Relationships effecting college students' perception of family influence impacting their health and lifestyle

TEACH[R]

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Abstract

The purpose of this cross-sectional, non-experimental descriptive design study was to determine college students' perception of family influence impacting their health and lifestyle. The sample included 120 college students in a faith-based institution and each student completed a Likert-type survey (4-point agreement scale) that investigated their perception of health, and the degree of influence peers and family had on their health. This second data analysis reports correlations between variables and group differences related to health perceptions and behaviours. The strongest correlation is between 'family demonstration of positive health habits' and 'personal health practices being like my families' ($r = 0.671$, $p < 0.01$), a moderate relationship supported by other weaker positive correlations to specific health outcomes. Negative correlations between 'my friends display more positive health habits than family' and both 'family has influenced my idea of health' and 'my health practices are similar to my family' indicate the potential for other contextual factors to effect family impact. While differences relating to health influence and outcomes between groups formed by age, gender, ethnicity, family structure and religion were found, the variable related to most healthy lifestyle transmission elements was 'My family demonstrates positive health habits'. Recommendations supporting improved societal health are offered, together with suggestions for further research. Group classifications that are fixed but might inform interactions with elements of cohorts are identified, together with group memberships which might be changed to enhance health options. Caution in the

> *This … data analysis reports correlations between variables and group differences related to [College students'] health perceptions and behaviours.*

generalisation of these findings is advised due to the explained limitations of this study.

Background

This research study is contextualised within a general concern about the rising occurrence of obesity and unhealthy behaviours among young adults, and the link these problems may have to family influence. The problem addressed in this research is: A persisting uncertainty about the impact of family influence on the health behaviours of young adults. Consequently, the purpose of this study was: To determine college students' perception of family influence impacting their health and lifestyle. The research question was: Do college students perceive a family influence impacting their health and lifestyle?

The research question prompted a literature search, that gathered eight focus research studies and a consideration of social learning (Bandura, 1971) that were presented and discussed together in the first paper reporting this research (Nicholas, Soptich, Tyson, Abraham, Perry, & Gillum, 2018). That report also provided information about the specifics of the survey tool, the survey processes and data gathering.

The prior report (Nicholas et al, 2018) considered an analysis of the descriptive statistics for the single responses and subsequently inferential statistics, in particular factorial analysis that established three factors Family Influence (FI), Positive Family Impacts (PFI) and Negative Impacts (NI). Both analytical processes asserted that most college students perceive their families influence their health attitudes and consequently their practices. Consideration of correlations between the factors – implied by the oblique rotation method required for factor formation— indicated a weak to moderate positive association between Family Influence (FI) and Positive Family Impact (PFI) ($r = 0.334$) that is consistent with, but not confirmatory of a causal relationship. Further, a moderate but negative correlation between FI and Negative Impacts (NI) ($r = -0.429$), and a very weak negative correlation between PFI and NI ($r = -0.242$) consistent with a perception of family influence having a predominantly positive impact, being inversely associated with negative impacts, and potentially preventative of them.

A subsidiary research question emerged and becomes the focus of this second report: Are there relationships between the variables investigated that indicate ways in which families may have influenced college students? This report considers significant correlations to identify relationships and One Way Analysis of Variance (ANOVA) to establish differences between groups, formed on the basis of demographic data and also specific item response groups, for each of the single item responses.

> *My family demonstrates positive health habits is prominent being most related … to … My health practices are similar to those of my family,*

Results and analysis

Methodological considerations

If the responses of students to the items are considered to be measures of the level of agreement, measured from low agreement (1) to high agreement (4), and can be considered interval data, parametric statistics may be applied. Tests of normality, including visual revision of the histograms, P-P and Q-Q plots, plus review of the statistics for skewness (>-2 but <2) and kurtosis (>-7 and <7) for the survey items 1 to 20, indicate the approximate fulfillment of the requirement of normality, a pre-requisite for the application of many parametric statistics. Kolmogorov-Smirnov and Shapiro-Wilk normality test statistics for the distributions of the items however, do not suggest normality. Pearson's correlation and One-way Analysis of Variance (ANOVA) are however robust tests, tolerating violations of normality well.

Between item relationships

Relationships as correlations

A comparison of the correlation tables indicates both the Spearman (non-parametric) and Pearson's (parametric) correlations give similar statistics, seeming to affirm the assumptions of interval data and normality required for application of parametric statistics. Pearson's correlations are consequently used in the following report of associations.

In considering associations, Item 3 *My family demonstrates positive health habits* is prominent being most related (highest correlation coefficient) to Item 2 *My health practices are similar to those of my family*, being moderately positively correlated ($r = 0.671$, $p < 0.01$), but Item 3 is also the most negatively related to Item 18 *Unlike my family members, my friends display more positive health habits* ($r = -0.514$). The second strongest relationship is between Item 3 and Item 8; *My family members eat well-balanced meals regularly* ($r = 0.663$, $p < 0.01$). Item 3—a demonstration of family health, Item 1—claiming the influence of family, and Item 2—an outcome being similar respondent student health practice—are all moderately positively inter-correlated ($0.5 < r > 0.6$), consistent with the postulation that family health ideas do influence these respondents' practices. A positive though low correlation between Item 2—*My health practices are similar to those of my family* and the following items Item 5—*My family's eating habits have shaped my own eating habits* ($r = 0.382$, $p < 0.01$); Item 8—*My family members eat well-balanced meals regularly* ($r = 0.518$, $p < 0.01$); Item 9—*I eat well-balanced meals regularly* ($r = 0.423$, $p < 0.01$); Item 13—*The way I handle stress is similar to the way my family deals with stress* ($r = 0.379$, $p < 0.01$); Item 14—*My family members have effective ways to positively handle stress* ($r = 0.421$, $p < 0.01$); further affirm this assertion.

Negative correlations, the strongest between Item 18—*Unlike my family members, my friends display more positive health habits* and Item 3 *My family demonstrates positive health habits* at moderate level ($r = -0.514$, $p < 0.01$), and lower level negative correlations with Item 1—*My family has influenced my idea of health* ($r = -0.409$, $p < 0.01$) and Item 2—*My health practices are similar to those of my family* ($r = -0.397$, $p < 0.01$), are consistent with agreeing to the influence of family display of poor habits and the adoption of 'better' alternative health practices. Negative correlations of Item 18 with beneficial family health practices Item 8—*My family members eat well-balanced meals regularly* ($r = -0.404$, $p < 0.01$), Item 11—*My family members exercise 30 minutes or more, 5 days a week* ($r = -0.389$, $p < 0.01$) and Item 14—*My family members have effective ways to positively handle stress* ($r = -0.404$, $p < 0.01$), suggests that respondents agreeing with Item 18 do disagree with their family having a number of beneficial positive health habits. Do these poor family habits influence their health ideas and habits in any particular way? Specifically, Item 18 moderately and positively correlates with Item 17—*My peers impact my idea of health more than my family members* ($r = 0.488$, $p < 0.01$), as might be expected, further, moderate to low negative correlations for Item 17 with Items 1, 2, 3 and 8 are similar to these items relationships to Item 18.

About 40% of the sample agree they have developed some bad health habits from their family (Item 4). This Item 4 has low to moderate negative correlations with Item 3—*My family demonstrates positive health habits* ($r = -0.361$, $p < 0.01$), Item 8—*My family members eat well-balanced meals regularly* ($r = -0.457$, $p < 0.01$), and Item 14—*My family members have effective ways to positively handle stress* ($r = -0.304$, $p < 0.01$). This asserts families with poorer health habits (including food consumption and stress) are associated with students who have developed bad health habits too – implying a negative family influence on health. The relationship between specific pairs of variables suggests family influences on health can be either positive or negative, depending on perceptions of family health practices. Can these potential group differences be confirmed? The following analyses of differences between groups develops awareness of potential influences.

Relationships as group differences
Statistically significant variable differences for the means of groups based on the demographic variables age, gender, ethnicity, religion, and family type were investigated by One-way ANOVA. Additional analyses, perhaps more significant for this discussion, investigated responses by groups formed on the basis of respondent perceptions of independent and dependent choice, positive or negative family health habits, and shared family spirituality.

Differences by age
Since for Item 1—*My family has influenced my idea of health*, the distribution of responses for age groups fails the Levine's (equality of variances) Test, consequently Robust Tests of Equality of Means (Brown-Forsyth and Welch Tests) must be applied. A statistically significant difference between the means for age groups 18-20 years of age ($n = 78$), being $M = 3.42$ ($SD = 0.593$) and 24-26 years of age ($n = 3$) with $M = 3.00$ ($SD = 0.615$), was confirmed by post hoc tests (Dunnett T3 and Games-Howell, both $p < 0.001$). This indicates that the older group's agreement with the statement *My family has influenced my idea of health* is clear but slightly less than the youngest group's more convicted agreement.

While ANOVA indicates a statistically significant difference in the mean for *My family members exercise 30 minute or more, 5 days week* between age groups [$F(2, 117) = 3.446$, $p > 0.034$], post hoc tests cannot confirm specific differences between groups. This is possibly due to the small sample size of one of the groups ($n = 3$ for age 24-26 years). It is clear however, that with increasing age of the group, agreement transitions from uncertainty ($M_{18-20} = 2.46$, $SD_{18-20} = 0.949$) to disagreement ($M_{21-23} = 2.36$, $SD_{21-23} = 0.894$) to strong disagreement ($M_{24-26} = 1.33$, $SD_{24-26} = 0.945$).

Differences by gender
One way ANOVA indicates a statistically significant difference [$F(1,118) = 14.585$, $p < 0.001$] for females being in agreement ($M_f = 2.83$, $SD_f = 0.722$), but in lower agreement than males ($M_m = 3.03$, $SD_m = 0.704$), that *I have effective ways to positively handle stress* (Item 15). Two non-parametric tests (Mann-Witney U and Kruskall-Wallis tests) affirm this difference.

The Brown-Forsyth and Welch Tests (robust tests of the equality of means for distribution of unequal variance) indicate gender differences in response perspectives on exercise. While females tend to agree *My family exercise habits have shaped my own exercise habits* (Item 10, $M_f = 2.79$, $SD_f = 0.778$, $p = 0.046$), males are uncertain that this is correct ($M_m = 2.44$, $SD_m = 1.013$). Males however agree overall that *I exercise 30 minutes or more, 5 days a week* (Item 12, $M_m = 3.28$, $SD_m = 0.784$, $p < 0.001$) while females are uncertain they do ($M_f = 2.64$, $SDf = 0.993$), a difference affirmed by non-parametric tests for group difference (Mann-Witney U, Kolomogov-Smirnov, and Kruskall-Wallis tests).

Differences by ethnicity
ANOVA indicates ethnic differences for Item 17 [$F(4,115) = 3.941$, $p = 0.005$] and Item 18 [$F(4, 115) =$

> *About 40% of the sample agree they have developed some bad health habits from their family*

2.606, *p* = 0.039), both of which relate to perspectives about peers, differences also indicated by the non-parametric Kruskall-Wallis Test.

Due to some groups being only composed of one respondent, no post hoc tests indicating specific group differences were available. While the Caucasian group was uncertain whether peers impacted their ideas of health more than their family (n_c = 105, M_c = 2.42, SD_c = 0.704), the Asian respondent disagreed (M_a = 2.00), while the African-Americans and Hispanic groups equally and most strongly disagreed (n_{aa} = 6, M_{aa} = 1.50, SD_{aa} = 0.548 and n_h = 2, M_h = 1.50, SD_h = 0.707 respectively). Those of "Other" ethnicity tended to offer uncertain agreement that peers displayed more positive views of health than family.

Differences by religion (Christian and Non-Christian)
Unequal variance is detected in religion groups for Items 4 and 15, but subsequent robust tests for equality do not indicate statistically significant differences. One way ANOVA indicates a moderate to large effect (Cohen's *d*) from Religion over seven items (see Table 1).

The Christian group (n_c = 109) agrees with two propositions that Non-Christians (n_{nc} = 11) disagree with: [Item 2] *My health practices are similar to those of my family* and [Item 19] *My family has consistent spiritual practices that I follow* (see Table 1). Further, while Christians agree with three statements, Non-Christians are uncertain about [Item 3] *My family demonstrates positive health habits*, [Item 8] *My family members eat well-balanced meals regularly*, and [Item 14] *My family members have effective ways to positively handle stress*. Christians are uncertain about agreeing with [Item 13] *The way I handle stress is similar to the way my family deals with stress*, but the Non-Christian group indicates disagreement. In a reversal of the direction of agreement, Non-Christians are in higher agreement that [Item 20] *I make my own choices and don't depend on family to influence*

me while the Christian group indicated they were uncertain of this. The non-parametric Kruskal-Wallis tests indicate the same results but added a difference for Item 15 *I have effective ways to positively handle stress*, Non-Christians being less certain in this assertion.

Differences by family type
Within an ANOVA, Items 2, 13 and 20 fail Levine's Test for equal variances, and consequently robust tests of equality indicate statistically significant differences between the means for the Traditional Family group and the Non-traditional Family group for Items 2 and 13 (See Table 2). Specifically, those in the Traditional Family group agree that [Item 2] *My health practices are similar to those of my family* however Non-Traditional Family group members are overall uncertain this is so for them. Further, while overall the Traditional Family group were uncertain [Item13] *The way I handle stress is similar to the way my family deals with stress*, the Non-Traditional group disagreed that this was true for them.

One-way ANOVA by family type—Traditional and Non-traditional—had a statistically significant impact on seven items (1, 3, 8, 9, 14, 15, 19 see Table 2). Members of the Traditional Family group (n_t = 100), are in stronger (but not strong) agreement with [Item1] *My family has influenced my idea of health* than members of Non-traditional Families (n_{nt} = 20). The Traditional Family group agrees, whereas the Non-traditional Family group are uncertain, that [Item 3] *My family demonstrates positive health habits*, [Item 8] *My family members eat well-balanced meals regularly*, [Item 9] *I eat well-balanced meals regularly*, [Item 14] *My family members have effective ways to positively handle stress*, [Item 15] *I have effective ways to positively handle stress* and [Item19] *My family has consistent spiritual practices that I follow*.

All of these differences are medium to very large effects as derived from Cohen's *d*. Non-parametric

> *Non-Christians are in higher agreement that … I make my own choices and don't depend on family to influence me while the Christian group indicated they were uncertain of this.*

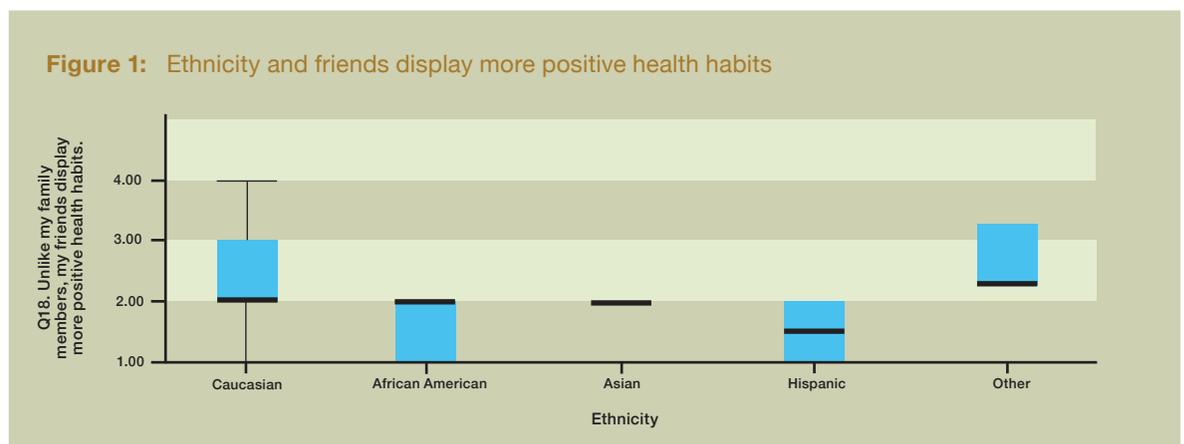**Figure 1:** Ethnicity and friends display more positive health habits

Table 1: Differences by religion grouping

Item		ANOVA statistic	Christian (*n*=109)			Non–Christian (*n*=11)			Cohen's *d*
			M	SD	A/U/D	*M*	SD	A/U/D	
2	*My health practices are similar to those of my family*	$F(1, 118) = 22.277$, $p = 0.000)$	3.09	0.071	A	2.00	1.00	D	1.54
3	*My family demonstrates positive health habits*	$F(1, 118) = 7.539$, $p = 0.007)$	3.06	0.692	A	2.45	0.688	U	0.88
8	*My family members eat well-balanced meals regularly*	$F(1, 118) = 5,875$, $p = 0.0017)$	2.99	0.700	A	2.45	0.688	U	0.78
13	*The way I handle stress is similar to the way my family deals with stress*	$F(1, 118) = 5.229$, $p = 0.024)$	2.58	0.671	U	2.09	0.701	D	0.71
14	*My family members have effective ways to positively handle stress*	$F(1, 118) = 3.968$, $p = 0.049)$	2.80	0.691	A	2.36	0.674	U	0.64
19	*My family has consistent spiritual practices that I follow*	$F(1, 118) = 27.514$, $p = 0.000)$	3.33	0.795	A	2.00	0.632	D	1.85
20	*I make my own choices and don't depend on family to influence me*	$F(1, 118) = 10.355$, $p = 0.002)$	2.45	0.811	U	3.27	0.786	A	1.03

Key: A = Agree, U = Uncertain, D = Disagree

tests affirm these statistically significant differences.

The Traditional family appears to support the transmission of positive health practices to children more effectively than Non-traditional families. Respondents from Non-traditional families recognise their family impacts their personal health practice [Item 1] but not necessarily positively. They are uncertain their families model positive health practices and personally choose to treat stress more positively, and religion differently to their families.

Differences by independent and dependent choice
Appropriately applying an unequal variance test to Item 1 and ANOVA to five items (2, 3, 13, 18, and 19), indicates statistically significant differences between Independent decision-makers (n_i = 60) and family Dependent decision-makers (n_d = 60) (See Table 3). While respondents dependent on family influence in decision-making agree [Item 1] *My family has influenced my idea of health*, [Item 3], *My family demonstrates positive health habits* [Item 18] *more than my friends*, [Item 2] *My health practices are similar to those of my family*, and [Item 19] *My family has consistent spiritual practices that I follow*.

Independents overall are uncertain their family demonstrates positive health habits but claim peers do; disagree their health practices are like their families, and claim their ideas of health are not being influenced by family, nor do they follow any

consistent spiritual practices of the family. There are difficulties in interpreting this last item since at least two possibilities apply, either the family does not have consistent spiritual practices or respondents do not follow practices assumed to exist. Responses may have indicated either circumstance. Finally, while Dependent decision makers are uncertain they deal with stress like their family [Item 13], Independent choice makers deny similarity with family in coping with stress, yet there is no difference in both groups agreed dealing with stress effectively.
The group making their own choices are uncertain their family members have effective ways to positively handle stress [Item 14] and have consequently chosen to handle stress differently (see the previous sentence). Those including family influence in their decisions agree their family does have ways to positively handle stress, a statistically significantly different perception, and this may explain their willingness to choose a similar set of health practices to their family reflecting social learning theory (Bandura, 1971).

While the subsample of Independent choice makers assert their families have not affected them directly, possibly due to being unconvinced family health is a useful modeling of lifestyle, the family effect has influenced them to choose what they perceive to be better practices through social learning from others outside their family, perhaps explaining why significant

The Traditional family appears to support the transmission of positive health practices to children more effectively than Non-traditional families.

Table 2: Differences by family type – Traditional and Non-traditional

Item		ANOVA statistic	Traditional (*n*=100)			Non–Traditional (*n*=20)			Cohen's d
			M	SD	A/U/D	*M*	SD	A/U/D	
2	*My health practices are similar to those of my family*	*Welch's* F(1, 22.915) = 7.707, p=0.011	3.10	0.704	A	2.45	0.999	U	0.75
13	*The way I handle stress is similar to the way my family deals with stress*	Welch's F(1, 39.874) =18.265, p=0.001	2.62	0.693	U	2.10	0.447	D	0.89
1	*My family has influenced my idea of health*	F(1, 118) = 7.836, p = 0.006)	3.41	0.552	A	3.00	0.795	A	0.60
3	*My family demonstrates positive health habits*	F(1, 118) = 13.111, p = 0.000)	3.10	0.674	A	2.50	0.688	U	0.88
8	*My family members eat well-balanced meals regularly*	F(1, 118) = 9.881, p = 0.002)	3.03	0.717	A	2.50	0.513	U	0.85
9	*I eat well-balanced meals regularly*	F(1, 118) = 17.034, p = 0.024)	2.94	0.600	A	2.35	0.489	U	1.08
14	*My family members have effective ways to positively handle stress*	F(1, 118) = 14.130, p = 0.000	2.86	0.622	A	2.25	0.716	U	0.91
15	*I have effective ways to positively handle stress*	F(1, 118) = 5.305, p = 0.023)	3.09	0.668	A	2.70	0.801	U	0.53
19	*My family has consistent spiritual practices that I follow*	F(1, 118) = 33.618, p = 0.000	3.25	0.687	A	2.25	0.786	U/D	1.35

Key: A = Agree, U = Uncertain, D = Disagree

> *Independent choice makers …assert the family effect has influenced them to choose what they perceive to be better practices through social learning from others outside their family*

Table 3: Differences by dependent and independent choice

Item		ANOVA statistic	Dependent (*n* = 113)			Independent (*n* = 7)			Cohen's d
			M	SD	A/U/D	*M*	SD	A/U/D	
1	*My family has influenced my idea of health*	*Welch's* F(1, 7.354) = 109.965, p=0.000	3.43	0.498	A	2.45	0.999	D	3.55
2	*My health practices are similar to those of my family*	F (1, 118) = 22.768 p = 0.000	3.07	0.728	A	1.71	0.756	D	1.83
3	*My family demonstrates positive health habits*	F(1, 118) = 7.962, p = 0.006)	3.04	0.699	A	2.29	0.488	U	1.24
13	*The way I handle stress is similar to the way my family deals with stress*	F(1, 118) = 11.565, p = 0.001)	2.58	0.664	U	1.71	0.488	D	1.49
18	*Unlike my family members, my friends display more positive health habits.*	F(1, 118) = 5.249, p = 0.024)	2.35	0.719	A	3.00	0.816	U	0.19
19	*My family has consistent spiritual practices that I follow.*	F(1, 118) = 7.923, p = 0.006)	3.13	0.773	A	2.29	0.756	U	1.10

Key: A = Agree, U = Uncertain, D = Disagree

differences between these two groups in personal health habits are not ultimately indicated.

Differences by family demonstrating positive [PH] or negative health [NH] habits

A quarter of the respondents (30) do not agree their families demonstrate positive health habits. The distribution of responses for two items (14, 15) show unequal variance within these groups, but when subjected to robust tests for statistically significant group differences, the null hypothesis that the means are the same, is rejected. Those perceiving their families to demonstrate positive health habits (n_{ph} = 90) agree [Item 14] *My family members have effective ways to positively handle stress* (see Table 4), those with negative perceptions of family health are uncertain their families have this attribute. While both groups assert they personally have effective ways to

positively handle stress, those with positive views of family health agree with this more strongly. All of these differences are moderate to large effects.

Both respondent groups, those who consider their families do not demonstrate positive health habits [NH] and those who consider families demonstrate positive health [PH], agree that their families influenced personal ideas of health, but the PH group asserts stronger agreement (see Table 4). The NH group agree they have developed bad practices from their family [Item 4] in contrast to the uncertainty of PH members that they have. The NH group asserts peers demonstrate positive health [Item 18] and impact their health concepts more than their families [Item 17], leading to an uncertainty their health practices are like their family's [Item 2]. The PH group disagrees with peers demonstrating more healthy habits than family, tend to disagree peers have effected ideas of health,

> *While both groups assert they personally have effective ways to positively handle stress, those with positive views of family health agree with this more strongly.*

Table 4: Differences by groups based on family demonstrating positive or negative health habits

Item		ANOVA statistic	Traditional (*n*=100)			Non–Traditional (*n*=20)			Cohen's *d*
			M	SD	A/U/D	*M*	SD	A/U/D	
1	My family has influenced my idea of health	F (1, 118) = 13.665 p = 0.000	3.46	0.544	A+	3.00	0.369	A	0.75
2	My health practices are similar to those of my family	F (1, 118) = 40.427, p = 0.000	3.22	0.667	A	2.30	0.750	U	0.99
4	I have developed some bad health habits from my family	F(1, 118) = 7.335, p = 0.008)	2.34	0.796	U	2.80	0.805	A	-0.57
6	My family members go out to eat more often than eating homemade meals	F(1, 118) = 6.319, p = 0.013)	1.77	0.808	D	2.20	0.847	D	-0.52
8	My family members eat well-balanced meals regularly	F(1, 118) = 38.147 p = 0.000)	3.14	0.646	A	2.33	0.847	U	1.08
9	I eat well-balanced meals regularly	F(1, 118) = 10.636, p = 0.001)	2.94	0.625	A	2.53	0.507	U	0.72
11	My family members exercise 30 minutes or more, 5 days a week	F(1,118) = 15.677, p = 0.000	2.51	0.927	U	1.77	0.774	D	0.87
14	My family members have effective ways to positively handle stress	Welch's F(1,40.4850 = 10.572, p = 0.002	2.89	0.604	A	2.37	0.809	U	0.73
15	I have effective ways to positively handle stress	Welch's F(1,39.584) = 8.185, p = 0.007	3.14	0.610	A	2.67	0.844	U	0.64
17	My peers impact my idea of health more than my family members	F(1,118) = 8.323, p = 0.005	2.27	0.700	U/D	2.70	0.750	U/A	0.59
18	Unlike my family members, my friends display more positive health habits	F(1,118) = 19.165 p = 0.000	2.23	0.688	D	2.87	0.621	A	0.98
19	My family has consistent spiritual practices that I follow	F(1,118) = 19.538, p = 0.000	3.26	0.696	A	2.57	0.858	U	0.88

Key: A = Agree, U = Uncertain, D = Disagree

claim their health practices are similar to their families and are uncertain they have learned any bad health habits from them. Though the NH and PH groups are both in disagreement that families eat out rather than eating a home cooked meal the PH group disagreed most. On the remaining items relating to family or personal health, the NH group score lower—usually expressing uncertainty, while the PH group express agreement with positive health.

Discussion

The participants can be summarised as mostly white, young, female students who were brought up in the Christian faith, studying at a Christian college having grown up in a traditional two-parent home. Based on the earlier results, participating students indicated their family influenced their idea of health, but consideration of the overall mean alone hides these statistically significant, and important to theory building differences existing between group subsamples. This subsequent analysis asserts that family influence was differentiated by experience including whether the respondents perceived their family demonstrated positive health habits or poor health habits.

Single item correlations indicate important concepts not apparent from the descriptive statistics. Experiencing a family demonstration of health habits is positively associated with recognition of family influence, adopting similar health practices, including eating regular well-balanced meals and dealing positively and effectively with stress. When peers demonstrate more positive health habits than family, negative associations indicate family are not demonstrating positive health habits, family influence on health is less, and personal health practices are less similar to those of family. Peers impact the health of these respondents more than family. Those asserting they have developed bad habits from family are negatively associated with good family health practice.

Group membership differentiates some outcomes. While some demographic variables are fixed, and in these cases group membership cannot be changed to improve health outcomes, they do enable the formation of expectations that might guide responsive interaction. These differences are discussed first.

Fixed grouping impacts
Age and gender
Increasing age probably reflects an increasing critical frankness, associated with achieving greater distancing and independence, evidenced in a lower recognition of family influence or healthy family habits. Alternatively, a change of exercise patterns within families may have occurred as children become independent and leave home, with parents

> **Increasing age probably reflects an increasing critical frankness, … greater distancing and inde-pendence, evidenced in a lower recognition of family influence or healthy family habits.**

transitioning into more relaxed, 'empty nest' lifestyles.

Males are more certain of dealing with stress positively as in other research (APA, 2011; Anbumalar, Dorathy, Jaswanti, Priya, & Reniangelin, 2017; Hogan, Carlson, & Dua, 2002), assert their exercise is rigorous, but are unsure this is 'shaped' by family. Females are influenced by family exercise, but are uncertain their program matches that of males.

Ethnicity
Ethnicity in this sample only effected attitudes to peers. African Americans, Asians and Hispanics tended to deny peers displayed better health than family, seemingly demonstrating a strong family attachment. Caucasians and others entertained the idea that peers might. Phoenix and Husain (2007) claim, "parenting style has become one of the most robust approaches used in developmental psychology to study how parents influence" (p. 11). In addition, "to have an ecologically valid understanding of parenting and ethnicity, it is important … to understand the context in which parenting of children or adolescents occurs" (p. 21). Strong connections "a 'no-nonsense' style of supportive, involved parenting with monitoring of children's activities and consistent discipline was related to positive emotional, behavioural, educational and social outcomes" (p. 12) within rural African American families. Even more 'authoritarian' parenting is apparently beneficial in Asian American families (p. 13). Ayón, Williams, Marsiglia, Ayers, and Kiehne (2015) explain "cultural features influence socialization practices, making Latino parents distinct from other parents … *familismo*, the cultural orientation and sense of obligation to family … leads to socialization practices that foster interdependence and sociocentrism in Latino children." This may account for the inward family focus about health opinions in Hispanic ethnicities. Cultural influences are consistent with findings in this work though the sampling is small.

Family structure
A traditional family structure can provide more continuous, potentially unified and consolidated modeling, demonstrating positive health habits and in this sample it does so in a number of specific areas, with adoption of family practices in both health and spirituality. Members of non-traditional families acknowledge the influence of family, but experience more disconnected, potentially diffuse and different opinion driven parenting, a poorer family demonstration of health (particularly in dealing with stress), less family influence, a lower similarity to family in health practices, dealing with stress differently – presumably better, and tending to independent and different spirituality. This is consistent with an Australian Institute of Family

Studies (2003) report and a more recent study (Slade, Beller, & Powers, 2017) both of which claim adverse health outcomes for the effect of non-traditional family structures, but also caution about complex contexts and comparative effect sizes.

Grouping variables open to choice

While some of the demographic variables considered are fixed, the following variables are open to choices.

Religion and religious attachment

The Christian group's agreement with more positive outcomes within both the family and individual health practice concur with an earlier review (Regenerus, 2003) and research findings (Chiswick & Mirtcheva, 2010) addressing the association of religious practice with positive health outcomes. King, Ledwell and Pearce-Morris (2013) assert that adult children who continue connection to church through frequent attendance, reported significantly higher quality relationships and more frequent contact with parents, independent of gender or age. Consequently, "It appears that the influence of religion in fostering early parent–child ties noted in prior research extends throughout the life course, influencing ties between adult children and their parents" (p. 834).

An assertion of individualism in choice-making by the Non-Christian group, links with their claim of being different to their family in health practices [Item 2], perhaps implying a reaction based on recognition of their personal uncertainty that their family demonstrates positive health habits [item 3]. This includes eating well-balanced meals regularly [nutrition, Item 8], or that the family can handle stress effectively and positively [mental health, Item 14], possibly leading them to choose to react to mental health issues differently themselves [Item 13]. Expressed individualism may explain why they do not follow family spiritual practices [Item 19].

Barton, Snider, Vazsonyi, and Cox (2014) have claimed that the religious attachment of adolescents influences the impact of parental religiosity on adolescent's health. Further, in seeking to explain parental influence they suggest

> in addition to the possible contributions of simple parent-to-child transmission and other family dynamics (e.g., marriage strength, parenting style), religious development includes transformational processes (Flor and Knapp, 2001), wherein values are formed as a result of active and constructive processing (Lawrence and Valsiner, 1993).   p. 91

However, King, Ledwell and Pearce-Morris (2013) warn religion's association with children's connections to parents needs to be placed in a proper perspective "being modest … [further] … Religion is only one

of many factors associated with children's ties with parents, but it is an important factor that should be given greater attention in future research" (p. 834).

Independent and dependent choice

Uncertainty that family demonstrates positive health habits seems to engage independent thinkers cognitively, enabling disengagement from family influence and emotive ties, and the initiation of practices not modeled by family, yet not necessarily imitating friends. In this small sub-sample, broader information sources and influencers are impacting health practices. Influences outside the family and peer group can have an effective role, for there are no significantly different health outcomes for these two groups. Most young adults however recognise their choices include shared family perspectives.

Family demonstration of health habits

When families demonstrated health habits, family members assert stronger family influence and interactively agree to positive health attitudes and outcomes. Where families have not demonstrated positive health habits, bad health habits have been learned, and these students are ultimately uncertain they are practicing good health, even though they claim to be different to their family. Family influence either positive or negative, appears to be persistent.

This work claims age, gender, ethnicity, and family structure are associated with specific aspects of health influence and can help health educators/facilitators to understand likely attitudes and practices of individuals within cohorts. Awareness of the apparent impact of religious attachment, independent or dependent decision-making and the impact of family demonstration, provides opportunity to develop and implement suitable strategies to modify health outcomes for aspiring students and caring families.

Limitations and implications

The limitations of this study have been previously discussed (Nicholas et al., 2018). Of specific importance to the analyses in this report are the following. A small sample resulted in even smaller sub-groups which challenged establishing statistically significant differences for small groups. Assumptions were made about the interval nature of the data and the normality required for parametric statistics, yet checking interpretations by applying non-parametric statistics, result in no disparate results, reducing this objection. Generalisation of the results is cautioned because of the limitations.

These analyses further inform health care professionals in the understanding of the importance of family-centered health care and health education by suggesting specific variables differentiating outcomes.

> " the religious attachment of adolescents influences the impact of parental religiosity on adolescent's health. "

Fixed variables may provide understanding of potential attitudes and practices of particular demographic groupings allowing more appropriate targeting of health improvement interactions. Identification of membership within disadvantageous groups, but open to change to improve health outcomes, stimulates health educators to implement proactive change processes to encourage transformative adaptation.

Recommendations

It is recommended that pre-parent education establish awareness of the importance of the family interactions that mutually model and modify acceptance of positive health practices and attitudes. From a young age through to adolescence, schools and other social groups (sporting clubs, churches, media) should accept and commit to a collective societal responsibility—the nurture of well-being in all members of family groups—establishing healthy life styles, supporting positive social outcomes.

Further, research needs to be undertaken into the mechanisms establishing and transferring the health beliefs and behaviours of a family to its children. This would encourage more positive and sustainable health outcomes for entire family units and continuity of positive health behaviours that may endure for generations to come, creating a healthier future, resulting in positive social and economic outcomes.

Conclusion

Investigating the extent of family influence on college students' perception of health and lifestyle was the focus of this research. Students felt their family influenced their idea of health and for most this was a positive influence with fulfilling health practice outcomes. Older students express more independence of family influence. Males are more confident of independent rigorous exercise and effective stress management. Ethnicity has little impact on the influence of the family on children's health, yet does effect perceptions of peer influence. Traditionally structured and Christian families have more positive health and health transfer outcomes. Students experiencing negative modeling of health, learn bad health habits and are uncertain they practice good health. Those able to think independently can overcome less positive family modeling of health. Families that positively demonstrate health practices are more likely to have their children agree they have adopted a healthy lifestyle and ratify family influence.

Health education can implement strategies informed by these groups' differences to change the lifestyle outcomes for young adults, improving their personal context and collective wellbeing. **TEACH**

> *From a young age to adolescence schools and other social groups (sporting clubs, churches, media) should accept and commit to a collective societal responsi-bility— the nurture of wellbeing … [with]in family groups*

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