevention programs, and may be beneficial for Pacific peoples dealing with suicide.

Given that our hierarchical model fits with current research in Pacific suicide, what advances can it make in this area? When using this model in conjunction with research as a guide to understanding the dual role factors can play in both risk and protection, it is possible to conduct large group surveys to assess the identity and wellbeing of Pacific individuals, especially for those who have experienced suicide within their community. When used in conjunction with other psychological measures, it is possible to see how the various Pacific identity and wellbeing factors, or the relationship between the two, predict negative or suicidal-related behaviours. More complicated analyses of the data may also identify at-risk sub-groups within the Pacific population and provide information on specific risk-factors for at risk groups.

Finally, scores on the PIWBS may indicate that some Pacific individuals may not strongly identify with particular aspects of Pacific identity and wellbeing. In this case, a Pacific oriented intervention or treatment program may not be beneficial or suitable. This tool can allow one to identify differences in identity and wellbeing within Pacific communities so as to be responsive to their specific cultural needs and cultural orientations, or develop interventions that can be more specific in their targeting towards at risk groups.

4.3 Limitations and Future Research

The study presented here is not without limitations. Firstly, the data used in this analysis is cross-sectional and describes the structure of identity and wellbeing at the point of time in which it was collected (2009). It is possible that the structure of Pacific identity and wellbeing may change over time, similar to how one's ethnic identity may not be static. Future research could explore the structure of Pacific identity and wellbeing longitudinally to see whether or not this structure holds for this group over time, or, alternatively, if the structure holds in a separate sample of Pacific individuals.

Secondly, these results are limited to Pacific peoples who reside in New Zealand. In addition to the specific Pacific communities that reside in their respective Pacific Nations, there are growing numbers of Pacific peoples who are now living in areas of Australia and America. It is unknown if this structure could be generalized to Pacific communities outside of New Zealand. Future research could explore this by adapting the PIWBS to the context of those specific countries and exploring the hierarchical factor structure in those samples. Furthermore, this analysis does not take into consideration any intra-group differences. In other words, the analyses reported here are treating the respondents as if they were a homogenous group, despite the fact that the Pacific group as a whole is extremely heterogeneous. It is unknown if there are differences in the structure of our model between

the specific Pacific Nations represented in this sample. Unfortunately, sample size limitations prevent us from trying to replicate our model within these specific subgroups.

Finally, there is a gender imbalance in the data used in this analysis. Despite this gender imbalance, previous analyses using this data has revealed no gender biases in the factors of the PIWBS (see Table 2 in Manuela and Sibley 2013; Manuela and Sibley 2012).

4.4 Concluding comments

Examining the relationship between aspects of Pacific identity and wellbeing is crucial to understanding Pacific peoples in NZ. The model presented here shows that at broader levels, identity and wellbeing are linked for Pacific peoples, and that a key mechanism for that link is religion. The relationships between Pacific identity and wellbeing factors as highlighted here can help guide research by identifying what and how particular identity and wellbeing factors are related. The conceptual analysis of our hierarchical model of Pacific identity and wellbeing provides us with possible insights into furthering our understanding of phenomena such as Pacific suicides in New Zealand. By understanding and modeling how the Pacific self may be cognitively organized, as offered by our hierarchical model, we can make predictions about what factors of the Pacific self may be beneficial for positive psychological outcomes.

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