



Intergenerational transmission of dietary behaviours: A qualitative study of Anglo-Australian, Chinese-Australian and Italian-Australian three-generation families

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ABSTRACT

Family food choice is complex with a number of people within the family sharing food choice and preparation responsibilities. Differences in dietary behaviours also exist between various ethnic groups worldwide, and are apparent within multicultural nations such as Australia. This study examined the intergenerational transmission of eating behaviour through semi-structured family interviews with 27 three generation families (Anglo-Australian: $n = 11$, Chinese-Australian: $n = 8$, Italian-Australian: $n = 8$; $N = 114$). The influence of generation (grandparent, parent, child), role (grandmother, grandfather, mother, father, daughter, son), and ethnic background were considered. Thematic analysis identified that regardless of ethnic background, grandmothers and mothers dominated family food choice decisions even in families where fathers were primarily responsible for the preparation of family meals. The women in each generation influenced fruit and vegetable intake by controlling purchasing decisions (e.g., by shopping for food or editing family grocery shopping lists), insisting on consumption, monitoring and reminding, utilizing food as a prerequisite for conditional treats (e.g., eating fruit before being allowed snacks), instigating and enforcing food rules (e.g., fast food only on weekends), and restricting others' food choices. Grandparents and children shared a relationship that skipped the parent generation and influenced dietary behaviours bi-directionally. These findings have implications for the delivery of dietary health messages used in disease prevention interventions designed to successfully reach culturally and linguistically diverse populations and all members of multigenerational families.

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Worldwide, obesity is a risk factor for a number of chronic diseases such as diabetes, heart disease and some cancers (Finer, 2010; National Health & Medical Research Council (NHMRC), 2013; Rowen, Milner, & Ross, 2010). In Australia, approximately two thirds of the adult population are either overweight or obese (Australian Bureau of Statistics, 2012), with the combined rate rising from 56% in 1995 to 63% in 2012. The rise in overweight and obesity has been attributed to factors that are environmental (Block, Scribner, & DeSalvo, 2004; Drewnowski, 2003), hereditary (Koehly, 2009; Ramachandrapappa & Farooqi, 2011), and behavioural

(NHMRC, 2013). Dietary intake is one modifiable, behavioural risk factor that contributes to obesity and chronic disease. Dietary behaviours linked to obesity (e.g., the regular consumption of foods high in saturated fats, salt and sugar, or overeating; Gluckman, Hanson, Zimmet, & Forrester, 2011) vary between individuals and are influenced by a range of social and environmental contexts (Linke, Robinson, & Pekmezi, 2013).

Dietary behaviours develop over time and are at least partly learnt through the social context of family experience. Research suggests that one individual will make most of the decisions about food purchases and preparation for the entire family (e.g., Wansink, 2006). Moreover, the individual with the most responsibility for food will impact the eating habits of the whole family (Chadwick, Crawford, & Ly, 2013). This suggests that identifying who fulfills this influential role is critical to impacting dietary choices at the

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level of the family. Although both parents have been shown to influence the eating attitudes, beliefs and behaviours of their children (e.g., Baker, Whisman, & Brownell, 2000; De Bourdeaudhuij, 1997), evidence suggests that the mother's influence predominates (Green et al., 2003, 2009; Johnson, Sharkey, Dean, McIntosh, & Kubena, 2011; Johnson, Sharkey, McIntosh, & Dean, 2010). To date, research has highlighted the key unidirectional role of mothers who both model and reinforce specific food-related behaviours (e.g., Feunekes, de Graaf, Meyboom, & van Staveren, 1998; Feunekes, Stafleu, de Graaf, & van Staveren, 1997; Green et al., 2009; Prichard, Hodder, Hutchinson, & Wilson, 2012). In particular, the 'mother' role has been identified as the most important in making dietary choices within families (Beydoun & Wang, 2009; Green et al., 2003, 2009; Prelip, Kinsler, Thai, Erasquin, & Slusser, 2012; Wroten, O'Neil, Stuff, Liu, & Nicklas, 2012).

However, influences on food choice within families can also operate bi-directionally and these influences may extend beyond two generations to extended family (Forero & Smith, 2010; Green et al., 2003). This highlights the possibility that the 'extended' family (i.e., family beyond the parents and children) may play a significant role in food consumption choices. Knowing whether other family members have similar or other bi-directional influence on children is important. For example, we do not know how children influence the diets of grandparents, or vice versa, and whether this influence may be positive, negative or reciprocal (Berge, Arikian, Doherty, & Neumark-Sztainer, 2012; Montgomery-Anderson & Borup, 2012). In addition, little is known about the other vertical (i.e., across generations) bi-directional influences on dietary behaviours that may exist within multigenerational families (i.e., intergenerational influence) or the horizontal (i.e., within generations) bi-directional influences that may impact on food-related behaviour within families.

These potential bi-directional, intergenerational and intra-generational influences on dietary behaviours may also operate differently in families from different ethnic backgrounds. The mother's primary responsibility for meal preparation may have influence in virtually all ethnic groups, whereas grandparents have been shown to affect grandchildren's diets in some ethnicities (e.g., Li, Adab, & Cheng, 2015). For example, Chinese grandparents in China have been shown to play a fundamental role in forming food environments for their grandchildren (Jingxiong et al., 2007). Children also potentially influence the adoption of 'new' dietary behaviours within families. Examining how the transmission of eating practices may differ across different ethnic groups allows us to identify influence processes that are potentially protective of, or promote, healthy food choices within multicultural societies.

Australia is regarded as one of the most ethnically diverse countries in the world (ABS., 2012; Department of Foreign Affairs and Trade (DFAT), 2012). Approximately 25% of Australia's population was born overseas and a further 20% have at least one migrant parent (ABS., 2012; Anikeeva et al., 2010). Of these, the highest proportion of English speaking migrants was born in the United Kingdom (UK) and the highest proportion of non-English speaking migrants was from China, India, Italy and Vietnam (ABS., 2012). Obesity and overweight in Australian children has been linked with the country of origin of the parents (Booth et al., 2001). This is likely because ethnicity and cultural practices are an important influence on dietary behaviours (Booth et al., 2001; House et al., 2014). However, many current studies of familial influences on dietary practices focus on individuals with an Anglo background and often neglect to represent other ethnicities within multicultural Western societies (Ristovski-Slijepcevic, Chapman, & Beagan, 2008). This research gap warrants more attention.

Ethnic differences in health and diet-related diseases have been investigated in a number of countries (e.g., Agyemang et al., 2011;

Baum, 2008), although to a much lesser extent in Australia. Studies indicate that there are often health status disparities between different ethnic populations within a country. Examples of this disparity are shown in American and Australian studies of migrant groups and indicate that people born in Italy and various other European countries are more likely to be overweight and obese compared to migrants from China and other Asian countries (Astell-Burt, Feng, Croteau, & Kolt, 2013; Delavari, Sonderland, Swinburn, Mellor, & Renzaho, 2013; Kaushal, 2009; Taylor, Chey, Bauman, & Webster, 1999). One explanation for this difference may be different levels of acculturation and the potential maintenance of particular dietary preferences and family influences across ethnic groups.

The present study examined dietary behaviour within three-generational Australian families and aimed to explore how decision-making and behaviour focused on food choices operates within the broader family context. It included a comparison between three subgroups; Anglo-, Chinese- and Italian-Australian families to determine any intra- and inter-generational influences on dietary behaviour across the three ethnic groups and which family members might play a dominant role in this. We considered uni- and bi-directional influences on food choices within families by interviewing three-generational Australian families about their purchasing decisions, food preparation, healthy and unhealthy dietary intake, with a focus on who makes or influences these decisions, and the interactive nature of the influences.

1. Method

1.1. Recruitment and sampling

Purposive sampling was used to recruit three-generational Australian families with known Anglo-, Chinese- or Italian-Australian background, to participate in a qualitative study exploring three-generational cross-ethnicity influences on dietary behaviours. Purposive sampling is recommended when an insightful and in-depth understanding of a research topic is required (Braun & Clarke, 2013). Criteria for participation included families that identified as having either English speaking, Chinese or Italian background with at least one participant that was a first generation migrant to Australia (except for Anglo-Australian families born entirely in Australia) from Italy or mainland China or regions of origin considered as representative of Chinese migration. These included Hong Kong, Macau and Taiwan (Cheah, Leung, Tahseen, & Schultz, 2009).

Inclusion criteria included having at least one child between the ages of seven and 18 years, one parent, and one grandparent. Average family interview group size was four, with a range of three to six family members across three generations. The sample consisted of 27 three generation families who were recruited from the community of South Australia and Victoria ($N = 114$). Participants comprised 11 Anglo-Australian families ($N = 50$), 8 Chinese-Australian families ($N = 33$), and 8 Italian-Australian families ($N = 31$). Table 1 provides a breakdown of participant numbers by ethnicity, generation and gender. All families were of middle class background and the parent generation in each family had some form of university education.

Participants were recruited by placing flyers on community noticeboards, distributing invitation letters to schools, placing advertisements in newspapers, speaking on radio or to community centre groups, visiting cultural associations in the community, utilizing researcher's community networks, placing advertisements on social media and via email distribution lists through organisations such as the Cancer Council of South Australia and Flinders University. Ethics approval was obtained from the Social and

Table 1
Participant numbers by generation, gender and ethnicity.

	Anglo-Australian (n = 50)	Italian-Australian (n = 31)	Chinese-Australian (n = 33)	Overall (N = 114)
Child n(%)	18 (15.8%)	9 (7.9%)	8 (7.0%)	35 (30.7%)
Male n(%)	5 (4.4%)	5 (4.4%)	4 (3.5%)	
Female n(%)	13 (11.4%)	4 (3.5%)	4 (3.5%)	
Parent	18 (15.8%)	12 (10.5%)	13 (11.4%)	43 (37.7%)
Male n(%)	6 (5.3%)	4 (3.5%)	6 (5.3%)	
Female n(%)	12 (10.5%)	8 (7.0%)	7 (6.1%)	
Grandparent	14 (12.3%)	10 (8.8%)	12 (10.5%)	36 (31.6%)
Male n(%)	4 (3.5%)	3 (2.7%)	5 (4.4%)	
Female n(%)	10 (8.8%)	7 (6.1%)	7 (6.1%)	
Overall	50 (43.9%)	31 (27.2%)	33 (28.9%)	114 (100%)
Male n(%)	15 (13.2%)	12 (10.5%)	15 (13.1%)	42 (36.8%)
Female n(%)	35 (30.7%)	19 (16.7%)	18 (15.8%)	72 (63.2%)

Behavioural Research Ethics Committee (SBREC) at Flinders University. Written consent and permission to record interviews was sought from each family member; parents signed on behalf of children under 18 years who had also verbally consented to participate.

1.2. Data collection

The study involved a series of semi-structured family interviews undertaken within each family home. Semi-structured group interviews are typical of the methods used in qualitative health or social science research (Liamputtong, 2013) and use prepared questions that allow for some degree of researcher flexibility and greater participant elaboration (Hennink, Hutter, & Bailey, 2011). The interview discussion guide began with questions that asked family members about their usual meal and snack times during the day. Participants were then asked to discuss: which family members were most responsible for family food purchases, meal planning and preparation, the types of food eaten and how this may have changed over time, and the family food rules (key questions). Interviews were moderated by the first author (an Anglo-Australian woman in her early fifties), or second author (a Chinese-Australian woman in her early thirties) and included a note-taker according to focus group procedures and strategies outlined by Krueger (1998). Each family interview typically took between 40 and 60 min, was recorded and then transcribed verbatim. Upon conclusion of the interview each individual participant received a supermarket voucher to the value of ten dollars to compensate them for their time.

1.3. Data analysis

Transcripts were progressively manually coded or imported into QRS NVivo™ computer software for coding and thematic analysis while data were being collected. Each transcript was closely examined using structural and simultaneous coding methods (Saldana, 2012). Any additional concepts that emerged from the interviews were also coded (using open and simultaneous coding methods) until transcripts were comprehensively analysed during the first cycle (Saldana, 2012). Coded segments of text passages were grouped together to form adult nodes (e.g., topics such as 'mother influence') and child nodes (e.g., sub-topics such as 'mother to child influence'). During second cycle coding, similar codes were then grouped into themes and labelled (using focused coding; Saldana, 2012). Similarities and differences in themes that emerged from the data were analysed across all transcripts and compared between selected participants (e.g., grandmothers, grandfathers, mothers, fathers, daughters, and sons) and across

ethnic groups (Saldana, 2012). Decision making around themes (thematic analysis) focussed on capturing important data relating to the research questions that represented a pattern within the overall data set (i.e., across all, but not necessarily included in all, family interview transcripts) (Braun & Clarke, 2008). The methodology used an interpretivist approach, hence the data were analysed beyond simply reporting the number of instances a topic occurred or by other quantifiable methods (Hennink et al., 2011).

2. Results

Familial and intergenerational influences on dietary behaviours and food choices were evident in a bi-directional manner across all ethnic groups. However, some notable differences existed between families from different ethnic backgrounds also. The results are described according to the generational location of influence under the following themes: the influence of the child generation; the influence of the parent generation; the influence of the grandparent generation; the intergenerational transmission of health-conscious behaviours; and ethnic differences in dietary preferences.

2.1. The influence of the child generation

2.1.1. Children's preferences influence parent's and grandparent's food decisions

The children in the present study had less influence on food choice than the members of the older generations, reflecting the low frequency of their participation in the food purchasing decisions and events. Nonetheless, child food preferences were considered by most parents in other ways. For example, when parents prepared breakfast or packed lunches for school, often on a daily basis, the wishes of the child were considered. Catherine (Anglo mother, aged 42) talked about this topic with her child Anne (Anglo daughter, aged 13):

Catherine: Yeah. Oh we talk about what goes in your lunch box.
Anne: Yep, what we are going to have every day.
Catherine: That's your choice though

Similarly Italian mother Rebecca (aged 43) stated, "Now that my kids are a bit older I let them pack most of their own fruits and snacks for school. I still have to make their sandwiches but they are pretty good at letting me know what they want and don't want." Child to parent influences beyond breakfast and lunch choices were demonstrated by children who made specific requests of parents for certain foods to be purchased. Nicole (Anglo mother, aged 41) commented:

Nicole: Yeah, yep. And then Courtney [Anglo-daughter, aged 18] might say, put in a request or something, or Josh might say ...
 Joshua: Influence. (Anglo son, aged 15)
 Nicole: Or let you know, for shopping.

In another example Chinese mother Susan (aged 40) said, *"In the morning when we're having breakfast, especially on the days that I know I'll be going to the shops, I'll ask the kids what they want to eat that night or one day this week. And I'll try to get a few of the things they suggest."*

Parents made the final food decisions because the boundaries of acceptable household foods were ultimately the parent's decision to make while shopping for food. Nonetheless, with advancing age, children made more of their own decisions about food. For example, in an otherwise health-conscious family, John (Anglo father, aged 51) said of his son (aged 18): *"He's a takeaway addict."* An Italian father, Angelo (aged 41) said, *"Well, if the boys [children] had their way, we would be eating pizza or fish and chips every day. So it's lucky that Simone [Italian mother, aged 40] is quite strict with their eating."*

Grandparents caring for children before and after school had requests made of them to prepare family meals according to the children's likes and dislikes. For example, before school Joshua (Anglo son, aged 15) requested his favourite meal when his Anglo grandmother Christine (aged 73) collected him for school in the morning, and then she prepared it for the whole family's evening meal, *"Yeah, well I would come over here [to the family home] to drop him off at school or something and I would say, 'What, what shall we have tonight? What do you want?' yeah. It's usually sausages or something, yeah."*

2.1.2. Children introduced 'new' food to the family's shared meals

Grandmothers who regularly prepared the family's evening meal appeared to be influenced by children who indicated a dislike for their grandparent's diet. In the Anglo-Australian families, children influenced grandmothers' family food preparation decisions by introducing 'new' foods the grandmothers had never considered previously (e.g., tacos, fish and chips, sushi, or pizza). Catherine (Anglo-mother, aged 42) said: *"Yeah. My kids don't like a lot of the same sort of things that Mum [their grandmother] will eat, because I don't cook a lot of meat and three veg; like hardly ever."*

Grandparents, and some parents of Chinese and Italian heritage, discussed changing their eating habits and adopting 'new' foods because of the children in their families. For example, Sofia (Italian mother, aged 39) commented that *"sometimes Claudio [Italian son, aged 10] will make us all have non-Italian food, even when we eat with my mum and dad [the grandparents]. Like fish and chips, my mum and dad would never have eaten that kind of food, but somehow, they will eat it with him."* Patty (Chinese mother, aged 39) stated, *"When the children started to go to school, they come back home and ask to eat things that I don't know how to cook. Like spaghetti and pies. So I had to learn to make it."* Peter (Chinese father, aged 53) said, *"They [the grandparents] still only cook Chinese food at home but when we go out to eat we try other foods because Sharon [Chinese daughter, aged 17] doesn't like Chinese food. So we all try like Korean or Indian or Italian food ... they [the grandparents] really like it but they will never go themselves or cook it otherwise."*

2.1.3. The influence of the parent generation

The vertical influence from parents extended to both the older and younger generations as well as horizontally between parents. Similar influence patterns were noted to occur across families regardless of ethnic background, and these were more clearly enunciated by mothers than fathers. Most mothers and grandmothers, who understood their husband's preferences, considered

the likes and dislikes of the family as a whole in meal preparation by preparing meals they knew were most likely to be enjoyed by all members of the family. Lauren (Anglo mother, aged 46) showed that she did not necessarily need to talk with family members to accomplish this. Facilitator: *"Okay. So when you're planning the meals for the whole family would you talk to Phil and Thomas about that – and Lily?"* Lauren: *"Not very much, because I sort of know what they like to eat"*.

2.1.4. Mum is in charge

In the present study, the important role of the mother was emphasised throughout by family members in each generation and across all ethnicities. For example, Andrea (Anglo mother, aged 47) stated: *"See it's mainly the female that organises the food."* ManShing, (Chinese grandfather, aged 84), stated [translated]: *"I just eat what I'm given (laughs). Because I don't cook so I don't mention too much about the food. I have no complaints though."* Likewise, Lucia (Italian grandmother, aged 73) remarked *"Don [Italian grandfather, aged 76] never cooks ... no I can't say never but very rarely."* In another example of mother's influential role, Alma (Italian grandmother, aged 71) said, *"Well I speak with the girls [her daughters] about food most of the time. They always ring me and ask me how to cook this and that. I think that's what mothers and daughters are like ... even my daughter-in-law calls me."* Finally, YiPing (Chinese mother, aged 36) simply stated, *"My sister and my mum and I share lots of recipes ..."*.

2.2. Mother's influence beyond the nuclear family

Fig. 1 provides a summary of the influences originating with mothers. Overall, across all families, mothers in the parent generation strongly influenced the food consumption of the other family members in their households and, to some degree, beyond it to that of the grandparent household. The mothers influenced grandparents by introducing them to new multicultural foods and spicier tastes (e.g., chili), or some of the 'new' foods available including foods labelled as 'superfoods' (e.g., quinoa, chia seeds, acai berries). These foods were offered at family meals in the parental home or provided pre-cooked for later use and delivered to the grandparents' home. Sandra (Anglo grandmother, aged 70), emphasised how her daughter Kylie (Anglo mother, aged 45), broadened her otherwise plain dietary experiences with foods that were new to her, *"Oh yes, it's incredible what [foods] I've had (laughs) ... when I've come here [mother's home]."*

In another example, Sofia (Italian mother, aged 39) said, *"Like I gave her [Italian-grandmother] a quinoa recipe ... I've made something with quinoa so then Mum [Italian-grandmother] went and bought it and got my recipe to try it herself."* Mothers were shown to influence grandparents with health-conscious attitudes by encouraging new, healthier foods, and discouraging unhealthy eating behaviours, such as the consumption of excess sugar or salt. Debra (Anglo mother, aged 43) discouraged the grandfather's salt consumption: *"We're always getting on to Dad about the salt."* It was also evident that the parent generation of the Italian and Chinese cultures saw themselves as the 'healthier' generation and acted much like the 'gatekeepers' for the older and younger generations. Weng (Chinese mother, aged 42) stated *"I think we [the parents] have the most say about the food because Ricky [Chinese-father, aged 47] does the shopping and I do the cooking. I try to make everybody happy. But because my mum [Chinese-grandmother] lives with us also, I think I try to make more Chinese food for her, especially for dinner. For lunch we eat more Westernized food to keep the boys [Chinese-children] happy. But I make sure it's healthy for us."*

Primary Role of Mothers	
Food Selection	<p>The People Mother was Influenced by</p> <p><i>Maternal grandmother</i> - her mother role-modelled being the dominant family food decision maker.</p> <p><i>Mother's</i> own preferences – for meal variety, multicultural food, health-conscious food attitudes.</p> <p><i>The father's</i> preferences – he made his likes and dislikes known, this impacted her implicit understanding over time.</p> <p><i>The children's</i> preferences – asked for specific foods; food refusal; requested baking ingredients; children prepared own foods with increasing age.</p>
Food Purchase	
Meal Planning	
Food Preparation	<p>The People Mother Influenced</p> <p><i>Household</i> – encouraged healthy food; health conscious food attitudes, discontinued daily dessert habit)</p> <p><i>The grandparents</i> - introduced new, more flavoursome and multicultural foods, encouraged healthy and discouraged unhealthy food consumption; delivered pre-prepared meals to household.</p> <p><i>The father (husband)</i> - her primary family food responsibility and meal provision, if father primary then she monitored, reminded, discouraged unhealthy and encouraged healthy food preparation.</p> <p><i>The children</i> – she modelled, reinforced, controlled, restricted, used conditional treats, gave healthy snack alternatives, provided for nutritional needs as perceived by her, internalised implicit understanding of preferences over time, introduced multicultural food.</p>
Household Diet	

Fig. 1. The primary roles of mothers are shown alongside a summary of the intergenerational and intragenerational influence pathways between mothers and other family members.

2.3. The influence of the grandparent generation

2.3.1. Grandmothers model mother's responsibility

Grandmothers, like the mothers in the present study, were principally responsible for meal planning, preparation and cooking. For example, Jennifer (Anglo grandmother, aged 73) spoke with her daughter: “*But I probably decide more on food because I do the shopping for it.*” Sarah (Anglo mother, aged 41): “*And the cooking.*” Jennifer: “*And the cooking, yes.*” Sarah: “*Yes.*” Margaret (Anglo grandmother, aged 76) also stated: “*Well I mainly do the shopping. Sometimes Jack [Anglo-grandfather, not present] will come and I just buy sort of, sort of what I think we need for the week and Jack will always ask about mid-morning what's for dinner at night (laughs). But as far as discussing meals he'll usually just sort of have what I cook and yeah.*” Consistent with reported memories of their own parents' behaviour, grandmothers highlighted their dominant role in food decisions and the comparatively passive role of the husband in accepting the meals prepared.

2.3.2. Grandparent preferences persisted over time

Across all families, cohort similarities were also observed within the grandparent generation. These were particularly evident as preferences for foods from their country of origin and their childhood. Anglo-Australian grandparents showed a preference for the plain food that they were exposed to as children, which they also prepared for the parent generation as children. For example, Barbara (Anglo grandmother, aged 71), “*I'm very bland in what I eat.*” and Brian (Anglo grandfather, aged 71), “*I don't go for anything too fancy. A plain food man I am.*” Grandparents in the present study also denied eating fast foods. Christine (Anglo grandmother, aged 73) stated: “*I don't have takeaway, I don't really have takeaways, no.*” Anglo-Australian grandparents also refrained from partaking of much of the multicultural food available in Australia even though their own offspring reported being open to trying these. For example, some grandparents would not eat pasta or rice because it was considered ‘foreign’ food (of Italian or Asian origin). Peter, Anglo-Australian grandfather, aged 76, talked about his wife,

“*Jennifer [Anglo grandmother, aged 73] doesn't like any foreign food at all, you know.*” She replied: “*Not much.*” and Peter explained: “*She won't eat pasta or rice.*”

One Italian-Australian grandmother Lucia (Italian grandmother, aged 73) explained, “*I still have to make Italian food every night, especially for Don [Italian-grandfather, aged 76]. He doesn't like to eat out or other things. ... Oh yes, I have tried. Like I make the fried rice but he eats and then complains it's not like a risotto. So I don't make again.*” One of the Italian-Australian fathers (Nick, aged 37) described the his parents' typical eating habits, “*I think Mum and Dad [Italian-grandparents] still finds it hard we don't have a five course meal every night coz that's what they are used to. Still now, when we go over to eat at theirs, we have the big traditional Italian meals. You know with antipasto, primo or you say entree, mains, desserts and all that ... I don't complain but she cooks all day. And we tell them to go out and eat, even Italian food ... but they say no*” Similarly in Chinese-Australian families, the grandparent generation was more inclined to eat Chinese foods. Wing Lee (Chinese grandfather, aged 75) commented that [translated], “*I need to eat rice every day, even every meal, or I feel I haven't eaten anything.*”

2.4. The intergenerational transmission of health-conscious behaviours

A health-conscious attitude was more apparent in female family members, and was transmitted intergenerationally from grandmother to mother, then from mother to daughter. Grandmothers had taught their children (the parent generation) the importance of health and nutrition and how it was important to eat fruit and vegetables. An intergenerational influence from grandmother to mother was noted in relation to certain food groups in particular, for example, encouragement to eat nutritious foods such as fruit and especially vegetables. The mothers in the parent generation continued with the same focus on healthy nutrition for their own family.

Health-conscious mothers in the parent generation also restricted the frequency of unhealthy snacks, confectionary, fast-

food, or sugar-sweetened beverages to weekly or monthly; foods that were not as readily available during the grandparents' childhood era. For example, Nicole (Anglo mother, aged 41), "Yeah, we probably restrict soft drinks"; Sarah (Anglo mother, aged 44), "Yeah and we, we have some rules around treats, don't we?"; Patty (Chinese mother, aged 39), "When Jess [Chinese daughter, aged 17] was younger we never had junk food in the house because I just didn't buy it, so she never ate it."; and Renata (Italian mother, aged 35), "The kids get treats maybe once or twice a week, like chocolates and chips, but the rest of the time I'm pretty strict with just healthy snacks."

The daily dessert provided by most grandmothers was not a practice carried on by the mothers in the parent generation who seemed to be more health-conscious and avoided sweetened foods or beverages (in one case, no food or drink besides water was allowed after the evening meal). Daniel (Anglo Australian father, aged 45) who prepared most family meals pointed out, not only his wife Sarah's (Anglo Australian mother, aged 41) involvement, but also her healthy dietary orientation:

Daniel: That's you [wife, mother] isn't it [who talks most about food]? In our family, yeah.

Sarah: yeah, yeah

Daniel: Because you're the one.

Sarah: yeah, yeah

Daniel: You do the most reading about diet and health.

Sarah: health-conscious I think

Daniel: Yeah you are, aren't you?

Healthy food options offered by mothers consisted of fruit for snacks and this, in turn, seemed to influence the child generation, some of whom consequently thought about, and were mindful of, healthy food choices when making their own decisions. For example, Anne (Anglo daughter, aged 13), commented, "Um Grandma and Mum like always remind us to eat healthy and if we go for snacks sometimes I will just have a piece of fruit instead."; Sharon (Chinese daughter, aged 17), "Mum and I are the healthy ones. We like to have salads and less oily foods, compared to dad."; Tina (Italian mother, aged 42), "I'm sure if you asked Danny [Italian son, aged 8] what snack he wants, he will say either an apple or a banana. Because he knows that those are his snack foods."

2.5. Ethnic differences in dietary preferences

2.5.1. Pride and cultural identity with food

The topic of tradition or culture as a dietary influence was a notable absence from discussions on food among the Anglo-Australians families. This contrasts with the discussions of Italian and Chinese families who indicated tradition or culture played a large role in influencing dietary behaviours and food choices, mainly for adult family members. Discussions often highlighted distinctions between 'our food' (either Chinese or Italian food) and other sources of food (e.g., Westernized food, Australian food or other multicultural food). In addition, when speaking about their own cultural food, a sense of pride and ownership was evident. For example, Angelo (Italian-father aged 41) declared, "Well of course, Italian food is always best ..." When food was discussed in the context of the child generation or by a child, it was evident that this cultural identity or ownership was not as apparent. This was most likely because all children in the present study were born in Australia and had been exposed to a broader range of Australian foods than the older generations. One of the Italian-Australian children, Leon (son, aged 7) said, "I like some Italian food but we eat it all the time. Sometimes I just want Mum to buy normal food." Similarly, Sharon (Chinese daughter, aged 17) explained, "I was born here [in Australia] so I don't like Chinese food as much ... Also some

Chinese food smells a little gross, especially the soups [she pulled a disgusted face]."

It was noticeable that for both Italian and Chinese families, pride in their food also stemmed from a firm belief that their cultural diet is beneficial to their health and well-being. For many Italian families, the benefits of following the Mediterranean diet were mentioned, "Well everyone knows now that the Mediterranean way of eating is healthy. So we've been doing the right thing all along." (Nick, Italian father, aged 37). In the Chinese families it was common to view food as a way to maintain health, and diets were often perceived as having medicinal purposes. This is illustrated by the way MeiChun (Chinese grandmother, aged 79), spoke about how she chose the food she prepared, "Well, during winter when it is cold and we often have colds and flus, I will use ginger in many of my dishes because it is warming for the body. I will also add some Chinese medicinal herbs to my soups to help us if we get a sore throat or have a cough."

2.5.2. Traditional food was passed down the generations

In contrast to the Anglo-Australian and Chinese-Australian families, in most Italian families, 'traditional' foods and recipes were passed down from the grandparent generation to the younger generations, and many were able to speak about specific recipes that were 'family favorites'. For example, Renate (Italian mother, aged 35) talked about traditional Italian food enjoyed by the child generation, "Michelle [Italian-daughter, aged 9] loves her Nonna's [Italian-grandmother's] cannelloni, so I have had to learn it off Mum especially. She [Michelle] tries to help me every time I cook it and she wants to know how to make it." Similarly, Sofia (Italian mother, aged 39) stated, "Yeah, the kids always complain about it, that it doesn't taste like Nonna's [Italian-grandmother's] special sauce ... so that's the bad thing. We have to learn to make it like Nonna's."

3. Discussion

The focus of the present study was to examine inter- and intra-generational similarities and differences in eating behaviours and food choices among three generation Australian families from different ethnic groups. Taken together, the findings from the interviews bring new insights, having gone beyond the results of previous research by incorporating bi-directional influences across three generations, including influences that skipped the parent generation altogether. The findings highlighted the intergenerational transmission of healthy and unhealthy dietary behaviours (including influence from children to parents and grandparents, parents to children and grandparents, and grandparents to younger generations) as well as the pervasive influence of women intra- and inter-generationally and the extent to which food choices and preferences are culturally embedded. Whilst the unidirectional (top down) influence of mothers has been previously established (e.g., Feunekes et al., 1997; Feunekes et al., 1998; Green et al., 2009; Prichard et al., 2012), findings from the present study also emphasise the importance of bi-directional influence on eating behaviour.

Previous research on the topic of healthy eating (e.g., fruit and vegetable consumption) has indicated intergenerational transmission from grandmothers to children among families in China (Jiang, Xia, Cui, Song, & Yuan, 2006; Jingxiong et al., 2007; Li et al., 2015), and African-American families in the U.S. (Kicklighter et al., 2007). However, none have compared multi-directional influences between Australian families of diverse ethnic groups. In the present study, across families from Anglo, Chinese and Italian backgrounds, grandparents were not seen as responsible for shaping the family food environment and actually placed fewer restrictions on the food consumption of their grandchildren. It was

the parent generation in this Australian cohort, regardless of ethnic background, that endeavoured to promote a positive attitude towards healthy food consumption amongst both their children and the grandparents. Grandparents were introduced to 'new' foods by both the parent generation and the child generation. Interestingly, the parent generation tended to introduce new foods that were considered healthy (e.g., quinoa) while grandchildren introduced grandparents to a wider variety of foods (ranging from fish and chips to tacos).

Grandparents exerted some influence on family food consumption through the use of traditional recipes that were considered family favourites, particularly in Chinese and Italian families. In all of the families that mentioned this, recipes and cooking information were passed down through the females in each generation right down to some children highlighting the importance of females in relation to family food environments. Overall, women had the predominant influence on food choice, meal preparation and dietary-related communication. This is in line with previous literature that has demonstrated that mothers predominantly influence food decisions in their households (Beydoun & Wang, 2009; Green et al., 2003, 2009; Prelip et al., 2012; Wroten et al., 2012). These findings are also consistent with observations from other studies in which women have been shown as more likely to follow healthy eating recommendations (Worsley & Scott, 2000), prefer the tastes of healthy foods (Turrell, 1997), engage in attempts to lose weight (Beardsworth et al., 2002), and appear to make greater contributions to the quality of their family's diets (Schafer, Schafer, Dunbar, & Keith, 1999).

In the present study generational differences were also present whereby mothers in the parent generation displayed concern for the dietary health of others that spanned across the entire family network to include husbands, children and any grandparents, even those living in separate physical households. Conversely, grandmothers appeared less concerned for the dietary health of any extended family members, particularly grandchildren and expressed being more lenient with 'treat' foods. This suggests that intergenerational healthy eating interventions might best be targeted at women in the parent generation.

Another generational difference that was evident was that grandmothers reported sole responsibility for food decision-making and cooking in their households, whereas mothers in the parent generation shared this responsibility with fathers. Grandmothers internalised an understanding of grandfathers' food preferences over time and incorporated this knowledge into their regular household meal planning, shopping and food preparation. Grandmothers also expressed greater concern for healthy nutrition than grandfathers. This could reflect their primary responsibility for household food decision-making and cooking, a task that the grandfathers historically had no need to concern themselves with; a notable difference from fathers in the parent generation.

In terms of ethnic differences, unlike the Anglo-Australian families, the data suggested that families from both Italian and Chinese heritage showed a strong sense of identity, ownership and pride, particularly in regards to their own 'traditional' foods. This was especially the case for the older generations who had a strong connection to their relevant ethnic community within Australia. Unique to Chinese-Australian and Italian-Australian families, findings suggest that 'traditional' eating habits and foods (particularly recipes and food preparation techniques) were passed down intergenerationally. In the present study, the older Italian-Australians preferred to maintain their Mediterranean diet in Australia believing it was healthier. Chinese-Australians grandparents in the present study adhered to their own traditional cultural beliefs that food has medicinal qualities and therefore would consume specific foods to address specific health concerns. This

specific aspect of intergenerational influence could be utilised and encouraged in future healthy eating interventions for families with communities that share these ethnic backgrounds, particularly in light of research findings that indicate traditional Italian and Chinese food are beneficial to health (e.g., Trichopoulou et al., 2003; Woo et al., 2003).

The findings of the present study should be considered in light of some potential limitations. It was evident in the recruitment phase of the study that a large proportion of mothers expressed an interest in food or health when enquiring about initial participation. The implication of this is a constraint on generalisability, particularly to less health-conscious population groups. Future research should conduct intergenerational family interviews with families from wider educational and socio-economic backgrounds who have less interest in food. Another potential limitation of the present study was that the higher number of female adults compared with male adults participated in the present study which may have led to a possible bias towards female perceptions within the families. However, as outlined previously, there is evidence to suggest that among Anglo-Australian, Chinese-Australian and Italian-Australian families, females still play a larger role in regards to meal preparations and food choices (e.g., Beydoun & Wang, 2009; Green et al., 2009), and this is consistent with our own findings. Nevertheless, future research should endeavour to sample a broader population of males to ensure the generalisability of these findings.

4. Conclusion

Previous literature emphasises that the socialization of children within families plays an important role in developing long-term food acceptance and food preferences (Birch, Savage, & Ventura, 2007; Contento, Williams, Michela, & Franklin, 2006; Savage, Orlet Fisher, & Birch, 2007). Consistent with previous research, in the present study mothers were dominant in the provision of family meals (Beydoun & Wang, 2009; Green et al., 2009; Prelip et al., 2012). Although there is less evidence regarding grandmothers' influence on diet (Wroten et al., 2012), the present study supported the view that the female role of grandmother also plays the most dominant role in the grandparent household. In the present study, grandmothers had even tighter control over their household food choice and meal preparation than mothers; however this control was tempered by grandmothers respecting their husband's food preferences which were tacitly understood. The trend towards fathers' greater involvement in food preparation in the parent generation showed an intergenerational difference when compared to grandfathers, yet mothers still monitored the health status of the family diet and therefore remained involved.

Noteworthy behaviours that were interpreted as being transmitted across generations in the present study comprised predominantly female, health-conscious food attitudes which were exhibited by encouraging healthy eating and discouraging unhealthy eating. Dominant female household food responsibility occurred in all families, regardless of country of origin, and was role-modelled from grandmothers to mothers. Reciprocal influences from mother to grandparents consisted of increasing the food acceptance of newer, healthier or multicultural food by using food exposure. Influences from child to grandmother included requests that increased the child's exposure to 'old-fashioned' food and requests that introduced 'new' foods to the older generation. These methods favoured the child's own food preferences and were not always healthy. Reciprocal influences from grandparent to child included positively shaping food preferences toward indulgent treats. The mechanisms of influence identified in this paper reflect the broader issues of food attitudes, health, family roles and

tradition that impact upon the family diet as a whole. As such, each of these areas are worthy of more detailed exploration in future research examining the intergenerational transmission of dietary behaviour.

With the ever increasing incidence of obesity and chronic disease in Australia, efforts that improve attitudes to the consumption of healthier food choices are critical. Overweight prevention initiatives that target the family network have so far shown moderate success in reducing the risk of obesity and chronic disease in the USA (Claassen et al., 2010; Ruffin et al., 2011). The effects of family socialization on food choice have also been demonstrated (Chadwick et al., 2013; Cullen et al., 2001). Given that the older generations in the present study reported being influenced by the younger generations to try 'new' foods and develop 'new' food-related skills, attempts to introduce 'non-traditional' healthier foods and food preparation methods could usefully be targeted at the younger generations, in the hope that they will positively influence the older generations.

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