Indigenous Identifiers:
Non-Indigenous Canadians' Stereotypes Associated with Labels for Indigenous People

by

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A thesis submitted in partial fulfillment of the requirements for the degree of

Master of Arts

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Abstract

Studies have shown that Canadians perceive stereotypes of ethnic groups as differentially varying in terms of warmth and competence, and that Aboriginal groups are stereotyped as less competent and warm than other ethnic groups. This study extends this research by examining whether different labels for designating Indigenous people are associated with variations in warmth and competence. Online questionnaires were collected from 402 non-Indigenous, Canadian-born undergraduate students. All participants rated their perceptions of how "typical Canadians" perceived the warmth and competence of four major ethnic groups (English Canadians, French Canadians, Chinese Canadians, and South Asian Canadians) and Indigenous groups in Canada. The term used to label the Indigenous group varied across six conditions, including "Indigenous"; "Aboriginal"; "Native"; "First Nations, Metis, and Inuit"; "Indian"; and "(North American) Indian". The results indicated that, regardless of the label, the Indigenous group was rated lowest in competence and warmth compared to the other ethnic groups, with the exception of "Indian" and "(North American) Indian" labels. The results are discussed with reference to other studies on the potential of relabelling in mitigating discriminatory stereotypes and the connotations that young adult Canadians may associate with the labels used in this study.

Preface

This thesis is an original work by Lakota Wood. The research project, of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board, Project Name “INDIGENOUS IDENTIFIERS”, No. Pro00096873, November 22, 2021.

Acknowledgements

I would like to acknowledge and express a very special thank you to my supervisor, Dr. Kim Noels, without whom this thesis would not have been possible. I am beyond grateful for the incredible amount of support, patience, feedback, and guidance she provided me throughout the duration of this research. I also want to thank the members of my supervisory committee, Drs. Katherine Collins, Jeff Schimel, and external reviewer, David Rast III, for all their encouragement and support, and for showing me that it is possible to enjoy a thesis defence.

I would like to especially thank the Indigenous Students' Union (ISU) at the University of Alberta, who provided me with immense support and guidance throughout the duration of this work.

I am very grateful to the University of Alberta for the scholarships I received, which funded my research endeavors, and which helped to make this study possible.

Thank you to all the research assistants and members of the Intercultural Communication Lab who put in an amazing amount of work in helping with data collection, and whom I am extremely grateful for.

Lastly, I would like to express a special thank you to my parents and my family, whose support never wavers and whose love is always felt. Thank you so very much for continuing to inspire me every day, for teaching me all that you know, and for cheering me on every step of the way.

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Introduction

There is evidence for the serious and often harmful implications of pervasive stereotypes of Indigenous groups in Canada (Morrison et al., 2008; Werhun & Penner, 2010). Cultural stereotypes, defined as widely held beliefs about a particular cultural or social group (Kashima, 2008), about Indigenous groups perpetuate anti-Indigenous attitudes that motivate discriminatory behaviours towards Indigenous people and initiatives in Canada. Discriminatory behaviours often lead to intergroup tension and conflict (Crisp & Hewstone, 2007). With a population growth rate that is surpassing that of non-Indigenous groups in Canada (Statistics Canada, 2022), intercultural interactions between Indigenous and non-Indigenous groups are only going to become more prevalent. Therefore, it is important to continue to investigate the associated stereotypes that the majority group may hold about Indigenous populations and their labels, as these associations may directly affect intergroup harmony between groups (Kalin & Berry, 1996). One strategy that has been suggested and employed to shift negative stereotypes is changing less favourable and derogatory Indigenous labels to more favourable ones. This study examined the culturally shared stereotypical associations that majority group English Canadians hold regarding different Indigenous labels used in Canada, in the interest of learning whether some labels might be more respectful than others.

[1]In this thesis I use the term "Indigenous" as the default label when referring to First Nations, Métis, and Inuit people in Canada. Indigenous refers to the original inhabitants of a territory (Government of Canada, 2023) and reinforces land claims and territory acknowledgments (Animikii Indigenous Innovation, 2020).

Examining stereotypes is an important tool in illuminating the relationships of power as well as the continued marginalization of Indigenous populations. Throughout Canada's colonial history, Indigenous stereotypes have been used to justify the colonization and genocide of these groups. Vowel (2016) asserts that colonization is both a past and present reality perpetuated through actions of dispossession of Indigenous territories, violence towards Indigenous peoples, and the continued political suppression of Indigenous sovereignty and governance. Historically, stereotypes about Indigenous peoples permuted policies that stripped Indigenous groups of both their land and their human rights. Many of these colonial falsehoods focused on stereotypical ideologies that framed Indigenous groups as uncivilized and represented European civilization as a gift, rather than what it was: annihilation of Indigenous cultures. Understanding the reciprocal relationship between prejudicial ideologies and discriminatory practices is an important first step in working towards addressing the negative relationships that exist between Indigenous and non-Indigenous groups in Canada. Stereotype-infused ideologies often influence anti-Indigenous attitudes which lead to negative outcomes for Indigenous groups, and only work to reaffirm existing stereotypes that continue to uphold interpersonal, as well as structural, forms of discrimination against Indigenous people in Canada.

Stereotypes and Discrimination Against Indigenous Groups in Canada

There is extensive evidence that Indigenous groups in Canada are discriminated against on many levels (Bailey, 2016; Beauvais, 2021; Clark et al., 2014; Cotter, 2022; Currie et al., 2012; Morrison et al., 2008). For the present purpose, we define prejudice as comprised of cognitive, affective, and behavioural dimensions, corresponding with stereotyping, evaluations, and discrimination, respectively. Although prejudice can be positive or negative (generally associated with privilege or harm, respectively), we focus this discussion on negative prejudice.

Moreover, we differentiate between interpersonal, structural/systemic, and normative aspects of discrimination.

We define interpersonal discrimination as behaviours committed by individuals or groups that aim to hurt or mock members of another social group (Morrison et al., 2008). These acts may be committed through face-to-face or mediated channels, and may be explicitly or implicitly derogatory. Several reports suggest they are an everyday reality for many Indigenous groups in Canada (Bailey, 2016; Lashta et al., 2016). According to the 2019 General Social Survey (GSS), 44% of First Nations men and women had experienced discrimination or been treated unfairly by others over the preceding five years, as had 24% of Métis and 29% of Inuit people (Cotter, 2022). The common reasons were ethnicity or culture (15%) and race or skin colour (14%). Many experienced discrimination in a bank, store, or restaurant (42%), or when interacting with police (21%). Although the GSS did not find any differences between Indigenous and non-Indigenous non-visible minority people with regards to discrimination in education and workplace, other research indicates nonetheless that Indigenous people might experience discrimination in these domains (Bailey, 2016; Currie et al., 2012; Morrison et al., 2008), as well as healthcare (Kitching et al., 2020; Morrison et al., 2008; Turpel-Lafond & Johnson, 2021). As summarized by Clark and colleagues (2014), “if there is a single urban Aboriginal experience – it is the shared perception among First Nations peoples, Métis, and Inuit, across cities, that they are stereotyped negatively”, providing evidence for negative meta-stereotyping as Indigenous students revealed a pervasive sense of being negatively stereotyped by non-Indigenous groups. Meta-stereotypes, stereotypes that members of one group have about the ways in which they are stereotypically viewed by other groups (Vorauer et al., 1998), may have significant negative

consequences for intergroup relations, as they can lead to avoidance behaviours between groups and intergroup conflict when contact is unavoidable (Finchilescu, 2010; Kteily et al., 2016).

Structural/systemic discrimination is the pattern of policy, practices, and behavioural biases that make up an organizational structure that creates and perpetuates unequal treatment of a racialized group of people (Braveman et al., 2022; Morrison et al., 2008). This type of discrimination against Indigenous groups in Canada is prevalent within academic and healthcare related contexts. For example, there are previous reports of significant disparities in the attainment of post-secondary education between Indigenous and non-Indigenous groups as a result of financial and geographical displacement challenges that Indigenous groups are faced with (Harper & Thompson, 2017; Layton, 2023; Morrison et al., 2008). In their overview of the impact stereotypes and structural discrimination has on Indigenous and non-Indigenous relations in Canada, Morrison et al. (2008) cite that "misunderstandings between white teachers and Aboriginal children with regards to non-verbal communication have been found to lead to conflict, increased levels of negative feedback, lower levels of positive feedback, and additional stress" leading to negative school experiences for Indigenous children and negative interactions with non-Indigenous groups.

Furthermore, the continued perpetuation of Indigenous stereotypes, and subsequent discrimination, has severe impacts on Indigenous health care experiences as Canadian physicians provide health care that is not deemed culturally appropriate due to these negative beliefs (Kitching et al., 2020; Morrison et al., 2008; Turpel-Lafond & Johnson, 2021). Many Indigenous people feel that their health concerns are not taken seriously and are often entirely dismissed as a direct result of these stereotypic beliefs (Browne & Fiske, 2001; Morrison et al., 2008). These types of interactions between Indigenous and non-Indigenous groups in Canada only work to

reinforce the perception that Indigenous values are not respected by non-Indigenous groups and continue to facilitate feelings of distrust and contempt. Many non-Indigenous groups rely on misinformation about Indigenous people and are guided by stereotypical beliefs in their interactions with Indigenous groups (Clark et al., 2014), which can harm the experiences of Indigenous people and taint Indigenous and non-Indigenous interactions.

This brings us to the cultural and normative level of discrimination. Previous research has shown that "intergroup behaviours are highly sensitive to variations in the social context and that culture-specific intergroup norms play a casual role in the emergence of discrimination" (Anier et al., 2019). The socially shared cognitions, including stereotypes, may identify particular social groups, including ethnic groups, as having negative traits that characterize those groups as inferior, negatively impacting attitudes towards those groups as well as the intercultural interactions they share with others. Discrimination that is guided by shared social norms may lead individuals who are engaging in such discrimination into believing they are behaving appropriately, leading to the widespread, normative practices of discriminatory behaviour.

Social Categorization, Stereotypes, and Ethnic Labels

It would be difficult to discuss stereotypes without mentioning social categorization, the process through which people group individuals based on social information, which is heavily influenced by social perceptions and interactions among cultural groups (Beukeboom & Burgers, 2019). Stereotyping and prejudice stem from social categories, as these categories function to convey generalized information about social groups. Although social categorization plays an essential role in allowing us to make sense of the social world around us and the people within it (Crisp & Hewstone, 2007), the reliance on stereotypical information surrounding social categories can lead to prejudicial and discriminatory behaviours that have the potential to foster

negative intercultural interactions and intergroup conflict (Rhodes & Baron, 2019). An important component of social categories and their associated stereotypes is the language we use to categorize, as "language reflects, constructs and maintains beliefs about social categories" (Beukeboom & Burgers, 2019). Linguistic cues, such as ethnic labels, play an important role in the formation of social categories and their associated cultural stereotypes as they work to convey generalizations about those groups as a whole (Rhodes and Baron, 2019). These cues are often used to then make judgements about social roles, relationships, and characteristics of other social groups (Cuddy et al., 2009). Ethnic labels function to identify specific categories of people and to convey meaning about those categories and the ethnic group they belong to. When members of ethnic groups are repeatedly referred to by linguistic labels, those labels may become entwined with the stereotypic characteristics of that group through association and repetition (Beukeboom & Burgers, 2019). Stereotype content about specific groups may then become activated by the given linguistic label (Carnaghi & Maass, 2007).

Labelling Indigenous People

The relationship between linguistic labels and associated stereotypes is demonstrated by the many different labels that are used to refer to North American people of Indigenous descent. Bird (1999), for instance, discusses how the label "Native American" does not carry the "baggage of stereotypes" often associated with the outdated and derogatory term "Indian", and asserts that labels have the power to regulate feelings of racism and discrimination for Indigenous groups. Varying Indigenous labels carry different connotations for different people. There are cases in which specific labels with offensive connotations have been replaced by labels that have been deemed politically correct. What exactly are the implications of these label

changes and to what extent do separate Indigenous identifying terms affect the external and internal perceptions of Indigenous groups in Canada?

Throughout history there have been many different terms used within Canada to refer to Indigenous populations. Much of the terminology used by the Government of Canada today is imposed as a guideline for understanding the differences between three separate groups of Indigenous peoples in Canada: Métis, Inuit, and First Nations (Government of Canada, 2023). There are many different preferences for various identifying terms used by both Indigenous and non-Indigenous groups in Canada. Typically, the term "Indian" is viewed as a negative label for Indigenous groups due to the historical connection this label has to the colonization of Indigenous people in Canada (Vowel, 2016). As a result, the usage of this specific Indigenous identifier has led to discrimination and racism against Indigenous populations. Despite this, the Government of Canada continues to use the term "Indian" when referring to certain official documents, such as the "Indian Act" and in reference to Indigenous land as "Indian reserves" (*Indian Act*, 1985), cementing its continued relevance within Canadian society. The term is also used for proof of First Nations status as the "certificate of Indian Status" (Government of Canada, 2023).

Native is a term used when referring to a person or thing that has originated from a particular place and has historically been used to reference people of Indigenous ancestry (Library of Parliament, 2020). This term, similar to the term Indian, is outdated and considered to be derogatory and offensive due to the complex colonial nature surrounding labels governed through legislation within Canada (Indigenous Corporate Training, 2016).

The term "Aboriginal" is a collective term that was popularized in 1982 when it was used in reference to Indigenous groups in Canada in section 35(1) of the Constitution Act, which

recognized and affirmed existing aboriginal treaty rights (Library of Parliament, 2020). The term was heavily used during a time when treaty rights were being recognized by the Canadian government without much consideration for any type of reconciliation between Indigenous and non-Indigenous populations. This led to tension and misconception between groups and "Aboriginal" is no longer the preferred label.

Indigenous is a more recent term used to collectively refer to the original peoples of North America and their descendants, although each of these three groups represent a distinct cultural group with diverse histories, languages, and spiritual beliefs. Indigenous may be viewed as a more inclusive term (Kesler, 2020) and as such is currently the preferred term within many academic institutions in Canada. Indigenous refers to "the original inhabitants of a territory" (Government of Canada, 2023) which recognizes and promotes territory acknowledgments that are an important aspect in respecting Indigenous groups' connections to the land (Animikii Indigenous Innovation, 2020).

The issue with these terms comes with the issue of colonization and the historical and emotional trauma that is connected to the colonization of Indigenous groups in Canada. As a result, Indigenous terminology is constantly changing and evolving over time, along with settler-Indigenous relations. It is important to note that although there seems to be a desire to assign one collective label to the First Nations, Métis, and Inuit people in Canada, collective terms and their erroneous nature tend to erode the diversity that exists between and within groups. With over 70 Indigenous languages (Statistics Canada, 2022) and over 600 distinct communities representing the First Nations, Métis, and Inuit people across Canada, it would be nearly impossible to sufficiently accommodate and achieve a universally agreed upon label.

Previous Research on Prejudice Towards Indigenous Groups

As previously stated, prejudice is defined as consisting of cognitive, affective, and behavioural dimensions, and corresponds with stereotyping and subsequent discrimination. Donakowski and Esses (1996) proposed a multifaceted approach in which intergroup attitudes toward social groups are defined as overall evaluations of groups based on emotions and beliefs about those groups (Haddock et al., 1994). This multicomponent perspective defines intergroup attitude as "a favourable or unfavourable overall evaluation of a social group that is based upon cognitive, affective, and behavioural sources of information" (Haddock et al., 1994). Within this definition, cognitive information refers to two different types of beliefs about an attitude object, which the authors identify as trait-laden beliefs, beliefs concerning the nature of characteristics of a target group, and symbolic beliefs which refers to "beliefs that social groups violate or promote the attainment of cherished values, customs, and traditions" (Haddock et al., 1994). Affective and behavioural sources of information refer to the emotional associations connected to the attitude object and the behavioural outcome directed to the attitude object, respectively (Haddock et al., 1994). Using this multicomponent model of intergroup attitudes, Donakowski and Esses (1996) examined stereotypes and beliefs about characteristics of Indigenous groups in relation to five separate Indigenous labels used at the time of the study: Aboriginal Peoples, First Nations People, Native Canadians, Native Indians, and Native Peoples. This study demonstrated that attitudes towards Indigenous groups may differ substantially as a function of the specific Indigenous identifying term used. Although the terminology used in this study is outdated, as the preferred labels used to identify people of Indigenous descent has since changed, the results suggest that differences in intergroup attitudes and evaluations towards Indigenous groups in

Canada are affected by the identifying term used and that these differences may be mediated by differences found in symbolic beliefs (Donakowski & Esses, 1996).

Similarly, Pfeifer and Ogloff (2003) found that priming participants with the label "Native Canadians" was enough to incite harsher punishments, lengthier prison sentences, and significantly higher rates of guilty verdicts when examining prejudice among mock jurors in an experimental design assessing discrimination against Indigenous groups within Canada's legal system. To further cement these findings, English Canadian defendants were found to be rated as significantly less guilty when the victim in the mock scenario was depicted as "Native Canadian", rather than French or English Canadian (Pfeifer & Ogloff, 2003). This study illustrates how using ethnic labels, specifically Indigenous labels, can impact how individuals are viewed and judged in Canada's court rooms.

A study conducted by Harell and colleagues (2014) revealed that Indigenous racialized cues had the power to influence attitudes towards redistributive policy and found that "support for redistribution is lower when recipients are portrayed as Aboriginal than when they are portrayed as white", demonstrating that non-Indigenous support for welfare and redistributive policies is related to racialized perceptions about Indigenous groups who may benefit from social assistance. Indigenous groups and negative ideals about distributive policies have long been connected by colonial tools of dominance: stereotypes. The negative and unequal perspectives of Indigenous groups rely heavily on stereotypical ideologies that stem from a history of racial discrimination and prejudice that has continuously tried to paint Indigenous people as inferior (Vowel, 2016). Furthermore, individuals are more likely to hold specific beliefs about groups that heavily rely on negative and prejudicial stereotypes as "these views are based on the

persuasive tendency of people to view outgroups in unequal and negative ways" (Harrel et al., 2014).

Previous research has focused on English Canadian stereotyping of immigrant ethnic groups in Canada (Kil et al., 2019). This research addressed the relationship between stereotype content and the corresponding predictions in emotions and behaviours that are held towards those ethnic groups. Cultural stereotypes have important implications for how people may react to these groups (Fiske et al., 2002). The Stereotype Content Model (SCM) stipulates that all cultural group stereotypes and personal impressions form along two key dimensions: warmth (friendliness and likability) and competence (confidence and capability) (Cuddy et al., 2009). According to this framework, competence is established by perceived status and represents the capability of a group, while warmth is established by the outgroups' perceived competition towards the ingroup, and represents the positive or negative intention of that group (Fiske et al., 2002). Different cultural outgroups may be perceived as: high in both dimensions (HC-HW); high in one dimension, but low on the other (HW-LC, LW-HC); or low on both (LW-LC) (Fiske et al., 2002). Furthermore, varying combinations of stereotypical warmth and competence "result in unique intergroup emotions – prejudices – directed toward various kinds of groups in society" (Fiske et al., 2002). These emotional responses are responsible for behavioural tendencies towards stereotyped groups which include a range between active or passive behaviours that affect the outgroup indirectly or directly, and represent whether the in-group is thought to harm or aid the out-group (Cuddy et al., 2007). Cuddy and colleagues' (2007) revealed target groups that were rated as high in both competence and warmth (admiration) elicited facilitation tendencies, while target groups that were rated as low in both competence and warmth (hated)

elicited harm tendencies indicating emotions play a mediating role when it comes to the relationship between stereotypes and behavioural tendencies towards outgroups.

Kil and colleagues (2019) found that Indigenous groups tended to score low on both perceived competence and perceived warmth relative to other ethnic groups. An important aspect of the study was the use of the term “Aboriginal” in reference to Indigenous groups in Canada. Although the term “Aboriginal” was commonly used in government and other institutions at the time, the authors noted that this term was replaced by “Indigenous” not long after the data were collected. It is possible that these terms might result in different evaluations.

Present Study, Research Question, and Gaps

Although there have been many studies that focus on the diverse stereotypes that majority group members in Canada may have about various minority groups within an immigration context (Kil et al., 2019), fewer studies have concentrated on the stereotypical ideologies connected to Indigenous groups in Canada, specifically the stereotypical associations of different Indigenous labels. Despite previous research (Donakowski & Esses, 1996; Haddock et al., 1994) demonstrating that different Indigenous terms may have an impact on behavioural outcomes towards Indigenous groups, little research has examined present-day Indigenous terminology and whether different labels affect how Indigenous groups compare in terms of warmth and competence to other ethnic groups in Canada.

Objectives

The present study replicates and extends previous research (Cuddy et al., 2009; Kil et al., 2019) by examining how English Canadians perceive the normative stereotypes associated with different terms for Indigenous people in Canada and whether the stereotype content measures of warmth and competence vary across Indigenous labels.

Methods

Participants

We recruited 402 non-Indigenous introductory psychology students (65.3% female, 30% male, and 4.7% other) to complete a questionnaire that examined how settler undergraduate students at the University of Alberta perceive the normative stereotypes associated with different terms for Indigenous people in Canada. Participants ranged in age from 18 to 37 years (M = 21.17, SD = 2.89) and were all born in Canada with many diverse backgrounds. Typical of the local university population, the ethnic origins spanned the globe and at least 15% claimed mixed ancestry.

Procedure

Participant recruitment and data collection commenced in January 2022 and ended in April 2023. Participants were compensated with class credit for their participation in the study. We consulted with multiple people and organizations on the structure and the nature of the study including Dr. Florence Glanfield (Vice-Provost Indigenous Programming and Research at the University of Alberta). We also discussed this issue with Dr. Daniel Sims at the University of British Columbia and Dr. Matthew Wildcat at the University of Northern British Columbia. We also asked this question of Dr. Carolyn Ellis, who is the Chair of the Tri-Council Panel of Research Ethics. We further consulted with the Edmonton Indigenous Relations Office and the First Peoples House community at the University of Alberta on the terminology used within the study, as well as the benefits of the study for Indigenous undergraduates at the University of Alberta. As we used the undergraduate psychology research pool, we felt that the Indigenous Students' Union (ISU) – a representative of Indigenous undergraduates at the University of Alberta – was the most appropriate Indigenous community to consult with on this project. We

met with ISU and presented our study proposal and materials, and received positive feedback as they expressed their interest in exploring this issue with us. We continued to meet periodically throughout the duration of the study to work together to enhance the integrity and impact of the research. The study was approved by the University of Alberta's ethics board and was completed in collaboration with the Indigenous Students' Union, a collective at the University of Alberta that "seeks to create a safe and inclusive space for self-identified Indigenous students to re-affirm and foster balance in spiritual, mental, physical, and emotional health through the promotion of cultural, political, academic, athletic, and interpersonal interests" (Indigenous Students' Union, 2023). Participants completed an online questionnaire during an online research session that was held over the online video conferencing platform Zoom. The participants received a consent form that provided them with a brief purpose of the study, participation rights, and possible benefits and risks of the study. Participants were then directed to complete their questionnaire in a quiet space.

Materials

The instrument used in this study was part of a larger study of non-Indigenous persons' attitudes and beliefs regarding Indigenous groups in Canada. The digital questionnaire included demographic information and questions regarding the stereotypical dimensions of warmth and competence for the four largest ethnic groups in Canada, including English Canadians, French Canadians, Chinese Canadians, and South Asian Canadians. These groups were presented in random order, and then followed by a section concerning Indigenous groups. The participants were randomly assigned to one of six conditions that varied in the Indigenous label used. The conditions included "Indigenous", "Aboriginal", "Native", "First Nations, Métis, and Inuit",

"Indian", and "(North American) Indian". Due to the nature of this randomization, the number of participants differed across each label condition.

Following a prompt of the five ethnic groups, Fiske et al.'s (2002) perceived competence and warmth items were presented. Six items represented warmth ratings (e.g., friendly, trustworthy, warm, etc.) and another six items represented competence ratings (e.g., intelligent, efficient, capable, etc.). Participants rated the extent to which "non-Indigenous Canadians view English Canadians/French Canadians/Chinese Canadians/South Asian Canadians" on a 7-point scale (1 = *not at all*; 7 = *extremely*). Due to an editorial error, the items relating to the Indigenous groups were followed by a 5-point scale. To facilitate comparisons across groups, the scales for the items pertaining to the English Canadian, Chinese Canadian, French Canadian, and South Asian Canadian groups were linearly transformed into a 5-level Likert scale guided by IBM SPSS Statistics (2020).

Analysis

The data was analyzed using SPSS Statistics software Version 28.0. Two participants were missing data, which was handled using listwise deletion. The variables were inspected with regards to their normality and found to be non-normal. Skewness varied between -1.03 and .33, with a mean of -.25, and kurtosis varied between -.48 and 1.33, with a mean of 0.23. Transformation was deemed unnecessary as review of the normality plots and statistics revealed that the non-normality of distributions was minor. The impact of non-normality is diminished by our large sample size and the ANOVA is quite robust to minor violations of normality (Blanca Mena et al., 2017; Tabachnick & Fidell, 2013). Table 1 and 2 provide the means and standard deviations, along with the Cronbach indices of internal consistency for each of the variables.

Table 1

Competence and Warmth Means, Standard Deviations, and Cronbach's Alpha Reliability Score for Ethnic Group

		Warmth			Competence		
Group	*n*	*M*	*SD*	*α*	*M*	*SD*	*α*
English Canadian	402	3.87	0.74	0.92	3.85	0.71	0.93
Chinese Canadian	402	3.26	0.76	0.90	4.17	0.66	0.88
French Canadian	402	2.96	0.88	0.92	3.53	0.70	0.92
South Asian Canadian	402	3.48	0.73	0.90	3.79	0.74	0.88
Indigenous Label (All labels combined)	402	3.01	0.86	0.88	2.76	0.96	0.91
M		3.32	0.79		3.62	0.75	

Note: For the 6 Indigenous Identifier conditions, the Cronbach alpha indices of internal consistency varied between .86 and .92, with a mean of .88 and .91 for Warmth and Competence, respectively.

Table 2

Competence and Warmth Means, Standard Deviations, and Cronbach's Alpha Reliability Score for Indigenous Labels

		Warmth			Competence		
Label	*n*	*M*	*SD*	*α*	*M*	*SD*	*α*
Indigenous	66	3.08	0.76	0.86	2.60	0.82	0.89
Aboriginal	68	2.82	0.85	0.89	2.50	0.83	0.90
Native	72	2.91	0.96	0.89	2.60	0.90	0.91
First Nations, Métis, and Inuit	68	2.92	0.85	0.87	2.40	0.87	0.92
Indian	59	3.21	0.84	0.90	3.50	0.93	0.91
North American Indian	69	3.12	0.89	0.90	3.03	0.98	0.92
M		3.00	0.87		2.75	0.96	

The hypotheses were tested using a 2x5x6 mixed model analysis of variance with two within-subject measures, including the trait ratings (Trait: warmth and competence) and ethnic group (Ethnic Group: English Canadian, Chinese Canadian, French Canadian, South Asian Canadian, and the Indigenous group). The between-subjects factor was the six different Indigenous identifiers (Labels: "Indigenous", "Aboriginal", "Native", "First Nations, Métis and Inuit", "Indian", and "(North American) Indian"). Because Mauchly's test of sphericity was violated, the Greenhouse-Geisser-corrected results are reported (Tabachnick & Fidell, 2013). Partial eta-squared (n_p^2) effect sizes are described as small ($n_p^2 = .01$), medium ($n_p^2 = .09$), or large ($n_p^2 = .25$) following Tabachnick and Fidell's (2013) guidelines. Statistically significant main and interaction effects were further examined through post hoc Tukey tests (see Appendix).

Results

The 2x5x6 ANOVA yielded a significant and large Trait main effect, $F(1,396)=275.66$, $p<.001$, $n_p^2= .410$; a significant and large main effect for Ethnic Group, $F(3.44,1584)=190.71$, $p<.001$, $n_p^2= .325$; but a non-significant main effect for Label, $F(5,396)=0.77$, $p=.57$, $n_p^2= .01$. We found a small significant two-way interaction effect between Trait ratings and Label conditions, $F(5,396)=2.46$, $p=.033$, $n_p^2= .030$, and a substantially larger two-way interaction effect between Trait and Ethnic Group $F(3.75,1584)=160.77$, $p<.001$, $n_p^2= .315$. The two-way interactions were moderated by a small, but statistically significant three-way interaction effect between Trait ratings, Ethnic Group, and Label Condition, $F(18.73,1584)=3.22$, $p<.001$, $n_p^2= .039$ (see Figure 1a-f).

Figure 1a

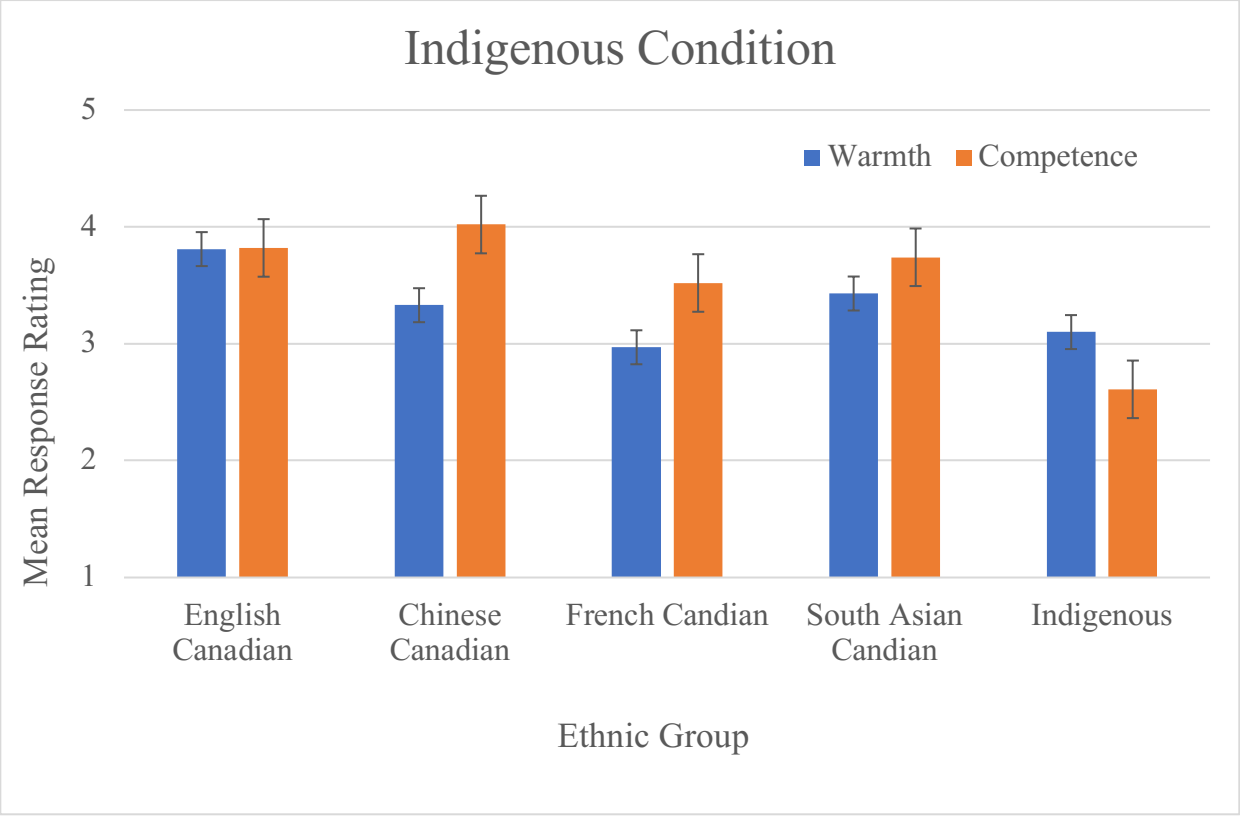


Figure 1b

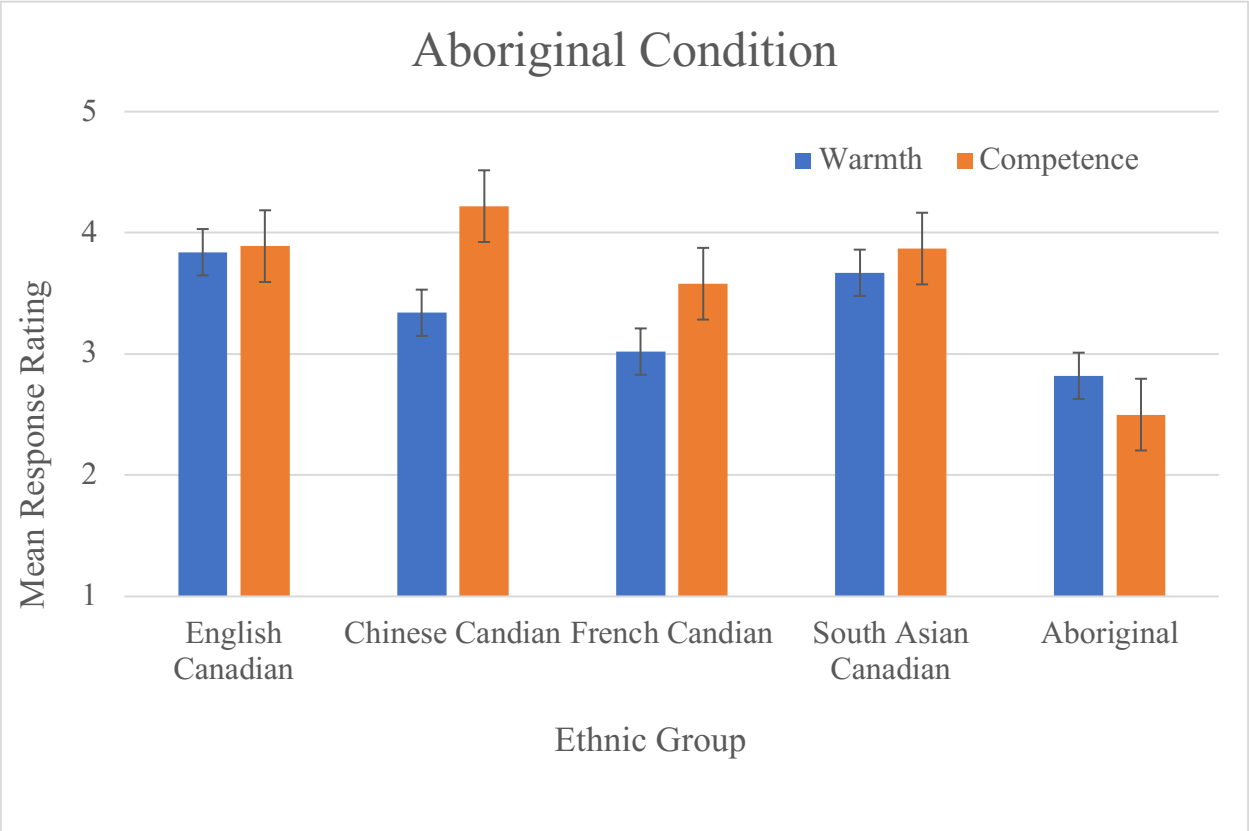


Figure 1c

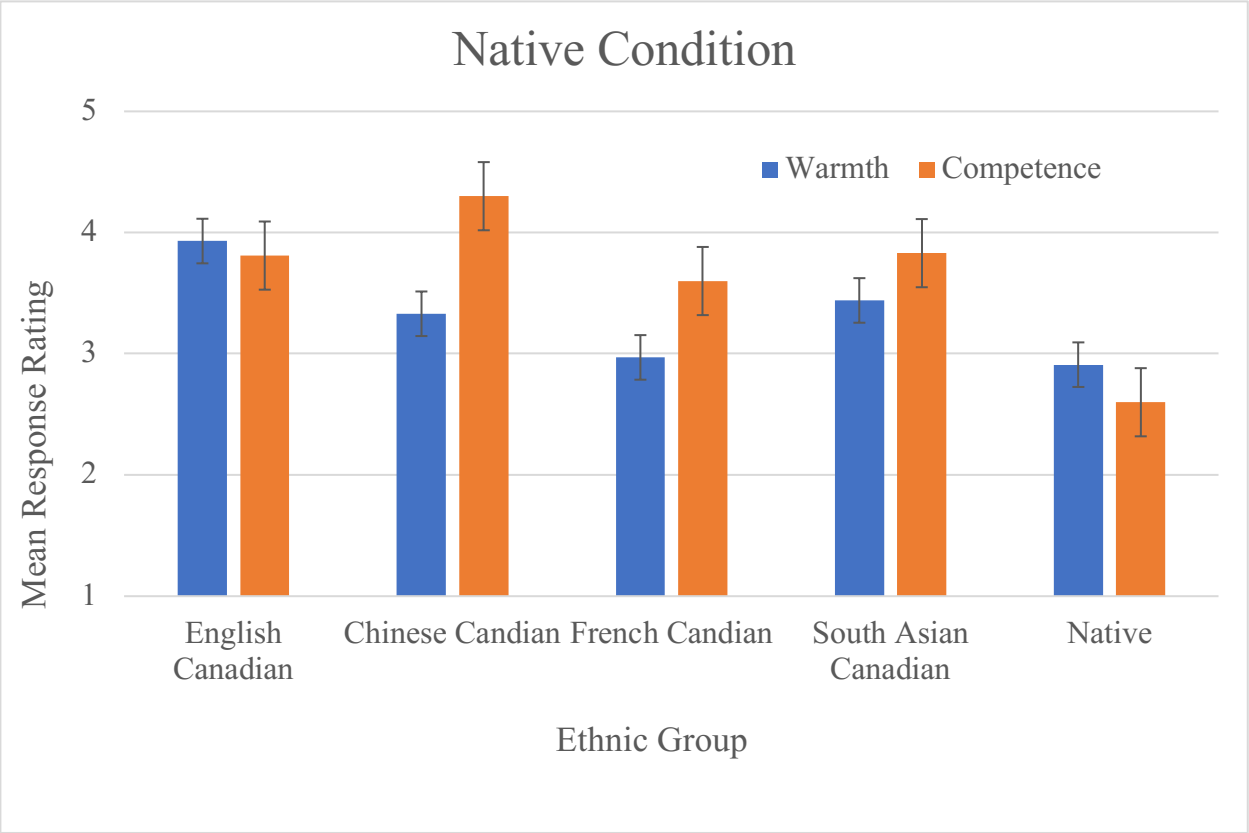


Figure 1d

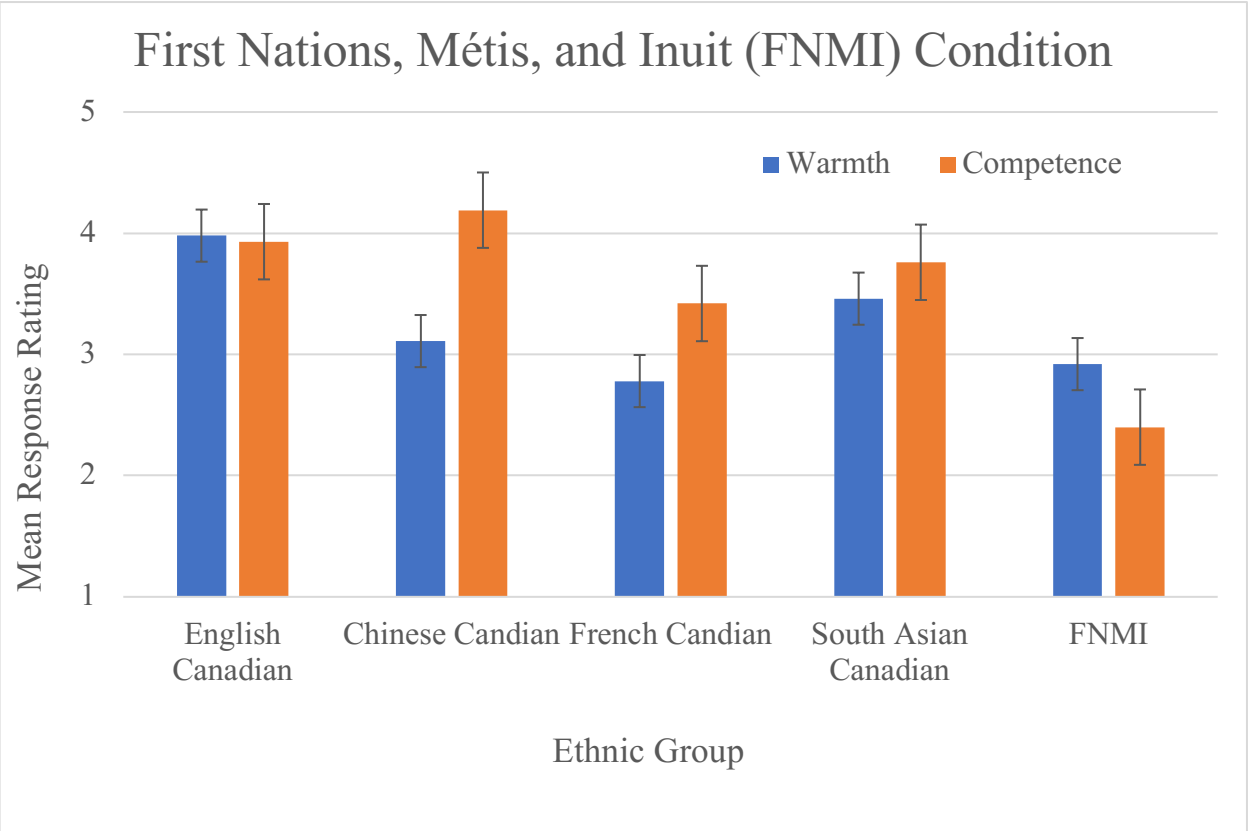


Figure 1e

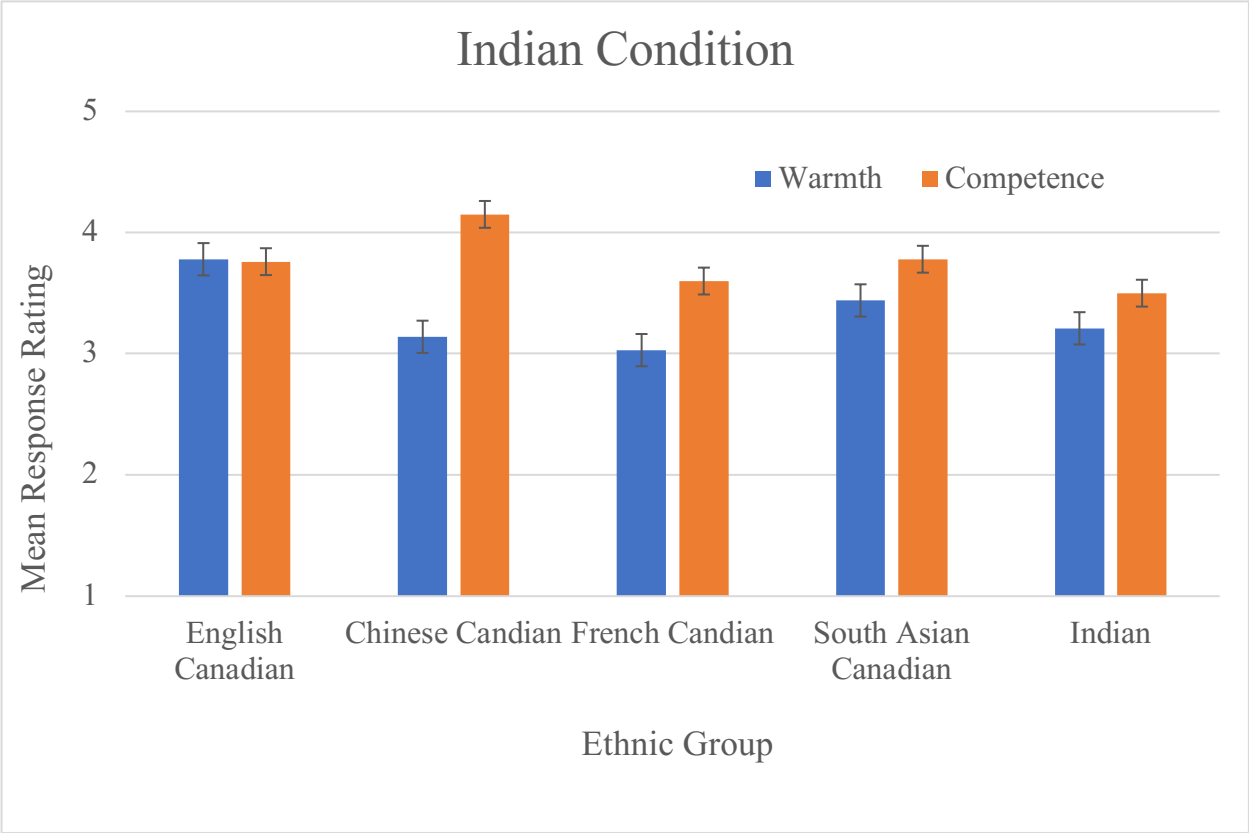


Figure 1f

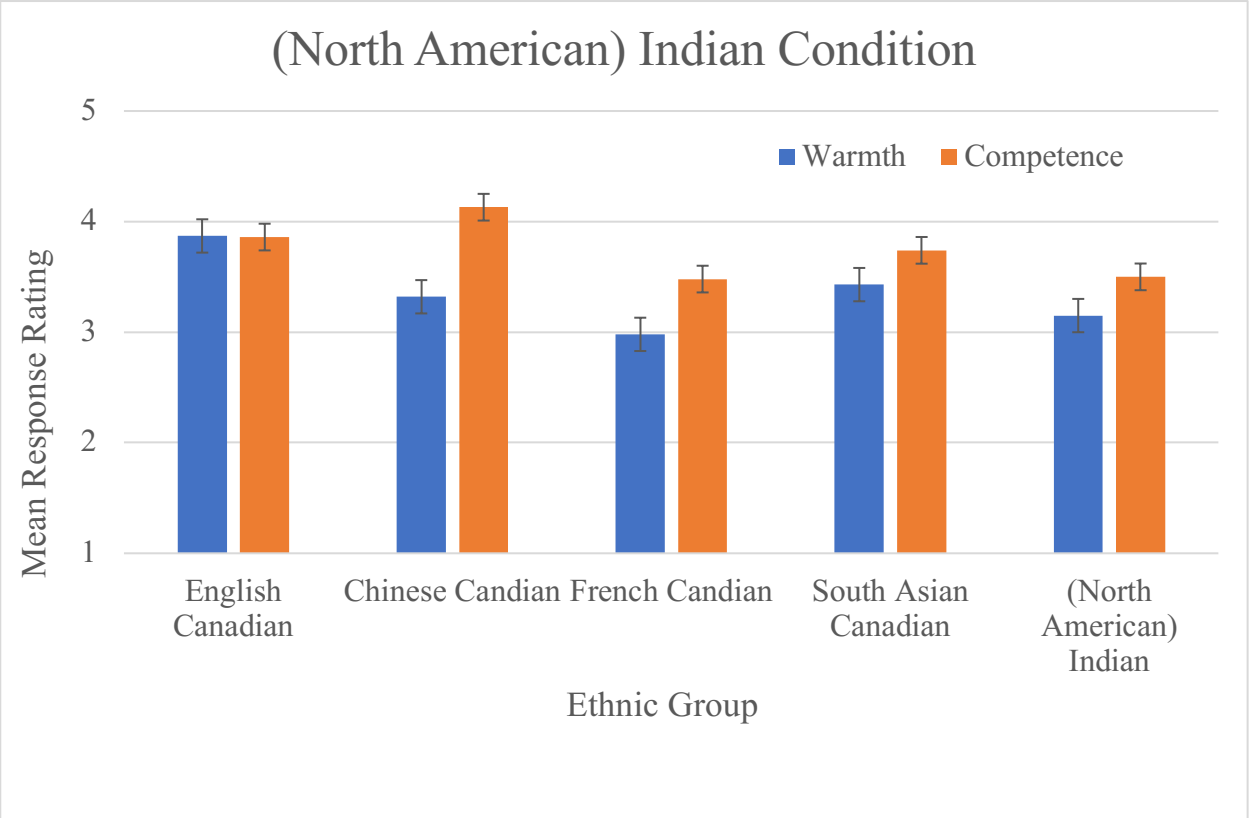
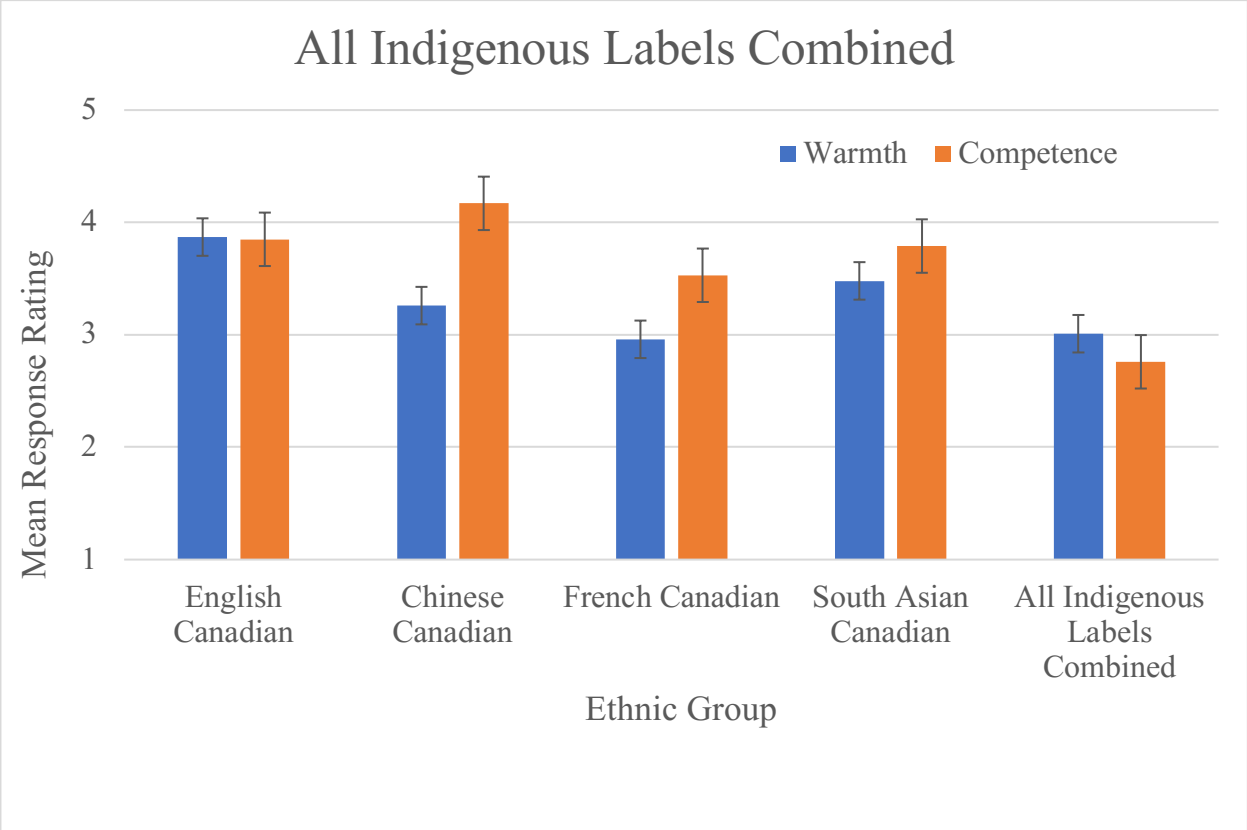


Figure 1g


All Indigenous Labels Combined
Warmth
Competence
Mean Response Rating
5
4
3
2
1
English Canadian
Chinese Canadian
French Canadian
South Asian Canadian
All Indigenous Labels Combined
Ethnic Group

Post hoc Tukey tests comparing the means across the levels of the three-way interaction revealed that there were significant differences within each ethnic group between labels, with a few exceptions. Across all Label conditions, English Canadians were rated equally on warmth and competence, and French, Chinese, and South Asian Canadians were rated as more competent than warm. Generally, Indigenous Canadians were rated as more warm than competent across all label conditions, with the exception that "Indian" was rated more competent than warm.

Comparisons of competence ratings across the Ethnic Groups showed that Chinese Canadians were rated higher than English Canadians and South Asian Canadians, who in turn were rated higher than French Canadians. French Canadians were rated higher in competence than Indigenous groups regardless of the label. Comparisons of warmth ratings across the Ethnic Groups showed that English Canadians were rated higher than South Asian Canadians and Chinese Canadians, who were rated higher than French Canadians and the Indigenous group. The exceptions were the "Indian" and "(North American) Indian" labels, which were rated higher in warmth than the French Canadians.

Across all label conditions there were no significant differences in warmth and competence ratings for all ethnic groups, with the exception of the Indigenous group. For warmth, all Indigenous labels were rated equally. For competence, "Indian" was significantly higher than "(North American) Indian", and "(North American) Indian" was significantly higher than all the other Indigenous labels.

Discussion

The first purpose of the present study was to assess the cultural stereotypes associated with various ethnic groups, with a particular focus on how Indigenous groups in Canada were perceived on the dimensions of warmth and competence relative to other groups. The second

objective was to investigate whether the label used to identify Indigenous groups affected the ratings, and how Indigenous groups are positioned relative to the other ethnic groups.

This study extended Kil and colleagues' (2019) research by comparing English Canadians' cultural stereotypes regarding the four largest ethnic groups in Canada, including English Canadians as a reference group. The results replicated Kil et al.'s (2019) finding that Chinese Canadians were rated as more competent than other ethnic groups, which is consistent with the stereotype of Asian immigrants as a "model minority". This rating was even higher than ratings of competence for English Canadians, the majority ethnic group in Canada and the ingroup for most of the participants. Compared to these two groups, South Asian Canadians were rated as moderately warm and competent, which was consistent with the earlier study. Counter to the hypothesis that French Canadians would be rated fairly similarly to English Canadians due to their shared Western European background, French Canadians were rated lower in competence and warmth than other ethnic groups, except for the Indigenous group. This low rating differs from the Kil et al. (2019) study, in which French-Canadians were rated as competent as Chinese Canadians, and as moderately warm, similar to East Indian, Pakistani and Somali participants. This relatively low rating might be due to the ongoing separatist movement in Quebec, and the sometimes antagonist relations between provinces of [blinded] and Quebec due to federal economic policies regarding provincial transfer payments (Jacques, Béland, & Lecours, 2022); this latter topic was the focus of a 2021 referendum in the province in which this study took place. For these participants, the "typical Canadian" may be construed as aligned with the provincial discourse that is critical of the Quebecois position on these and other issues. Clearly future research is merited regarding cultural stereotypes and attitudes towards French Canadians (Kircher, 2016) and how they are affected by the dynamics of interprovincial relations. It would

also be helpful to specify the region from which the target French Canadians originate (e.g., Québécois vs. Franco-Albertans).

This study also extended earlier work by examining the cultural stereotypes of Indigenous groups in Canada, and confirmed the findings that overall Indigenous groups were rated lower in competence and warmth in relation to other ethnic groups (with the only exceptions being the warmth rating for French Canadians). Moreover, the use of the labels "Indigenous", "Aboriginal", "Native" and "First Nations, Métis, and Inuit" did not affect how Indigenous groups are viewed in terms of warmth and competence. This was an unexpected finding as we hypothesized that preferred terminology, such as "Indigenous", that is viewed as more inclusive and respectful would be rated higher to reflect those connotations.

The only labels that appeared to have any effect on warmth and competence ratings were the terms "Indian" and "(North American) Indian", which, surprisingly, were both rated higher in competence and warmth compared to the other Indigenous labels. We had assumed that "Indian" would have lower warmth and competence ratings because of its direct relation to colonization and systemic discrimination against Indigenous groups in Canada. One possible reason for this finding could be the ambiguity of the term "Indian", which can be used to refer to either Indigenous or East Indian people. Consistent with this interpretation, the ratings for the South Asian Canadians and the "Indian" group yielded a similar pattern, as did the "(North American) Indian" group (see Figure 1e-f). The parenthetical adjective "(North American)", intended to clarify the historical provenance of the group, could have been interpreted along the lines of "East Indians in North America".

Limitations and Future Directions

Although this study furthers understanding of current perceptions regarding varying labels of Indigenous populations in Canada, there are several limitations that should be considered. First, while our sample of non-Indigenous Canadian-born university students provides insight into perceptions surrounding well-educated emerging adults, it would be helpful to include a broader community sample to examine perceptions of Indigenous labels beyond an academic setting with younger adults. A community sample might also vary more in terms of opportunities for intercultural contact between Indigenous and settler groups. For instance, settlers living in rural areas may have more or less opportunity for interactions and experiences of different kinds with Indigenous people than those living in urban areas, which may correspond with differences in label use. Whether individuals reside in rural or urban communities also likely impacts the ambiguity of certain terms and experiences with Indigenous labels, as individuals residing in areas that are more multiculturally populated are likely more familiar with the use of the term "Indian" in reference to South Asian groups, rather than Indigenous groups. Conversely, individuals living in rural areas, in particular areas that are near Indigenous communities and reserves, may have more experiences with the term "Indian" in reference to Indigenous groups, especially when interaction between Indigenous and non-Indigenous people is more prevalent in these areas.

A feature of this study's design was the inclusion of four other ethnic groups alongside which the Indigenous group was rated. In doing so, this frame may have provided such prominent points of reference that nuances in how Indigenous labels are perceived were obscured. It would be important to assess how these labels are perceived in relation to each other, a study that is currently ongoing.

Relatedly, this study focused on the stereotypical associations of non-Indigenous groups, which ultimately have little to do with how Indigenous groups view themselves, or the labels they choose to identify with. Indigenous groups hold many different opinions and preferences for separate Indigenous labels and what they choose to call themselves. To echo the words of Battell Lowman and Barker (2016) "the words we use to name ourselves are important" as these words are how we make sense of ourselves and the relationships we share with the world around us. Vowel (2016) argues that the mislabelling of Indigenous groups is a prominent colonial tactic that has been used for centuries to gain control and dominance over Indigenous people in Canada. Specific labels were inherently designed to foster negative perceptions of these groups and perpetuate cultural stereotypes (Vowel, 2016). Negative language towards Indigenous groups only serves to perpetuate prejudicial attitudes and discrimination against these groups (Vowel, 2016). Regardless of whether non-Indigenous attitudes towards Indigenous groups differentiate between Indigenous labels, personal label preference is important to Indigenous groups and plays a factor in fostering respect for individual tribal choice, Indigenous cultures, and diversity. Therefore, future investigations should consider how Indigenous groups view different Indigenous labels.

Implications

In sum, this study showed that Indigenous groups were consistently rated lower in competence and warmth when compared to the other four ethnic groups, and this rating did not change regardless of the label used. These results do not align with previous research which indicated that different Indigenous labels can have positive and negative effects on intergroup attitudes towards Indigenous groups in Canada (Donakowski & Esses, 1996; Pfeifer & Ogloff, 2003). Rather, these results demonstrate there may not be a difference in perceptions of

Indigenous groups as a function of the Indigenous identifier used. Building on Harell and colleagues' (2014) research that priming negative racial stereotypes results in negative attitudes, our results align with the premise that even if individuals do not personally endorse prejudicial values, they may still be aware of those stereotypes and, as a result, respond negatively. This indicates that in the face of stereotypical associations, continuing to change and update Indigenous labels may not be sufficient as we are only changing the label, not the stereotype content.

Within the context of this study, it is important to note the dynamic nature of Indigenous labels in Canada, where in one term, that may be viewed as having more positive connotations, is used to substitute a second term that may have more negative connotations (Kesler, 2020). The substitution does not change the fact that these terms are relational in that they "are defined as much by what they are not as by what they are or appear to describe more directly" (Kesler, 2020). In this manner, both terms may come to contribute to the definition of the other, instilling similar stereotypical associations in both terms.

Although different Indigenous labels may not change non-Indigenous perceptions, it should be noted that the identification of positive versus negative terms, and the subsequent promotion of Indigenous preferred terminology, has the potential to impact Indigenous and non-Indigenous relationships. Using preferred terminology lays the groundwork for respectful interactions and relationships. It is important to keep in mind that as these relationships have evolved and changed over time, so has specific Indigenous identifying terms. Terminology that may have been popular many decades ago is now recognized as derogatory and offensive. If we use negative terminology in the face of positive change, we may be undoing much of the work that has been put in towards repairing these relationships. It should be noted that it is always good

practice to ask people what they want to be called and, when appropriate, to use Nation-specific terms to show respect for territory acknowledgments (Animikii, Indigenous Innovation, 2020).

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Appendix

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1:57:58 PM    2023-08-04

                    Results of Posthoc analysis of means

                                Analysis # 1

MEAN SQUARE ERROR INPUT WAS 0.248
 DF ERROR WAS 1483

N( 1) = 402
N( 2) = 402
Mean # 1 = 3.81
Mean # 2 = 3.82
MEANS BEING CONTRASTED  Q-Statistic  NUMBER    MAXIMUM
                                     OF STEPS    STEPS

   3.8200     3.8100        0.403        2          2
                    ----------------------------------------

1:59:05 PM    2023-08-04

                    Results of Posthoc analysis of means

                                Analysis # 2

MEAN SQUARE ERROR INPUT WAS 0.248
 DF ERROR WAS 1483

N( 1) = 402
N( 2) = 402
Mean # 1 = 3.33
Mean # 2 = 4.02
MEANS BEING CONTRASTED  Q-Statistic  NUMBER    MAXIMUM
                                     OF STEPS    STEPS

   4.0200     3.3300       27.780        2          2
                    ----------------------------------------

1:59:54 PM    2023-08-04

                    Results of Posthoc analysis of means

                                Analysis # 3

MEAN SQUARE ERROR INPUT WAS 0.248
 DF ERROR WAS 1483

N( 1) = 402
N( 2) = 402
Mean # 1 = 2.97
Mean # 2 = 3.52
```

```
MEANS BEING CONTRASTED  Q-Statistic  NUMBER    MAXIMUM
                                     OF STEPS    STEPS

   3.5200     2.9700       22.144        2          2
                  ----------------------------------------

2:00:43 PM    2023-08-04

                  Results of Posthoc analysis of means

                              Analysis # 4

MEAN SQUARE ERROR INPUT WAS 0.248
 DF ERROR WAS 1483

N( 1) = 402
N( 2) = 402
Mean # 1 = 3.43
Mean # 2 = 3.74
MEANS BEING CONTRASTED  Q-Statistic  NUMBER    MAXIMUM
                                     OF STEPS    STEPS

   3.7400     3.4300       12.481        2          2
                  ----------------------------------------

2:01:25 PM    2023-08-04

                  Results of Posthoc analysis of means

                              Analysis # 5

MEAN SQUARE ERROR INPUT WAS 0.248
 DF ERROR WAS 1483

N( 1) = 402
N( 2) = 402
Mean # 1 = 3.1
Mean # 2 = 2.61
MEANS BEING CONTRASTED  Q-Statistic  NUMBER    MAXIMUM
                                     OF STEPS    STEPS

   3.1000     2.6100       19.728        2          2
                  ----------------------------------------

2:02:11 PM    2023-08-04

                  Results of Posthoc analysis of means

                              Analysis # 6

MEAN SQUARE ERROR INPUT WAS 0.248
 DF ERROR WAS 1483

N( 1) = 402
```

N(2) = 402
Mean # 1 = 3.84
Mean # 2 = 3.89

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.8900	3.8400	2.013	2	2

2:03:22 PM 2023-08-04

Results of Posthoc analysis of means

Analysis # 7

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
Mean # 1 = 3.34
Mean # 2 = 4.22

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
4.2200	3.3400	35.430	2	2

2:03:58 PM 2023-08-04

Results of Posthoc analysis of means

Analysis # 8

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
Mean # 1 = 3.02
Mean # 2 = 3.58

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.5800	3.0200	22.546	2	2

2:04:38 PM 2023-08-04

Results of Posthoc analysis of means

Analysis # 9

MEAN SQUARE ERROR INPUT WAS 0.248

```
 DF ERROR WAS 1483

N( 1) = 402
N( 2) = 402
Mean # 1 = 3.67
Mean # 2 = 3.87
MEANS BEING CONTRASTED  Q-Statistic  NUMBER    MAXIMUM
                                     OF STEPS    STEPS

   3.8700     3.6700        8.052        2          2
                    ----------------------------------------

2:05:17 PM    2023-08-04

                    Results of Posthoc analysis of means

                                Analysis # 10

MEAN SQUARE ERROR INPUT WAS 0.248
 DF ERROR WAS 1483

N( 1) = 402
N( 2) = 402
Mean # 1 = 2.82
Mean # 2 = 2.5
MEANS BEING CONTRASTED  Q-Statistic  NUMBER    MAXIMUM
                                     OF STEPS    STEPS

   2.8200     2.5000       12.884        2          2
                    ----------------------------------------

2:06:58 PM    2023-08-04

                    Results of Posthoc analysis of means

                                Analysis # 11

MEAN SQUARE ERROR INPUT WAS 0.248
 DF ERROR WAS 1483

N( 1) = 402
N( 2) = 402
Mean # 1 = 3.93
Mean # 2 = 3.81
MEANS BEING CONTRASTED  Q-Statistic  NUMBER    MAXIMUM
                                     OF STEPS    STEPS

   3.9300     3.8100        4.831        2          2
                    ----------------------------------------

2:07:53 PM    2023-08-04

                    Results of Posthoc analysis of means
```

Analysis # 12

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
Mean # 1 = 3.33
Mean # 2 = 4.3

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
4.3000	3.3300	39.053	2	2

2:08:26 PM 2023-08-04

Results of Posthoc analysis of means

Analysis # 13

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
Mean # 1 = 2.97
Mean # 2 = 3.6

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.6000	2.9700	25.365	2	2

2:09:01 PM 2023-08-04

Results of Posthoc analysis of means

Analysis # 14

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
Mean # 1 = 3.44
Mean # 2 = 3.83

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.8300	3.4400	15.702	2	2

2:09:32 PM 2023-08-04

Results of Posthoc analysis of means

Analysis # 15

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
Mean # 1 = 2.91
Mean # 2 = 2.6

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
2.9100	2.6000	12.481	2	2

2:10:10 PM 2023-08-04

Results of Posthoc analysis of means

Analysis # 16

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
Mean # 1 = 3.98
Mean # 2 = 3.93

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.9800	3.9300	2.013	2	2

2:10:52 PM 2023-08-04

Results of Posthoc analysis of means

Analysis # 17

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
Mean # 1 = 3.11
Mean # 2 = 4.19

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
4.1900	3.1100	43.482	2	2

```
                    ----------------------------------------

2:11:28 PM    2023-08-04

                    Results of Posthoc analysis of means

                                Analysis # 18

MEAN SQUARE ERROR INPUT WAS 0.248
 DF ERROR WAS 1483

N( 1) = 402
N( 2) = 402
Mean # 1 = 2.78
Mean # 2 = 3.42
MEANS BEING CONTRASTED  Q-Statistic  NUMBER    MAXIMUM
                                     OF STEPS    STEPS

   3.4200     2.7800       25.767        2          2
                    ----------------------------------------

2:12:10 PM    2023-08-04

                    Results of Posthoc analysis of means

                                Analysis # 19

MEAN SQUARE ERROR INPUT WAS 0.248
 DF ERROR WAS 1483

N( 1) = 402
N( 2) = 402
Mean # 1 = 3.46
Mean # 2 = 3.76
MEANS BEING CONTRASTED  Q-Statistic  NUMBER    MAXIMUM
                                     OF STEPS    STEPS

   3.7600     3.4600       12.078        2          2
                    ----------------------------------------

2:12:43 PM    2023-08-04

                    Results of Posthoc analysis of means

                                Analysis # 20

MEAN SQUARE ERROR INPUT WAS 0.248
 DF ERROR WAS 1483

N( 1) = 402
N( 2) = 402
Mean # 1 = 2.92
Mean # 2 = 2.4
MEANS BEING CONTRASTED  Q-Statistic  NUMBER    MAXIMUM
```

```
                                        OF STEPS    STEPS

   2.9200     2.4000       20.936        2          2
                    ----------------------------------------

2:13:23 PM    2023-08-04

                    Results of Posthoc analysis of means

                                Analysis # 21

MEAN SQUARE ERROR INPUT WAS 0.248
 DF ERROR WAS 1483

N( 1) = 402
N( 2) = 402
Mean # 1 = 3.78
Mean # 2 = 3.76
MEANS BEING CONTRASTED  Q-Statistic  NUMBER    MAXIMUM
                                     OF STEPS    STEPS

   3.7800     3.7600        0.805        2          2
                    ----------------------------------------

2:13:54 PM    2023-08-04

                    Results of Posthoc analysis of means

                                Analysis # 22

MEAN SQUARE ERROR INPUT WAS 0.248
 DF ERROR WAS 1483

N( 1) = 402
N( 2) = 402
Mean # 1 = 3.14
Mean # 2 = 4.15
MEANS BEING CONTRASTED  Q-Statistic  NUMBER    MAXIMUM
                                     OF STEPS    STEPS

   4.1500     3.1400       40.664        2          2
                    ----------------------------------------

2:14:23 PM    2023-08-04

                    Results of Posthoc analysis of means

                                Analysis # 23

MEAN SQUARE ERROR INPUT WAS 0.248
 DF ERROR WAS 1483

N( 1) = 402
N( 2) = 402
```

```
Mean # 1 = 3.03
Mean # 2 = 3.6
MEANS BEING CONTRASTED  Q-Statistic  NUMBER    MAXIMUM
                                     OF STEPS    STEPS

   3.6000     3.0300       22.949        2          2
                  ----------------------------------------

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                  Results of Posthoc analysis of means

                               Analysis # 24

MEAN SQUARE ERROR INPUT WAS 0.248
 DF ERROR WAS 1483

N( 1) = 402
N( 2) = 402
Mean # 1 = 3.44
Mean # 2 = 3.78
MEANS BEING CONTRASTED  Q-Statistic  NUMBER    MAXIMUM
                                     OF STEPS    STEPS

   3.7800     3.4400       13.689        2          2
                  ----------------------------------------

2:15:46 PM    2023-08-04

                  Results of Posthoc analysis of means

                               Analysis # 25

MEAN SQUARE ERROR INPUT WAS 0.248
 DF ERROR WAS 1483

N( 1) = 402
N( 2) = 402
Mean # 1 = 3.21
Mean # 2 = 3.5
MEANS BEING CONTRASTED  Q-Statistic  NUMBER    MAXIMUM
                                     OF STEPS    STEPS

   3.5000     3.2100       11.676        2          2
                  ----------------------------------------

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                  Results of Posthoc analysis of means

                               Analysis # 26

MEAN SQUARE ERROR INPUT WAS 0.248
 DF ERROR WAS 1483
```

N(1) = 402
N(2) = 402
Mean # 1 = 3.87
Mean # 2 = 3.86

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.8700	3.8600	0.403	2	2

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Results of Posthoc analysis of means

Analysis # 27

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
Mean # 1 = 3.32
Mean # 2 = 4.13

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
4.1300	3.3200	32.612	2	2

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Results of Posthoc analysis of means

Analysis # 28

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
Mean # 1 = 2.98
Mean # 2 = 3.48

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.4800	2.9800	20.131	2	2

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Results of Posthoc analysis of means

Analysis # 29

```
MEAN SQUARE ERROR INPUT WAS 0.248
 DF ERROR WAS 1483

N( 1) = 402
N( 2) = 402
Mean # 1 = 3.43
Mean # 2 = 3.74
MEANS BEING CONTRASTED  Q-Statistic  NUMBER    MAXIMUM
                                     OF STEPS    STEPS

   3.7400     3.4300       12.481        2          2
                  ----------------------------------------

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                  Results of Posthoc analysis of means

                              Analysis # 30

MEAN SQUARE ERROR INPUT WAS 0.248
 DF ERROR WAS 1483

N( 1) = 402
N( 2) = 402
Mean # 1 = 3.15
Mean # 2 = 3.06
MEANS BEING CONTRASTED  Q-Statistic  NUMBER    MAXIMUM
                                     OF STEPS    STEPS

   3.1500     3.0600        3.624        2          2
                  ----------------------------------------

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                  Results of Posthoc analysis of means

                              Analysis # 31

MEAN SQUARE ERROR INPUT WAS 0.248
 DF ERROR WAS 1483

N( 1) = 402
N( 2) = 402
Mean # 1 = 3.87
Mean # 2 = 3.85
MEANS BEING CONTRASTED  Q-Statistic  NUMBER    MAXIMUM
                                     OF STEPS    STEPS

   3.8700     3.8500        0.805        2          2
                  ----------------------------------------

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```

Results of Posthoc analysis of means

Analysis # 32

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
Mean # 1 = 3.26
Mean # 2 = 4.17

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
4.1700	3.2600	36.638	2	2

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Results of Posthoc analysis of means

Analysis # 33

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
Mean # 1 = 2.96
Mean # 2 = 3.53

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.5300	2.9600	22.949	2	2

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Results of Posthoc analysis of means

Analysis # 34

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
Mean # 1 = 3.48
Mean # 2 = 3.79

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.7900	3.4800	12.481	2	2

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Results of Posthoc analysis of means

Analysis # 35

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
Mean # 1 = 3.01
Mean # 2 = 2.76

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.0100	2.7600	10.065	2	2

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Results of Posthoc analysis of means

Analysis # 36

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
N(3) = 402
N(4) = 402
N(5) = 402
Mean # 1 = 3.81
Mean # 2 = 3.33
Mean # 3 = 2.97
Mean # 4 = 3.43
Mean # 5 = 3.1

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.8100	3.4300	15.299	2	5
3.8100	3.3300	19.325	3	5
3.8100	3.1000	28.585	4	5
3.8100	2.9700	33.819	5	5
3.4300	3.3300	4.026	2	5
3.4300	3.1000	13.286	3	5
3.4300	2.9700	18.520	4	5
3.3300	3.1000	9.260	2	5
3.3300	2.9700	14.494	3	5
3.1000	2.9700	5.234	2	5

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Results of Posthoc analysis of means

Analysis # 37

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
N(3) = 402
N(4) = 402
N(5) = 402
Mean # 1 = 3.82
Mean # 2 = 4.02
Mean # 3 = 3.52
Mean # 4 = 3.74
Mean # 5 = 2.61

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
4.0200	3.8200	8.052	2	5
4.0200	3.7400	11.273	3	5
4.0200	3.5200	20.131	4	5
4.0200	2.6100	56.768	5	5
3.8200	3.7400	3.221	2	5
3.8200	3.5200	12.078	3	5
3.8200	2.6100	48.716	4	5
3.7400	3.5200	8.857	2	5
3.7400	2.6100	45.495	3	5
3.5200	2.6100	36.638	2	5

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Results of Posthoc analysis of means

Analysis # 38

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
N(3) = 402
N(4) = 402
N(5) = 402
Mean # 1 = 3.84
Mean # 2 = 3.34
Mean # 3 = 3.02
Mean # 4 = 3.67
Mean # 5 = 2.82

MEANS BEING CONTRASTED		Q-Statistic	NUMBER	MAXIMUM

			OF STEPS	STEPS
3.8400	3.6700	6.844	2	5
3.8400	3.3400	20.131	3	5
3.8400	3.0200	33.014	4	5
3.8400	2.8200	41.066	5	5
3.6700	3.3400	13.286	2	5
3.6700	3.0200	26.170	3	5
3.6700	2.8200	34.222	4	5
3.3400	3.0200	12.884	2	5
3.3400	2.8200	20.936	3	5
3.0200	2.8200	8.052	2	5

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Results of Posthoc analysis of means

Analysis # 39

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
N(3) = 402
N(4) = 402
N(5) = 402
Mean # 1 = 3.89
Mean # 2 = 4.22
Mean # 3 = 3.58
Mean # 4 = 3.87
Mean # 5 = 2.5

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
4.2200	3.8900	13.286	2	5
4.2200	3.8700	14.091	3	5
4.2200	3.5800	25.767	4	5
4.2200	2.5000	69.249	5	5
3.8900	3.8700	0.805	2	5
3.8900	3.5800	12.481	3	5
3.8900	2.5000	55.963	4	5
3.8700	3.5800	11.676	2	5
3.8700	2.5000	55.158	3	5
3.5800	2.5000	43.482	2	5

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Results of Posthoc analysis of means

Analysis # 40

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
N(3) = 402
N(4) = 402
N(5) = 402
Mean # 1 = 3.93
Mean # 2 = 3.33
Mean # 3 = 2.97
Mean # 4 = 3.44
Mean # 5 = 2.91

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.9300	3.4400	19.728	2	5
3.9300	3.3300	24.157	3	5
3.9300	2.9700	38.651	4	5
3.9300	2.9100	41.066	5	5
3.4400	3.3300	4.429	2	5
3.4400	2.9700	18.923	3	5
3.4400	2.9100	21.338	4	5
3.3300	2.9700	14.494	2	5
3.3300	2.9100	16.910	3	5
2.9700	2.9100	2.416	2	5

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Results of Posthoc analysis of means

Analysis # 41

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
N(3) = 402
N(4) = 402
N(5) = 402
Mean # 1 = 3.81
Mean # 2 = 4.3
Mean # 3 = 3.6
Mean # 4 = 3.83
Mean # 5 = 2.6

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
4.3000	3.8300	18.923	2	5
4.3000	3.8100	19.728	3	5
4.3000	3.6000	28.183	4	5
4.3000	2.6000	68.444	5	5

3.8300	3.8100	0.805	2	5
3.8300	3.6000	9.260	3	5
3.8300	2.6000	49.521	4	5
3.8100	3.6000	8.455	2	5
3.8100	2.6000	48.716	3	5
3.6000	2.6000	40.261	2	5

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Results of Posthoc analysis of means

Analysis # 42

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
N(3) = 402
N(4) = 402
N(5) = 402
Mean # 1 = 3.98
Mean # 2 = 3.11
Mean # 3 = 2.78
Mean # 4 = 3.46
Mean # 5 = 2.92

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.9800	3.4600	20.936	2	5
3.9800	3.1100	35.027	3	5
3.9800	2.9200	42.677	4	5
3.9800	2.7800	48.313	5	5
3.4600	3.1100	14.091	2	5
3.4600	2.9200	21.741	3	5
3.4600	2.7800	27.378	4	5
3.1100	2.9200	7.650	2	5
3.1100	2.7800	13.286	3	5
2.9200	2.7800	5.637	2	5

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Results of Posthoc analysis of means

Analysis # 43

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
N(3) = 402

N(4) = 402
N(5) = 402
Mean # 1 = 3.93
Mean # 2 = 4.19
Mean # 3 = 3.42
Mean # 4 = 3.76
Mean # 5 = 2.4

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
4.1900	3.9300	10.468	2	5
4.1900	3.7600	17.312	3	5
4.1900	3.4200	31.001	4	5
4.1900	2.4000	72.068	5	5
3.9300	3.7600	6.844	2	5
3.9300	3.4200	20.533	3	5
3.9300	2.4000	61.600	4	5
3.7600	3.4200	13.689	2	5
3.7600	2.4000	54.755	3	5
3.4200	2.4000	41.066	2	5

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Results of Posthoc analysis of means

Analysis # 44

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
N(3) = 402
N(4) = 402
N(5) = 402
Mean # 1 = 3.78
Mean # 2 = 3.14
Mean # 3 = 3.03
Mean # 4 = 3.44
Mean # 5 = 3.21

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.7800	3.4400	13.689	2	5
3.7800	3.2100	22.949	3	5
3.7800	3.1400	25.767	4	5
3.7800	3.0300	30.196	5	5
3.4400	3.2100	9.260	2	5
3.4400	3.1400	12.078	3	5
3.4400	3.0300	16.507	4	5
3.2100	3.1400	2.818	2	5
3.2100	3.0300	7.247	3	5
3.1400	3.0300	4.429	2	5

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Results of Posthoc analysis of means

Analysis # 45

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
N(3) = 402
N(4) = 402
N(5) = 402
Mean # 1 = 3.76
Mean # 2 = 4.15
Mean # 3 = 3.6
Mean # 4 = 3.78
Mean # 5 = 3.5

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
4.1500	3.7800	14.897	2	5
4.1500	3.7600	15.702	3	5
4.1500	3.6000	22.144	4	5
4.1500	3.5000	26.170	5	5
3.7800	3.7600	0.805	2	5
3.7800	3.6000	7.247	3	5
3.7800	3.5000	11.273	4	5
3.7600	3.6000	6.442	2	5
3.7600	3.5000	10.468	3	5
3.6000	3.5000	4.026	2	5

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Results of Posthoc analysis of means

Analysis # 46

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
N(3) = 402
N(4) = 402
N(5) = 402
Mean # 1 = 3.84
Mean # 2 = 3.34
Mean # 3 = 3.02
Mean # 4 = 3.67

Mean # 5 = 2.82

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.8400	3.6700	6.844	2	5
3.8400	3.3400	20.131	3	5
3.8400	3.0200	33.014	4	5
3.8400	2.8200	41.066	5	5
3.6700	3.3400	13.286	2	5
3.6700	3.0200	26.170	3	5
3.6700	2.8200	34.222	4	5
3.3400	3.0200	12.884	2	5
3.3400	2.8200	20.936	3	5
3.0200	2.8200	8.052	2	5

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Results of Posthoc analysis of means

Analysis # 47

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
N(3) = 402
N(4) = 402
N(5) = 402
Mean # 1 = 3.86
Mean # 2 = 4.13
Mean # 3 = 3.48
Mean # 4 = 3.74
Mean # 5 = 3.06

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
4.1300	3.8600	10.871	2	5
4.1300	3.7400	15.702	3	5
4.1300	3.4800	26.170	4	5
4.1300	3.0600	43.080	5	5
3.8600	3.7400	4.831	2	5
3.8600	3.4800	15.299	3	5
3.8600	3.0600	32.209	4	5
3.7400	3.4800	10.468	2	5
3.7400	3.0600	27.378	3	5
3.4800	3.0600	16.910	2	5

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Results of Posthoc analysis of means

Analysis # 48

MEAN SQUARE ERROR INPUT WAS 0.637
DF ERROR WAS 784.185

N(1) = 66
N(2) = 68
N(3) = 72
N(4) = 68
N(5) = 59
N(6) = 69
Mean # 1 = 3.81
Mean # 2 = 3.84
Mean # 3 = 3.93
Mean # 4 = 3.98
Mean # 5 = 3.78
Mean # 6 = 3.87

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.9800	3.9300	0.524	2	6
3.9800	3.8700	1.141	3	6
3.9800	3.8400	1.446	4	6
3.9800	3.8100	1.743	5	6
3.9800	3.7800	1.992	6	6
3.9300	3.8700	0.631	2	6
3.9300	3.8400	0.943	3	6
3.9300	3.8100	1.248	4	6
3.9300	3.7800	1.514	5	6
3.8700	3.8400	0.311	2	6
3.8700	3.8100	0.617	3	6
3.8700	3.7800	0.899	4	6
3.8400	3.8100	0.308	2	6
3.8400	3.7800	0.598	3	6
3.8100	3.7800	0.297	2	6

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Results of Posthoc analysis of means

Analysis # 49

MEAN SQUARE ERROR INPUT WAS 0.637
DF ERROR WAS 784.185

N(1) = 66
N(2) = 68
N(3) = 72
N(4) = 68
N(5) = 59
N(6) = 69
Mean # 1 = 3.81
Mean # 2 = 3.84

Mean # 3 = 3.93
Mean # 4 = 3.98
Mean # 5 = 3.78
Mean # 6 = 3.87

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.9800	3.9300	0.524	2	6
3.9800	3.8700	1.141	3	6
3.9800	3.8400	1.446	4	6
3.9800	3.8100	1.743	5	6
3.9800	3.7800	1.992	6	6
3.9300	3.8700	0.631	2	6
3.9300	3.8400	0.943	3	6
3.9300	3.8100	1.248	4	6
3.9300	3.7800	1.514	5	6
3.8700	3.8400	0.311	2	6
3.8700	3.8100	0.617	3	6
3.8700	3.7800	0.899	4	6
3.8400	3.8100	0.308	2	6
3.8400	3.7800	0.598	3	6
3.8100	3.7800	0.297	2	6

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Results of Posthoc analysis of means

Analysis # 50

MEAN SQUARE ERROR INPUT WAS 0.637
DF ERROR WAS 784.185

N(1) = 66
N(2) = 68
N(3) = 72
N(4) = 68
N(5) = 59
N(6) = 69
Mean # 1 = 3.82
Mean # 2 = 3.89
Mean # 3 = 3.81
Mean # 4 = 3.93
Mean # 5 = 3.76
Mean # 6 = 3.86

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.9300	3.8900	0.413	2	6
3.9300	3.8600	0.726	3	6
3.9300	3.8200	1.128	4	6
3.9300	3.8100	1.257	5	6
3.9300	3.7600	1.693	6	6
3.8900	3.8600	0.311	2	6

3.8900	3.8200	0.718	3	6
3.8900	3.8100	0.838	4	6
3.8900	3.7600	1.295	5	6
3.8600	3.8200	0.412	2	6
3.8600	3.8100	0.526	3	6
3.8600	3.7600	0.999	4	6
3.8200	3.8100	0.104	2	6
3.8200	3.7600	0.593	3	6
3.8100	3.7600	0.505	2	6

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Results of Posthoc analysis of means

Analysis # 51

MEAN SQUARE ERROR INPUT WAS 0.637
DF ERROR WAS 784.185

N(1) = 66
N(2) = 68
N(3) = 72
N(4) = 68
N(5) = 59
N(6) = 69
Mean # 1 = 3.33
Mean # 2 = 3.34
Mean # 3 = 3.33
Mean # 4 = 3.11
Mean # 5 = 3.14
Mean # 6 = 3.32

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.3400	3.3300	0.103	2	6
3.3400	3.3300	0.105	3	6
3.3400	3.3200	0.207	4	6
3.3400	3.1400	1.992	5	6
3.3400	3.1100	2.376	6	6
3.3300	3.3300	0.000	2	6
3.3300	3.3200	0.103	3	6
3.3300	3.1400	1.879	4	6
3.3300	3.1100	2.256	5	6
3.3300	3.3200	0.105	2	6
3.3300	3.1400	1.917	3	6
3.3300	3.1100	2.305	4	6
3.3200	3.1400	1.799	2	6
3.3200	3.1100	2.178	3	6
3.1400	3.1100	0.299	2	6

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Results of Posthoc analysis of means

Analysis # 52

MEAN SQUARE ERROR INPUT WAS 0.637
DF ERROR WAS 784.185

N(1) = 66
N(2) = 68
N(3) = 72
N(4) = 68
N(5) = 59
N(6) = 69
Mean # 1 = 4.02
Mean # 2 = 4.22
Mean # 3 = 4.3
Mean # 4 = 4.19
Mean # 5 = 4.15
Mean # 6 = 4.13

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
4.3000	4.2200	0.838	2	6
4.3000	4.1900	1.153	3	6
4.3000	4.1500	1.514	4	6
4.3000	4.1300	1.788	5	6
4.3000	4.0200	2.911	6	6
4.2200	4.1900	0.310	2	6
4.2200	4.1500	0.697	3	6
4.2200	4.1300	0.933	4	6
4.2200	4.0200	2.051	5	6
4.1900	4.1500	0.398	2	6
4.1900	4.1300	0.622	3	6
4.1900	4.0200	1.743	4	6
4.1500	4.1300	0.200	2	6
4.1500	4.0200	1.286	3	6
4.1300	4.0200	1.132	2	6

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Results of Posthoc analysis of means

Analysis # 53

MEAN SQUARE ERROR INPUT WAS 0.637
DF ERROR WAS 784.185

N(1) = 66
N(2) = 68
N(3) = 72
N(4) = 68
N(5) = 59
N(6) = 69

Mean # 1 = 2.97
Mean # 2 = 3.02
Mean # 3 = 2.97
Mean # 4 = 2.78
Mean # 5 = 3.03
Mean # 6 = 2.98

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.0300	3.0200	0.100	2	6
3.0300	2.9800	0.500	3	6
3.0300	2.9700	0.593	4	6
3.0300	2.9700	0.605	5	6
3.0300	2.7800	2.490	6	6
3.0200	2.9800	0.415	2	6
3.0200	2.9700	0.513	3	6
3.0200	2.9700	0.524	4	6
3.0200	2.7800	2.480	5	6
2.9800	2.9700	0.103	2	6
2.9800	2.9700	0.105	3	6
2.9800	2.7800	2.074	4	6
2.9700	2.9700	0.000	2	6
2.9700	2.7800	1.948	3	6
2.9700	2.7800	1.991	2	6

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Results of Posthoc analysis of means

Analysis # 54

MEAN SQUARE ERROR INPUT WAS 0.637
DF ERROR WAS 784.185

N(1) = 66
N(2) = 68
N(3) = 72
N(4) = 68
N(5) = 59
N(6) = 69
Mean # 1 = 3.52
Mean # 2 = 3.58
Mean # 3 = 3.6
Mean # 4 = 3.42
Mean # 5 = 3.6
Mean # 6 = 3.48

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.6000	3.6000	0.000	2	6
3.6000	3.5800	0.210	3	6
3.6000	3.5200	0.832	4	6
3.6000	3.4800	1.262	5	6

3.6000	3.4200	1.886	6	6
3.6000	3.5800	0.199	2	6
3.6000	3.5200	0.791	3	6
3.6000	3.4800	1.199	4	6
3.6000	3.4200	1.793	5	6
3.5800	3.5200	0.615	2	6
3.5800	3.4800	1.037	3	6
3.5800	3.4200	1.653	4	6
3.5200	3.4800	0.412	2	6
3.5200	3.4200	1.025	3	6
3.4800	3.4200	0.622	2	6

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Results of Posthoc analysis of means

Analysis # 55

MEAN SQUARE ERROR INPUT WAS 0.637
DF ERROR WAS 784.185

N(1) = 66
N(2) = 68
N(3) = 72
N(4) = 68
N(5) = 59
N(6) = 69
Mean # 1 = 3.43
Mean # 2 = 3.67
Mean # 3 = 3.44
Mean # 4 = 3.46
Mean # 5 = 3.44
Mean # 6 = 3.43

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.6700	3.4600	2.170	2	6
3.6700	3.4400	2.410	3	6
3.6700	3.4400	2.291	4	6
3.6700	3.4300	2.461	5	6
3.6700	3.4300	2.489	6	6
3.4600	3.4400	0.210	2	6
3.4600	3.4400	0.199	3	6
3.4600	3.4300	0.308	4	6
3.4600	3.4300	0.311	5	6
3.4400	3.4400	0.000	2	6
3.4400	3.4300	0.104	3	6
3.4400	3.4300	0.105	4	6
3.4400	3.4300	0.099	2	6
3.4400	3.4300	0.100	3	6
3.4300	3.4300	0.000	2	6

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Results of Posthoc analysis of means

Analysis # 56

MEAN SQUARE ERROR INPUT WAS 0.637
DF ERROR WAS 784.185

N(1) = 66
N(2) = 68
N(3) = 72
N(4) = 68
N(5) = 59
N(6) = 69
Mean # 1 = 3.74
Mean # 2 = 3.87
Mean # 3 = 3.83
Mean # 4 = 3.76
Mean # 5 = 3.78
Mean # 6 = 3.74

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.8700	3.8300	0.419	2	6
3.8700	3.7800	0.896	3	6
3.8700	3.7600	1.137	4	6
3.8700	3.7400	1.333	5	6
3.8700	3.7400	1.348	6	6
3.8300	3.7800	0.505	2	6
3.8300	3.7600	0.733	3	6
3.8300	3.7400	0.936	4	6
3.8300	3.7400	0.947	5	6
3.7800	3.7600	0.199	2	6
3.7800	3.7400	0.396	3	6
3.7800	3.7400	0.400	4	6
3.7600	3.7400	0.205	2	6
3.7600	3.7400	0.207	3	6
3.7400	3.7400	0.000	2	6

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Results of Posthoc analysis of means

Analysis # 57

MEAN SQUARE ERROR INPUT WAS 0.637
DF ERROR WAS 784.185

N(1) = 66
N(2) = 68
N(3) = 72
N(4) = 68

N(5) = 59
N(6) = 69
Mean # 1 = 3.1
Mean # 2 = 2.82
Mean # 3 = 2.91
Mean # 4 = 2.92
Mean # 5 = 3.21
Mean # 6 = 3.15

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.2100	3.1500	0.600	2	6
3.2100	3.1000	1.088	3	6
3.2100	2.9200	2.888	4	6
3.2100	2.9100	3.027	5	6
3.2100	2.8200	3.884	6	6
3.1500	3.1000	0.515	2	6
3.1500	2.9200	2.385	3	6
3.1500	2.9100	2.524	4	6
3.1500	2.8200	3.422	5	6
3.1000	2.9200	1.846	2	6
3.1000	2.9100	1.976	3	6
3.1000	2.8200	2.871	4	6
2.9200	2.9100	0.105	2	6
2.9200	2.8200	1.033	3	6
2.9100	2.8200	0.943	2	6

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Results of Posthoc analysis of means

Analysis # 58

MEAN SQUARE ERROR INPUT WAS 0.637
DF ERROR WAS 784.185

N(1) = 66
N(2) = 68
N(3) = 72
N(4) = 68
N(5) = 59
N(6) = 69
Mean # 1 = 3.1
Mean # 2 = 2.82
Mean # 3 = 2.91
Mean # 4 = 2.92
Mean # 5 = 3.21
Mean # 6 = 3.15

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.2100	3.1500	0.600	2	6
3.2100	3.1000	1.088	3	6

3.2100	2.9200	2.888	4	6
3.2100	2.9100	3.027	5	6
3.2100	2.8200	3.884	6	6
3.1500	3.1000	0.515	2	6
3.1500	2.9200	2.385	3	6
3.1500	2.9100	2.524	4	6
3.1500	2.8200	3.422	5	6
3.1000	2.9200	1.846	2	6
3.1000	2.9100	1.976	3	6
3.1000	2.8200	2.871	4	6
2.9200	2.9100	0.105	2	6
2.9200	2.8200	1.033	3	6
2.9100	2.8200	0.943	2	6

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Results of Posthoc analysis of means

Analysis # 59

MEAN SQUARE ERROR INPUT WAS 0.637
DF ERROR WAS 784.185

N(1) = 66
N(2) = 68
N(3) = 72
N(4) = 68
N(5) = 59
N(6) = 69
Mean # 1 = 2.61
Mean # 2 = 2.5
Mean # 3 = 2.6
Mean # 4 = 2.4
Mean # 5 = 3.5
Mean # 6 = 3.06

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.5000	3.0600	4.397	2	6
3.5000	2.6100	8.802	3	6
3.5000	2.6000	9.081	4	6
3.5000	2.5000	9.959	5	6
3.5000	2.4000	10.955	6	6
3.0600	2.6100	4.631	2	6
3.0600	2.6000	4.838	3	6
3.0600	2.5000	5.807	4	6
3.0600	2.4000	6.844	5	6
2.6100	2.6000	0.104	2	6
2.6100	2.5000	1.128	3	6
2.6100	2.4000	2.153	4	6
2.6000	2.5000	1.048	2	6
2.6000	2.4000	2.096	3	6
2.5000	2.4000	1.033	2	6

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Results of Posthoc analysis of means

Analysis # 60

MEAN SQUARE ERROR INPUT WAS 0.637
DF ERROR WAS 784.185

N(1) = 66
N(2) = 68
N(3) = 72
N(4) = 68
N(5) = 59
N(6) = 69
Mean # 1 = 2.61
Mean # 2 = 2.5
Mean # 3 = 2.6
Mean # 4 = 2.4
Mean # 5 = 3.5
Mean # 6 = 3.06

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.5000	3.0600	4.397	2	6
3.5000	2.6100	8.802	3	6
3.5000	2.6000	9.081	4	6
3.5000	2.5000	9.959	5	6
3.5000	2.4000	10.955	6	6
3.0600	2.6100	4.631	2	6
3.0600	2.6000	4.838	3	6
3.0600	2.5000	5.807	4	6
3.0600	2.4000	6.844	5	6
2.6100	2.6000	0.104	2	6
2.6100	2.5000	1.128	3	6
2.6100	2.4000	2.153	4	6
2.6000	2.5000	1.048	2	6
2.6000	2.4000	2.096	3	6
2.5000	2.4000	1.033	2	6

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Results of Posthoc analysis of means

Analysis # 61

MEAN SQUARE ERROR INPUT WAS 0.637
DF ERROR WAS 784.185

N(1) = 66
N(2) = 68

N(3) = 72
N(4) = 68
N(5) = 59
N(6) = 69
Mean # 1 = 2.61
Mean # 2 = 2.5
Mean # 3 = 2.6
Mean # 4 = 2.4
Mean # 5 = 3.5
Mean # 6 = 3.06

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.5000	3.0600	4.397	2	6
3.5000	2.6100	8.802	3	6
3.5000	2.6000	9.081	4	6
3.5000	2.5000	9.959	5	6
3.5000	2.4000	10.955	6	6
3.0600	2.6100	4.631	2	6
3.0600	2.6000	4.838	3	6
3.0600	2.5000	5.807	4	6
3.0600	2.4000	6.844	5	6
2.6100	2.6000	0.104	2	6
2.6100	2.5000	1.128	3	6
2.6100	2.4000	2.153	4	6
2.6000	2.5000	1.048	2	6
2.6000	2.4000	2.096	3	6
2.5000	2.4000	1.033	2	6

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Results of Posthoc analysis of means

Analysis # 62

MEAN SQUARE ERROR INPUT WAS 0.637
DF ERROR WAS 784.185

N(1) = 66
N(2) = 68
N(3) = 72
N(4) = 68
N(5) = 59
N(6) = 69
Mean # 1 = 2.61
Mean # 2 = 2.5
Mean # 3 = 2.6
Mean # 4 = 2.4
Mean # 5 = 3.5
Mean # 6 = 3.06

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS

3.5000	3.0600	4.397	2	6
3.5000	2.6100	8.802	3	6
3.5000	2.6000	9.081	4	6
3.5000	2.5000	9.959	5	6
3.5000	2.4000	10.955	6	6
3.0600	2.6100	4.631	2	6
3.0600	2.6000	4.838	3	6
3.0600	2.5000	5.807	4	6
3.0600	2.4000	6.844	5	6
2.6100	2.6000	0.104	2	6
2.6100	2.5000	1.128	3	6
2.6100	2.4000	2.153	4	6
2.6000	2.5000	1.048	2	6
2.6000	2.4000	2.096	3	6
2.5000	2.4000	1.033	2	6

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Results of Posthoc analysis of means

Analysis # 1

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
N(3) = 402
N(4) = 402
N(5) = 402
Mean # 1 = 3.87
Mean # 2 = 3.26
Mean # 3 = 2.96
Mean # 4 = 3.48
Mean # 5 = 3.01

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
3.8700	3.4800	15.702	2	5
3.8700	3.2600	24.559	3	5
3.8700	3.0100	34.625	4	5
3.8700	2.9600	36.638	5	5
3.4800	3.2600	8.857	2	5
3.4800	3.0100	18.923	3	5
3.4800	2.9600	20.936	4	5
3.2600	3.0100	10.065	2	5
3.2600	2.9600	12.078	3	5
3.0100	2.9600	2.013	2	5

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Results of Posthoc analysis of means

Analysis # 2

MEAN SQUARE ERROR INPUT WAS 0.248
DF ERROR WAS 1483

N(1) = 402
N(2) = 402
N(3) = 402
N(4) = 402
N(5) = 402
Mean # 1 = 3.85
Mean # 2 = 4.17
Mean # 3 = 3.53
Mean # 4 = 3.79
Mean # 5 = 2.76

MEANS BEING CONTRASTED		Q-Statistic	NUMBER OF STEPS	MAXIMUM STEPS
4.1700	3.8500	12.884	2	5
4.1700	3.7900	15.299	3	5
4.1700	3.5300	25.767	4	5
4.1700	2.7600	56.768	5	5
3.8500	3.7900	2.416	2	5
3.8500	3.5300	12.884	3	5
3.8500	2.7600	43.885	4	5
3.7900	3.5300	10.468	2	5
3.7900	2.7600	41.469	3	5
3.5300	2.7600	31.001	2	5