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# The New Zealand Journal of Psychology

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# Editorial 2014

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Editing the *New Zealand Journal of Psychology* is a special privilege on so many levels. Not only does it provide some structure to one aspect of my own professional development, but it also give me the opportunity to support the development of my colleagues as they present their work to psychologists in Aotearoa/New Zealand and the international community of psychologists. This is a shared endeavour and I am grateful to the members of the *Journal's* Editorial Board and 'back room' staff at National Office for their tireless efforts in this regard. While we cannot produce a *Journal* without authors, we also rely on a large group of reviewers who are willing to contribute their time and expertise. As a professional society we owe these folk a huge debt of gratitude.

large local datasets. The editorial team ensures that the papers accepted for publication are of good quality and are relevant to our communities. Embracing this broad scope is challenging, exciting, reflects the diversity of our discipline, and is consistent with our place ... perched on the edge of the world, working things out for ourselves. Thanks to all who have contributed to this creative endeavour during 2014.

**John Fitzgerald, Ph.D.**

Editor, *New Zealand Journal of Psychology*

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The *Journal* continues to reflect the wide range of psychological research and scholarship work being undertaken in New Zealand. We are fortunate to have the independence to publish work which draws on, for example, student theses, studies conducted within applied settings, and reports based on

# Coping and adjustment in New Zealand Police staff 12-18 months after the Canterbury earthquakes: A directed qualitative content analysis

Deborah L. Snell, Lois J. Surgenor *University of Otago, Christchurch*

Martin J. Dorahy *University of Canterbury, Christchurch*

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Following a significant earthquake police are a large first responder group involved in victim recovery, civil emergencies and community support. They are also exposed to the everyday work and non-work related disruptions associated with the disaster. Conservation of resources (COR) theory offers a framework for understanding longer-term health outcomes associated with disasters in this group. Using a mixed methods approach we surveyed coping resources and psychological health outcomes in police (sworn and non-sworn) working during the 2010-2011 earthquakes in Christchurch (New Zealand). Free text responses ( $n = 322$ ) from the quantitative survey were subject to a directed qualitative content analysis. Initial data coding used four categories derived from COR theory then inductively grouped into a typology of losses and gains. Resource losses included on-going issues with insurance providers, damage and threat of loss to home, financial insecurity, and loss of social connectedness, lack of employer recognition and job threat. Resource gains included enhanced self-efficacy, posttraumatic growth and pride in contributing as police during the critical periods. COR theory was conceptually a good fit for the data, and underscored the dominance of disaster-associated day-to-day resource losses. Implications for staff support and wellbeing, and foci of future welfare interventions are considered.

In the early hours of September 4th 2010 the first of a series of significant earthquakes struck the Canterbury region of New Zealand (NZ). This first earthquake measured 7.1 on the Richter scale, causing widespread damage to land and buildings across the region but no loss of life. Over the ensuing 15 months a further eight significant earthquake events followed among more than 10,000 aftershocks (GNS Science, 2013). The most destructive was the February 22nd (2011) shallow earthquake (6.3 on the Richter scale) with an epicentre close to the Christchurch Central Business District (CBD), the largest city (population 376,000) in the Canterbury region (population 520,000) (Statistics New Zealand, 2013). This earthquake struck at 12.51pm causing widespread damage to buildings and infrastructure. Unlike the September earthquake, 185 people were killed and more than 8,000 injuries were registered with the

Accident Compensation Corporation (ACC), NZ's primary injury insurance and compensation provider (ACC, 2011). It has been estimated that 10,000 homes have since been demolished and more than 100,000 homes were damaged although considered repairable.

Approximately 95% of New Zealanders have home insurance (Morrall, 2012) from which a levy is collected from an entity called the Earthquake Commission (EQC) creating a government-regulated natural disaster fund (EQC, 1993). To determine the outcome (repairs or otherwise) for properties, homeowners have had to negotiate claim settlements with both EQC and their private insurance companies. This has become a prolonged and stressful process for many homeowners, given problems achieving resolution of claims because processes between these insurance providers have differed.

## *Police as First Responders*

Disaster first responders include a wide range of both professional and non-professional groups. Professional groups reflect those occupations whose members are regularly put in harm's way and provide critical services following a civil disaster. Prevention and intervention strategies for adverse psychological outcomes in disaster first responders (police or otherwise) remains an underdeveloped field of research, which in part may explain a recent description of best prevention and intervention practice as still very controversial (Kleim & Westphal, 2011). More research into specific first responder populations and their respective peri- and post-disaster roles may help understand risk factors and in turn opportunities for primary prevention, screening and intervention.

The rescue response to the February earthquake was extensive involving multiple agencies co-ordinated by Fire and Police Services. International first responder teams supplemented these groups, though Canterbury Police were among the largest of the first responder groups taking a leadership role and coordinating additional personnel from other districts and countries (New Zealand Police, 2013a, 2013b). Alongside regular duties, police provided security cordons, organised evacuations and search and rescue, worked in victim identification teams, provided missing persons/family liaison support, and organised media briefings.

As an occupational group, police are frequently exposed to high stress, and internationally have high rates of medical retirement due to mental health problems (Peñalba, McGuire,

& Leite, 2009). Disaster research investigating psychological outcomes of first responder groups often focuses on negative emotional consequences resulting from exposures to traumatic experiences, high work demands, working with evacuees, and separation from home and loved ones (Benedek, Fullerton, & Ursano, 2007; Haugen, Evces, & Weiss, 2012). In a disaster, local first responders can be personally affected and experience damage to their own homes/communities, loss and injury to themselves, family members, friends and colleagues. There is limited research assessing the impact of these non-work related repercussions on local first responder groups. Such effects might be important to consider in the prediction of psychological adjustment in first responder groups such as police following large-scale disasters.

### *Conservation of Resources Theory*

Various models conceptualise psychological distress following disasters (Sumer, Karanci, Berument, & Gunes, 2005). One model potentially capturing the complexities of disaster outcomes in first responders who both work and live in affected communities is the Conservation of Resources (COR) model (Hobfoll, 1989, 2001, 2012). It is a theory capable of drawing together resource losses and gains across both work and non-work contexts. The COR model assumes that people are motivated to obtain, retain and protect valued resources to successfully cope with stress. Resources consist of material elements or objects such as housing and possessions, along with personal characteristics (e.g., optimism, self-efficacy), energy resources (time, effort, knowledge) and conditions (employment roles, interpersonal relationships). The model suggests stress occurs when an individual's resources are threatened or lost and/or individuals fail to gain sufficient resources following investment. Loss or threat to personal resources is assumed to lead to negative emotional and physical health outcomes.

The COR model has been investigated in relation to understanding coping and adjustment following disasters, whether natural such as

earthquakes (Sattler et al., 2006; Sumer, et al., 2005), hurricanes (Ehrlich et al., 2010), floods and drought (e.g. Zamani, Gorgievski-Duijvesteijn, & Zarafshani, 2006); or 'man made' such as war and terrorism (Heath, Hall, Russ, Canetti, & Hobfoll, 2012); or technological (Ehrlich, et al., 2010). Such research provides support for the COR model regarding: (1) relationships between resource losses and symptoms of anxiety, depression and post-traumatic stress disorder (PTSD), (2) the mitigating but less salient effects of resource gains, and (3) the effects of resource loss spirals (continued loss of resources and the impacts of secondary stressors). Following an earthquake, losses may occur through damage to possessions and places of work, disruption to social systems, inability to maintain and gain resources (Ehrlich, et al., 2010), and through impact on personal characteristics such as perceived control and self-efficacy. Resource gains might also be experienced such as a positive sense of well-being associated with being in a helping role and seeing oneself cope (Zoellner, Rabe, Karl, & Maercker, 2008). However COR theory predicts that resource gains, while mitigating, are less salient in the face of large-scale resource losses.

In the present study psychological outcomes for police as first responders were examined 12-18 months after the Canterbury earthquake series began because people may delay acknowledging their distress for lengthy periods post-disaster, despite experiencing reasonably significant problems (Mitchell, Griffin, Stewart, & Loba, 2004). The COR model was considered a useful framework in which longer term outcomes associated with both work and non-work stressors might be understood in local first responder police. This is because local police as first responders are exposed to potential disaster effects both in their work roles and in their roles as members of the affected wider community. The following questions were considered:

1. Using the COR model as a guiding framework, what are the work- and non-work earthquake-related consequences for local police first responders 12-18 months after the Canterbury earthquakes began?

2. What are the implications for staff training and wellbeing, particularly the curricula of future preventative interventions?

## **METHOD**

### *Design and setting*

This was a mixed methods study surveying coping resources and psychological health outcomes in police working during the 2010-2011 earthquakes in Christchurch, New Zealand. This paper reports the findings of the directed qualitative content analysis of free text responses that followed the main questionnaire (see Surgenor, Snell and Dorahy, now in press, for a fuller description of the study methods).

### *Participants*

Potential participants were recruited from a list of Canterbury sworn and non-sworn staff provided by New Zealand Police. The primary inclusion criterion was being active police (sworn or non-sworn) residing in the Canterbury area on 22 February 2011. Exclusion criteria were staff not on active duty on/around 22 February 2011 (e.g., sick-leave) or otherwise excluded as required by Police National Headquarters (e.g., personnel in high security roles). An email invitation to participate in the study was circulated internally by Police National Headquarters to all eligible staff. Face-to-face data collection was considered untenable due to many participants being displaced from their usual buildings. Thus, internet-based data collection was a practical solution, and one used before in disaster research (Schlenger et al., 2002).

We received 786 (75%) responses from 1,048 police staff residing in Canterbury on 22 February 2011. Of these, 18 were identified as duplicates and removed; the actual participation rate was 72% (n = 768). Free text responses were provided by 324 (45%). More males than females responded (males 72.7%) and mean age of respondents was 46.2 years (SD 7.59). The only significant difference between the free text responders and wider sample was being sworn staff (p < 0.05); sworn staff members were more likely

to have provided free text responses. Free text responses were received from staff across all earthquake related work categories (public cordon duties, search and rescue, victim recovery and identification, family liaison, media work, communications, logistics and missing person's assignments). The gender and ratio of sworn/non-sworn staff of recruited participants very closely mirrors the New Zealand Police overall (Human Rights Commission, 2012). Ethical approval was obtained from both the research institution's Ethics Committee and the New Zealand Police.

### *Data collection and measures*

An internet-based survey was circulated using Survey Monkey® (www.surveymonkey.com). For security reasons, the survey link was distributed via the police email network, although all content identified the email as a research study independent of the police. Completed surveys were accessed only by the research institution.

Along with standard demographic questions (gender, age, ethnicity, education level), participants were asked to describe their usual work location (categorised as central CBD, suburban, rural or other), sworn status, and whether they held a specialist emergency role (e.g., search and rescue, armed offenders squad) in addition to their normal duties. They were also asked to indicate from a list which first-responder roles they took part in (list ascertained from human resources and welfare staff) in response to the 22 February 2011 earthquake and how many (0-4) of the four major earthquakes (September, 2010; February, 2011; June, 2011; December, 2011) they worked in as part of the police emergency response. Measures included in the survey assessed coping resources and styles, distress, and general health outcomes (see Surgenor et al., in press). After these an open-ended statement ("Is there anything else (positive or negative) you would like to tell us") was included to elicit free text information from respondents.

### *Data analysis*

A directed qualitative content analysis was used to identify, classify

and code themes and patterns within the free text data (Hsieh & Shannon, 2005). Directed content analysis differs from more conventional qualitative methods in that it is more structured and involves both deductive and inductive approaches to the analysis (Pisarik, Rowell, & Currie, 2013). The researcher is guided by an a priori theory or framework or previous research in order to promote more detailed description of a phenomenon or validate or extend a theory.

The COR model was used to identify key concepts for the initial coding categories and then operational definitions for each category were determined by the research team using COR theory resource categories. Free text responses were coded by two members of the team (DS, LS) using the predetermined codes, and any data that could not be coded was examined to determine if this represented new categories or subcategories of existing codes (Braun & Clarke, 2006; Hsieh & Shannon, 2005). Member checking occurred by informal presentation to a police management team. Data are presented descriptively by code with their associated exemplars, and frequency of codes was also calculated (Hsieh & Shannon, 2005).

## **RESULTS**

Data were coded, using the four COR resource categories (object, condition, energy and personal characteristic resources), as either a resource loss or gain. Table 1 shows the response frequencies and exemplar quotes from participants. The most salient patterns that emerged from the analyses were losses in terms of object and condition resources, and resource gains with respect to personal characteristics.

### *Object Resource Loss*

Object resources were defined as physical items of value due to their utility, rarity, or symbolism (e.g., housing, transportation). Object resource loss was often mentioned underscoring the importance of object resources, such as financial and housing security. The impact of living in a damaged home without any certainty around decisions

on insurance outcomes and EQC claims, the loss of financial security as a result of the insurance process, and the loss of valued possessions were common issues. For example:

Our house is a write-off, despite being still able to live in it and we are still in absolute limbo over timelines and also cash shortfalls when the rebuild comes. House is cold as gaps under doors need to be plugged by towels [Case 250].

We still have a lot of stress coming at some point because we have a medium to significant amount of damage to our home including foundations and roof which will need fixing and will require us to move out to alternative accommodation for many months at some point in the future. This will be very stressful for us [Case 26].

Also losing two pets as a result of these quakes - which I don't think was mentioned in the survey. Very disheartening losing family, pets and a city [Case 36].

### *Condition Resources*

Condition resources (states of being) were defined as resources to the extent they are valued and sought after. Following our initial analysis, it appeared helpful to consider work and non-work condition resources as subcategories (see Table 1). Examples of non-work condition resources included non-work roles (wife, partner, parent, social relationships) that are important in increasing stress resistance capacity. Work condition resources included work roles and status, collegial relationships at work, feeling part of a work team, employer (e.g. supervisors, managers) recognition and acknowledgement, feeling safe at work, and experiencing organisational support. Free text responses included both condition resource losses and gains although losses were more prominent.

#### *a) Non-work condition resource losses*

Loss of connection with family and friends as well as relational impacts, fears and concerns for partner and children were prominent in responses. For example:

I have lost touch with a number of people who moved away after the

quakes ... I feel a loss of connection and feel like I am just drifting away. The place I knew and served seems like it is no longer there, and the tie I felt is gone [Case 73].

I have a child at school and I often feel concerned when I am at work that if another significant event occurred I may not be able to get to him. This scares me and I think about this quite often [Case 28].

My wife is worn out from the continuing fights with all the various agencies; she has aged 10 years in two. My kids are still afraid of our house and won't go upstairs alone [Case 114].

#### *b) Non-work condition resource gains*

There were also reflections of strengthened ties with family and community and the positive impact this had on coping and resilience. For example:

I am much closer to my community and know my neighbours a lot better as well as the local business people and information centre. I fully intend to stay in this area and keep my current home after it is repaired [Case 26].

The main positive thing that happened as a direct result of the earthquakes was that family, friends and neighbours pulled together to help each other [Case 47].

I have found that people are better communicators since the earthquakes. People are more willing to talk about their situations. The earthquakes showed everyone involved what is actually important in each of our lives [Case 97].

#### *c) Work condition resource losses*

Many comments reflected concerns about lack of both support and recognition for going above and beyond at the time of the earthquakes as well as the impact of organisational restructuring when staff were already feeling overwhelmed and under pressure. For a few, distrust in the building in which they worked throughout the critical period suggested a lack of concern for personal safety by the organisation. For example:

I am extremely disappointed with the lack of recognition from the department for the 'above and beyond' work completed on that day. It was like a war zone,

the injuries and fatalities were horrific [Case 56].

My attitude towards work is not so positive as I feel we should have been removed from the Central Police Station until they were absolutely certain it was safe ... [Case 27].

Some staff also reflected on a sense of isolation that resulted from being Police, such that access to usual sources of social support was unavailable:

However, a lot of the experience has to be kept private, simply because I can't burden anyone with the 'gory' details [Case 52].

#### *d) Work condition resource gains*

Positive acts of leadership and support were perceived as helpful:

The ring arounds [phone calls to staff] were nice to know that management were thinking about staff and I found this a comfort [Case 105]. Many staff acknowledged a sense of pride in their role as Police at the time of the disaster, as well as commitment and connectedness to being Police:

The theme was one of pride with being a member of police as to the way we had responded [Case 245].

### **Energy Resources**

Energy resources were defined as resources that are valued because they lead to acquiring other resources (such as time, money, knowledge, help seeking [i.e. seeking information/knowledge/ support to enable better coping]). A small number of respondents commented on the importance of information in regard to managing anxiety about safety:

I was very disappointed with the way the situation with Christchurch Central [police station] was handled and the initial lack of information about the building safety...this caused me and many others a large amount of stress [Case 165].

Some respondents reflected on knowledge gain including how helpful access to professional support was for them in regard to gaining knowledge and skills to cope better with the situation they were in:

Following the earthquake, I sought assistance with a psychologist for my PTSD. I have found that it has helped me cope and recognise my symptoms and how best to relieve them [Case 300].

### *Personal Characteristic Resources*

Personal characteristic resources are traits that help with stress resiliency such as general personal orientation toward the world, beliefs, self-efficacy, and locus of control. A small number of respondents reported coping less well than they expected and some acknowledged both difficulty returning to normal work and an element of cynicism in their approach to the work following the earthquakes.

I was able to do my job, but away from my desk I broke down and felt weak and along with people losing lives and homes this affected me a great deal - had to take time off work [Case 37].

When I came back to 'normal' duties after the earthquake I had difficulty relating to people and their problems. I was very critical of what I perceived to be their petty or minor problems after the enormity of what I had dealt with and seen [Case 52].

However more prominent were perceptions of having coped well, better than expected, with associated enhancement of self-esteem.

The earthquakes have provided me with the most rewarding experiences in my professional work. All the training I've had has actually been put to the test and I feel that I met the challenges of the day(s) really well [Case 4].

### **Other Responses**

A small proportion of responses (7.6%) could not be categorised into one of these COR resource categories and these were responses that reflected psychological and health consequences of earthquake trauma exposure such as anxiety, depression, fatigue, and vulnerability to illness since the earthquakes. These are shown in Table 1.



Table 1: Category and subcategory exemplar quotes and frequencies (606 items coded)

COR <sup>s</sup> Category	Subcategory	Loss/Gain	Frequency (%)	Example/supporting data
Object Resources		Loss	21.0	<p>At the end of the day we are nearly two years down the track. I have a home that is broken and needs to be rebuilt. ...we cannot move forward. We don't know what will happen with insurance, land testing, lending, resale etc. [Case 114].</p> <p>Some of us are still living in red-zoned housing<sup>1</sup> 2 years on fighting Insurance companies with no light at the end of the tunnel as to where we are going to live [Case 138].</p> <p>Damage to home, damage to work place - entire disruption that has been outside of my control [Case 115].</p> <p>My house was wrecked, my wife and kids weren't coping with living in a wrecked and leaking house. My area was also wrecked along with the roads, the liquefaction, the liquefaction dust, earthquake damage to our land, our house, our belongings and our motor vehicle [Case 122].</p> <p>Many aspects of the lives of me and my family are on hold because our house is significantly damaged, i.e. part of the house foundations have moved away from the rest of the house and the external bricks are cracked [Case 63].</p>
Object Resources		Gain	2.6	<p>We have ended up selling our house and are now renting in case we decide we want to make a new start somewhere else. This has in effect made us more relaxed [Case 32].</p>
Condition Resources	Non-Work <sup>2</sup>	Loss	14.2	<p>I have lost touch with a number of people who moved away after the quakes that is sad. I feel sad that a lot of people have been badly hurt through it all and I know nothing of their stories. It saddens me I have seen, to have seen so much history just disappear, I feel a loss of connection and feel like I am just drifting away. The place I knew and served seems like it is no longer there, and the tie I felt is gone [Case 73].</p>
				<p>MY RELATIONSHIP HAS BASICALLY BEEN TAKEN TO ITS LIMIT [Case 50]. (Capital letters used by respondent).</p> <p>Partner of ten years left me and took our two year old daughter with her while I was working 16 hour days [Case 142].</p>
Condition Resources	Non-Work <sup>2</sup>	Gain	9.6	<p>The most major positive is that I now have a stronger marriage and family as we pulled together when we really needed to and the knowledge that we can rely on each other during times like this is priceless!!!! [Case 147] (Exclamation marks included by respondent).</p> <p>The feeling of community increased significantly as a result of the earthquakes. This related to neighbours, friends, family, colleagues and the relationship between police and the public. While this feeling has diminished, there is still a sense that we have all gone through something together [Case 146].</p>
Condition Resources	Work <sup>3</sup>	Loss	14.0	<p>...there seems to be no recognition of some of the work some of us had to do. This in itself would help heal and put things behind us. It's as if the door hasn't closed [Case 138].</p> <p>I believe that front line Police have been extremely under-appreciated as a result of the earthquakes... I know of lots of cops who will never ever get recognised for what they did during the earthquakes and the effort that they put in to help others. [Case 24].</p> <p>We are currently being affected by major restructuring and job uncertainty. This along with the loss of our home, ongoing issues with EQC, Insurance, poor work environment and permanent injury and ongoing issues to a family member makes life more than challenging. There appears little respite. I am seeking help...[Case 41].</p>

Condition Resources	Work <sup>3</sup>	Gain	6.9	<p>I feel immensely grateful that as a police officer, I was allowed to be involved in the searching process during the early stages after Feb 22. So many people wanted to be actively involved but weren't allowed access. We were, and I feel very privileged for that [Case 146].</p> <p>Even though not directly involved in search/rescue etc, and doing rather "un heroic" jobs, felt good to be part of the company we work for [Case 68].</p> <p>It was an honour to work with the families [of victims] and this in turn helped with my coping mechanisms, even though I also lost a cousin on 22/02/2011 [Case 219].</p>
Energy Resources		Loss	2.3	<p>Made lots of rash and quick decisions following earthquakes in regard to property and listening to media that the quakes were going to continue for 30 years which made me think real estate wouldn't be worth much which is now the opposite with what's occurring in the rebuild [Case 170].</p>
Energy Resources		Gain	3.3	<p>Learning experience not only from professional, working perspective but involvement in an historic, life changing event in the history of Canterbury. Gained a greater overview of how different areas and organisations operate, respond and prepare [Case 243].</p>
Personal Characteristics Resources		Loss	5.8	<p>I had always wondered how I would be in an emergency. I always assumed I would be a tower of strength, be proactive and help others....I was able to do my job, but away from my desk I broke down and felt weak &amp; along with people losing lives and homes this affected me a great deal - had to take time off work [Case 37]. It would be [a] fair comment that I do not necessarily like my hardened attitude I do not like reflecting on the EQs I like to move on with life, I cannot tolerate repeated reliving of the events [Case 713].</p>
Personal Characteristics Resources		Gain	12.7	<p>The way I personally responded and my decision making during all the earthquakes. Learnt about myself. E.g. Ability to handle a huge workload [Case 127].</p> <p>I have learned that I can cope under life and death stress. My home and family are more prepared for another civil defence emergency [Case 145].</p>
Other <sup>4</sup>			7.6	<p>I am still very "jumpy" around loud noises, bangs or shakes... [Case 1].</p> <p>...diagnosed with PTSD. Working through this daily, some are good (haven't had many great ones yet), some are really bad and low. On the whole I feel I'm slowly getting better; but it does feel like it takes an awfully long time [Case 49].</p> <p>I seem to have had negative impacts on my physical health, getting sick (cold/flu symptoms) substantially more often and for longer periods [Case 109].</p>

Note:

§ Hobfoll (1989, 2001).

1. Red-zoned houses are those deemed damaged beyond repair (or on unsafe land unable to be repaired). Red zone homeowners were offered a Government payout for purchase of their homes.
2. Non-work condition resources included social relationships outside work such as being married, with a partner, being a parent, connection to community (friends, neighbours).
3. Work condition resources included seniority at work, work role, collegial relationships, recognition and support from superiors, feeling safe at work.
4. Other: items that could not be coded into one of the four resource categories but reflected emotional consequences of the traumatic experience such as still feeling anxious and jumpy, depressed, fatigued.

## DISCUSSION

The Canterbury earthquakes provided a unique opportunity for extending research exploring psychological outcomes following natural disasters. The combination of the context (nature of disaster, sociocultural context), target population (police first responders), and the impact of resource losses and gains described by COR theory have not been examined previously. This directed qualitative content analysis examined the fit between free text responses from a survey of police first responders and Hobfoll's COR theory of stress.

The COR model was conceptually a good fit for the data, underscoring the dominance of on-going disaster associated day-to-day losses (work and non-work) in police. Object and condition resource losses including the impacts of living in earthquake damaged homes, uncertainty regarding timelines and outcomes of insurance claim processes, loss of financial security and widespread social impacts of the earthquakes predominated. The social aspect included impacts on connectedness to home, work and community, lack of employer recognition for going above and beyond, and job threat due to restructuring plans. Gains were also evident, such as enhanced self-efficacy and pride in contributing as police during the critical periods.

### *The Context Revisited – the earthquakes*

First, the series of Canterbury earthquakes and significant aftershocks continued for more than 15 months and included 60 events  $\geq$  magnitude 5 on the Richter scale. We are not aware of any disaster outcome research that has considered impacts of such prolonged seismic activity on a first responder community, with the duration of this exposure seriously testing resilience. Second, earthquake events typically occur without warning, are usually followed by a series of aftershocks and might not have a low point where people feel the worst is over as may be the case for other acute natural disasters such as floods, fires and hurricanes (Zamani, et al., 2006). The extended nature of the Canterbury experience

might produce similar outcomes to those following slower onset disaster scenarios, where in addition to obvious immediate effects; impacts may also evolve slowly, becoming more uncertain and ambiguous over time (Zamani, et al., 2006). These effects are potentially exacerbated by the sociocultural context. The dual nature of New Zealand property insurance (EQC and private companies) has had unintended effects of conflicting insurance processes without resolution or certainty of outcomes for home owners.

The prolonged nature of stress reported by many respondents was consistent with the salience of resource losses predicted by COR theory and resource loss spirals (Hobfoll, 2001, 2012). Loss spirals occur as a result of initial resource losses increasing vulnerability to ongoing resource loss and the impacts of secondary stressors. Resource loss spirals have been investigated in high demand situations such as large-scale disasters (Ehrlich, et al., 2010; Heath, et al., 2012). This body of research shows that persistent stressors such as repeated earthquakes contribute to spiralling resource losses and exacerbated chronic stress effects (see especially Sattler, et al., 2006). In our study respondent comments suggested loss spirals associated with continuing earthquakes, lack of future certainty, in combination with additional pressures such as perceived ill-judged timing of restructuring of jobs while individuals still reported feeling overwhelmed by earthquake sequelae.

Previous research has also examined associations between components of the COR model and psychological outcomes after disasters in general community samples. The salience of resource loss in the prediction of psychological outcomes is supported but varying patterns of resource category losses emerge. For example, Ehrlich et al. (2010) examined loss of resources as predictors of post-partum depression in 208 women following Hurricane Katrina, measuring outcome (depression) at 6 and 12 months post-partum. Loss of psychosocial resources (COR condition and personal characteristic resources) was associated with development of depression. Sattler et al. (2006) examined the relationship

between resource loss and psychological outcomes (acute stress disorder [ASD], PTSD, depression) in college students ( $n = 253$ ) and a community sample ( $n = 83$ ) four and seven weeks following the 2001 El Salvador earthquakes. In students, personal characteristic, condition and energy resource losses contributed to ASD and depression while object and personal characteristic resource losses were more salient for the community sample. In our study object and condition resource losses dominated and while no relationships between outcomes can be discussed, the potential impact of contextual factors (nature of sample and location) are underscored.

### *The Context Revisited – Police as First Responders*

The potential negative emotional consequences of disaster work such as ASD, PTSD, depression as well as subclinical emotional symptoms and behaviours have been the subject of extensive research (Benedek, et al., 2007). However, usually only a small percentage of people going through a disaster will experience serious mental health problems (Benedek, et al., 2007). For some, a positive sense of well-being sometimes referred to as post-traumatic growth is reported (Zoellner, et al., 2008), albeit the concept of post-traumatic growth itself is contentious in some quarters (Aspinwell & Tedeschi, 2010; Coyne & Tennen, 2010). Existing research also suggests benefit-finding may be influenced by cultural and social contexts. For example, studies in Western cultures tend to find greater willingness of participants to endorse and discuss positive emotions when compared with participants in Eastern cultures (Cummins, 2013). Such findings emphasise the importance of the sociocultural context that is arguably at the centre of COR theory, setting it apart from other stress models and theoretical frameworks (Hobfoll, 2001).

Disaster effects do not occur in a vacuum. In our study respondents highlighted the salience of both work (supervisor and colleague relationships, wider organisational factors) and non-work resource losses. The COR framework offers a coherent way of understanding and examining the relative contributions of these

various resources, the associations of these with psychological outcomes, and opportunities for intervention. Consistent with Cummins (2013), many respondents in our study offered positive comments about their ability to cope with the disaster, skills and knowledge gained through the experience, and reflected on their commitment to and sense of pride in their police role, particularly at the time of and following the February earthquake. In COR theory, these responses reflect personal characteristic resource gains. Further examination of these gains and their associations with coping and adjustment in first responders will assist development of interventions to enhance the psychological robustness or resilience of these groups.

### **Implications for Future Research**

Our results suggested that the COR theoretical framework might provide a useful means of understanding psychological outcomes following large-scale disasters in first responders who themselves have experienced disaster associated resource losses and gains. There is a growing body of evidence supporting COR theory assumptions in general disaster populations however there is also some research that suggests first responders might respond differently to disaster experiences (Benedek, et al., 2007). Consistent with this, our study suggests that compared with the general population, these groups might experience a differing pattern of resource losses and gains necessitating modified intervention approaches. Research is required to examine these theoretical possibilities. In addition, our cross-sectional descriptive study suggests future research might focus on risk for development of resource loss spirals leading to chronic stress outcomes, using longitudinal designs with follow-up extending beyond the early weeks after a disaster.

### **Implications for Practice**

Based on the body of research examining COR theory in disaster-exposed populations, the model has utility as a coherent framework to guide intervention. It seems that attending to patterns of resource loss and gain

and focus on restoring psychosocial (personal characteristics, condition and energy resources) and object resources could lead to improved outcomes. Thus interventions might need to target individual, family, organisation and community contexts although separating these parts from the whole may limit both predictive and intervention capacity (Hobfoll, 2001, 2012). In addition COR theory predicts that resource losses following traumatic events occur quickly and cumulatively and halting or reversing loss spirals early should be an important focus (Heath, et al., 2012). COR theory suggests that organisations focus on development of ‘resource caravans’ (Hobfoll, 2012, p 118), where resources are supplied, protected, shared, fostered and pooled within an organisation. Such an approach redirects the focus to the social climate of the organisation rather than externalising failures by blaming employees or groups of employees.

### **Limitations**

This is a descriptive study using directed content analysis to code a large number of free text responses at the end of a formal survey of police first responders following a series of major earthquakes in New Zealand. Although due caution is needed in generalising these findings beyond the study context and sample, the findings provide helpful leads for future research and will assist the research team interpret results from the wider quantitative analyses.

The structure of the survey and use of directed content analysis may have influenced the findings. First, the open ended question at the end of the survey followed structured questionnaires asking about coping resources and styles, distress, and general health outcomes. These preceding items may have led respondents to focus on these aspects. Second, directed content analysis involves the researcher approaching the data from an informed a priori position with an increased likelihood that evidence will be found to support the chosen theoretical framework (Hsieh & Shannon, 2005). An overemphasis on the theoretical framework might direct the researchers gaze and thus increase risk that important contextual information is overlooked. In order

to increase the trustworthiness of the approach to data analysis a second researcher tested the definitions of codes and care was taken to refine Hobfoll’s resource definitions as clearly as possible. Member checking by referring back to the affected community (police) was also undertaken in order to consider the relevance of the findings.

Finally, three of the four researchers in the team also experienced the earthquakes themselves and work as clinicians treating distressed members of the affected broader community of Christchurch. This positioning of the researchers may have introduced bias and so the inclusion of an additional co-author (JHS) who does not live in the affected community and did not experience the earthquakes was considered important to verify the data analysis.

### **Conclusions**

This exploratory directed qualitative content analysis applied a theoretical model of stress to understanding psychological adjustment and consequences in a first responder cohort following the New Zealand earthquakes of 2010-2011. Participant free text responses reflected the importance over time of both work and non-work pressures for first responders who themselves were exposed to the earthquakes. The COR framework was conceptually a good fit for the data and the insights regarding patterns of resource losses perceived by participants provides useful leads for future hypothesis-driven research. The COR model has potential to contribute usefully to the iterative process of theory development and refinement of individual and organisational interventions for disaster first responder populations.

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# Cultural invisibility: Māori people with traumatic brain injury and their experiences of neuropsychological assessments

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**Objectives:** To explore aspects of Māori culture and cultural appropriateness of the neuropsychological assessment process. **Participants:** 16 Māori who had undergone a neuropsychological assessment following a traumatic brain injury. **Research design:** A qualitative study using semi-structured interviews that were thematically analysed. **Results:** The four themes were: positive experiences, cultural invisibility, having little or no choice, and preferred ways of doing things. **Conclusions:** Neuropsychological assessments are driven by the dominant Euro-Western culture, which renders the cultural identity and practices of Māori invisible. **Implications:** Cultural factors are known to impact neuropsychological functioning, which may have significant clinical implications for culturally and linguistically diverse clinical populations. More culturally friendly processes for neuropsychological assessments would promote motivation to achieve better performance.

**Keywords:** Māori, Indigenous health services, neuropsychology, assessment, culture, traumatic brain injury

In this paper, we will report findings from a qualitative study with Māori about their experiences of neuropsychological testing. Māori have high morbidity and mortality rates associated with neurological trauma, and are highly likely to present for neuropsychological testing for rehabilitation purposes. However, neuropsychological functioning is not determined by brain functioning alone and can be affected by a number of other factors such as effort (Tombaugh, 1996), fatigue (van der Linden, Frese, & Meijman, 2003), pain (Grigsby, Rosenberg, & Busenbark, 1995), and cultural experience (Ardila, 1995; Uzzell, 2007). Various theories have been postulated to account for between cultural group differences and include diverse explanations such as genetic variation, the utilisation of tests that measure different cognitive constructs in different cultures, and the clinicians' understanding of and experience with

different ethnic groups which has been found to systematically impact that group's test performance (Brickman, Cabo, & Manly, 2006). Neuroimaging has provided us with knowledge about the brain's exceptional plasticity and flexibility. There is now research that suggests that this pliability in the development and organisation of the human nervous system may be directly influenced by cultural experience and its correlations with education and acculturation (Ansari, 2012; Baltes & Singer, 2001; Gergen, 2010).

Māori have been colonised, and similar to other Indigenous peoples experience marked health inequities (King et al., 2008). They make up 15% of the population (Statistics New Zealand, 2013a) and have overall the poorest health status of all ethnic groups in New Zealand (Ministry of Health, 2010). The disparity in health status between Māori and non-Māori is an unacceptable phenomenon common

with other comparable Indigenous populations worldwide (Ring & Brown, 2003). One of the barriers to equitable health outcomes for Māori lies in the failure of health organisations to deliver culturally appropriate services that embrace Māori cultural practises and which are user-friendly and accessible to Māori. Equitable health-related access and outcomes for Māori in New Zealand when they seek health care services is a guaranteed right under Article 3 of the Treaty Waitangi (an agreement between the Queen of England and Māori and administered by the New Zealand Crown), which says that Māori have the same rights as others living in New Zealand (Durie, 1998). Acknowledgement of the Treaty of Waitangi is now firmly embedded in the NZ Psychological Society's Code of Ethics and its values underpin the New Zealand's Psychologist Board's guidelines for competent practice for psychologists (New Zealand Psychological Society, 2002).

Mortality and morbidity rates show neurological disorders feature prominently in the overall poor state of Māori health. In a recent incidence study, Māori had a significantly higher relative risk (RR 1.23) of mild traumatic brain injury (TBI) than other ethnic groups living in New Zealand, and are 3-4 times more likely to have assault as the cause of a TBI (Feigin et al., 2013). Furthermore, the stroke incidence for Māori is similarly disproportionate (RR 1.7-2.7; depending on type), and they also suffer stroke earlier than non-Māori (mean = 65 years vs 75 years) (Feigin

et al., 2006).

Individuals with neurological insult are often required to undergo a neuropsychological assessment to determine if cognitive impairment has occurred. However, there is now an international body of research indicating culture is a confounding factor on neuropsychological performance, and those individuals who are not of the dominant western culture may be disadvantaged (Agranovich, & Puente, 2007; Walker, Batchelor, & Shores, 2009). The few studies conducted in New Zealand also suggest that Māori may have performed sub-optimally due to the exclusion of culture in the assessment process (Ogden & McFarlane, 1997; Ogden, Cooper, & Dudley, 2003). In contrast, Māori participants expressed positive feelings and performed better when cultural content and cultural practises were included (Haitana, Pitman & Rucklidge, 2010; Shepherd & Leathem, 1999). The high prevalence of Māori with neurological insult, necessitates further research into the impact Māori culture has on neuropsychology and neuro-rehabilitation services.

Qualitative descriptive research design was chosen for this study with Māori so that we could talk to them and explore their experiences of the neuropsychological assessment process. The aims of the study were to (a) explore whether any aspects of Māori culture had been included in their neuropsychological assessment process, and (b) determine the culturally appropriateness of the neuropsychological assessment process.

**METHODS**

Ethical approval was obtained from the Auckland University of Technology’s Ethics Committee (12/127). Ensuring the cultural acceptability of the study was important particularly as the participants, principal researcher and mentor all identified as Māori. Therefore a Māori-centred research methodology informed the research process. Māori tikanga (correct procedures, customs, practices) and principles described by Smith (2012) guided the way the research process was undertaken, and involved:

- Ensuring respect for the people

at all times;

- Conducting all meetings face to face;
- Observing, listening and reflecting before speaking;
- Sharing, hosting, and being generous to all;
- Being politically astute, culturally safe, and reflective about researchers’ insider and outsider status;
- Informing people and guarding against being disrespectful, paternalistic or impatient; and
- Finding ways of sharing and being generous with knowledge, without being boastful or arrogant

Furthermore, to ensure Māori tikanga was observed and honoured at all stages of the research, Māori elders were frequently consulted for cultural guidance.

**Participants and recruitment**

The study sample comprised 16 participants who met the following inclusion criteria:

1. Self-identified as Māori;
2. Had undergone a neuropsychological assessment within the previous five years;
3. Had no memory deficit that would impact participation; and
4. Were able to communicate effectively.

Flyers outlining the study and participant information sheets were distributed to practising neuropsychologists, hauora (Māori wellbeing) clinics, and neuro-rehabilitation organisations within Auckland and the upper North Island of New Zealand. Potential participants were informed of the study by neuropsychologists, occupational therapists, and psychologists, and contacted the study using the details on the flyers and participant information sheets. If they met the inclusion criteria, a suitable time and venue was negotiated to conduct an interview. Neuropsychologists, occupational therapists, and psychologists screened potential participants for any memory deficit that would impact participation in the study. Potential participants not meeting the criteria or those who contacted us after recruitment ended

were respectfully declined and told why. All interviews took place in the participants’ homes.

**Participant characteristics**

All participants had undergone a neuropsychological assessment following a traumatic brain injury as part of their state funded medical care. Participants’ ages ranged from 16 to 64 years. There were more men (n=9) than women (n=7) in the sample, with more from urban (n=9) than rural locations (n=7) (see Table 1). Half of the sample had an annual household income of \$30,000 or less, with only one above \$50,000 – these are well below the median income of \$68,600 (Fallow, 2013). The majority of participants had sustained a severe head injury, however, their memory was sufficiently intact to recall detail of their neuropsychological assessment experience to inform this study. All participants spoke English as their first language and elected to be interviewed in English.

TABLE 1 Participant Demographics

Demographics		Number (n)
Age	Range	16 – 64 years
	Mean	37 years
Gender	Male	9
	Female	7
Household Income	\$10,000 - \$30,000	7
	\$30,000 - \$50,000	6
	\$50,000 +	1
Geographic Location	Urban	9
	Rural	7
Severity of Injury	Mild	1
	Moderate	4
	Severe	11

Most participants were able to identify their iwi (tribe) and hapū (sub-tribe), and affiliated with a variety of tribal groups. The participants were extensively involved in “Māori cultural activities” in their daily lives, attending their marae (local communal meeting house) for occasions such as tangihanga (funerals), kawē mate (memorial services), weddings,

birthdays, and similar events. Most participants had some ability to speak Māori, some had conversational skills, and one was a fluent Māori language speaker.

#### Data collection

Digitally recorded semi-structured face to face interviews, considered the most culturally appropriate method, lasting between 20 to 60 minutes were used to collect data (Braun & Clarke, 2013). Flick (2004) argued that participants are more likely to express their viewpoints through face to face interviews than using a survey questionnaire. The interview schedule enabled each participant to be asked the same questions, while answers could be explored in more detail if relevant. An interview schedule, that included prompt questions, was used to ensure we had covered all areas of interest the participants had not covered when they shared their experiences. Interviews predominately took place in the participants' homes, and participants were given the opportunity for a family member to support them, if they wished.

The Māori centred process meant that participants were asked if they wanted karakia (a Māori cultural blessing) to open and close each session. Furthermore, in recognition of the importance of kinship and relationships for Māori, each interview began with whakawhanaungatanga (a two-way process of making connections), a process for establishing relationships that involved sharing tribal affiliations, and whakapapa (geneology). Following this process of engagement, the participant information sheet (in both Māori and English) was explained and any questions participants had were answered as part of the written informed consent process. Confidentiality of the information shared was reconfirmed, along with the right to withdraw from the study at any time up until data analysis commenced. Consent forms were kept separate from data, and both stored securely. In keeping with Māori practices and the value of reciprocity, a koha (gift) was given to participants in the form of a small grocery voucher in recognition of their time and travel associated with contributing to the

study.

#### Data analysis

All interviews were transcribed by someone familiar with communicating in Māori, after signing a confidentiality agreement. Each transcript was checked for accuracy. Braun and Clarke's (2013) thematic analysis involved the transcripts being coded and collated to identify similar themes and patterns. This was a five phase process that involved: (1) *Becoming familiar* with the data during data collection and several repeated readings of the data; (2) *Generating initial codes* by reading the transcripts for data-driven and theory-driven codes, which were examined for consistency within, and distinctiveness between, categories; (3) *Searching for themes* between the coded data, accomplished by drawing mind maps and naming each code and sorting them into theme piles; (4) *Reviewing sub-themes* by revising and refining sub-themes and the emergence of overarching themes, and finally, (5) *Defining and refining* the data to ensure that each theme was clearly defined.

#### Research rigour

Lincoln and Guba's criteria of credibility, transferability, dependability and confirmability were used to establish the research rigour (Lincoln & Guba, 1985). Credibility of the data was established by spending time in the field, cultural supervision, and verification of the digital recordings of each interview with the relevant transcript. Moreover, the analysis was checked by others in the research team. Transferability relates to ensuring a range of Māori with traumatic brain injury were interviewed, and that the robust description of the themes reflected the comparative analysis across the transcripts. Furthermore, the findings have been presented to a range of neuropsychologists who have confirmed the applicability of the findings to their practice. Dependability involves a description of the research process, particularly the data collection and analysis phases. Confirmability was established through a process of reflexivity and ensuring research bias was avoided during data analysis.

## RESULTS

### Themes

Four themes describe the experiences of Māori having a neuropsychological assessment: *Positive experiences, cultural invisibility, having little or no choice, and preferred ways of doing things*. While participants identified positive aspects, it was clear from the participants' stories that the dominant Euro-Western cultural process drove neuropsychological assessments. *Cultural invisibility* demonstrates the importance of cultural practices, such as whakawhanaungatanga and karakia for spiritually clearing the way forward and making clients feel comfortable with the neuropsychological testing process. In addition, participants provided information on areas that would make this process more accessible and friendlier.

**Positive Experiences** – encompasses those aspects of the neuropsychological assessment that participants' were satisfied with, from the time they were first made aware of their upcoming assessment through to the point of contact between themselves and the neuropsychologist. In addition to possessing competent clinical skills, the ability of the neuropsychologist to use acceptable processes to establish rapport and connect with a Māori client was as signpost of a positive experience. Defining features of a positive experience included acceptable processes being used and the importance of establishing good rapport and engagement at the beginning of the assessment. One participant explained:

*He [neuropsychologist] was really great, you know. . . he broke it all down for me. He was brilliant I've got to say, and he explained a lot of things and just took me back you when he was with the All Blacks [New Zealand rugby team].*

Other participants stated:

*The lady there was quite good. She asked me if I wanted a coffee or anything while I was there [for the neuropsychological assessment] . . . at that time it was winter so it was quite cold outside, but the lady had the fire on so it was quite good.*

*She was good at making me feel ok. And just getting me to rebalance and stuff. So that was really nice.*



Despite participants reporting positive aspects of their neuropsychological assessment, the approaches informing the practice of neuropsychologists were not inclusive of cultural matters. This meant that participants' cultural selves were rendered invisible.

**Cultural invisibility** – refers to the neuropsychologist neither acknowledging nor inquiring about the participants' Māori identity and their cultural backgrounds. While this oversight was seen as normal for some when engaging with dominant health services, and therefore expected, some participants were offended and resented the neuropsychologists' indifference to their Indigeneity. *Nah, it's a Pākehā [dominant cultural group] place [neuropsychologist's office] – you don't expect it [cultural acknowledgement]. As a Māori, you always feel different going into anything that's Pākehā. I'm bloody 60 years old! Nothing in my life leads me to expect that. That's just a fact.*

The importance of being Māori was something that participants wanted acknowledged, especially as their daily lives and activities centred on being involved in Māori life. Furthermore, the non-acknowledgment of their cultural identity meant an absence of “normal” Māori processes of engagement, such as the process of relationship building by sharing who they were and where they were from. In fact, no questions were asked about their cultural affiliations or identity, even when some participants indicated involvement in their Māori community.

*Māori had nothing to do with it. I just put my ethnicity on the form.*

*No, she didn't ask about whakapapa [genealogy] but in general conversation for her to get an overall feeling of who I am; I alluded to [cultural] things. Like when she said, “Are you involved in the community?” I said, “I'm involved in the Māori community, being a licensee to kohanga reo [Māori language preschools]”.*

*I told him I was Tuhoe, but I could see it didn't mean anything to him.*

These were missed opportunities for the clinician to have developed a rapport with the client. To have shown some interest in the fact that

the last client was Tuhoe would have assisted in establishing a trusting and respectful relationship. The lack of acknowledgement of this client's iwi created a barrier, and led to the client feeling reluctant to engage with the neuropsychologist and the assessment process.

In addition, participants noted the lack of Māori ways of doing things, such as having the opportunity to say a karakia before the assessment began, or whether they preferred to speak using Māori language.

*I think if they really cared they would have asked what your nationality was and to see if you wanted anything done, like karakia. Being part Māori I have that spiritual thing in me. . . . So I know that doing that sort of thing with any kind of doctor, it helps.*

Overlooking the role of cultural identity and the connection to cognitive functioning disregards the impact of cultural bias and culture on neuropsychological assessments. Moreover, participants reported not being given options or choice.

**Having little or no choice** – participants reported the lack of or limited choice they had in determining how the neuropsychological assessment processes and procedures were managed before, during and after an assessment. This resulted in a sense of disempowerment, aided by receiving very little information prior to an assessment that continued throughout the whole process. Most participants were unaware of the neuropsychological assessment purpose or process, although some had received information from other health workers. As one participant succinctly noted:

*I never knew what to expect [for the neuropsychological assessment].*

Another participant explained the importance of neuropsychologists providing information to the client:

*Again it's like you're going to all these people who you have no idea who they are or what they are trying to achieve. To me it felt like another part of the getting well that I had to do, but not understanding why I was there. I suppose I should have asked but you feel a bit intimidated sometimes.*

The importance of having a choice

of venue was explained by another participant:

*I would have had it at home, just because the stage where I was at, at that time – it's familiar surroundings. I just think it wouldn't have added to my anxiety. I never ever experienced this [anxiety] until my head injury and those kinds of things are heightened really quickly for me, so to be given the option I would have been quite happy to have it at home.*

The following participant reflected an element of cynicism about the process, also expressed by a number of other participants:

*It just felt like you were put through the system and it feels like they are just taking money, and I don't see the value of going there. But I don't know what they charge, but I couldn't imagine it would be cheap. I couldn't see any value in it.*

**Preferred ways of doing things** – refers to participants' thoughts about the practices and protocols that would make the neuropsychological assessment both meaningful and friendlier. Most participants indicated a preference for Māori-friendly assessments – it is about what matters to Māori clients and attending to their needs. Participants noted a cultural divide existing between Māori clients and neuropsychologists:

*That is very much where the neuropsychologist comes, a medical model, a Western view . . . and the way it positioned us, like because [if] we didn't go down that path [recommended assessments and interventions] we were not caring.*

Participants also believed rehabilitation was conducted within a medical model, contrary to the holistic Māori worldview. Therefore, participants thought only part of their healing process would be addressed by the neuropsychological rehabilitation recommendations and outcomes:

*. . . like his tinana [physical dimension] and hinengaro [psychological dimension] can be healed here [rehabilitation] but when he gets home his wairua [spiritual dimension] will be healed and that is all part of his Māori stuff. They might not realise it around here, but he won't be 100 percent until he is home.*

There was an overwhelming

indication that participants preferred to have been assessed by a Māori clinician. It was thought that better relationships could be formed with a Māori clinician, who would have had a deeper understanding of them and their realities.

*I just felt you could relate with Māori a bit more. They have more understanding you know, from my perspective.*

Participants' elevated anxieties arising from being assessed by a clinician from a different and/or a dominant culture can be mitigated by having a clinician of the same cultural background.

*I would have preferred if I was sitting with a Māori, you know because I think a Māori is more likely to be able to make a judgement on the way I react to things and answer things than a Pākehā person would be. ... Their perspective of what I might say maybe absolutely bloody wrong because it has been like that quite a bit in my life. You think they understand. They go, "Yeah, yeah." But, their perception of understanding is not yours.*

Sentiments were echoed by a number of participants suggesting that Māori want to be seen by Māori clinicians. The following statement implies that some Māori are no longer accepting of the status quo.

*What I'd like to see for Māori is a lot more Māori people working with Māori with injuries because they have that belief, you know our cultural beliefs.*

Preferred ways of doing things extended to participants indicating preferences for assessment tools that included Māori content and protocols, such as Māori words in lists requiring memory skills, because they believed this would have encouraged them to perform better.

*Yeah, I'd say that if there were some Māori words in there I probably would remember it.*

*Well if you get other tests from other countries they're going to put their language in it so why can't Māori?*

Furthermore, having support people, such as family members, while they were completing a neuropsychological assessment would help lower their

anxiety.

*... you would open up more if you had a Māori type session . . . just to understand Pākehā [the neuropsychologist] may interpret it wrong just by the sheer difference between the two [cultures] – not prejudice just sheer difference and that just exists, that's a fact.*

## DISCUSSION

The findings of this study provide some insight into the importance of recognising Māori cultural identity and background when Māori engage with health services such as those provided by neuropsychologists. They make a contribution about the experiences Māori have when required to undergo neuropsychological testing. Recognising a person's cultural identity and being willing to include important cultural practices (for instance, whakawhanaungatanga and karakia) conveys to clients that neuropsychologists are respectful of them as Māori.

Indigenous peoples who have been colonised globally suffer persistent health inequities compared to others living in their respective countries (Bird, 2002; Ring & Brown, 2003; Wexler, 2009). Health inequities are unfair and unacceptable (Braveman & Gruskin, 2003). Contemporary Indigenous health status is located within complex contexts of colonisation, historical traumas (Walters et al., 2011), socioeconomic disadvantage, differential access to determinants of health, and experiences of institutional and interpersonal discrimination (Reid & Robson, 2007). Reducing inequities is important and while many of these factors are beyond individual health professionals' control, the quality of health service delivery is something that neuropsychologists can attend to.

In the last two decades the rapid diversification of the American population has had significant implications for the field of neuropsychology and given rise to a steady body of research leading to a growing awareness and acknowledgement of the role of cultural diversity in cognitive test score disparities (Boone, Victor, Wen, Razani,

& Pontón, 2007; Ferraro, & McDonald, 2005; Loewenstein, Argüelles, Argüelles, & Linn-Fuentes, 1994; Rosselli, & Ardila, 2003). Culturally diverse populations now make up the fabric of many countries, including New Zealand, and the need for cultural competence is even greater as the demand for neuropsychologists to work cross-culturally increases. Alongside this growth, is the emergence of a developing body of evidence providing some understanding of the complex and contentious issue of cross-cultural neuropsychology (Jacobs et al., 1997; Kennepohl, Shore, Nabors, & Hanks, 2004; Manly, Jacobs, Touradji, Small, & Stern, 2002; Pedraza & Mungas, 2008; Razani, Burciaga, Madore, & Wong, 2007; Rosselli & Ardila, 2003; Wong, Strickland, Fletcher-Janzen, Ardila, & Reynolds, 2000).

In New Zealand, little research has been conducted into the complexities of Māori identity and the impact on neuropsychological performance. In the absence of theoretical, evidence-based research, it is even more critical for neuropsychologists in this country to aspire to the highest level of cultural competence in order to mitigate any potential cultural bias in neuropsychological testing. This is in keeping with the principles of the New Zealand Psychological Society's Code of Ethics and The New Zealand's Psychologists Board's guidelines for psychometric testing. Together these documents provide a comprehensive framework for conducting culturally safe and valid psychometric testing. It is thus disappointing that in this study the majority of the neuropsychologists did not consider their client's cultural identity when conducting their assessments.

Culturally responsive practice involves a blend of cultural competence and cultural safety. It requires the establishment of a mutual relationship between practitioners and their clients (Werkmeister-Rozas & Klein, 2009). However, the reality of locating a Māori neuropsychologist is a major problem. The incremental increase, albeit small, in the number of Māori practising psychology in New Zealand has not manifested in the field of neuropsychology. The need for

Māori to be trained in the field of neuropsychology was first realised well over a decade ago (Ogden, 1997), yet at this point in time there remains a critical shortage of Māori neuropsychologists.

In addition to relationships, recognising clients' different worldviews and cultural contexts is central to cultural responsiveness and understanding cultural ways of functioning in their daily life. Within the neuropsychological context, this requires neuropsychologists to identify their own cultural location (including the potential socio-economic differences that may exist between their own social positioning and their Māori client's socio-economic realities), and undertake a critical analysis of their local Indigenous socio-historical realities and how this impacts on their daily lives and life chances (Anderson et al., 2009; Bellon-Harn & Garrett, 2008; Kelly, 2009; Pauly, MacKinnon, & Varcoe, 2009). Culturally responsive neuropsychological assessments require neuropsychologists to work together with Māori clients to optimise a culturally safe and satisfying experience for them. Understanding the negative experiences and inequities in educational performance for many Indigenous peoples (Smith, 2012) and the impact this has on cognitive testing further reinforces the need to acknowledge clients' cultural identity and background.

Yet, despite the growing recognition of cultural diversity within neuropsychology, the majority of assessment instruments, their content and normative data continue to be developed by those who prescribe to the dominant culture. Instrument items are constructed within the dominant culture context on the basis that translated cultural concepts and items have relevance. This is a flawed notion as items and concepts can lack relevance to Indigenous peoples or their meanings may be altered in the translation process, for example (Ardila, 1995).

In this study, we found that Māori wanted to have some choice and a sense of empowerment during their experience. The participants in this study articulated that a lack of information prior to their neuropsychological assessment meant that they did not

know or understand what was expected of them or what was going to happen – it left them feeling disempowered. Furthermore, the participants were generally not consulted when recommendations for rehabilitation were being developed thus exacerbating their feelings of disempowerment and exclusion. Empowerment requires having necessary information and an environment whereby clients feel they are informed and that they have a sense of control. Sohlberg and Mateer (2001) emphasise the importance of empowering individuals and families in the rehabilitation process. When working with families with a member who had a brain injury, Mann (1998) identified 'information and access' as a key empowering factor. Empowerment can be further enhanced by providing information in a way that promotes the health literacy of Indigenous peoples.

#### *Clinical implications*

There are a number of strategies that can be undertaken to improve client experiences of neuropsychological assessment. First and foremost, recognising and respecting the importance of clients' cultural identity and background for putting them at ease and enhancing their performance is crucial. Understanding the importance of cultural processes of engagement is crucial for making clients feel less anxious and potentially performing better on cognitive tests. A simple step such as greeting the client in Māori (*kia ora*) may greatly enhance rapport and increase motivation. It is also necessary for contextualising the neuropsychological assessment and establishing the relevance of its outcomes. This may include engaging with extended whanau members and may even necessitate visiting the client at home. Gaining an understanding of the client's environment provides the added benefit of informing rehabilitation recommendations that are relevant and practical for that client and their whanau. Neuropsychologists should consider selecting neuropsychological measures that have been identified as more culturally appropriate with other ethnic minority groups. Furthermore, measures whose normative data has been obtained from heterogenous samples are preferable for use with

Māori than data bases derived from homogenous white groups. Cultural guidance should be sought from Māori who have knowledge of *tikanga Māori*. Neuropsychological services should establish genuine relationships with local *iwi* and *hapū* in order to make neuropsychological process more client-friendly. In some New Zealand towns, *hauora* clinics may provide space for conducting neuropsychological assessments.

An understanding of Māori models of health indicates a respect for a Māori worldview and provides further insight to the needs of Māori clients. Non-Māori neuropsychologists can negotiate with their client the extent of their involvement in the recovery process as part of or in addition to the Māori model of health. The lack of Māori providing neuropsychological assessment services has remained unchanged over the last two decades despite the increasing number of Māori presenting for assessment and their numerous pleas to be seen by a Māori neuropsychologist. In this situation it becomes even more incumbent for non-Māori neuropsychologists to continue to develop their cultural competence.

There is a need for measures that contain culturally relevant material. It has been shown over a number of studies now that Māori want to see content from their own culture integrated into the tests (Ogden et al, 2003; Shepherd, & Leatham, 1999). Not only will this generate feelings of inclusion and empowerment but cognitive performance may also improve because of the familiarity of the material (Diana, Reder, Arndt & Park, 2006; Haitana, Pitama & Rucklidge, 2010). A small New Zealand study (Ogden et al., 2003) showed that Māori performance improved significantly on a test that had been modified to include Māori content, compared to performance on the original version of the test. Māori therefore may be doubly disadvantaged on memory tasks due to (a) unfamiliar content of the material in existing memory tasks, and (b) the lack of Māori content throughout.

#### *Limitations*

While there are similarities in experiences with other Māori and Indigenous peoples, and also potentially non-Māori, caution must be taken when

applying the findings of this study to groups and cultural contexts beyond those in this study. Further research is needed on the role of cultural responsiveness in neuropsychologists' practice with Māori. For example, validation studies of the cultural relevance and equivalency of neuropsychological test items when applied with Maori needs further investigation. There is a remote possibility that a participant could have been influenced by the koha provided. However, all participants indicated their motivation for participation in the study was to make a difference for other Māori undergoing neuropsychological assessments.

## CONCLUSION

By talking to participants about their experiences with neuropsychological assessments, we have been able to uncover important aspects that would enhance the process of Indigenous peoples, like Māori. Although participants identified positive aspects of the assessment process, specifically their impression of the neuropsychologist, there was clearly disappointment that cultural identity was invisible throughout the assessment process. Fundamental to neuropsychologists' cultural responsiveness is the importance of making clients' cultural identity and background visible and working on how to incorporate cultural practices into the process. Culturally responsive neuropsychological assessments result in more accurate diagnoses, and more relevant and appropriate rehabilitation programmes that lead to better outcomes for those Māori with brain damage, and their whanau.

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#### Conflicts of interest:

None declared.

# A comparison of therapist-present or therapist-free delivery of very brief mindfulness and hypnosis for acute experimental pain

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The present experiment compared the effectiveness of seeing a therapist on DVD and face-to-face, in a laboratory-based acute pain experiment, using either hypnosis or mindfulness therapy as examples of psychological therapies. Two hundred and forty participants were recruited for a between subjects design. Participants were randomly assigned to one of four intervention groups: 1. Hypnosis face-to-face; 2. Hypnosis on DVD; 3. Mindfulness face-to-face; 4. Mindfulness on DVD. Pain tolerance times, subjective pain ratings, opinions on how helpful the technique was, how much it reduced pain, how enjoyable, anxiety reduction and willingness to do again were measured. Pain tolerance times and other results supported the use of psychological therapies on DVD as well as face-to-face, relative to the baseline condition and a control condition. Very brief interventions of both hypnosis and mindfulness were effective for acute pain management.

**Keywords:** acute pain, DVD, mindfulness, hypnosis, on-line therapies, psychological treatment

A pain experience is not a simple biological response to a stimulus. It is a complex interaction of biological, psychological and social factors (Melzack and Wall, 1965). Therefore, as well as using biological treatments for treating pain it may also be necessary to use other treatments, including psychological methods. Psychological treatments used for pain include distraction, relaxation, cognitive behavioural therapy (CBT), acceptance (ACT), hypnosis, and mindfulness.

Work done by the present research team has established that technological presentation of active distraction is an effective treatment for acute laboratory-induced pain (Jameson, Trevena and Swain, 2011). Distraction is perhaps the simplest of psychological methods, with little therapist skill involved in delivery. More sophisticated psychological therapies for pain include hypnosis and mindfulness training. These therapies

are both cognitive coping strategies. We have chosen these two therapies for the present experiment to represent popular psychological therapies. Although these therapies have a well-known lay meaning, findings in the literature are mixed, as there is widespread terminological inconsistency (Lynn, Martin and Frauman, 1996), meaning how much treatment, for how long, by whom, and its' specific components are not consistent.

Hypnosis is a brief cognitive behavioural technique, with no specific side-effects (Lynn et al, 1996; Rhue, Lynn and Kirsch, 1993). Hypnosis has long been used for its pain relieving qualities. A meta-analysis of hypnotically-induced analgesia found that hypnosis can produce moderate to large analgesic effects (Montgomery, DuHamel and Redd, 2000). These researchers also report that hypnosis is equally effective at reducing experimental and clinical

pain. A later meta-analysis indicated that the method of hypnotic induction (face-to-face vs audio tape) did not lead to any significant difference in pain outcomes (Montgomery et al, 2002). A more recent review has concluded that (for children and adolescents) hypnosis is at least as effective as distraction and is more effective than control conditions at managing pain related to treatment and tests (Accardi and Milling, 2009).

Conversely, mindfulness is a heightened awareness of the present moment. Mindfulness is also commonly used for the psychological treatment of chronic pain (Kabat-Zinn, 1982). Mindfulness both reduces the intensity of pain and increase mood, attention, sleep, well-being and general functioning (Baer, 2003; Morone et al, 2008; Palermo, 2009). Acceptance as a component of mindfulness has been found to be particularly useful for the management of pain (Palermo, 2009). Recent results using mindfulness for cold pressor pain found a mixed results, with one reporting a 12 minute mindfulness task not sufficient to increase tolerance time (Sharpe et al, 2009) and one using a 15 minute mindfulness task finding it was sufficient to increase pain tolerance (Liu et al, 2013).

While it is not clear exactly how either hypnosis or mindfulness therapies work to control pain, one possibility is that they may both train people to focus attention. Neurocognitive models of pain would suggest that pain demands a great deal of attention (LeGrain et al, 2009), so directing attention somewhere else might be a very effective way of dealing with an acute pain experience.

Hypnosis directly asks people to shift their attention while mindfulness pays some attention to the pain in a less emotional way.

While mindfulness and hypnosis are both effective for the treatment of pain, the problem remains of how to efficiently and economically administer the treatments. One option is to use DVD presentation of treatment, which has been found to work in several other medical fields. For example, the DVD presentation of CBT interventions has been found to reduce intensity and duration of hot flashes (Carpenter et al, 2007). Patient information presented via DVD has also been found to be useful and acceptable in cases of heart surgery (Steffinino et al, 2007), chemotherapy (Schofield et al, 2008), joint replacement surgery (Lewis, Gunta and Wong, 2002), and post surgical pain medication (Chen, Yeh and Yang, 2005). An audio recording was successfully used to present a mindfulness intervention for acute cold-pressor induced pain (Carpenter et al, 2007).

The present research sought to extend these findings and test solutions which may be applicable to “real world” acute pain settings. The following will test the hypotheses that 1) mindfulness and hypnosis interventions, even when only presented for 3 minutes, are effective acute pain reduction strategies in the laboratory setting, and 2) DVD recordings of expert therapists performing hypnosis or mindfulness will be as effective as seeing a therapist face-to-face.

## MATERIALS AND METHODS

### Participants

There were 240 participants with ages ranging from 18 to 38 years (121 females and 119 males) with a median age of 21 years ( $SD = 2.98$  years). The participants were recruited through Student Job Search and consisted of students from the University of Otago and other tertiary providers. All participants received a NZ\$15 cash payment for their time. The experimental procedure and participant recruitment was reviewed and approved by the University of Otago Human Ethics Committee (ethical approval

reference 07/235).

*Exclusion criteria.* Before beginning the experiment, all participants were given a self-report checklist to indicate whether they had any health problems that might make it dangerous for them to participate. The participant’s agreement form specifically asked about circulatory problems, skin problems, painful conditions serious health problems. If participants indicated they had any of these problems they were not asked to participate in the experiment. Because of the way the experiment was set up (with the cold pressor situated to the left of the participant), only right-handed participants were asked to participate in the experiment.

### Design

The experiment was conducted as a between-subjects design with 60 participants per group. Students were assigned to a group as they were referred by Student Job Search. Group order was randomised with each of the four groups being recruited twice during an eight month period. Thus therapists saw 30 people in one week, on two occasions, separated by several weeks/months. Therapists saw six people each day, at no more than two per hour. After an initial baseline exposure with no intervention, participants experienced one of four conditions: hypnosis face-to-face; hypnosis on DVD; mindfulness face-to-face or mindfulness on DVD.

### Materials and Measures

*Cold pressor.* A Conthern Classic Series CAT 350-380 digital culture bath (cold pressor) was used to induce pain. The cold-pressor chilled a 20cm deep water-bath to two degrees Celsius ( $\pm 1$  degree). A jug of warm water ( $30^{\circ}\text{C} \pm 1$  degree) was provided for participants to warm their hand following each exposure to the cold water. A towel was also provided, so that the participant could dry their hands before completing the VAS scales after each task. The room was kept between 19 and  $20^{\circ}\text{C}$ .

*Interventions.* There were two therapists, one for the hypnosis intervention and one for the mindfulness intervention. Each therapist was experienced in their field and prepared a three minute script according to their professional standards. The scripts included specific instructions

eg. “when you place your hand in the cold water...” The therapist was filmed conducting this script, or repeated it from memory in the face-to-face conditions. Scripts were standard for the profession (please contact the author for further information).

*Tolerance time.* During both exposures to the water bath, the experimenter used a stop watch to record how long participants left their hand submerged from entry to withdrawal (tolerance time in seconds).

*Visual Analogue Scale (VAS).* After each exposure to the water bath, participants rated their pain levels and how interested they were in the task using visual analogue scales. For pain, participants were asked to rate how painful they found the task by making a mark on a 100mm line with ‘no pain’ at one end (0mm), and ‘most intense pain imaginable’ at the other end (100mm). Ratings were measured and recorded as mm from the 0mm end of the scale. The VAS has been demonstrated to be a reliable and consistent measure of clinical and experimental pain sensation (Price et al, 1994).

*Final Questionnaire.* At the completion of the experiment, participants answered a further four questions about their enjoyment, anxiety, pain, and how happy they would be doing the cold water immersion again, by circling a number between 1 (not at all/never) and 7 (very much/everyday) on a 7-point Likert scale.

### Procedures

After reading the information sheet, completing the self-report checklist and consent form, and giving demographic information, participants took part in a baseline exposure with no intervention, by submerging their left hand up to their wrist in the cold water. The tolerance time was recorded, and the participant rated their pain and absorption. (Unknown to the participants, there was an upper time limit of two minutes after which they were asked to remove their hand from the cold water.) They were then either introduced to the therapist or watched the DVD of the therapist. The therapist left the room (if present). Immediately following hearing the script the participants were asked to again immerse their hand

Table 1 Demographic information for study participants

Age	Mean	21.05	21.38	20.75	21.02	21.03
	Sd	2.98	3.46	3.08	2.89	2.47
	range	18-38	18-34	18-38	18-33	18-29
Female gender	N	121	28	36	26	31
	%	50.4	46.7	60.0	43.3	51.7
Single marital status	N	168	44	48	37	39
	%	70.0	73.3	80.0	61.7	65.0
Student occupation	N	229	59	58	58	54
	%	95.4	98.3	96.7	96.7	90.0
European/Pakeha Ethnicity	N	183	50	39	51	43
	%	76.3	83.3	65.0	85.0	71.7

in the cold water bath (therapeutic exposure), repeated the ratings of pain and absorption, and then completed the final questionnaire.

**Analysis**

Data were collected on paper, and then entered into an Excel spreadsheet before being analysed using SPSS for Windows version v18.0. The hypothesis that DVD presentation of psychological therapies would be as effective as seeing the therapist face-to-face was examined using ANOVAs with between-subjects factors of therapy (hypnosis vs mindfulness) and administration (face-to-face vs. DVD), and within-subjects factor of task (baseline or therapeutic).

**RESULTS**

**Control condition**

A control condition using the same methods has been previously reported (see Jameson, Trevena and Swain, 2011). Participants' tolerance time for cold pressor at baseline was 57 seconds, following 2 minutes of television watching the participants again submerged their hand in the cold pressor. The second exposure had a mean tolerance time of 60 seconds. This was not statistically different from the baseline ( $P > .01$ ,  $n=60$ ). Temperatures of bath, environment, interval between test, instructions, and all other variables were the same as the present experiment. This indicates that there is a small and non-significant repetition effect. Control data has been included in Table 2 for comparison.

Table 1 shows the demographic information of participants overall and separately for each group.

**Tolerance Time**

Tolerance times were analysed using a mixed-design ANOVA with between-subjects factors of therapy (hypnosis vs mindfulness) and administration (face-to-face vs. DVD), and within-subjects factor of task (baseline or therapeutic: see Table 2).

Table 2. Means (and 95% confidence intervals) of pain tolerance times (in seconds), for baseline and therapeutic exposure to pain each of four groups (face-to-face mindfulness, face-to-face hypnosis, DVD mindfulness, DVD hypnosis:  $n=60$  in each group)

	Presentation	Baseline	Therapeutic
Mindfulness	DVD	57.70 (47.99 - 67.41)	79.00 (69.26 - 88.74)
	Face-to-face	58.92 (49.21 - 68.63)	84.85 (75.11 - 94.59)
Hypnosis	DVD	52.65 (42.94 - 62.36)	77.72 (67.98 - 87.45)
	Face-to-face	62.62 (52.91 - 72.33)	84.85 (75.11 - 94.59)
Control*	TV	56.93	60.45
Overall**		57.97 (53.12 - 62.83)	81.60 (76.74 - 86.47)

Note.

\*From Jameson, Trevena and Swain (2011)  $n=60$

\*\* does not include control condition

On average, tolerance time was longer in the therapeutic condition (81.60 seconds) than the baseline (57.97 seconds), and this difference was statistically significant ( $F(1,236)=205.20$ ,  $p < 0.001$ ). However, none of the other comparisons were statistically significant. Specifically, the tolerance time was the same for both therapies ( $F(1,236)=0.02$ ,  $p=0.888$ ), method of administration ( $F(1,236)=1.69$ ,  $p=0.20$ ). There was no interaction between therapist and administration ( $F(1,236)=0.29$ ,  $p=0.59$ ), and the increase in tolerance time from baseline to therapeutic session did not depend on therapist, mode of

administration, or the interaction (all  $p > 0.19$ : see Table 2 for means and 95% confidence intervals)

**Checking for ceiling effect on tolerance time**

There were 51 people (21.3% of participants) who kept their hands in

the water for the maximum time of two minutes during the baseline task, and were asked to stop. (During the therapeutic task, 101 people (42.1%) reached the maximum time.) To ensure that our results were not affected by a ceiling effect on tolerance time, the above analysis was repeated without the 51 people who reached the time limit at the baseline condition (see Table 3). On average, tolerance time was longer in the therapeutic condition (71.22 seconds) than the baseline (41.24 seconds), and this difference was statistically significant ( $F(1,185)=265.47$ ,  $p < 0.001$ ). There was a non-significant trend for



Table 3. Means (and 95% confidence intervals) of pain tolerance times (in seconds), for baseline and therapeutic exposure to pain each of four groups (face-to-face mindfulness, face-to-face hypnosis, DVD mindfulness, DVD hypnosis), excluding participants who reached two minutes at baseline.

	Presentation	Baseline	Therapeutic
Mindfulness	DVD (n=47)	40.47 (33.93-47.01)	67.66 (57.08-78.24)
	Face-to-face (n=49)	45.20 (38.80-51.610)	76.96 (66.60-87.32)
Hypnosis	DVD (n=48)	35.81 (29.34-42.28)	67.15 (56.68-77.61)
	Face-to-face (n=45)	43.49 (36.81-50.17)	73.13 (62.33-83.94)
Overall	(n=189)	41.24 (37.98-44.51)	71.22 (65.95-76.50)

tolerances to be longer for face-to-face interactions than for DVD administration ( $F(1,185)=2.93$ ,  $p=0.089$ ). None of the other comparisons approached significance: tolerance time was the same for both therapies ( $F(1,185)=0.04$ ,  $p=0.509$ ), there was no interaction between therapist and administration ( $F(1,185)=0.001$ ,  $p=0.982$ ), and the increase in tolerance time from baseline to therapeutic session did not depend on therapy, mode of administration, or the interaction (all  $ps>0.39$ ). As the results were not different from analyses with all participants, subsequent analyses were conducted on the whole sample.

#### Subjective Pain Scores

Table 4 shows pain scores measured using the VAS after each cold pressor condition. Scores were collected by measuring the distance (mm) from 0 (labelled "no pain") to where the participants made a mark on the 100mm line (labelled "most intense pain imaginable"), after both the baseline and the therapeutic task.

Pain scores were significantly lower for the therapeutic task than

for the baseline task (44.90 to 48.66,  $F(1,236)=20.29$ ,  $p<0.001$ ), and the difference between tasks was greater for Hypnosis (43.64 to 49.74) than for Mindfulness (46.15 to 47.58,  $F(1,236)=7.79$ ,  $p<0.01$  for the task by therapist interaction). There was also a non-significant trend for pain reports to be lower for face-to-face interactions (44.78) than for DVD (48.78,  $F(1,236)=2.92$ ,  $p<0.089$ ). None of the other comparisons approached significance (all  $ps>0.4$ ).

#### Helpfulness of the technique

Responses to the question "How helpful did you find the technique?" were analysed using a mixed-design ANOVA with between-subjects factors of therapist (hypnosis vs mindfulness) and administration (face-to-face vs. DVD). The perceived helpfulness did not depend on the therapy, the mode of administration, or the interaction between them (all  $ps>0.14$ : see Table 5).

#### Subjective pain reduction

Scores for "How much did the technique reduce pain?" (where

1=not at all and 7=very much) were analysed using a mixed-design ANOVA with between-subjects factors of therapy (hypnosis vs mindfulness) and administration (face-to-face vs. DVD). The perceived reduction in pain did not depend on the therapy, the mode of administration, or the interaction between them (all  $ps>0.2$ : see Table 5)

#### Enjoyment

Likert enjoyment scores were analysed using a mixed-design ANOVA with between-subjects factors of therapy (hypnosis vs mindfulness) and administration (face-to-face vs. DVD), and within-subjects factor of task (baseline or therapeutic). Enjoyment was greater face-to-face (5.00, 95% CI 4.83-5.18) than for the DVD (4.64, 95% CI 4.46-4.82,  $F(1,236)=7.919$ ,  $p=0.005$ ). There were no other significant differences.

#### Anxiety

Likert anxiety scores were analysed using a mixed-design ANOVA with between-subjects factors of therapist (hypnosis vs mindfulness) and

Table 4. Mean Subjective Pain Scores (with 95% confidence intervals) measured on VAS (n=240) in mm

	Presentation	Baseline	Therapeutic
Mindfulness	DVD	48.22(43.57-52.87)	47.67 (42.55-52.78)
	Face-to-face	46.95 (42.30-51.60)	44.63 (39.52-49.75)
Hypnosis	DVD	52.57 (47.92-57.22)	46.65(41.54-51.76)
	Face-to-face	46.92 (42.27-51.57)	40.63(35.52-45.75)
Overall		48.66(46.34-50.99)	44.90(42.34-47.45)

Table 5. Mean responses to the questions: "How helpful did you find the technique?" (VAS, 0-100mm) and "How much did it reduce the pain?" (Likert 1-7) with 95% Confidence Intervals in brackets

	Mindfulness face-to-face	Mindfulness DVD	Hypnosis face-to- face	Hypnosis DVD	Overall
"How helpful did you find the technique?" (VAS, 0-100mm)	49.48 (43.43 - 55.53)	48.53 (42.48- 54.58)	54.55 (48.50- 60.60)	52.42 (46.37- 58.47)	51.25 (48.22- 54.27)
"How much did it reduce the pain?" (Likert 1-7)	4.10 (3.70-4.50)	3.67 (3.27-4.06)	4.13 (3.74- 4.53)	4.15 (3.75- 4.55)	4.01 (3.82- 4.21)

administration (face-to-face vs. DVD), and within-subjects factor of task (baseline or therapeutic).

Anxiety was higher for the baseline (3.63) than for the therapeutic condition (3.05,  $F(1,236) = 23.466$ ,  $p < 0.00$ ). The difference between tasks was more pronounced for hypnosis (3.72 to 2.89) than for mindfulness (3.55 to 3.22,  $F(1,236) = 4.228$ ,  $p < 0.05$  for interaction between task and therapist). None of the other comparisons was significant.

#### *Happy to do again with/without help*

Likert scores for reported readiness to repeat the water immersion were analysed using a mixed-design ANOVA with between-subjects factors of therapy (hypnosis vs mindfulness) and administration (face-to-face vs. DVD), and within-subjects factor of help (with or without the DVD/therapist). The readiness to do the task again was much greater for "with the therapist/DVD" (5.28) than for without (4.83,  $F(1,236) = 24.680$ ,  $p < 0.001$ ). There were no main effects of therapy, mode of administration, or the interaction between the two (all  $ps > 0.8$ ) and the effect of help also did not differ across therapy, mode of administration, or the interaction between the two (all  $ps > 0.15$ ).

## DISCUSSION

The present results provide evidence for hypnosis and mindfulness being effective therapies for the reduction of an acute pain experience in the laboratory. This is consistent with neurocognitive models of pain, stating that pain competes for attention (Steffinino, 2007). Additionally, the results confirm

the hypothesis that DVD presentation of psychological pain therapies has similar effects on acute pain as face-to-face therapy. Specifically, tolerance times for pain were significantly longer when participants were given either intervention. The lengths of time that the pain could be tolerated were equally extended by mindfulness on DVD and face-to-face, and hypnosis on DVD and face-to-face administrations of therapy. However, the subjective experience of pain was not reduced by each of the interventions equally: participants reported less pain with hypnosis than mindfulness (using VAS pain scores). This result might be expected as mindfulness asks participants to examine the pain and feel it whilst accepting it; in contrast, hypnosis directs attention away from pain.

Interestingly, on a subjective question participants reported around a fifty percent reduction in pain for both interventions relative to the baseline, and if they were asked to do the task again most people would choose to have the intervention they were given instead of no intervention. "Enjoyment" was rated as higher for face-to-face interventions than DVD: although pain experience and tolerance times were not improved by seeing the therapist face-to-face, people seem to enjoy having a therapist present. Hypnosis provided a greater reduction in task anxiety than mindfulness. Addition of control data from a previous study show that the effect is not simply the results of repeated trials. The participants in previous research ( $n=60$ ) showed a slight increase of reported pain in the cold-pressor test after a second administration under similar conditions

(Jameson, Trevena & Swain, 2011).

These results support the literature on hypnosis and mindfulness's ability to reduce a person's experience of acute pain (Montgomery et al, 2000; Kabat-Zinn, 1982; Carpenter et al, 2007; Zeidan et al, 2010). This research adds to that body of work with the finding that those therapies can be presented therapist-free with very little reduction of the pain-relieving power. This finding will allow psychological treatments to be used more easily in clinical settings, instead of being confined to the laboratory.

When considering a treatment for clinical use we must consider clinical significance as well as statistical significance. Previous studies suggest that the minimum change in a VAS score for pain to have clinical significance is between 9mm (Todd, 1996) and 13mm (Kelly, 1998). The VAS change scores reported in the present study are in the range of 0.6 mm (mindfulness on DVD) to 6.29 mm (hypnosis face-to-face) and they therefore may not represent clinically significant changes in pain perception. This means that either of these therapies (hypnosis or mindfulness) in either presentation (DVD or face-to-face) would need to be developed further to have an important effect on acute clinical pain. Longer interventions may fulfil this challenge.

The authors also note that the therapists may have done a better job face-to-face if allowed to vary from the script. Small variations were observed in the behaviour of the therapists when face-to-face such as modelling of body language, social smile, pacing and

handshake. Although the therapists' words were the same face-to-face as on DVD, some tailoring to clients still occurred. In an unrestricted trial, where therapist could vary the script it may be possible for some skilled therapists to do better face-to-face than via DVD presentation. Also, notably all previous interventions have had much longer than a three-minute intervention (Sharpe et al, 2010; Carpenter et al, 2007; Kelly, 1998). The present findings provides an interesting addition to the literature that even an extremely brief intervention can be effective.

Any clinical value of these interventions is not established and this issue requires further testing. Another limitation in this study is the order effect: the baseline condition was always before the therapeutic condition, so that the increased tolerance time may be due to familiarity with the sensations. However, a previous study in this laboratory has shown that repetition of the cold pressor task does not lead to statistically significantly increased tolerance time (Jameson, Tevena and Swain, 2011). Data has been presented in tables to support this claim.

Another possible limitation of this research is the choice of therapists. No objective data exists on their absolute skill level, which may have varied and the effect of their treatment was not measured. This type of problem can be considered realistic of a clinical setting where an expert will be relied upon. Care was taken in the choice of therapist but skill level is unknown. We also note that the participants in this study were tertiary students, therefore the generalizability to a wider population is speculative.

These findings suggest useful psychological interventions for acute pain are possible. There is very little previous evidence that very short interventions can be effective for acute pain. Apps and computer-based technologies are constantly being developed as treatment for pain, as well as many other disorders. Yet, evidence that technological versions of established therapies are effective is lacking. This research goes some way to filling that evidence gap. It suggests that therapies effective in the hands of skilled practitioners may also be effective

delivered in an on-line environment. Thus, we may be able to generalise that various psychological in-person therapies could be delivered effectively using technology.

In conclusion, the present hypotheses were confirmed: that a very short intervention of hypnosis or mindfulness can be effective for acute pain treatment. Secondly, DVD presentation of therapists are similarly effective as face-to-face with therapists in this scenario. This work opens the possibility of a multimedia intervention being developed for use in mild to moderate acute pains settings. Therapist-free presentations of psychological therapies should be tested in clinical settings to confirm that the results of this experiment are replicable and acceptable in clinical situations.

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# How do Sources of Meaning in Life Vary According to Demographic Factors?

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Research has identified a variety of sources for deriving meaning in one's life. The present research examined how central sources of meaning varied according to age, gender, and level of education, and, second, whether these sources predicted well-being differentially. A New Zealand community sample of 247 individuals (30 – 69 years) provided open-ended descriptions of the meaning in their lives, rated their meaning in certain domains and completed 11 well-being measures. The most frequently reported source of meaning was family, and the second was interpersonal relations. Differences were found by age, gender, and amount of education, for example, younger individuals were more likely to find personal growth meaningful, whereas older people were more likely to find standard of living and community activities meaningful.

Keywords: Sources of meaning in life; age; gender; education level; well-being

The desire to seek and attain meaning in life is a fundamental human inclination, and although there is variation in how this is approached, for example across different cultures, it is a universal process (Reker & Chamberlain, 2000). In fact, human beings are posited to be the only species to be motivated to piece together life events and experiences in order to make meaning (Emmons, 2005). This longing for meaning is a mechanism through which humans endeavour to create a sense of stability within our ever-changing existence (Baumeister & Vohs, 2002). Meaning is not only an intrinsic human motivation, but it is “an important construct in the prevention of illness, the promotion of wellness and successful adaptation to life's changing circumstances” (Reker, 2000, p. 39).

When considering meaning in life, the aim is to consider what different experiences and goals make life worth living for the individual rather than the overall meaning of a life. Thus, the experience of meaning is fundamentally

unique and reflective of themes in a person's life, though history, culture, socio-demographics and developmental stage do exert influence over values and beliefs, which in turn shape the nature of the meaning that is constructed (Prager, 1996). “People do not exist in isolation. They have families, live in communities, and share ethnic, gender, and professional backgrounds that generate specific meanings” (Bar-Tur, Savaya, & Prager, 2001, p. 255). Consequently, the meaning that individuals generate is influenced by these variables.

Although there is consensus that finding meaning is of importance, there is an absence of a unifying theory or conceptualisation of what this search constitutes (e.g., Reker & Chamberlain, 2000; Steger, 2009). The idea that two essential aspects of meaning-making are the search for and attainment of meaning is, nevertheless, echoed throughout many conceptualisations (e.g., Frankl, 1963; Reker, 2000; Steger, Frazier, Oishi, & Kaler, 2006).

However, the focus of the present investigation will be on the sources from which individuals derive a sense of meaning (the contents of the experience of meaning), rather than seeking meaning in a more general sense.

## *What is Meaningful in Life?*

Although having meaning in life has been found to be important for a multitude of reasons from the physical to psychological, it is also vital to consider what provides human beings with this sense of meaning. Empirical research indicates that meaning can arise from a variety of sources (e.g., interpersonal relationships, religious activities, personal development, O'Connor & Chamberlain, 1996). Typically, individuals experience meaning in several different spheres (Pöhlmann, Gruss, & Joraschky, 2006) and it has been suggested that deriving meaning from multiple sources is in fact protective, as in instances when meaning in one domain is compromised, the remaining sources can be strengthened and thus overall meaning is not compromised (Heine, Proulx, & Vohs, 2006).

## *Central Sources of Meaning*

The areas in life from which meaning is derived are termed sources of meaning. Sources of meaning are assembled into overarching categories in varied ways across different investigations: they are described differently, the total number of categories vary, as do the research methods of ascertaining the sources of meaning (Schnell, 2011). One approach to understanding sources of meaning

is qualitative interviews which ask individuals what is meaningful in life. De Volger and Ebersole (1981) found that human relationships, service, belief, life work, growth, pleasure, obtaining, and health were overarching categories which encapsulated the various answers. Similarly, O'Connor and Chamberlain (1996) arrived at six sources of meaning through interviews: human relationships, creativity, personal development, relationship with nature, religiosity/spirituality, and social/political beliefs. Wong (1998) took a slightly different approach and asked participants to describe the nature of an archetypal meaningful life, which produced seven sources of overall meaning. A somewhat more quantitative approach which has been utilised is to ask individuals to rate the degree to which they experience meaning in a list of different domains (e.g., Prager, Bar-Tur, & Abramowici, 1997; Reker & Wong, 1988). Additionally, Delle Fave and colleagues (2010) used a mixed qualitative/quantitative approach with open-ended answers and ratings on the following domains: family, work, interpersonal relations, health, personal growth, standard of living, religiosity/spirituality, leisure/free time, community/society, life in general, and education.

It is evident that there is quite some variation between studies as to how sources of meaning are categorised. However, one consistent finding is that interpersonal relationships have been found to be the most frequently reported source of meaning across numerous studies (e.g., Baum & Stewart, 1990; Debats, 1999; O'Connor & Chamberlain, 1996; De Vogler & Ebersole, 1981; Yalom, 1980). Social connection appears to be essential to evaluating one's life as meaningful (Lambert et al., 2010). However, when the next most important sources are probed, a varied picture emerges with no consistent pattern. Examples of the second most important sources of meaning include preservation of values (Bar-Tur & Prager, 1996; Prager, 1998), personal growth (Prager, 1996), creativity (O'Connor & Chamberlain, 1996), and work (Debats, 1999; Delle Fave et al., 2010).

### *Variation across the Lifespan*

Research has found support for the idea that people's meaning in life becomes more integrated and consolidated with age (Dittmann-Kohli & Westerhof, 2000). Reker and colleagues (1987) discovered that older individuals possess a more established sense of purpose in life, whereas their younger counterparts exhibited a stronger goal focus and anticipated that their futures would be meaningful.

One challenge for meaning, which is characterised by stability, is the constant adaptation required due to the perpetually changing nature of life (Bar-Tur & Prager, 1996). As individuals age, previous and current experiences are constantly re-evaluated in response to personal values so that they may be fitted together into a self-concept (Prager, 1998). It has been suggested that while the sources from which people derive a sense of meaning change at different developmental stages, one's overall level of meaning in life stays constant across the lifespan (Yalom, 1980); this contention has been supported in empirical research (Prager, 1998; Zika & Chamberlain, 1992).

There have been mixed results with regard to differences in sources of meaning according to age. For example, research has unveiled differences according to age with acknowledgment of achievement, personal growth and hedonistic enjoyment as being more important for younger people; whereas, preserving values and financial security were more important for older individuals (Prager, 1996; Prager, 1998). Family has been found to be the most important source of meaning for younger people (Lambert et al., 2010). Religiosity/spirituality, tradition, practicality, morality and reason have been found to be of greater importance in older age (Schnell, 2009). Further, older people have been found to most highly endorse personal relationships, preserving values, humanistic concerns and financial security (Bar-Tur & Prager, 1996).

### *Gender and Level of Education*

There appears to be an influence of gender on the sources of meaning which are deemed important, however

there is some variation between research investigations. Although interpersonal relationships appear to be universally meaningful to people, research has revealed this source to be more important for females (Debats, 1999; Wong, 1998). Furthermore, religiosity/spirituality is more valued by females (Wong, 1998), as are well-being and relatedness; self-actualisation seems to be a central source for males, and this difference is thought to reflect the female/communion and male/agency associations (Schnell, 2009). Another study revealed work, love/marriage, independent pursuits, and leisure as centrally important for males, and birth of children, love/marriage, and work as most meaningful for females (Baum & Stewart, 1990).

Investigations of differences in sources of meaning as a function of education level are few, however it has been found that older adults with higher education possess greater purpose in life overall (Pinquart, 2002). In relation to the more specific sources of meaning, one study revealed religiosity/spirituality, tradition, normality, practicality, and reason to be of reduced significance the more educated individuals become (Schnell, 2009). When considering the realms in life in which people hope to experience meaning and fulfilment, individuals with less education frequently reported the domains of family and health more often than their more educated counterparts, whose life longings tended to emphasise personal characteristics (Kotter-Grühn, Wiest, Zurek, & Scheibe, 2009).

### *Meaning, Well-being and Age,*

#### *Gender, and Level of Education*

Previous research has ascertained that having meaning in life is positively associated with happiness and life satisfaction (e.g., Cohen & Cairns, 2011; Park, Park, & Peterson, 2010; Reker et al., 1987; Steger, Oishi, & Kashdan, 2009; Zika & Chamberlain, 1992). Furthermore, feeling that one's life is imbued with meaning acts as a buffer against experiencing depression (e.g., Feldman & Snyder, 2005; Mascaro & Rosen, 2006; Steger, Kashdan, Sullivan, & Lorentz, 2008) and rumination

(Steger et al., 2008). Research has also found that specific sources of meaning were positively related to positive well-being outcomes, but unrelated to negative well-being outcomes (Schnell, 2009). However, it is not known whether various sources of meaning are more predictive of positive well-being as a function of demographic variables, or whether certain sources of meaning are more predictive of well-being for males or females, younger or older people, or those with less or more education.

### Goals of the Present Study

Although there is convergence on the idea that relationships with other people make the largest contribution to a sense of meaningfulness, different interpersonal relationships might not have the same degree of impact. There is some evidence to suggest that familial relationships are more strongly linked to meaning than friendships (Delle Fave et al., 2010; Lambert et al., 2010). Research is varied when it comes to unearthing the next most important sources of meaning. Therefore, the current research expected that family would be the most important source of meaning followed by interpersonal friendships (Hypothesis 1). In the absence of consistency in previous research as to the next most meaningful sources, the current investigation endeavoured to explore this order of ranking.

Though there have been differences with what sources are important at different stages across the lifespan, the results have not been consistent. In the absence of consistent empirical research to inform the hypothesis, we turn to theoretical assertions as to what is expected to be meaningful. It is theorised that younger people are preoccupied with self-interests such as identity establishment, materialism, creation of relationships and being productive, whereas in older age, people become more concerned with the well-being of others and humankind in general, finding community activities, welfare of others and religious activities to be of importance (Prager, 1996). We expected that younger individuals would highly endorse personal growth, interpersonal relations, leisure activities and work, and their older counterparts

would value community activities and religiosity/spirituality (Hypothesis 2). Again, findings according to gender have not been consistent across research, but research has shown that males have a preference for agency and females for communion (Schnell, 2009). Thus, we expected that females would more highly endorse interpersonal relationships and religiosity/spirituality, and males would more highly value work (Hypothesis 3). Based on previous research (Kotter-Grühn et al., 2009; Schnell, 2009), we anticipated that family, health, and religiosity/spirituality to be of greater importance to those individuals possessing less education (Hypothesis 4).

Lastly, we expected that the hypothesised important sources of meaning for different age groups, genders, and levels of education would be more predictive of positive well-being. Specifically we anticipated that personal growth, interpersonal relations, leisure, and work would be more predictive of positive well-being for younger people, and community activities and religiosity/spirituality would be more predictive of positive well-being for older people (Hypothesis 5). We hypothesised that interpersonal relations and religiosity/spirituality would be more predictive of positive well-being for females, and work would be more predictive of positive well-being for males (Hypothesis 6). Finally, we anticipated that family, health, and religiosity/spirituality would be more predictive of positive well-being for those with less education (Hypothesis 7).

## METHOD

### Participants

Participants included in this study were 247 individuals from a wider cross-cultural investigation, the Eudaimonic and Hedonic Happiness Investigation (EHHI). The sample was composed of 139 females and 108 males, and the age of participants ranged from 30 to 69 years ( $M = 44.28$  years;  $SD = 9.30$ ). The participants included in this sample were geographically scattered around New Zealand, mostly centring around Wellington and Auckland. The sample included 112 individuals whose education level was non-tertiary, and

135 who held a tertiary degree.

### Measures

**Eudaimonic and Hedonic Happiness Investigation.** The EHHI (Delle Fave et al., 2010) is a mixed qualitative-quantitative questionnaire asking participants to outline their goals, meaning in life and their subjective definition of happiness. The present study will focus on the qualitative descriptions of what participants described was meaningful in their lives, and their quantitative endorsement of meaningfulness in 11 different domains. Participants were asked to "Please list the three things that you consider most meaningful in your present life". Next, participants indicated on a 7-point Likert scale from 1 (*not meaningful at all*) to 7 (*extremely meaningful*), the degree to which they derived meaning from the following domains: work, family, standard of living, interpersonal relationships, health, personal growth, leisure, religiosity/spirituality, community issues, society issues, and life in general.

**Subjective Happiness Scale.** The Subjective Happiness Scale (SHS; Lyubomirsky & Lepper, 1999) is a 4-item measure of global subjective happiness. Participants are asked to describe their degree of happiness in relation to their peers and archetypal happy and unhappy people. An example question is "Compared with most of my peers, I consider myself:" and on a 7-point Likert scale participants choose from 1 (*less happy*) to 7 (*more happy*). Another item is "Some people are generally happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterisation describe you?" and respondents chose an option between 1 (*not at all*) and 7 (*a great deal*). The SHS is a reliable measure, with alphas ranging from .85 to .95 (Lyubomirsky & Tucker, 1998). This was also evidenced in the present investigation with an alpha of .87.

**Satisfaction with Life Scale.** The Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) is a 5-item subjective measure of a person's degree of satisfaction with their life as a whole. Items included are "In most ways, my life is close to my ideal" and "I am satisfied with my life"

and responses are indicated in a 7-point Likert scale from 1 (*strongly disagree*) to 7 (*strongly agree*). This scale has good internal consistency, with alphas between .79 and .89 (Pavot & Diener, 1993). This reliability was also seen in the current research as the alpha was .89.

#### **Mental Health Continuum.**

The short form of the Mental Health Continuum (MHC-SF; Keyes, 2009) is a 14-item measure of emotional, social, and psychological well-being. Participants indicate how often they felt a certain way during the past month on a 7-point Likert scale from 1 (*never*) to 7 (*every day*). "Interested in life" is an example of an item in the emotional well-being subscale, "That you had something important to contribute to society", is one from the social well-being subscale, and "That you had experiences that challenged you to grow and become a better person" is an example from the psychological well-being subscale. The scale has demonstrated good internal consistency with alphas greater than .80 (Keyes, 2009). These reliabilities were also found in the present study with alphas of .84 for emotional well-being, .78 for social well-being and .82 for psychological well-being.

#### **Basic Psychological Needs Scale.**

The Basic Psychological Needs Scale (BPNS) is a measure stemming from self-determination theory, which posits three basic psychological needs: autonomy, relatedness and competence (Deci & Ryan, 2000). The 9-item measure used here is an adaptation and examples from the three subscales are: "I feel like I am free to decide for myself how to live my life" (autonomy); "People are generally pretty friendly towards me" (relatedness); and "People I know tell me I am good at what I do" (competence). Participants indicate responses on a 7-point Likert scale from 1 (*not at all true*) to 7 (*very true*). The reliability of the scale is acceptable, with alphas for the subscales ranging from .69 to .86 (Gagné, 2003). In the present research, the alphas were .70 for autonomy, .69 for competence and .76 for relatedness.

#### **Depression Anxiety Stress Scales.**

The Depression Anxiety Stress Scales (DASS; Lovibond & Lovibond, 1995) measure depression, anxiety and stress.

A shortened 7-item version of the depression scale was utilised here. Participants describe how much they felt that statements such as "I couldn't seem to experience any positive feeling at all" and "I felt I wasn't worth much as a person" were applicable over the previous week. Responses were indicated on a 7-point Likert scale from 1 (*not at all*) to 7 (*very much, or most of the time*). The DASS has excellent internal consistency with an alpha above .91 (Lovibond & Lovibond, 1995). This was also the case with the current research as the alpha was .88.

**The Positive and Negative Affect Schedule.** The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) measures affective well-being. The scale has 28 items, and individuals are asked how much they experience different feelings on average on a 5-point Likert scale from 1 (*very slightly or not at all*) to 5 (*extremely*). Examples from the positive affect scale include "interested" and "proud" and items in the negative affect scale are "ashamed" and "jittery". The PANAS has demonstrated excellent reliability with alphas of .89 for positive affect and .85 for negative affect (Crawford & Henry, 2004). This reliability was also evident in the current study with alphas of .90 for both positive and negative affect.

#### **Procedure**

In late 2010, recruitment of participants began and this process was concluded by mid-2012. A variety of recruitment methods were utilised, for example posters at the university and locations around Wellington city, national newspaper advertisements, and mail-drops in Wellington city. Individuals participated in the research on an entirely voluntary basis and were therefore able to withdraw at any time. The Victoria University of Wellington Ethics Committee granted ethical approval to conduct the research.

Participants completed the questionnaire on-line using the Survey Monkey website. It took approximately 30-40 minutes on average for participants to complete the questionnaire. As a thank you, participants were posted a \$10 voucher of their choice. Participants were sent reminders to complete the questionnaire if they had not done

so after registering for the research. Participants completed the questionnaire in English.

#### **Coding**

The qualitative meaning descriptions were coded with the possible 11 codes being: work, family, standard of living, interpersonal relationships, health, personal growth, leisure, religiosity/spirituality, community issues, life in general, and education. Two coders coded 25% of the responses in order to examine inter-rater reliability. Reliability for coding of the things that were described to be meaningful was excellent (Cohen's  $\kappa = .94$ ). Each of the coders coded 50% of the responses analysed here.

#### **Design**

As part of the broader EHHI cross-national study, we recruited individuals who would complete a three-way crossed design: age (30–39, 40–49, 50–60+) by gender (male, female) by level of education (tertiary, non-tertiary). The target sample was 216, but we ultimately recruited 247 participants. The crossed design yielded approximately equal numbers of individuals in each of the 12 cells of the design.

## **RESULTS**

So as to avoid producing a huge number of results (if analyses were conducted with all the individual well-being variables), a data reduction technique was employed. The 11 well-being variables were transformed into z-scores and then combined into a single measure of overall positive well-being. The internal reliability of the positive well-being measure was excellent with an alpha of .82.

#### **What are the Most Common Sources of Meaning?**

When asked to provide three things that were meaningful in life, participants reported an average of 2.98 responses. Figure 1 delineates the percentages of mentions for the 11 domains. Family was by far the most commonly cited source of meaning in life, with an overwhelming majority of mentions (36.14%). Interpersonal relations was the next most mentioned source of meaning (14.40%), followed by personal life (9.65%) and work (8.83%).



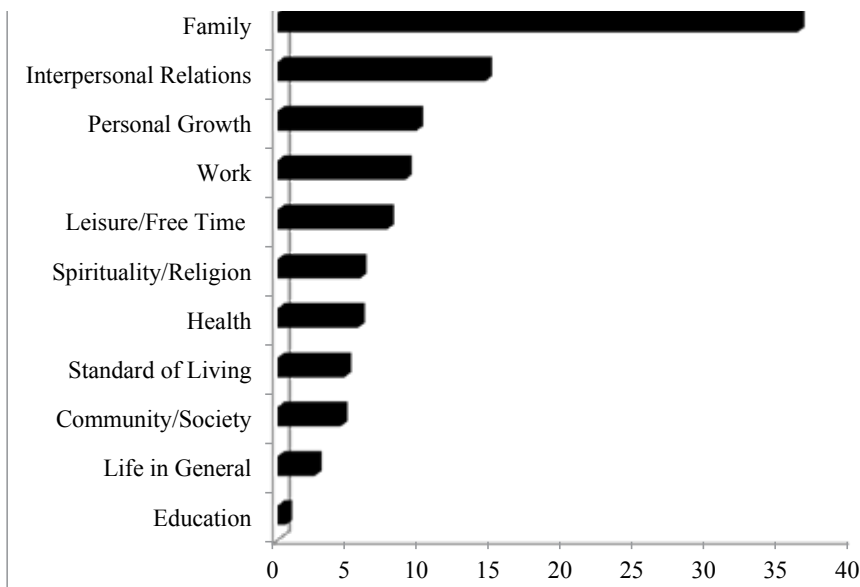


Figure 1. Percentages of qualitative mentions of meaningful things in life.

The least commonly reported sources of meaning were life in general (2.6%) and education (.54%). This result was consistent with Hypothesis 1 (H1), which stipulated that family would be the most commonly reported source of meaning, followed by interpersonal relations. The degree to which other sources were mentioned will help to provide a clearer understanding of other important sources of meaning.

Table 1  
Levels of meaning derived from eleven quantitative domains.

Quantitative Domain	M	SD
Family	6.43	1.12
Health	6.30	0.88
Life in General	6.13	1.02
Interpersonal Relations	6.10	1.05
Personal Growth	5.93	1.08
Leisure/Free Time	5.67	1.11
Standard of Living	5.15	1.25
Work	5.13	1.42
Community Issues	4.82	1.33
Society Issues	4.64	1.43
Spirituality/Religion	4.34	2.18

The quantitative ratings of how meaningful various life domains were reflected some variation from the qualitative responses of meaningful things in life. Family was still the domain which people described as most meaningful, but the next most meaningful was health, followed by life in general. (See Table 1)

Family being the most important was also consistent with H1, however health and life in general being the next most important sources was not expected. This may reflect an effect of method of ascertaining meaning: the meaning that comes to mind when asked an open-ended question vs. the degree to which one endorses domains when presented with a list (some of which might not be thought of spontaneously).

**Did Sources of Meaning Vary According to Age, Gender, and Level of Education?**

Chi-square analyses were performed to examine the relations between qualitatively reported meaning domains and age, gender and level of education. Relationships were found between age and standard of living,  $\chi^2(2, N = 247) = 6.06, p < .05$ , and community issues,  $\chi^2(2, N = 247) = 6.84, p < .05$ . People aged 30 – 49 were less likely to rate standard of living and community issues as meaningful compared to those individuals aged 50 – 60. These findings provided minimal

support for H2 which expected older people to endorse community issues more than their younger counterparts (the other hypothesised differences, younger people valuing personal growth, interpersonal relations, leisure activities and work, and older people endorsing religiosity/spirituality, were not evident).

Relationships were found between gender and leisure/free time,  $\chi^2(1, N = 247) = 7.60, p < .01$ , and life in general,  $\chi^2(1, N = 245) = 8.39, p < .01$ . This result indicates that leisure/free time was less likely to be reported as meaningful by females than males, and life in general was more likely to be meaningful for females than males. These findings were not anticipated by H3, which expected females to highly endorse interpersonal relationships and religiosity/spirituality, and males to value work.

We also found a relationship between education level and community issues,  $\chi^2(1, N = 247) = 4.18, p < .05$ . Those individuals with tertiary level education were more likely to report community issues as meaningful compared to those individuals with non-tertiary education. This result did not support H4, which expected family, health, and religiosity/spirituality to be more important to those with less education.

To investigate whether meaningfulness of quantitative domains varied according to age, a three-way multivariate analysis of variance (MANOVA) was computed on gender (males, females) by age group (30 – 39, 40 – 49, 50 – 60+) by educational level (tertiary, non-tertiary) on the 11 domains of meaningfulness (work, family, standard of living, interpersonal relations, health, personal growth, leisure/free time, religiosity/spirituality, community issues, society issues, life in general). The MANOVA yielded a significant multivariate main effect of age ( $F(22, 450) = 1.72, p < .05$ , partial  $\eta^2 = .08$ ), and the univariate result was significant for personal growth ( $F(2, 235) = 3.71, p < .05$ , partial  $\eta^2 = .03$ ). A post-hoc Tukey test revealed that individuals aged 50 – 60+ found personal growth to be significantly less meaningful than those aged 30 – 39. This result was consistent with H2, however the other hypothesised age-

related differences were not evidenced. The multivariate main effect for gender was non-significant ( $F(11, 225) = 1.34, p = .20$ ), and this result suggests that males and females did not significantly differ in their endorsement of these domains.

The MANOVA also yielded a significant multivariate main effect for educational level ( $F(11, 225) = 1.96, p < .05$ , partial  $\eta^2 = .09$ ), and the univariate results were significant for family ( $F(1, 235) = 4.25, p < .05$ ), standard of living ( $F(1, 235) = 11.70, p < .001$ ), health ( $F(1, 235) = 3.83, p < .05$ ), leisure/free time ( $F(1, 235) = 4.20, p < .05$ ), and life in general ( $F(1, 235) = 4.65, p < .05$ ). A post-hoc Tukey test indicated that individuals with non-tertiary education found the domains of family, standard of living, health, leisure/free time, and life in general, to be more meaningful than those with tertiary education. This result provided support for H4, though the differences in the domains of leisure/free time, standard of living, and life in general were not expected, and we did not find a difference with regard to endorsement of religiosity/spirituality.

None of the two-way interactions nor the three-way interaction reached statistical significance.

**Do Age, Gender, and Level of Education Influence the Relationship between Domains and Positive Well-being?**

In order to examine whether meaning from various domains differentially predicted positive well-being in relation to age, gender and level of education, moderation analyses were computed. Age was not found to be a significant moderator in any of the cases, so H5 was not supported.

In the first regression, gender moderated the relationship between meaning from personal growth and positive well-being ( $\beta = .19, p < .05$ ). A significant simple slope was found for females (slope =  $.16, t = 2.79, p < .01$ ), indicating that females manifested a positive relation between meaning from personal growth and positive well-being, but males did not (see Figure 2).

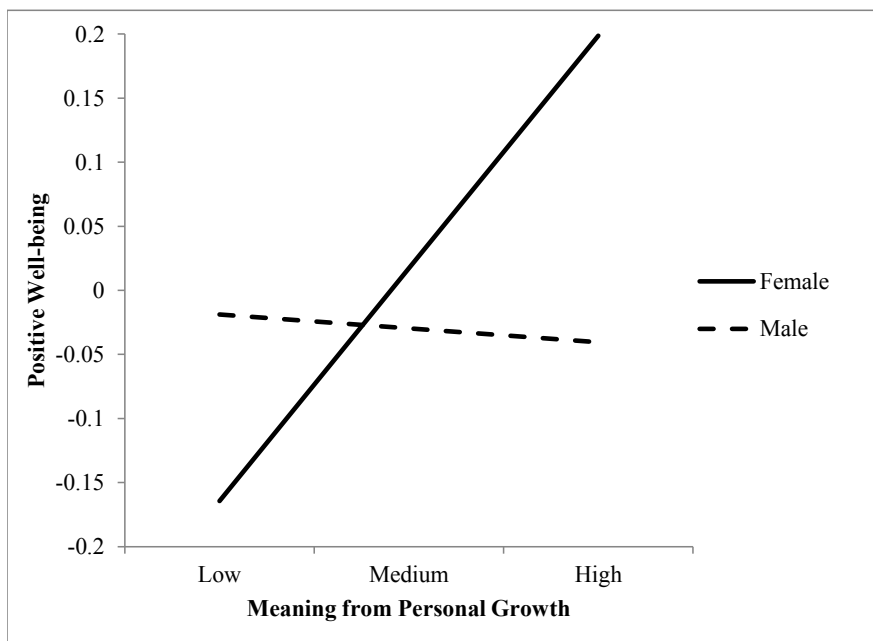


Figure 2. Moderation by gender on meaning from personal growth to positive well-being.

In the next regression, gender moderated the relationship between meaning from life in general and positive well-being ( $\beta = .20, p < .05$ ). Significant simple slopes were obtained for males (slope =  $.23, t = 3.50, p < .001$ ) and females (slope =  $.43, t = 7.95, p < .001$ ), however, it was a more strongly positive relationship for females (see Figure 3).

This result is inconsistent with H6, which expected that interpersonal relations and religiosity/spirituality would be more predictive of positive well-being for females, and work would be more predictive of positive well-being for males.

Level of education was found to moderate the relationship between meaning from religiosity/spirituality and positive well-being ( $\beta = .10, p < .05$ ). A

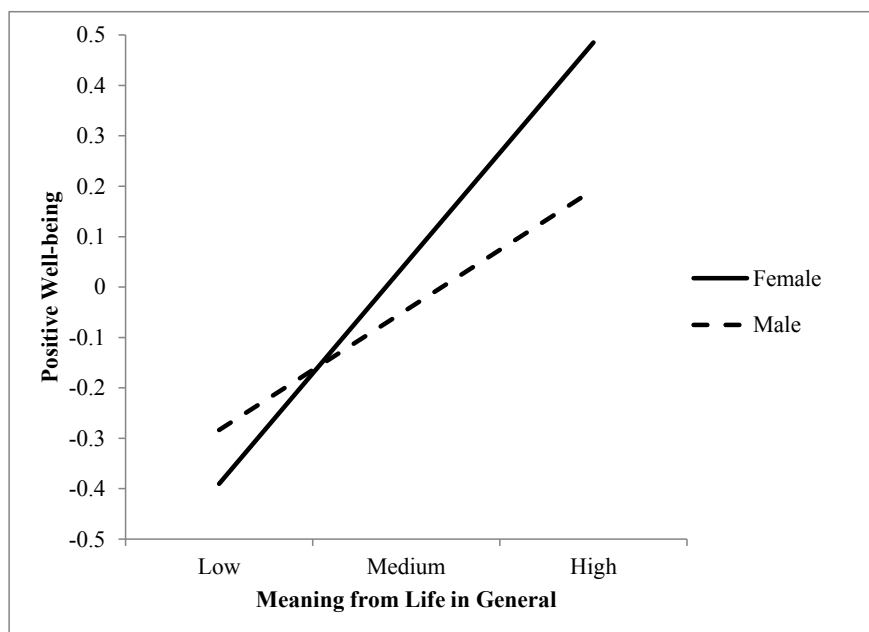


Figure 3. Moderation by gender on meaning from life in general to positive well-being

significant simple slope was obtained for those with tertiary education (slope = .09,  $t = 3.06$ ,  $p < .001$ ), showing that deriving meaning from religiosity/spirituality was positively related to well-being for those individuals possessing tertiary education (see Figure 4).

4.87,  $p < .001$ ), and non-tertiary (slope = .48,  $t = 7.29$ ,  $p < .001$ ) education levels, however the relationship was stronger for those with non-tertiary education (see Figure 5). These results were not expected by H7, as we anticipated that family, health, and religiosity/spirituality would be more predictive

## DISCUSSION

The main goal of this research was to examine the nature of what people find to be meaningful in life and how this might vary according to demographic factors (specifically age, gender, and level of education). Previous research has ascertained the most frequently cited contributor to meaning in life is interpersonal relationships (e.g., Baum & Stewart, 1990; Debats, 1999; O'Connor & Chamberlain, 1996; De Vogler & Ebersole, 1981; Yalom, 1980), with additional research finding that familial relationships were of particular importance (Delle Fave et al., 2010; Lambert et al., 2010). The qualitative descriptions of meaning in the present research replicated the finding that family is the most important source of meaning in life, followed by other interpersonal relationships. When individuals quantitatively rated the degree to which certain domains were meaningful, family was still the most important, however health and life in general were the next most important; this result was not expected based on previous research and might suggest a degree of lesser insight into the importance of health and life as a whole unless prompted to think of these issues. Personal growth and work were the next most qualitatively mentioned sources of meaning. These findings are consistent with previous research in which personal growth (Prager, 1996) and work (Debats, 1999; Delle Fave et al., 2010) were ranked high. Overall, it appears that when individuals are asked to elucidate the domains in life that are meaningful, relationships with others, especially family, feature heavily and some emphasis is placed on personal development and work endeavours; however when the domains are provided first, health and life in general also feature prominently.

Research has ascertained that meaning in life changes across the lifespan to become more integrated (Dittmann-Kohli & Westerhof, 2000), but generally the degree of meaningfulness in life is relatively constant (Yalom, 1980), with the sources of meaning showing variability in size of contribution (Prager, 1998; Zika & Chamberlain, 1992). The present research found that younger

Figure 4. Moderation by education level on meaning from spirituality to positive well-being.

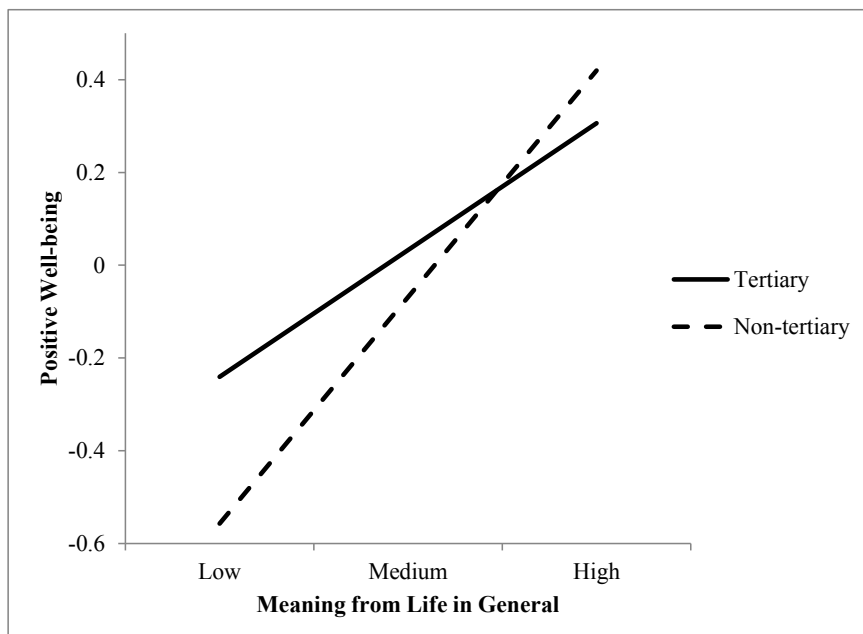
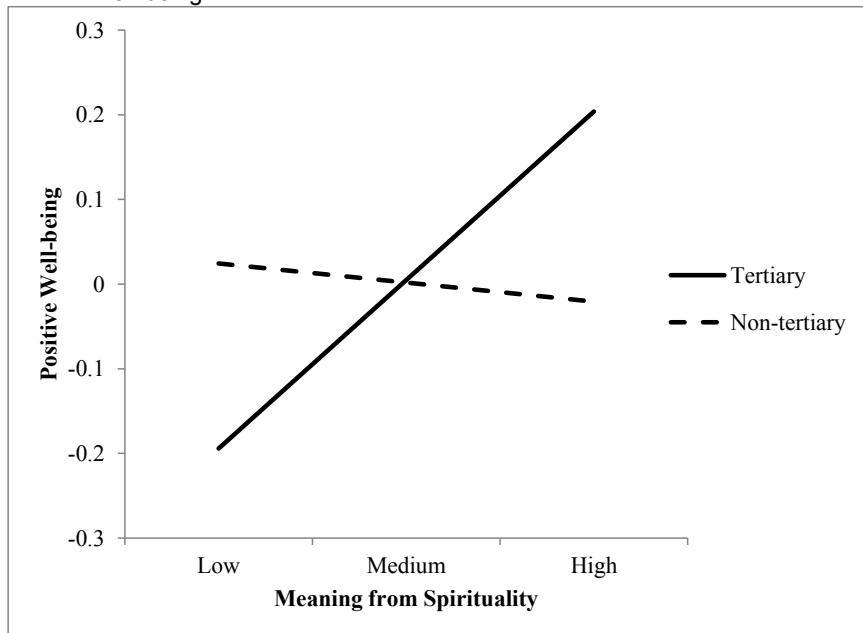


Figure 5. Moderation by education on meaning from life in general to positive well-being.

Finally, education moderated the relationship between meaning from life in general and positive well-being, ( $\beta = -.21$ ,  $p < .05$ ). Significant simple slopes were found for tertiary (slope = .27,  $t =$

of positive well-being for those with less education.

individuals aged 30 – 49 were less likely to report that standard of living and community issues were important sources of meaning than their older counterparts aged 50 – 60+. This outcome is generally consistent with research from Schnell, which found that older people place greater importance on practicality and morality (2009), and findings from Bar-Tur and Prager (1994) who found that preserving values, humanistic concerns and financial security were important in older age. Additionally, the present research found that personal growth was more important for those aged 30 – 39 than those aged 50 – 60+; although this result was not predicted by previous research, it has been theorised that identity development and self-exploration is more integral in younger years (Steger et al., 2009). Overall this pattern suggests that older individuals have spent time on tasks important for the self, such as developing an identity and facilitating personal growth, enabling them to put effort into establishing financial security for their family and making a contribution to future generations.

Research examining gender differences in sources of meaning has shown that interpersonal relationships are more valued by females than males (Debats, 1999; Wong, 1998). Other research has revealed that well-being and relatedness are more important for females and self-actualisation is more important for males (Schnell, 2009). The present research showed that leisure activities contributed to males' meaning in life more than females, and deriving meaning from life in general was more important for females. Research on gender differences with regard to leisure activities has suggested that due to gender inequity, females are more constrained from engaging in such pastimes than males. Thus, this difference in meaningfulness may reflect the fact that females are less able to participate in leisure activities, so are less likely to rank this source highly (Shaw, 1994). Further, when considering how different sources of meaning contributed to well-being according to gender, the results showed that meaning from personal growth and life in general predicted well-being for females. The gender difference found

for meaning from personal growth contributing to well-being is consistent with research which has found that personal growth (but not meaning derived from it) was more predictive of well-being for females than males (Robitschek, 1999). The tendency for life in general to be more meaningful for females may suggest that women take a broader perspective when considering meaning, and consider the degree to which their whole life is imbued with a sense of meaning.

Little research has examined variations in endorsed sources of meaning as moderated by level of education, but one study (Schnell, 2009) has found that religiosity/spirituality, tradition, normality, practicality and reason were less important for more educated individuals. The current research revealed community issues to be of greater importance for those individuals possessing a tertiary education, which was not expected. However, involvement with community issues has been found to increase as individuals acquire higher education (Coulthard, Walker, & Morgan, 2002), so this domain may be more meaningful for those with more education because they are more likely to be engaged with their community. Additionally, family, standard of living, health, leisure activities and life in general were deemed to be of greater importance for individuals with non-tertiary education. This pattern is partially consistent with research which found that life hopes pertaining to family and health to be more important for females with less education (Kotter-Grühn et al., 2009); the authors argue that this is due to the fact that individuals with less education are likely to experience disadvantage with regard to health and have experienced less family stability. Additionally those with less education tend to have a lower standard of living (Scott, 2010), so perhaps achievement of meaning in these domains is consequently of greater importance. Lastly, when considering how different sources of meaning might differentially impact well-being in relation to level of education, the present research discovered that religiosity/spirituality predicted well-being for those individuals possessing tertiary education, whereas life in general did

for those with non-tertiary education. This result suggests that for individuals with less education, viewing one's entire life as meaningful, in a global way, is essential in facilitating a sense of well-being. And additionally it shows that although those individuals with tertiary education might experience meaning in a variety of domains, meaning derived from spiritual beliefs is especially important in fostering well-being.

### *Limitations*

The present research is not without limitations. In the present instance, the data were cross-sectional and so while the research has generated some findings pertaining to differences in sources of meaning across the lifespan, these would be better examined using longitudinal data. An aspect of the study, which is both a strength and a limitation, is the use of the mixed qualitative-quantitative design. By asking individuals to describe the nature of the meaning in their life using their own words, greater detail and subtlety in responding is facilitated, however coding this information did result in complex, detailed information being reduced to broad categories. Additionally, this approach has not been standardised, rather it is an exploration into individuals' meaning frameworks, so future research should endeavour to achieve standardisation in order for the research to be more scientifically rigorous and generalisable (Delle Fave et al., 2010).

### *Practical Implications*

This research has provided support to the idea that individuals find interpersonal relationships, especially with family members, to be of utmost importance to their sense of meaning. However it is evident that there is some variation between what is reported to be meaningful in a free recall situation compared to what is rated to be meaningful when individuals are prompted. In particular, the domain of health was noted as meaningful when people were asked to consider a variety of stated domains, but it slipped in importance when people were asked about meaning in life in a free recall methodology. Some domains, such as health, may be 'taken for granted' as they are typically positive and stable for

most people, and it may be that the open-ended format may be less appropriate to assessing these types of domains.

This research also confirmed the idea that meaning in life is fluid across the lifespan with different spheres of life contributing to different degrees of meaning at different ages, for example, financial stability and making a contribution to the wider community both increasing in meaningfulness with age. However, it is also evident that some domains maintained their importance over time, suggesting that some areas of life retain a sense of meaning, regardless of age. It also showed that what is meaningful in life varies by gender and level of education, highlighting how the process of making meaning is affected by demographic and sociocultural forces. This pattern of results has implications for interventions which might be developed around the idea of bolstering a sense of meaning in order to promote well-being: trying to create a “one-size-fits-all” approach or algorithm for achieving a meaningful existence would seem to be unwise, and instead the process seems to depend on individual and life stage characteristics.

Further, the present research has demonstrated that certain meaning domains predict overall well-being, although age, gender, and level of education moderate these relationships. This realisation is useful to know as it validates the belief that demographic statuses shape and mould the acquisition of meaning from different sources. For example, it seems that deriving a sense of meaning from personal growth is vital for women’s well-being. Future research might examine how other factors, e.g., personal qualities such as curiosity and determination, influence the development of an individual’s meaning in life and investigate whether certain domains are more predictive of well-being according to such variables. Further, it would be important to conduct longitudinal research on the sources of meaning in life as it is important to discover how the nature of meaning changes over time, rather than comparing different age cohorts as was done here. In sum, the present research has identified several critical aspects of life which reliably provide people at large with a sense of meaning, but at the

same time the research has highlighted the fact that significant variation between people exists, signifying the individual nature of making meaning.

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# Politics and Post-Colonial Ideology: Historical Negation and Symbolic Exclusion Predict Political Party Preference

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The Dark Duo Model of Post-Colonial Ideology proposes that two core ideologies (Historical Negation and Symbolic Exclusion) play a key role in shaping intergroup relations in post-colonial society. Using a longitudinal panel study of New Zealanders (N = 3,769), we examined the effects of these ideologies on political party preferences from 2009 to 2010. Historical Negation (denying the relevance of historical injustice) and Symbolic Exclusion (discounting indigenous peoples as representative of the national category) uniquely predicted cross-lagged changes in support for conservative (versus liberal) political parties. Testing these models in reverse showed that political party support also predicted the uptake of these ideologies. These effects held after controlling for a host of demographic factors, including socio-economic status, gender, ethnicity, religious affiliation, employment and education. We argue that Historical Negation and Symbolic Exclusion legitimize social inequality in post-colonial societies by shaping political party support, and that change in political support also leads to the endorsement or rejection of these ideologies over time. These findings demonstrate the importance of considering culture-specific ideologies when predicting changes in political attitudes and voting behaviour.

Keywords: Political Attitudes, Ideology, Party Identification, Symbolic Politics, Longitudinal Panel Study

It has long been argued that ideology shapes how people interpret and attend to information in their social world (Marx & Engels, 1846/1970; Rokeach, 1968). This perspective assumes that ideologies are both created and shared by people, while also suggesting that they frame the ways in which people think about politics. Accordingly, we define ideology as a shared set of beliefs that shape people's cognitive, affective and behavioural responses to the environment (also see Jost, 2006; Tedin, 1987). As such, ideologies can be seen as an important influence on the political party preferences of the voting public (Rokeach, 1968; Jost, Federico & Napier, 2009). Consistent with this premise, research indicates that various ideologies are correlated with both voting behaviour and support for different political systems and parties (Jackman, 1994; Jost, 2006; Sidanius

& Pratto, 1999). Likewise, ideologies are reliably associated with intergroup attitudes (Altemeyer, 1998; Duckitt, Wagner, du Plessis & Birum, 2002; Sidanius & Pratto, 1999), personality traits (Carney, Jost, Gosling & Potter, 2008; Chirumbolo & Leone, 2010; Jost, Glaser, Kruglanski & Sulloway, 2003; Sibley & Duckitt, 2008), existential needs (Jost, 2006) and even bedroom décor (Carney et al., 2008).

In something of a call to arms for scholars of ideology, Jost (2006) reported that people's self-placement as liberal versus conservative explained 85% of the variance in vote choice for United States' Presidential Elections held between 1972 and 2004. While these findings demonstrate that ideology and voting behaviour are strongly linked, the vast majority of research in this area focuses exclusively on specific policies and/or intergroup

attitudes (e.g., Sibley & Duckitt, 2010). Likewise, these studies typically rely on a single liberal to conservative dimension (e.g., Jost, 2006). Such a unidimensional approach to ideology may capture how parties are *generally* organised in multi-party systems, but it makes it difficult to examine nuanced differences in support *between* multiple parties (Bartels, 2012; Green, Palmquist, & Schickler, 2002; Jost, 2006). Perhaps most importantly, the literature on the ideological correlates of political attitudes is often based on cross-sectional data at one time point, so the research is unable to even infer the direction of causation (Jost, Federico & Napier, 2009). As such, there is an absence of evidence looking at the idea that ideology might affect political party attitudes and voting behaviour over time. Indeed, it is possible that voting behaviour affects ideology over time.

Here, we examine the link between context-specific ideologies and political party support in a large, nationally representative longitudinal sample of New Zealanders. In doing so, we focus on two ideologies that are particularly relevant to socio-political attitudes in the New Zealand context: Historical Negation and Symbolic Exclusion (Sibley, 2010). These two ideologies comprise what has been referred to as a Dark Duo of Post-colonial Ideology in New Zealand, as they are posited to work together to maintain systemic inequality between New Zealand Europeans and the indigenous Māori people. These ideologies may, to some extent, reflect conservatism, the other side of the dimensions – Historical Recognition and Symbolic Projection may reflect liberalism (Sibley, 2010). However, these ideologies are specific to New Zealand and perhaps for other post-colonial societies. Their specificity and

suitability to the New Zealand context is what makes them different to typical measures of ideology across cultures.

According to Sibley (2010), Historical Negation indexes the extent to which past injustices perpetrated against indigenous peoples by European colonisers are seen as relevant to resource allocation in contemporary society. A low score on Historical Negation is referred to as Historical Recognition, or believing that reparations for these historical injustices are relevant to modern day New Zealand politics. Symbolic Exclusion, on the other hand, captures the degree to which indigenous culture is excluded from the identity of a nation. The other side of this ideology is Symbolic Projection, or those who embrace Maori culture as a key part of New Zealand's culture. Sibley argued that the dark side of these ideologies arise from two unique features of the intergroup history between Māori and European settlers (Pākehā) in New Zealand: *the undeniable nationality* of Māori as the indigenous group and the *objective historical injustice* perpetrated against Māori by European colonists. Sibley further proposed that these two ideologies operate in tandem as a Dark Duo that delegitimizes claims against the former perpetrators of historical injustices and minimises the place of the indigenous culture in contemporary society.

Since Historical Negation and Symbolic Exclusion are ideologies that help maintain the status quo in post-colonial nations (namely, in New Zealand; Sibley, 2010), endorsement of these belief systems should be associated with support for conservative political parties (cf. Jost, 2006; Jost et al., 2003). That is, supporters of right-leaning parties should endorse Historical Negation and Symbolic Exclusion more than supporters of left-leaning parties. Whereas left leaning parties may support historical reparations and a greater role for Maori culture in New Zealand society. In this paper, we utilize the unique aspects of the New Zealand Attitudes and Values Study (NZAVS) to test whether these two ideologies might affect political party support over a one-year period and begin to investigate plausible causal directions for this, also examining the possibility that this

relationship is bidirectional.

### *Ideology and Politics*

There has been much debate over the definition of ideology and its role in explaining voting behaviour (e.g., Converse, 1964; Shils, 1968). However, in his review of the literatures in sociology, psychology and political science, Jost (2006) found that most definitions of ideology share several common elements. Namely, they describe ideology as “a belief system of the individual that is typically shared with an identifiable group and that organises, motivates and gives meaning to political behaviour” (Jost, 2006, p. 653). That is, ideologies are shared systems of meaning that influence people's cognitive, affective and motivational responses to the environment (Tedin, 1987). In this sense, ideologies differ from individual attitudes or opinions in that the former are a set of consensually held beliefs subscribed to by a large group of people (Tedin, 1987). Some scholars have added that ideologies are prescriptive beliefs in that they tell people about how the world *should* be, particularly in the domain of intergroup relations (Cohrs, 2012). This implies that ideologies have the potential to shape public opinion (Jost, Federico, & Napier, 2009). This raises questions of whether changes in ideology can lead to changes in voting behaviour and political party support, or vice versa.

At a group level, ideologies arise from external authority or elite discourses about history and culture (Marx & Engels, 1846/1970; Federico & Goren, 2009; Rokeach, 1968; Zaller, 1992) and are specific to different socio-structural conditions and historical periods, which provide a kind of “ideological climate” (Cohrs, 2012). Ideologies change over time, especially in response to changes in socio-structural conditions. These socio-structural conditions include the historical context of intergroup relations in a given society, as well as contemporary power and status differentials between groups, thus in addition to general measures of ideology, there is a need for measures of ideology to be context-specific (Jost, 2006; Sibley & Liu, 2012). For example, issues considered “left-wing” (or “right-wing”) depend on whether

or not someone is looking at a given policy in the US or Canada (also see Jost, 2005). Elite discourses both add and reshape the content of the ideology depending on what political responses are required to specific intergroup tensions of the day.

At an individual level, the degree to which someone subscribes to an ideology depends on multiple factors. Converse (1964) argued that people vary in terms of the consistency of their political beliefs. The modern legacy of his work informs the study of ideology by suggesting that people vary on how knowledgeable they are on political matters (Jost, 2006). Individual differences in personality and world-views also imply that there will be individual differences in the uptake of an ideology (Duckitt, 2001; Duckitt & Sibley, 2009; Federico & Goren, 2009). For example, when people feel their ingroup is under economic threat from another group, ideologies that foster prejudice are adopted (Duckitt, 2001).

### *Voting Behaviour*

Traditional theories of voting behaviour are often divided between two schools of thought (Visser, 1994). One tradition argues that vote choice is largely determined by demographic characteristics such as age, income, ethnicity and religion (e.g., Berelson, Lazarsfeld & McPhee, 1954). The other perspective, in contrast, posits that psychological factors such as party identification affect policy preferences and voting behaviour (e.g., Campbell, Converse, Miller & Stokes, 1960; Sears, Lau, Tyler, & Allen, 1980). Modern incarnates of these schools of thought still exist, as demonstrated by the literature on the personality correlates of voter preferences (e.g., Barbaranelli, Caprara, Vecchione & Fraley, 2007; Caprara, Schwartz, Capanna, Vecchione & Barbaranelli, 2006; Caprara & Zimbardo, 2004; Chirumbolo & Leone, 2010; Osborne & Sibley, in press; Sibley, Osborne & Duckitt, 2012; Vecchione et al., 2011).

In terms of the relationship between ideology and voting behaviour, findings such as those by Jost (2006) imply that ideology should be a key antecedent in this relationship.



However, the particular causal direction—that is, whether ideology *develops* as a result of people's voting preferences or if ideology *causes* voters to prefer certain political parties and/or candidates (Bartels, 2012)—remains unknown. Recently, Vecchione, Caprara, Dentale and Schwartz (2013) found a reciprocal causal relationship between voting and core political values. Over 2 studies, they used a set of structural equation models to test basic and core political values at Time 1 as predictors of voting behaviour, which was then used to predict values at Time 2, and also the reverse model. Vecchione and colleagues found that the effects of values on voting and the effect of voting on values were roughly equal for the majority of the values they examined. Nevertheless, the possibility that the pathway between *specifically* ideology and vote choice is bidirectional remains unexamined.

Because experimental manipulations of ideology are generally unfeasible, most research has relied on cross-sectional data (Jost, Federico, & Napier, 2009). Unfortunately, cross-sectional data limits the field's ability to even suggest the potential causal directions of these relationships. Our research seeks to directly address this problem by using longitudinal data to estimate bidirectional cross-lagged regression models. These models will allow us to assess whether changes in ideology over time lead to changes in political party support. We will also be able to examine the possibility that changes in political party support over time lead to changes in ideologies. Although falling short of being able to unequivocally demonstrate causation, this design allows us to test plausible causal models with greater precision than cross-sectional designs (Jost, Federico & Napier, 2009).

### The New Zealand Political System

To understand the relevance of particular political attitudes in New Zealand and the current situation of the indigenous Māori, a brief overview of New Zealand politics is needed. Accordingly, we provide an overview of the electoral system in New Zealand paying particular attention to the multi-

party makeup of New Zealand politics. We then discuss the nature of intergroup relations in New Zealand by highlighting the various deleterious outcomes encountered by Māori relative to the numerical majority group of people of European descent. Though necessarily brief, this section helps contextualize the nature of our investigation.

In recent years, there have been two main political parties in New Zealand: the National Party and the Labour Party. The National Party sits on the centre right of the political spectrum as evidenced by their support for conservative social and fiscal policies, as well as their emphasis on personal responsibility (The New Zealand National Party, 2012). In contrast, the Labour Party sits on the centre left by advocating for liberal social values such as social justice and equality. Indeed, the Labour Party describes itself as “democratic socialist” (The New Zealand Labour Party, 2010). Together, the National and Labour parties captured 74% of the popular vote in the 2011 general election (New Zealand Electoral Commission, 2011).

Although the National and Labour parties are the most widely-supported political parties in New Zealand, the electoral system is set up such that neither party can have an unequivocal voice in politics. This is because, since 1996, New Zealand politics has been based on a Mixed Member Proportional (MMP) electoral system. Critically, MMP provides each political party a seat in parliament that is proportional to their share of the popular vote. As such, though the National and Labour parties receive more votes than the remaining political parties in the country, they must form a coalition with one (or more) of the minor parties to create a majority-led government (Miller, 2010; New Zealand Electoral Commission, 2011). Thus, New Zealand politics is predicated on often-times tenuous relationships between one of the two major parties (i.e., the National Party or the Labour Party) and one (or more) of the minor parties.

When data were collected for the current study, there were three crucial minor parties in the New Zealand parliament: the Māori Party, the ACT Party and the Green Party of Aotearoa. The Greens fall to the left of Labour

on the political spectrum as evidenced by their platform of environmentalism and social equality (Green Party of Aotearoa, 2010), whereas the ACT Party falls to the ideological right of the National party on economic issues by running on a platform of personal choice and individual responsibility (ACT New Zealand, 2011). Finally, though ideologically ambiguous, the Māori Party aim to represent Māori constituents and uphold various principles of the Treaty of Waitangi—a founding document that established New Zealand as a sovereign British territory. Despite their emphasis on social equality for Māori (see The Māori Party, 2012), the Māori Party, along with the ACT Party, formed coalitional governments with the National party in both 2008 and 2011.

### Disparities between Māori and Pākehā

In terms of the demographics of the New Zealand electorate, those who identify as Māori currently make up 15% of New Zealand's total population of 4.4 million, compared with 70% who identify as the European majority (Ministry of Social Development, 2010). Although there is some evidence to suggest that the gap is narrowing, the average life expectancy for Māori women is 7.9 years shorter than their non-Māori counterparts, whereas the life expectancy for Māori men is 8.6 years shorter than non-Māori men (Ministry of Social Development, 2010). Additionally, Māori earn less per hour and are less educated than their European counterparts and are also overrepresented in suicide, negative physical and mental health, and prison statistics (Ministry of Social Development, 2010). In sum, Māori trail Europeans in most positive outcomes in New Zealand society.

### Ideology in New Zealand: The Dark Duo Model

Sibley's (2010) Dark Duo model of Post-colonial ideology argues that ideologies in post-colonial societies consist of two interrelated beliefs—Historical Negation and Symbolic Exclusion—that have different roots and distinct effects. These twin ideologies differ from simple intergroup attitudes because they *subsume* values, attitudes

and norms (Cohrs, 2012; Jost, 2006; Sibley, 2010). In terms of the origins of these ideologies, Sibley (2010) argues that the first building block to any functional post-colonial society is to establish an ethnic prototype of the most legitimate citizen in terms of representing the national category. This is based on the Ingroup Projection model by Mummendy and Wenzel (1999) which states that, though every citizen within a society makes up the superordinate group of citizens, the degree to which someone is discriminated against critically depends on how representative they are of the given national prototype. When a group is seen as representative of the nation, it gains status and value. In contrast, if a group is considered unrepresentative of the nation, it is devalued by society and its members are judged more harshly than people from groups perceived as representative (Waldzus, Mummendy, Wenzel, & Weber, 2003; Wenzel, Mummendy, Weber, & Waldzus, 2003). Within New Zealand, those high on Symbolic Exclusion do not believe that Māori culture is/should be representative of the superordinate category of "New Zealander." Thus, Symbolic Exclusion delegitimizes Māori despite their long standing history with the land and their indigenous status (Bar-Tal & Hammack, 2012; Sibley, 2010).

In New Zealand, Māori's nationality is undeniable as they are the first people to have settled in the country (King, 2003). Thus, unlike recently-arrived immigrants, Māori cannot be discriminated against on the basis of objective national category fit. This poses a problem to those who wish to project the European ingroup as the national prototype. Symbolic Exclusion is thus promoted by the dominant group as a way to claim ownership of the national category in post-colonial societies where there is an inability to factually deny that indigenous peoples "belong" to the nation (*undeniable belongingness*).

Sibley (2010) argued that claims to resources based on historical grievance, pose a threat to descendants of the European colonisers of New Zealand, by challenging their monopoly over the power and resources in contemporary society. Pākehā must therefore

reconcile their ownership and rights to resources with the undeniable injustices perpetuated against Māori. Rather than deny that injustices occurred in the past, Pākehā can claim ownership of the nation's resources through Historical Negation: the belief that historical injustices perpetrated against the indigenous peoples in the colonial era are irrelevant in modern society. Sibley, Liu, Duckitt and Khan (2008) argued that this ideology manifests itself through motivations to protect the history of the European ingroup. Historical Negation is based upon System Justification Theory which posits that people will adopt ideologies that justify the status quo to soothe cognitive uneasiness (Jost & Banaji, 1994; Jost & Hunyady, 2005). Thus, by subscribing to an ideology that deems past injustices as irrelevant, current generations of European settlers can claim freedom from the obligation to redress past harms (Sibley, 2010; Sibley & Liu, 2012).

Cross-sectional evidence shows that Symbolic Exclusion and Historical Negation have independent relationships with party support, political preferences and intergroup contact (Sengupta, Barlow, & Sibley, 2012; Sibley, 2010; Sibley, Liu, Duckitt, & Khan, 2008). This is believed to occur because each ideology is rooted in distinct aspects of conservatism. Historical Negation is primarily associated with people's concerns over resources (i.e., economic conservatism versus economic liberalism). While Symbolic Exclusion taps into people's ideas about the cultural values of the country (i.e., social/symbolic conservatism vs social/symbolic liberalism; Sibley, 2010; Sibley, Liu, Duckitt, & Khan, 2008).

In the paper that established the Dark Duo model, Sibley (2010) performed two analyses, including one that showed the link between these ideologies and support for the two major political parties in New Zealand. Firstly, Sibley (2010) validated the Dark Duo model by performing both Exploratory and Confirmatory factor analyses on data from a sample of 372 undergraduates. Secondly, Sibley (2010) used a community sample ( $N = 447$ ) of New Zealand voters recruited from public places, to investigate the links

between Symbolic Exclusion, Historical Negation, demographic variables, personality, system justification, support for New Zealand's two major parties (the Labour and National Parties) and support for a publicly funded Māori television channel. The paper showed that higher Historical Negation and Symbolic Exclusion meant higher levels of support for the centre-right, National Party and lower support for the left-wing, Labour Party. Historical negation was also associated with System Justification and both Dark Duo ideologies were negatively correlated with Openness to Experience. These analyses suggest that Historical Negation and Symbolic Exclusion are more associated with political conservatism than liberalism. Additionally, both ideologies predicted decreased support for government funding of a free-to-air Māori language channel.

Critically, the Dark Duo ideologies still predicted political party support after controlling for demographic and personality variables, as well as individual differences in the endorsement of system justifying beliefs. Similarly, Sibley, Liu, Duckitt and Khan (2008) found that Historical Negation explained around 60% of the variance in resource-policy support for Pākehā. This indicates that Symbolic Exclusion and Historical Negation capture unique variance in political party and policy preferences in New Zealand that is unexplained by other standard measures of ideology.

Both Right-Wing Authoritarianism (RWA; adherence to moral values and tradition) and Social Dominance Orientation (SDO; an individual desire to maintain the current group hierarchy) have been examined within the framework of the Dark Duo model of ideology. Sibley and Liu (2012) have found that RWA predicted Historical Negation, but the effect of RWA on resource-based policy is mediated by Historical Negation. In study 2, Sibley and Liu (2012) used a cross-lagged panel design with 183 undergraduates over a 9 month period. They found that RWA predicted longitudinal change in Historical Negation and Historical Negation also predicted change in resource-based policy opposition. This provided support for the idea

that Historical Negation mediates the effect that RWA has on resource-based policy opposition longitudinally. Showing that Historical Negation is a different construct to RWA – in that Historical Negation may be providing a legitimizing myth – giving people a context specific ideology that directly rejects these historically based resource claims.

Furthermore, Sibley and Liu (2012) suggested that RWA predicted Historical Negation because RWA is rooted in a threat-driven motivation for social cohesion. In this sense, the rocky history between Pākehā and Māori leads Pākehā to adopt a “rose-tinted” view of their in-group’s history. To acknowledge prior injustices would mean that Pākehā would have to recognise the negative actions of their group—something that people who are high in RWA tend to overlook (Sibley et al., 2008). By contrast, SDO has been shown to more directly predict increased opposition to symbolic and resource specific social policy measures, independent of the Dark Duo ideologies (Sibley et al., 2008). Sibley et al. (2008) theorised that those high in SDO had little concern for perception of historical sin and culture. Instead, they were likely to support policies maintaining the social hierarchy, regardless of the reason.

### Overview and Guiding Hypotheses

This study aims to provide a longitudinal test of political ideology and its effects on political party preferences using data from a large, nationally representative sample in New Zealand. As noted above, New Zealand is a modern democracy that elects public officials via a MMP system, meaning that the two major parties – the National and Labour Parties – require the support of one (or more) of the minor parties to form a government (Miller, 2010). Since 2008, the right-leaning National Party has been in power by forging a coalitional government with the ACT Party and the Māori Party. The National-led government’s major political opponents are the Labour Party and the rapidly-growing Green Party (Miller, 2010).

Because Symbolic Exclusion and Historical Negation are two related, albeit distinct, ideologies developed

to maintain the status quo in post-colonial societies (Sibley, 2010); we predicted that these two ideologies would *independently* predict change in support for the various political parties in New Zealand over a one-year period. On the one hand, increases in Symbolic Exclusion and Historical Negation should have significant cross-lagged relationships with increased support for *conservative* political parties (the National Party, the ACT Party) because these ideologies satisfy the motivational bases of conservatism (i.e., motivations to maintain majority group status and system justification, respectively; Hypothesis 1). On the other hand, we predicted that increases in Symbolic Exclusion and Historical Negation over the same one year period would lead to decreased support for *liberal* political parties (the Labour Party, the Green Party and the Māori Party; Hypothesis 2). We also predicted that the effects would be bidirectional, in that changes in political support would, over the course of a year, predict the endorsement of Historical Negation and Symbolic Exclusion. Namely, increases in support for conservative parties should increase people’s endorsement for these ideologies, whereas increases in support for liberal parties should correspond with a rejection of Historical Negation and Symbolic Exclusion (Hypothesis 3). Finally, we predicted that these relationships would remain robust after adjusting for other demographic factors typically studied in the voting literature (e.g., gender, age, ethnicity, religion, education and socio-economic status; Hypothesis 4).

We tested these predictions using a series of cross-lagged regression models in which Time 2 levels of Symbolic Exclusion and Historical Negation were used to predict Time 2 support for each political party (after adjusting for Time 1 support and controlling for a number of demographic factors). We also tested the reverse of these models where Time 1 political party support was used to predict Historical Negation and Symbolic Projection at Time 2. These analyses thus provide one of the first formal tests of the *possible* causal effects of culture-specific ideologies on political party support, as well as a test of the possible bi-directionality

of political support on ideology. Moreover, we use data from a national probability sample in New Zealand and assess support for numerous political parties that range along the liberal-to-conservative spectrum. This provides us with the unique opportunity to assess the robustness of our findings using a built-in replication across the different political parties present in New Zealand politics.

## METHOD

### Sampling procedure

The Time 1 (2009) NZAVS contained responses from 6518 participants sampled from the 2009 New Zealand electoral roll. The electoral roll is publicly available for scientific research and in 2009 contained 2,986,546 registered voters. This represented all citizens over 18 years of age who were eligible to vote regardless of whether they chose to vote, barring people who had their contact details removed due to specific case-by-case concerns about privacy. The sample frame was spilt into three parts. Sample Frame 1 constituted a random sample of 25,000 people from the electoral roll (4,060 respondents). Sample Frame 2 constituted a second random sample of a further 10,000 people from the electoral roll (1,609 respondents).

Sample Frame 3 constituted a booster sample of 5,500 people randomly selected from meshblock area units of the country with a high proportion of Māori, Pacific Nations and Asian peoples (671 respondents). Statistics New Zealand (2013) define the meshblock as “the smallest geographic unit for which statistical data is collected and processed by Statistics New Zealand. A meshblock is a defined geographic area, varying in size from part of a city block to large areas of rural land. Each meshblock abuts against another to form a network covering all of New Zealand including coasts and inlets, and extending out to the two hundred mile economic zone. Meshblocks are added together to ‘build up’ larger geographic areas such as area units and urban areas. They are also the principal unit used to draw-up and define electoral district and local authority boundaries.” Meshblocks were selected using ethnic group proportions

based on 2006 national census data. A further 178 people responded but did not provide contact details and so could not be matched to a sample frame.

In sum, postal questionnaires were sent to 40,500 registered voters or roughly 1.36% of all registered voters in New Zealand. The overall response rate (adjusting for the address accuracy of the electoral roll and including anonymous responses) was 16.6%.

The Time 2 (2010) NZAVS contained responses from 4442 participants. The Time 2 (2010) NZAVS retained 4423 from the initial Time 1 (2009) NZAVS sample of 6518 participants, and included an additional 20 respondents who could not be matched to the Time 1 participant database (a retention rate of 67.9% over one year). Participants in the initial Time 1 (2009) sample were randomly selected from the New Zealand electoral roll (a national registry of registered voters). The response rate in the initial Time 1 sample, adjusting for the accuracy of the electoral roll and including anonymous responses was 16.6%. Participants were posted a copy of the questionnaire, with a second postal follow-up two months later. Participants who provided an email address were also emailed and invited to complete an online questionnaire if they preferred.

### *Participant details*

Out of the 4,423, our models were limited to the participants who reported support for the relevant party at both time points. As such, the five cross-lagged models predicting support for the five parties – the National, Labour, Green, ACT, and Maori parties – differ slightly based on the participants' responses. These samples are briefly described below.

The largest response rate was for support for the National party across both time points which were provided by 3,998 participants (2,455 women and 1,543 men). However, sample size for the models varied from. This represented 84% of the available Time 2 sample. The majority of missing data were for the New Zealand deprivation index and occurred because we could not determine the meshblock area unit (and hence level of neighbourhood deprivation) for some participants. Of

the sample analyzed here, participants' mean age was 49.09 (SD = 49.44). Of those providing complete data for our variables of interest, 75.7% were New Zealand European (n = 3,028), 14.4% were Māori (n = 575), 3.5% were of Pacific Nations descent (n = 141), 3.9% were Asian (n = 1454) and 2.5% reported another ethnicity or did not answer (n = 100).

With regard to other demographic variables, 44.7% of the sample (n = 1,789) identified as religious. In terms of parental status, 77.6% had at least one child (n = 3,102). Those in paid employment made up 75% of the sample (n = 2,997). As for educational status, 20% did not report their highest level of education or said they had no education (n = 801), 28.6% reported at least some high school (n = 1,142), 16.4% reported having studied towards a diploma or certificate (n = 654), 24.6% reported having studied at undergraduate level (n = 984) and 10.4% reported having pursued post-graduate study (n = 417). The majority (79.9%) of participants were born in New Zealand (n = 3,196).

### *Materials*

A short version of the Post-Colonial Ideology Scale developed by Sibley (2010) was used to assess the Dark Duo ideologies. This short scale consisted of 3 items for Historical Negation ( $\alpha = .79$ ) and 3 items for Symbolic Exclusion ( $\alpha = .81$ ). For Historical Negation, participants were asked to rate their level of agreement with the following statements on a scale from 1 (strongly disagree) to 7 (strongly agree): "We should all move on as one nation and forget about past differences and conflicts between ethnic groups", "We should not have to pay for the mistakes of our ancestors" and "People who weren't around in previous centuries should not feel accountable for the actions of their ancestors." The three items assessing Symbolic Exclusion were "I think that Māori culture helps to define New Zealand in positive ways" (reverse coded), "I reckon Māori culture should stay where it belongs—with Māori. It doesn't concern other New Zealanders" and "New Zealand would be a better place to live if we forgot about trying to promote Māori culture to everyone."

The participants indicated their

level of party support for the National, Labour, Green, ACT and Māori parties separately on a scale from 1 (strongly oppose) to 7 (strongly support). Socioeconomic status was assessed using the NZDep2006 index (see Salmund, Crampton, & Atkinson, 2007), a measure of regional/neighborhood deprivation based on access to transport and communication, levels of unemployment, income, property ownership, family support and residential overcrowding. Each participant's address was thus coded for level of deprivation on an ordinal scale of 1 (the ten percent who are least deprived) to 10 (the ten percent who are most deprived).

### *Model Estimation*

To test our predicted effects of ideology on political party preference over time, we constructed a series of path models in which the combined set of demographic covariates, and measures of Historical Negation and Symbolic Exclusion were used to predict levels of support for each political party separately one year later. Thus, we constructed a set of five separate, cross-lagged, bi-directional models, each of which assessed the cross-lagged effects of ideology on political party support for a particular political party. Our models were saturated (that is, we estimated all possible cross-lagged effects in and thus controlled for all other demographic covariates in the model). Because of this, our models do not provide fit statistics.

The model also included Time 1 support for a given political party as a covariate when predicting Time 2 ratings of that same party. We allowed the residual variance of support for the outcome measures to correlate (support for the party being predicted, as well as historical negation and symbolic exclusion) and estimated model parameters using Maximum Likelihood estimation. Missing for our endogenous variables were estimated Full Information Maximum Likelihood Estimation (or FIML). We estimated bias corrected bootstrap confidence intervals for all parameters using 5000 resamples.

Each model also included the reverse effects of support for a given political party on both Historical

Negation and Symbolic Exclusion over the same time frame. We calculated univariate Wald tests of parameter constraint to assess whether Historical Negation and Symbolic Exclusion had stronger effects on support for a given political party than support for that party had on Historical Negation and Symbolic Exclusion.

Our path model allows us to assess whether Historical Negation and Symbolic Exclusion predict significant residualized variance in support for each political party over the one year time-frame. If significant, this provides good evidence for the effect of ideology on political party attitudes. Including

various demographic factors allowed us to test if these predicted cross-lagged effects also held while controlling for other plausible alternative explanations that might covary with rates of residualized change in our outcome variables.

**RESULTS**

Bivariate correlations for all measures included in our study are presented in Table 1. As shown, support between Time 1 and Time 2 was reasonably stable for the National Party ( $r=.79$ ), the Labour Party ( $r=.75$ ), the Greens ( $r=.75$ ), the ACT Party ( $r=.63$ ) and the

Māori party ( $r=.68$ ). We estimated the models, as above, for each of the five parties. A conceptual overview of the path model we tested is presented in Figure 1. Table 2 presents unstandardized beta and Wald tests for each of the models tested. Parameters for the reverse effects of support for each political party on HRN and SPE are reported in text and in Table 2 (along with reported tests of parameter constraints comparing whether the effects were stronger in one direction relative to the other). Cross-lagged models predicting residualized change in respective levels of support for the National Party, the Labour Party, the Green Party, the ACT Party and the Māori Party are presented in Tables 3 and 4.

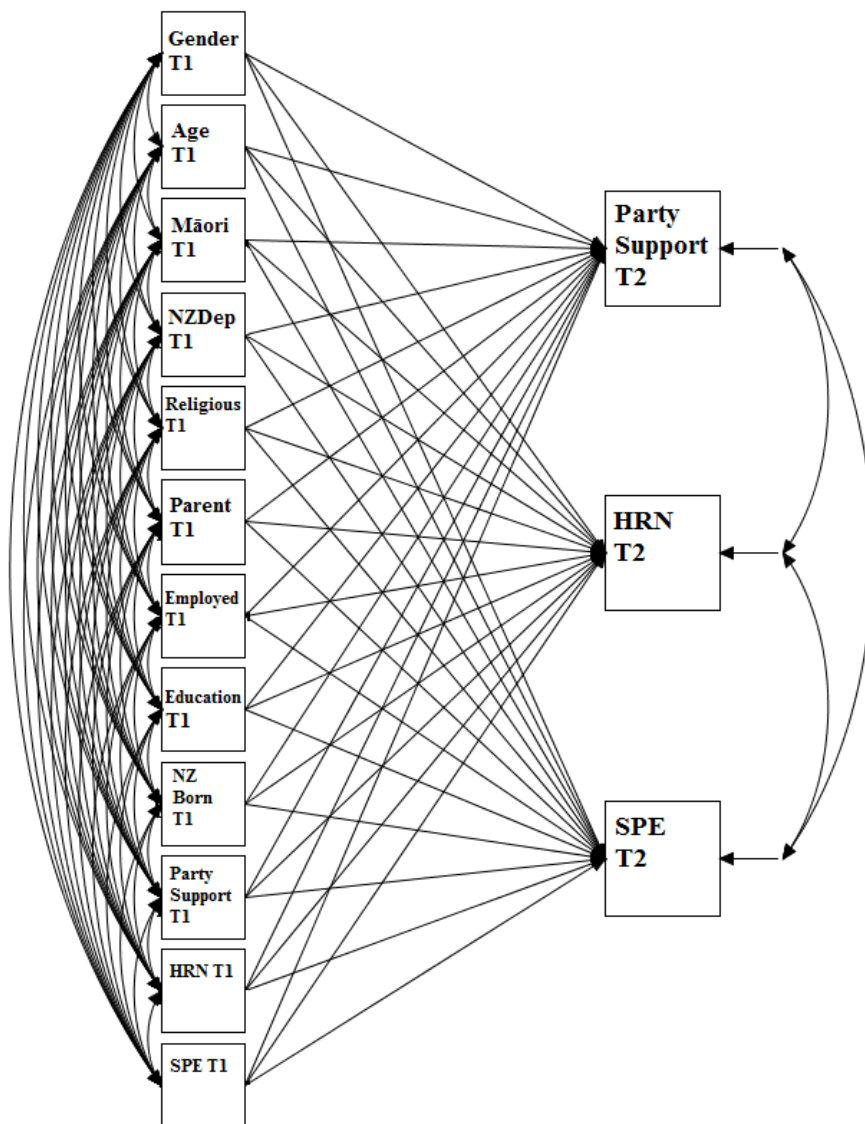


Figure 1. A visual depiction of the models tested

Table 1. Descriptive statistics and bivariate correlations between all variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	
1. T2 National																								
2. T2 Labour	-.56*																							
3. T2 Greens	-.38*	.49*																						
4. T2 ACT	.33*	-.21*	-.10*																					
5. T2 Māori	-.17*	-.23*	.40*	.11*																				
6. T2 HRN	.26*	-.16*	-.29*	.15*	-.41*																			
7. T2 SPE	.22*	-.24*	-.37*	.11*	-.51*	.49*																		
8. T1 Gender	.04	-.08*	-.17*	.02	-.08*	.04	.19*																	
9. T1 Age	.05*	-.04	-.14*	-.15*	-.03*	.14*	.17*	.12*																
10. T1 Māori ethnicity	-.14*	.08*	.05*	-.04*	.27*	-.18*	-.23*	-.02	-.11*															
11. T1 Deprivation	-.20*	.17*	.07*	-.07*	.10*	.00	-.01	.01	-.02*	.20*														
12. T1 Religious	.03	-.01	-.07*	.03	.07*	-.01	-.02	-.06*	.18*	.02	.02*													
13. T1 Parent	.06*	-.07*	-.13*	-.02	.01	.05*	.05*	-.04	.42*	.01	-.01	-.09*												
14. T1 Employment	.04	-.05*	.04*	.07*	.01	-.11*	-.12*	.04*	-.37*	-.00	-.09*	-.09*	-.13*											
15. T1 Education	-.05*	.02	.16*	-.02	.12*	-.25*	-.25*	-.09*	-.15*	-.13*	-.18*	-.01	-.09*	.21*										
16. T1 Born in NZ	.00	-.05*	-.04*	-.03	.02	-.07*	-.10*	-.04*	-.06*	.19*	.03	-.06*	-.02	.01	-.08*									
17. T1 National	.79*	-.57*	-.42*	.33*	-.21*	.26*	.24*	.06*	.07*	-.13*	-.18*	.04*	.08*	.03*	-.06*	-.01								
18. T1 Labour	-.54*	.75*	.42*	-.25*	.19*	-.17*	-.23*	-.07*	-.06*	.07*	.17*	-.03	-.08*	-.04*	.04	-.05*	-.56*							
19. T1 Greens	-.39*	.43*	.75*	-.14*	.34*	-.29*	-.38*	-.16*	-.19*	.07*	.06*	-.06*	-.14*	.06*	.18*	-.04*	-.39*	.49*						
20. T1 ACT	-.38*	-.30*	-.20*	.63*	-.05*	.18*	.15*	.04	-.14*	-.10*	-.11*	.03	-.03*	.08*	.01	-.03*	.42*	-.28*	-.10*					
21. T1 Māori	-.20*	.19*	.33*	-.00	.68*	-.41*	-.51*	-.05*	-.05*	.28*	.09*	.08*	-.02	.02	.13*	.04*	-.18*	.20*	.40*	.07*				
22. T1 HRN	.24*	-.17*	-.30*	.15*	-.42*	.73*	.47*	.04	.13*	-.17*	-.01	-.03	.05*	-.12*	-.25*	-.06*	.26*	-.17*	-.30*	.17*	-.43*			
23. T1 SPE	.23*	-.22*	-.35*	.11*	-.47*	.44*	.78*	.14*	.13*	-.23*	.00	-.01	.03	-.10*	-.24*	-.08*	.24*	-.23*	-.37*	.14*	-.53*	.48*		
M	4.50	4.01	3.71	2.48	2.94	5.21	3.20		49.30		4.84					4.55	4.05	3.63	2.70	3.03	5.22	3.21		
SD	1.80	1.72	1.71	1.43	1.58	1.43	1.55		14.78		2.79					1.75	1.72	1.74	1.50	1.61	1.47	1.55		

Correlations represent bivariate r-values with pair-wise deletion. N=4047 \* p < .01

**Support for the Major Parties**

Change in support for the National Party from 2009 to 2010 was jointly predicted by both Symbolic Exclusion ( $\beta = .033$ ) and Historical Negation ( $\beta = .023$ ). These effects were small in magnitude, which is not surprising because we were examining change over only a single year. Despite this, we nevertheless show that both ideologies predicted a subtle, though nonetheless reliable, change in levels of support for the National Party. Moreover, these effects held, not only after controlling for Time 1 support for the National Party, but also after adjusting for numerous demographic covariates known to correlate with voting behaviour. Consistent with demographic research on voting preferences in New Zealand (reviewed in Mulgan & Aimer, 2004), our model also showed that people who were more affluent (i.e., lower in deprivation) and those in paid employment, were more supportive of National than their less affluent and unemployed counterparts.

The reverse cross-lagged effects of Historical Negation and Symbolic Exclusion on subsequent support for the National Party were also significant. As shown in Table 2, support for the National Party significantly predicted

ideology. Wald tests of parameter constraint indicated that the opposing cross-lagged effects of Historical Negation and National Party support did not differ in size, nor did the opposing cross-lagged effects of Symbolic Exclusion and National Party support on one another over time. These tests indicate that the effect of support for the National Party on ideology was roughly equivalent (i.e., did not significantly differ) to the effect of ideology on support for the National Party.

The ideological antecedents predicting support for the Labour Party (i.e., the other major political party in New Zealand politics) differed from those of the National Party in the predicted direction. As can be seen in the right hand columns of Table 3, residualized change in support for the Labour Party was associated with changes in Symbolic Exclusion ( $\beta = -.053$ ) and Historical Negation ( $\beta = -.025$ ). Increasing levels of support for the inclusion of Māori in the national identity (Symbolic Exclusion) predicted increased levels of support for Labour. However, increased beliefs about the relevance of historical injustices experienced by Māori (Historical Negation) had marginal significance when predicting increased support for the Labour Party. The fact that Symbolic Exclusion played a relatively stronger role than Historical Negation

in predicting changing levels of support for the Labour Party suggests that symbolic ideologies may exert a more of an influence on support for center-left political parties, whereas ideologies relating to realistic threat and resource distribution are associated with support for center-right political parties. This may reflect a core distinction in the ideological antecedents of left-right differences in voter preferences. Additionally, higher levels of deprivation tended to predict support for the Labour Party, as did being of Pacific Island descent, both key traditional voting blocs for the Labour Party in New Zealand.

As with the National Party model, the reverse cross-lagged effects of Symbolic Exclusion on support for the Labour Party was also significant. The results of the tests for a bi-directional effect are shown in Table 2. These tests indicate that the effect of support for the Labour Party on ideology was roughly equivalent (i.e., did not significantly differ) to the effect of ideology on support for the Labour Party.

Table 2. Test statistics for the models of ideology predicting party support and party support predicting ideology, by political party.

		Ideology Predicting Political Support		Political Support Predicting Ideology		Wald $\chi^2$ test of difference	
		<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>	$\chi^2$	<i>p</i>
National Party	HRN	.029*	.014	.048*	.010	1.241	.265
	SPE	.038*	.015	.029*	.009	.325	.569
Labour Party	HRN	-.027*	.010	-.029	.014	.009	.925
	SPE	-.044*	.010	-.058*	.015	.742	.389
Green Party	HRN	-.069*	.015	-.041*	.010	2.693	.101
	SPE	-.073*	.016	-.064*	.011	.259	.611
ACT Party	HRN	.040*	.014	.046*	.011	.129	.720
	SPE	.014	.015	.043*	.010	2.870	.090
Māori Party	HRN	-.123*	.016	-.068*	.013	8.201	.004
	SPE	-.110*	.016	-.110*	.013	.000	.998

\*  $p < .05$ , HRN = Historical Recognition vs. Negation, SPE = Symbolic Projection vs. Exclusion.

**Support for the Minor Parties**

Table 4 presents comparable regression models predicting support for the three minor parties in New Zealand politics. The model for the largest of New Zealand’s minor parties, the Green Party, is presented on the left of the table. The Green Party was set up to promote environmentalism and social justice. In recent years, they have been the only party outside of National and Labour to reach double-digit support among the electorate. In terms of policy positions, the Green Party tends to unofficially side with the Labour Party in opposition to the National government (Green Party of Aotearoa, 2010).

As expected, residualized change in support for the Green Party was associated with changes in both Historical Negation ( $\beta = -.060$ ) and Symbolic Exclusion ( $\beta = -.066$ ). Moreover, these effects held when controlling for demographic factors. This indicates that those who support the most left-wing (i.e., liberal) party analysed here tend to both support the symbolism of Māori culture and Māori people’s claims to resource reparation. These results are notably similar to the analyses used to predict support for the Green Party’s relatively centrist ally, the Labour Party. Table 3 also shows that lack of religious affiliation was the main demographic predictor of Green

Party support.

The center of Table 4 shows the regression model for support of the ACT Party at Time 2. The ACT Party was founded on the principle of individual responsibility and can be thought of as a broadly libertarian party. Their ideals have led to the promotion of policies advocating flat or lower tax rates and personal or social freedom (ACT New Zealand, 2011). In contrast to the other parties, residualized change in support for the ACT Party was only associated with changes in Historical Negation ( $\beta = .041$ ) and not significantly by Symbolic Exclusion ( $\beta = .015$ ). This indicates that support for the most fiscally conservative, albeit socially liberal, ACT Party is more centered around resource based claims by Māori than their symbolic claims. The two main demographic predictors of ACT Party support were increased age and parental status. Interestingly (and in contrast to the results for National Party support), affluence was unassociated with support for the ACT Party.

The right of Table 4 shows the model of support for the Māori Party at Time 2. Both ideologies, Historical Negation ( $\beta = -.11$ ) and Symbolic Exclusion ( $\beta = -.11$ ), predicted support for the Māori Party at Time 2. Out of the five models we ran, Historical Negation and Symbolic Exclusion had the largest

effect size on Māori Party support. This was as expected, given that the Māori Party was established to promote and support both symbolic and resource based Māori issues (The Māori Party, 2012). Reparation for historical injustice and support for symbolic cultural representations are an integral part of the Māori Party platform, unlike the other parties analyzed here. This was also backed up by the strongest demographic predictor for the Māori Party, which was identifying as ethnically Māori, a sign that the Māori Party is capturing the support of the ethnic group they aim to represent.

Table 3. Regression models predicting Time 2 support for The National Party and The Labour Party. Ideology effects printed in bold. Party Support T1 refers to Time 1 ratings of support for the same political party predicted at Time 2

Model predicting Time 2 Support for The National Party					
	<i>b</i>	95% CI	<i>se(b)</i>	$\beta$	<i>t</i> -value
Constant	.678		.129		5.270*
Party Support T1	.782	[.760, .806]	.012	.759	67.480*
<b>Historical Negation</b>	<b>.029</b>	<b>[.001, .058]</b>	<b>.014</b>	<b>.023</b>	<b>1.970*</b>
<b>Symbolic Exclusion</b>	<b>.038</b>	<b>[.009, .067]</b>	<b>.015</b>	<b>.033</b>	<b>2.581*</b>
Gender (0 women, 1 men)	-.061	[-.132, .011]	.037	-.017	-1.641
Age	.001	[-.003, .004]	.002	.005	.360
Māori (0 no, 1 yes)	-.102	[-.220, .007]	.058	-.020	-1.756
NZ Deprivation Index (1 low to 10 high)	-.039	[-.053, -.026]	.007	-.061	-5.737*
Religious (0 no, 1 yes)	.028	[-.041, .097]	.036	.008	.794
Parent (0 no, 1 yes)	-.025	[-.119, .068]	.048	-.006	-.511
Employment (0 no, 1 yes)	.127	[.037, .221]	.048	.031	2.661*
Education (-2 low to 2 high)	-.005	[-.034, .026]	.015	-.003	-.311
Born in NZ (0 no, 1 yes)	.069	[-.023, .161]	.047	.015	1.462

*N* = 3998, \**p* < .05, [R<sup>2</sup> = .625, *se* = .009, *p* < .001]. Model results excluding co-variables are Historical Negation *b* = .026, *se* = .014,  $\beta$  = .021, *p* = .060; and Symbolic Exclusion *b* = .035, *se* = .013,  $\beta$  = .030, *p* = .008

Model predicting Time 2 Support for The Labour Party					
	<i>b</i>	95% CI	<i>se(b)</i>	$\beta$	<i>t</i> -value
Constant	1.495		.146		10.208*
Party Support T1	.717	[.694, .740]	.012	.720	60.339*
<b>Historical Negation</b>	<b>-.029</b>	<b>[-.057, .001]</b>	<b>.015</b>	<b>-.025</b>	<b>-1.962<sup>a</sup></b>
<b>Symbolic Exclusion</b>	<b>-.058</b>	<b>[-.088, -.027]</b>	<b>.016</b>	<b>-.053</b>	<b>-3.730*</b>
Gender (0 women, 1 men)	-.096	[-.170, -.025]	.038	-.027	-2.534*
Age	.001	[-.002, .004]	.002	.006	.451
Māori (0 no, 1 yes)	.031	[-.084, .140]	.058	.007	.547
NZ Deprivation Index (1 low to 10 high)	.026	[.012, .040]	.007	.042	3.805*
Religious (0 no, 1 yes)	.003	[-.071, .079]	.038	.001	.086
Parent (0 no, 1 yes)	-.070	[-.164, .023]	.048	-.017	-1.470
Employment (0 no, 1 yes)	-.065	[-.159, .031]	.048	-.016	-1.342
Education (-2 low to 2 high)	-.027	[-.058, .002]	.016	-.021	-1.720
Born in NZ (0 no, 1 yes)	-.117	[-.212, -.024]	.048	-.027	-2.438*

*N* = 3970, \**p* < .05, [R<sup>2</sup> = .434, *se* = .010, *p* < .001].  
<sup>a</sup> = The effect of Historical Negation was marginally significant.  
 Model results excluding co-variables are Historical Negation *b* = -.021, *se* = .014,  $\beta$  = -.018, *p* = .135; Symbolic Exclusion *b* = -.054, *se* = .014,  $\beta$  = -.048, *p* = .008



Table 4. Regression models predicting Time 2 support for The Green Party, and The ACT Party. Ideology effects printed in bold. Party Support T1 refers to Time 1 ratings of support for the same political party predicted at Time 2

Model predicting Time 2 Support for The Green Party					
	<i>b</i>	95% CI	<i>se(b)</i>	$\beta$	<i>t-value</i>
Constant	1.959		.154		12.712*
Party Support T1	.677	[.652, .700]	.012	.691	54.971*
<b>Historical Negation</b>	<b>-.069</b>	<b>[-.099, -.039]</b>	<b>.015</b>	<b>-.060</b>	<b>-4.618*</b>
<b>Symbolic Exclusion</b>	<b>-.073</b>	<b>[-.103, -.041]</b>	<b>.016</b>	<b>-.066</b>	<b>-4.565*</b>
Gender (0 women, 1 men)	-.161	[-.239, -.086]	.039	-.046	-4.139*
Age	.003	[.000, .006]	.002	.027	2.038*
Māori (0 no, 1 yes)	-.076	[-.184, .043]	.058	-.016	-1.312
NZ Deprivation Index (1 low to 10 high)	.017	[.004, .030]	.007	.028	2.504*
Religious (0 no, 1 yes)	-.122	[-.197, -.045]	.038	-.035	-3.167*
Parent (0 no, 1 yes)	-.163	[-.256, -.069]	.048	-.040	-3.417*
Employment (0 no, 1 yes)	-.029	[-.120, .063]	.047	-.007	-.631
Education (-2 low to 2 high)	.004	[-.027, .035]	.016	.003	.250
Born in NZ (0 no, 1 yes)	-.097	[-.190, -.004]	.047	-.023	-2.065*

*N* = 3949, \* *p* < .05, [R<sup>2</sup> = .568, *se* = .010, *p* < .001] Model results excluding co-variables are Historical Negation *b* = -.062, *se* = .014,  $\beta$  = -.053, *p* < .001; Symbolic Exclusion *b* = -.069, *se* = .014,  $\beta$  = -.062, *p* < .001

Model predicting Time 2 Support for The ACT Party					
	<i>b</i>	95% CI	<i>se(b)</i>	$\beta$	<i>t-value</i>
Constant	1.080		.124		8.693*
Party Support T1	.575	[.546, .602]	.014	.605	40.106*
<b>Historical Negation</b>	<b>.040</b>	<b>[.013, .067]</b>	<b>.014</b>	<b>.041</b>	<b>2.856*</b>
<b>Symbolic Exclusion</b>	<b>.014</b>	<b>[-.013, .067]</b>	<b>.015</b>	<b>.015</b>	<b>.934</b>
Gender (0 women, 1 men)	.014	[-.060, .089]	.038	.005	.383
Age	-.010	[-.013, -.007]	.001	-.100	-6.500*
Māori (0 no, 1 yes)	.075	[-.030, .184]	.054	.019	1.384
NZ Deprivation Index (1 low to 10 high)	-.005	[-.018, .008]	.007	-.011	-.810
Religious (0 no, 1 yes)	.052	[-.021, .122]	.037	.018	1.427
Parent (0 no, 1 yes)	.113	[.024, .203]	.046	.033	2.446*
Employment (0 no, 1 yes)	-.001	[-.094, .092]	.047	.000	-.011
Education (-2 low to 2 high)	-.019	[-.050, .011]	.015	-.017	-1.199
Born in NZ (0 no, 1 yes)	-.040	[-.134, .052]	.048	-.011	-.841

*N* = 3919, \* *p* < .05, [R<sup>2</sup> = .403, *se* = .012, *p* < .001] Model results excluding co-variables are Historical Negation *b* = .034, *se* = .014,  $\beta$  = .035, *p* = .018; Symbolic Exclusion *b* = .005, *se* = .014,  $\beta$  = .005, *p* = .715

Model predicting Time 2 Support for The Māori Party					
	<i>b</i>	95% CI	<i>se(b)</i>	$\beta$	<i>t-value</i>
Constant	2.173		.153		14.247*
Party Support T1	.540	[.508, .571]	.016	.548	33.722*
<b>Historical Negation</b>	<b>-.123</b>	<b>[-.154, -.093]</b>	<b>.016</b>	<b>-.114</b>	<b>-7.797*</b>
<b>Symbolic Exclusion</b>	<b>-.110</b>	<b>[-.143, -.080]</b>	<b>.016</b>	<b>-.108</b>	<b>-6.893*</b>
Gender (0 women, 1 men)	-.093	[-.166, -.017]	.038	-.029	-2.428*
Age	.001	[-.002, .004]	.002	.013	.917
Māori (0 no, 1 yes)	.321	[.201, .445]	.062	.073	5.178*
NZ Deprivation Index (1 low to 10 high)	.019	[.005, .033]	.007	.033	2.651*
Religious (0 no, 1 yes)	.051	[-.023, .126]	.038	.016	1.347
Parent (0 no, 1 yes)	.081	[-.009, .176]	.047	.021	1.715
Employment (0 no, 1 yes)	-.019	[-.116, .071]	.047	-.005	-.411
Education (-2 low to 2 high)	.008	[-.021, .038]	.015	.006	.521
Born in NZ (0 no, 1 yes)	-.151	[-.240, -.074]	.046	-.038	-3.247*

*N* = 3941, \* *p* < .05, [R<sup>2</sup> = .495, *se* = .012, *p* < .001]; Model results excluding co-variables are Historical Negation *b* = -.121, *se* = .015,  $\beta$  = -.112, *p* < .001; Symbolic Exclusion *b* = -.117, *se* = .015,  $\beta$  = -.115, *p* < .001

For the three minor parties, the reverse cross-lagged effects of Historical Negation and Symbolic Exclusion on subsequent support for were also significant. As shown in Table 2, support for all three of the minor parties also significantly predicted ideology. Wald tests of parameter constraint indicated that the opposing cross-lagged effects of Historical Negation and minor party support did not differ in size (apart from Historical Negation and Māori Party support), nor did the opposing cross-lagged effects of Symbolic Exclusion and minor party support on each other over time. These tests indicate that the effects of support for minor parties on ideology was roughly equal (i.e., did not significantly differ) to the effects of ideology on support for these minor parties.

Above and beyond the effects of demographic factors and previous levels of party support, Historical Negation predicted significant amounts of unique variance in support for the National, Labour, Green, ACT and Māori parties at Time 2. Increases in Historical Negation led to increases in support for both the National and ACT parties (the two center-right parties in New Zealand), but decreases in support for the Labour, Māori and Green parties. Additionally, Symbolic Exclusion predicted significant amounts of unique variance in levels of support for the National, Labour, Green and Māori parties at Time 2. Specifically, a decrease in support for the projection of Māori culture corresponded with increases in support for the National Party. Those who showed increases in support for the Symbolic Projection of Māori culture over time, however, increased their levels of support for the Labour, Green and Māori parties. In contrast, changes in support for Symbolic Exclusion did not affect ACT Party support over time. These effects are also bi-directional in most cases, showing that while these ideologies do predict support for political parties, the support for the political parties also predicts changes in Historical Negation and Symbolic Exclusion.

## DISCUSSION

This is the first study of its kind to model longitudinal change in

political preferences as a function of culturally-specific ideologies in a large, representative national sample. Consistent with our hypotheses, we found that ideology predicted change in political party preferences over time, and also the reverse. These data are consistent with Sibley's (2010) Dark Duo model, previous research on the model (Sibley et al., 2008) and Jost's (2006) thesis on the importance of ideology, by showing that ideology is an important antecedent to political choice. As hypothesized, Historical Negation predicted increased support for conservative political parties (Hypothesis 1) and decreased support for liberal parties (Hypothesis 2). This suggests that endorsing an ideology that denies the relevance of group-based injustices bolsters support for right-leaning parties (i.e., the National Party and ACT). Conversely, acknowledging the continuing importance of historical injustices (indexed by lower Historical Negation) led to increased support for left-leaning parties (the Māori Party and the Greens).

In terms of excluding Māori from the national social category, we found that increases in Symbolic Exclusion led to increased levels of support for the National Party at Time 2. In contrast, increased acceptance of Māori culture as part of the New Zealand identity led to increases in support for New Zealand's more liberal political parties (the Labour, Green and Māori parties; Hypothesis 2). Additionally, the effects of Historical Negation and Symbolic Exclusion on party support both held when controlling for demographic factors (Hypothesis 4). Unexpectedly, changes in Symbolic Exclusion were unrelated with support for the right-leaning ACT Party, as we found a relatively stable relationship between Symbolic Exclusion and support for the ACT Party over time. One explanation for this finding is that the ACT Party, New Zealand's most economically conservative party, is also relatively liberal on social policies. As such, ACT voters may be supportive of preventing the redistribution of resources (i.e., the motivation underlying the ideology of Historical Negation), yet may find Symbolic Projection (i.e., a cultural-based measure of ideology) irrelevant.

Finally, the effects of the model for National Party support were quite subtle, which was most likely the result of controlling for a large number of factors. Together, these results corroborate Jost's (2006) assertion that ideologies are important determinants of political preferences.

Though we have relatively strong evidence for the direction of our hypothesized relationships, it is important to keep in mind that our results are still based on correlational data. As such, our models (although they only use two time points) might provide support for the idea that political preferences have a causal influence on ideology. To examine this possibility, we conducted additional models testing the reverse cross-lagged effects of support for each political party on Historical Negation and Symbolic Projection over time (Hypothesis 3). In doing so, we tested whether the magnitude of these reverse paths from political party support to ideology differed from those of ideology to political party support by imposing model constraints.

The results from these additional analyses indicated that the relationship between party support and ideology were, for the most part, reciprocal, with party support predicting both Historical Negation and Symbolic Projection at similar magnitudes to the effects of these ideologies on support for each political party (Hypothesis 3). However, in no case did party support have a stronger effect on ideology. Importantly, the effects of ideology were particularly pronounced when predicting support for the Māori Party. In this case, the effect of Historical Negation on party support was significantly stronger than the reverse effect of support for the Māori Party on subsequent levels of this ideology (Wald test of parameter constraint = 8.201,  $p = .004$ ). These results indicate that ideology and political party support tend to have reciprocal effects on one another, but that ideology might exert a stronger causal effect in contexts where party support is highly contested, and where discourse relating to the party is based in representations strongly linked to the content of that specific ideology.

### Demographic Factors

Some of the demographic correlates of political party preference examined here warrant comment, as our results show that some demographic variables were weak, albeit reliable, predictors of political preferences. Two of the liberal parties analysed here, Labour and the Greens, were significantly more likely to be supported by women than men. This supports the idea of a modern ‘gender gap’ in voting in New Zealand and is perhaps a reflection of the educational and health policies championed by the respective parties (Aimer, 1993; Mulgan & Aimer, 2004; Vowles et al., 2002). Although being religious used to be an important predictor of support for the National Party (Vowles et al., 2002), we found no significant effect here for religiosity on support for the National Party. We do, however, provide some evidence for Vowles et al.’s (2002) findings by showing that Green supporters were more likely to identify as non-religious.

Socio-Economic Status (SES), measured here with the New Zealand deprivation index, was another significant predictor of party support. Traditionally, research has indicated that people lower in SES are more likely to vote for Labour, whereas those high in SES are more likely to be National supporters (as reviewed in Mulgan & Aimer, 2004). Consistent with this finding, our results indicate that being from a more deprived area predicted Labour Party support, whereas being from a less deprived area predicted National Party support. This is not surprising when thinking of the fiscal policies advocated by each party, as National and ACT tend to be ‘tax cutters’, whereas the Labour Party support welfare policies that are reliant on taxes (ACT New Zealand, 2011; The New Zealand Labour Party, 2010; The New Zealand National Party, 2012).

In terms of ethnicity, we found that being Māori negatively predicts support for the National Party, but positively predicts support for the Māori Party. This is particularly notable, given that the National and Māori parties have bridged the isle to form part of New Zealand’s last two coalition governments. Prior research indicates that Māori should be more supportive than Pākehā of

Labour (reviewed in Mulgan & Aimer, 2004), an effect that we did not find here. Perhaps their support has since been usurped by the emergence of the Māori Party. Asians, a relatively recent immigrant group, were more likely to support both the ACT and Māori parties, an interesting combination which should be followed up in future research. Pacific Nations peoples were particularly inclined to support the Labour Party, which replicates past research and may be linked to the party’s fiscal and immigration policies (Mulgan & Aimer, 2004).

### Implications, Caveats and Future Research Directions

Our findings have important implications for our understanding of the social and political climate in New Zealand, as these ideologies may have the power to shape elections. Indeed, Sibley (2010) argued that endorsement of Historical Negation and Symbolic Exclusion may legitimize the modern-day inequalities between Māori and Pākehā by dismissing Māori claims for reparation and representation in parliament. A prominent example of the power of Historical Negation can be seen in Don Brash’s infamous Orewa speech in 2004. In his speech, Dr. Brash—who was, at the time, the leader of the National Party—openly dismissed Māori resource-based claims to ownership of the seabed and affirmative action. In the immediate wake of this speech, the National Party received a 17-point bump in the polls (Miller, 2010). This suggests that, as long as Historical Negation is endorsed by a sizeable segment of the population, politicians may reap electoral benefits by drawing on an ideology that denies Māori the rights to material reparations for past injustices.

In terms of the real effects of Symbolic Exclusion, endorsement of this ideology has been found to increase for Māori as they spend more time with Pākehā friends (Sengupta, Barlow, & Sibley, 2012). Ultimately, this could lead Māori to reject their own culture as part of the projected national identity. In contrast, among Pākehā, those who have little contact with Māori are also less likely to endorse Māori culture as legitimately representative of New Zealand’s culture (Sengupta, Barlow,

& Sibley, 2012). These divergent trends could result in the undermining of Māori culture, which, as indicated by the current lack of public support for Māori language programmes (Ministry of Social Development, 2010), is already struggling to retain followers. In fact, Sibley (2010) argued that these ideologies form a dual ideological system that act as proximal legitimising myths that justify existing arrangements of intergroup relations (in the vein of Social Dominance Orientation; Sidanius & Pratto, 1999).

The reason that these two ideologies form a “Dark Duo” has practical implications for intergroup relations in New Zealand. It is possible that endorsing Māori culture as representative of the nation (indexed by low Symbolic Exclusion) could serve as a way to justify rejecting Māori claims to resources (indexed by high Historical Negation). Specifically, the literature on the divide between principles vs. implementation suggest that a large portion of the electorate is supportive of the principle of equality (which may, to some extent, be captured by low levels of Symbolic Exclusion), yet are often opposed to specific policies that may be used to achieve these ends (which may be facilitated by the endorsement of Historical Negation; see Kluegel & Smith, 1986; Schuman, Steeh, Bobo, & Krysan, 1997).

A core strength of our research is that we used a large, national probability, panel sample and modelled change in preferences and ideology over a one year period. Although the results of prior cross-sectional studies are generally consistent with the premise that ideology predicts political party support and policy preferences (e.g., Carney et al., 2008; Jost, 2006; Sibley, 2010), they cannot test proposed causal sequences with the same degree of integrity that longitudinal panel designs can achieve, as we have used here (Jost, Federico, & Napier, 2009). This is particularly important, as it is practically impossible to experimentally manipulate large scale ideologies within the lab. Nonetheless, it is important to remember that longitudinal designs also have their faults; it could still be that an unidentified third variable has influenced outcomes over time.

Although longitudinal designs are an improvement over cross-sectional studies, they still lack the validity that could be provided by growth curve modelling (which requires a minimum of three time points; see Cole & Maxwell, 2003, for a discussion of these and other issues relating to tests of cross-lagged effects using two-wave panel data).

The Dark Duo model proposes that Symbolic Exclusion and Historical Negation have developed as a consequence of unresolved post-colonial tensions. This leaves open the possibility that our model could be used to predict political party support in other post-colonial nations. Future research could also look at specific ideologies that may be particularly relevant in other nations, post-colonial or otherwise, such as meritocracy, capitalism and system justification, as well as investigating the effects of ideologies on other facets of life within New Zealand. It may be that a model of ideology very similar to the Dark Duo model operates in other post-colonial nations, or will in the future as indigenous peoples demand reparations. Broadly one dimension, Historical Negation, refers to opposition to resource based reparations. The rhetoric around reparations and the provision of resources to indigenous people may follow a similar pattern to that found in New Zealand. Similarly, support for indigenous culture as a part of the national culture may also mirror something like the ideology of Symbolic Exclusion in other nations. The theoretical links between the Dark Duo model and certain other relevant ideologies, like symbolic racism and collective guilt, remain unexamined. Additional psychological—and particularly longitudinal—research is needed in order for the literature on political ideology to advance. Such endeavours into research on ideology can help us understand the various belief systems that ultimately underlie most—if not all—democratic societies.

### Concluding Comments

This paper shows that the ideologies of Historical Negation and Symbolic Exclusion are both *unique* predictors of support for various political parties in New Zealand over time. These results suggest that Historical Negation and

Symbolic Exclusion hold power in the New Zealand political system, as these ideologies may contribute to shaping intergroup relations, political discourse and subsequent policies. Our results are even more impressive given that we identified these relationships after controlling for the usual demographic factors that are thought to predict party support. Most importantly, our data provide the first demonstration that ideology shapes political preference reciprocally. As such, this Dark Duo of ideologies ultimately legitimizes social and resource inequality in New Zealand by providing a discourse that shapes political party support.

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