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ELVIS: DEAD AND LOVING IT - THE INFLUENCE OF ATTRACTION, NOSTALGIA, AND RISK IN DEAD CELEBRITY ATTITUDE FORMATION

Robert D. Evans, Jr.
University of Memphis
rob.evans@memphis.edu

Phillip J. Hart
University of Memphis
pmhart@memphis.edu

John E. Cicala
University of Memphis
jcicala@memphis.edu

Dan L. Sherrell
University of Memphis
Fogelman Executive Center, Room 150
Fogelman College of Business and Economics
Memphis, TN 38152
901-678-4552
dsherrll@memphis.edu

ABSTRACT

Research surrounding celebrities has typically focused on trying to capture and understand individuals' existing attitudes, thoughts and feelings to product endorsement, celebrity branding, and more recently the concept of celebrity worship. Typically, this research has measured these attitudes, thoughts, and feelings toward living celebrities; however, this research measured these constructs as they relate to dead celebrities. We hypothesized that: (a) the age of the celebrity at the time of their death; (b) the number of years that have passed since the celebrity's death; and (c) the gender of the celebrity will have a stronger impact on respondents' attitudes towards that celebrity as the similarity between the celebrity and respondent increases. Results from regression analyses suggest that for Celebrity Identification, risk is the greatest influence, followed by nostalgia-tradition and nostalgia-progress for dead celebrity worship. For Celebrity Enjoyment, nostalgia-tradition and gender had an effect on dead celebrity worship, which suggests that there may be a consistent gender effect on dead celebrity worship. Results from a discriminant analysis point to gender being the greatest influence in the selection of dead celebrities followed by age difference between the celebrity and respondent and Celebrity Enjoyment. These results provide a strong foundation into examining the attitude formation toward dead celebrities.

INTRODUCTION

A celebrity is someone who is 'known for being known' (Boorstin, 1961, p. 57). Celebrities have emanated from a variety of sources, including sports, politics, religion, music, entertainment, and even everyday circumstances, as seen recently with the appearance of "Joe the Plumber" as a supporter in the McCain campaign for president. These individuals have become the focus of attention and interest to the general population and/or segments within a population. Marketers have long been interested in the efficacy of using celebrities such as these in connection with their product or service to attract consumer attention and/or provide credibility to their promotional claims.

Little research attention has focused on the influence of factors surrounding the "visibility" of a celebrity. Previous marketing studies on celebrities have addressed such issues as how celebrity status affects consumer behavior attitudes (Till and Shimp 1998), the effects of celebrity endorsement (Tripp, Jensen, and Carlson 1994; Mathur, Mathur, and Rangan 1997), and the phenomenon of celebrity worship (McCutcheon, Lange, and Houran 2002). Despite the efforts of this stream of research addressing the celebrity as an endorser and as an object of adoration, we know relatively little about the process of consumers' celebrity attitude formation.

This study focuses on a specific aspect of celebrity attitude formation, specifically the attraction and apparent strengthening of attitudes toward a celebrity after their death. Fortune recently released its annual review of dead celebrities' current earnings, with Elvis still the leading revenue producer 30 years after his death (www.forbes.com/deadcelebs). This study seeks to understand what factors influence such celebrity worship by fans with such persistence over time.

Because there is scant research regarding dead celebrities, with the majority of it found in the economics literature addressing the "death effect", this study will serve as one of the first to examine attitude formation toward dead celebrities. Further, this research study uses the similarity attraction model (Bryne 1971), which proposes that people tend to have more positive attitudes towards target individuals that they perceive as similar to themselves. We hypothesize that: (a) the age of the celebrity at the time of their death; (b) the number of years that have passed since the celebrity's death; and (c) the gender of the celebrity will have a stronger impact on respondents' attitudes towards that celebrity as the similarity between the celebrity and respondent increases. This research also examines the influence of two other factors, the individual respondent's affinity or tendency toward nostalgia and the perceived social risk associated with the individual's endorsement of a particular celebrity. We include the demographic factors of age and gender of the respondents as control factors.

CELEBRITY RESEARCH

As long as there is mass media, there will be celebrity worship. Worship of celebrities has often been compared to religious worship (Giles 2000), or likened to a similar level of dedication (Maltby et al. 2004). Celebrity status has been claimed to be a specific product of the media (Martin et al. 2003). Studies conducted in the U.K. and U.S. have so far succeeded at establishing that cognitive factors (Levy 1979; Martin et al. 2003; McCutcheon et al. 2003) and social psychological factors (Maltby et al. 2001; Maltby et al. 2004) are involved in celebrity worship. The primary findings of which are that celebrity worship is often associated with poor mental health, such as social dysfunction, depression, and anxiety, (Maltby et al., 2001; McCutcheon, Lange, Houran 2002) coping, (Maltby et al. 2004) and narcissism (Ashe, Maltby, McCutcheon 2005). Additionally, it has shown that cognitive factors, such as lack of education (Levy 1979), cognitive flexibility (Martin et al. 2003) and cognitive deficiencies (McCutcheon et al. 2003) are also associated with celebrity worship.

It has been suggested that those who engage in celebrity worship have a weak identity structure that absorption into a celebrity helps to establish (McCutcheon et al. 2002). Celebrity worshippers are often adolescents (Martin et al. 2003) and derive satisfaction from the worship. These worshippers can feel sadness and joy vicariously through the successes and failures of the target celebrity (McCutcheon et al. 2003). Often the worshippers see themselves and the target celebrity as being in an ongoing relationship, which in extreme cases can lead to behavior such as stalking (Maltby et al. 2001). Dead celebrities, however, represent a special case of celebrity worship in which satisfaction from a relationship or vicarious successes cannot as easily be achieved as it can with the worship of a living celebrity.

Related to the worship of dead celebrities, the 'death effect' literature in economics has examined the increased value of an artist's works or a sports player's memorabilia around their time of death (Ekelund et al. 2000; Matheson and Baade 2004). Two explanations for this increased value have come from this effort. First, Ekelund et al. (2000) hypothesize that the increase in value comes from the expectation of no future supply of such memorabilia/art. A second and more recent explanation has come from Matheson and Baade (2004), who show an empirical link between the increased value and nostalgia. Matheson and Baade (2004) claim that media coverage around the time a celebrity's death (and after) increases nostalgia for the artist/sports-figure, which in turn is responsible for increased value in their related products. In some cases, this increase in media coverage is sustained well beyond their death, which sustains the nostalgia for the artists/sports figures. Most often, a 'nostalgia spike' occurs immediately after the death, spurred on by an increase of media coverage, after which there is a drop in nostalgia (Matheson and Baade 2004). Death effect literature has not, however, explored the relationship between celebrity worship and its connection to nostalgia or the increased value of memorabilia.

NOSTALGIA

Nostalgia has been defined as the "yearning for yesterday" (Davis 1979) and "a longing for the past, a yearning for yesterday, or a fondness for possessions and activities associated with days of yore" (Holbrook 1993). It has long been identified and studied by physicians, psychologists, sociologists, and most recently, consumer behaviorists (Hofer 1934; Davis 1979; Havlena and Holak 1992). Originally thought of in a negative sense, nostalgia was initially identified by physicians as a cerebral disease (Hofer 1934). Through most of the twentieth century, nostalgia was seen as a mental illness that caused depression-like symptoms (McCann 1941; Rosen 1975). It was not until 1979, when sociologists began researching nostalgia that it began to be viewed in a more positive light. Surprising at the time, Davis (1979) found that many positive sentiments are expressed in regard to nostalgia.

Current advances in understanding nostalgia have come from consumer research. These researchers have found that nostalgia occurs in response to negative mood and the discrete affective state of loneliness (Wildschut et al. 2006). Consumer psychologists see nostalgia as a longing for past values (Holak and Havlena 1998; Schindler and Holbrook 2003), to be distinct from homesickness, which is a longing for one's home during a time of absence (Van Tilburg, Vingerhoets, and van Heck 1996). These past values are most often seeded around the age of twenty, or the age of preference (Schindler and Holbrook 2003). Recent contributions have shown that instead of having negative outcomes, nostalgia is associated with increased social bonds, increased positive self-regard, and the generation of more positive than negative affect (Wildschut et al. 2006). From this view, nostalgia can be seen as a coping mechanism in which individuals respond to negative moods with positive memories. Nostalgia literature, however, has not made the critical link between yearning for past values and the worship of dead celebrities, who themselves often represent past values.

RISK

Social risk is also a relevant to dead celebrity worship. While celebrity worship and nostalgia research both find a link to negative mood states like depression (Maltby et al. 2001; McCann 1942), they have not explored the recent link between depression and social risk (Allen and Badcock 2003). Allen and Badcock (2003) find that many of the behaviors associated with depression are intended to reduce social risk. They explain that, “depressed mood evolved to facilitate a risk-averse approach to social interaction in situations in which individuals were typically at risk of exclusion from social contexts.” Negative moods are seen as a defense mechanism to reduce the social risk of exclusion. In this context, social risk cannot be ignored in the study of any behavior rooted in negative moods, such as celebrity worship or nostalgia. Particularly in the case of dead celebrity worship, risk may be a key factor, as the social risk of associating with a living celebrity is different from the risk of associating with a dead celebrity, whose reputation and social standing have been long established. If depressed individuals pursue risk-averse social strategies, worshipping a dead celebrity may present less risk than worshipping a living celebrity.

STUDY METHODOLOGY

The purpose of the study was to examine a specific aspect of celebrity attitude formation, specifically the attraction and apparent strengthening of attitudes toward a celebrity after their death. Additionally, we examined the factors that influence such celebrity worship by fans with such persistence over time. This research study uses the similarity attraction model (Bryne 1971), which proposes that people tend to have more positive attitudes towards target individuals that they perceive as similar to themselves. This research also examines the influence of two other factors, the individual respondent’s affinity or tendency toward nostalgia and the perceived social risk associated with the individual’s endorsement of a particular celebrity. We include the demographic factors of age and gender of the respondents as control factors.

College students are often aware of the latest happenings in movies, music, and sports in their culture. As a result, we feel as though this is a relevant population in which to do this initial study. Further, since the conceptual model is an early attempt to model these attitude formations toward dead celebrities, testing the hypotheses in a homogeneous population should provide an ecologically valid test of the model parameters (Calder, Phillips, and Tybout 1981).

A written questionnaire was administered to groups of undergraduate business students in classes at a large university in the southern U.S. Respondents were told the purpose of the study was to gain insight into the formation of attitudes toward dead celebrities. The questionnaire consisted of scaled questions asking respondents about their recognition and preferences for dead celebrities, and to identify their most favorite dead celebrity (MFDC) and to answer a series of questions specifically related to that celebrity. Additional scaled questions addressed components of nostalgia and risk and there were several demographic questions.

Questionnaires were administered over a two-week period in the fall of 2008 semester. 161 valid responses were obtained. The sample respondents were split 49.1% male (79 respondents) and 48.4% female (78 respondents), with 4 respondents failing to identify their sex. The average age of the respondents was 25.5 years.

Existing scales were administered to measure each of the model components described earlier and pre-tested using a sample of students from the same population as the study sample. Celebrity worship is defined by McCutcheon et al. (2003) as a form of parasocial interaction in which individuals become obsessed with a celebrity or celebrities. Celebrity worship was measured with McCutcheon et al.’s

(2003) Celebrity Attitude Scale, which is a 34-item scale intended to measure the respondent's attitude toward their self-identified MFDC. The scale addresses three separate dimensions: a) entertainment-social; b) intense-personal; and c) borderline-pathological. In order to modify the scale for dead celebrities, the tenses and wording was adjusted to account for the fact that the celebrities addressed in the survey are dead. The items were scored on a 5-point Likert-type scale ranging from "1= Strongly Disagree" to "5=Strongly Agree".

Nostalgia refers to a longing for the past, a yearning for yesterday, or a fondness for possessions and activities associated with the past (Holbrook 1993). Holbrook and Schindler (1991) define nostalgia as 'a preference toward objects (people, place, or things) that were more common when one was younger.' Nostalgia was measured by Holbrook's (1993) nostalgia scale, which consists of eight items scored on a 9-point Likert-type scale ranging from "1= Strongly Disagree" to "9=Strongly Agree". Item scores are then summed to form an overall score for nostalgia.

Risk is defined as a degree of uncertainty or the potential of loss and can be in the form of financial, performance, social, psychological, safety and time or convenience loss (Bettman 1972, 1973; Murray 1991). In this study, risk was measured in relation to social risk aversion (Craig and Ginter 1975) by three items scored on a 9-point Likert-type scale ranging from "1= Strongly Disagree" to "9=Strongly Agree".

Respondents were also asked to identify their 7 favorite dead celebrities from a list of 60 dead celebrities. The celebrities were arranged randomly, but were selected so that celebrities were available for selection from different categories, such as age since death and age at death. They were then asked to rank order their choices for celebrities and those rankings were averaged across respondents, providing an average ranking for the most preferred celebrity.

RESULTS

As mentioned above, the survey was administered to students at a large university in the southern U.S. There were 161 usable surveys returned that were included in the data set.

Table 1 displays the results of a principal components factor analysis that was undertaken to assess the convergent and discriminant validity properties of the multi-item measurement scales. The factor solution was rotated using a varimax rotation to assure maximum independence between the factor dimensions.

As the elements of Table 1 show, the factor solution produced 5 discernable factors accounting for approximately 67% of the variance in the data. The scales items didn't load completely on their respective factors. Items which didn't load appropriately for the Celebrity Attitude Scales (CAS) were eliminated, leaving two identifiable factors; the first being a Celebrity Identification Scale, and the second being a Celebrity Enjoyment Scale. For Holbrook's (1993) Nostalgia scale, the items loaded on two separate factors, which are identified as a Nostalgia-Tradition Scale, and a Nostalgia-Progress Scale. One item for the risk scale exhibited cross-loading and was eliminated, leaving two items to measure respondent's risk. As Table 1 indicates, the reliabilities of the scales were respectable (i.e. $>.60$, Nunnally 1978).

The failure of some items to load on the expected factors and to display the anticipated psychometric properties represents a limitation of the study results and will be discussed later.

Two separate regression models were tested in an attempt to see what factors influence the CAS subscales for each respondent's MFDC. Table 2 shows the results of these regression analyses. The regression model estimating the relationship between the proposed predictors and the Celebrity Identification

subscale shows that collectively, the proposed model accounts for approximately 14.2% of the variance in the dependent variable. The regression model is statistically significant at the .01 level. The entries in Table 2 are standardized regression coefficients.

The most influential predictor of Celebrity Identification was risk. This scale measures an individual's risk-taking propensity or preference for risk. However, the results are in the negative direction, suggesting that individuals engaged in some degree of dead celebrity worship may do so because this type of celebrity worship has a security aspect to it. With a dead celebrity, the quantity is known in the respect that that celebrity no longer has the potential to engage in behaviors which may diminish his or her celebrity status. With living celebrities, there may be more risk involved in the selection of a celebrity to worship, as there is potential for that celebrity to engage in activities that may diminish their status as a celebrity.

Table 1

Scale Measurement Properties

Scale Items	F1	F2	F3	F4	F5	
Celebrity Identification Scale						
I consider MFDC ¹ to have been my soul mate	.907					
MFDC and I have our own code so we can communicate with each other secretly	.854					
If someone gave me several thousand dollars to do with as I please, I would consider spending it on a personal possession (like a napkin or paper plate) once used by MFDC	.853					
I would gladly die in order to have saved the life of MFDC	.838					
When I learn MFDC failed or lost at something I feel like a failure myself	.752					
When MFDC died I felt like dying too	.737					
I am obsessed by details of MFDC's life	.640					
When I learn of something good that happened to MFDC I feel/felt like it happened to me	.579					
The successes of MFDC are my successes too	.565					
When I learn of something bad that happened to MFDC I feel like it happened to me	.268					
Celebrity Enjoyment Scale						
I like watching and hearing about MFDC when I am with a large group of people		.900				
I love to talk with others who admire MFDC		.798				
My friends and I like to discuss what MFDC has done		.788				
I enjoy watching, reading, or listening to MFDC because it means a good time		.766				
It is enjoyable just to be with others who like MFDC		.740				
Learning the life story of MFDC is a lot of fun		.726				
Keeping up with MFDC in the media is an entertaining pastime		.428				
Nostalgia - Tradition Scale						
Technological change will insure a brighter future*			.861			
Steady growth of GNP (Gross National Product) has brought increased human happiness*			.789			
History involves a steady improvement in human welfare*			.750			
Modern business constantly builds a better tomorrow*			.696			
Nostalgia – Progress						
Things used to be better in the good old days				.783		
They don't make 'em like they used to				.775		
Products are getting poorer and poorer in quality				.760		
We are experiencing a decline in the quality of life				.696		
Risk Scale						
I like to take a chance					-.741	
I like people who are a little shocking					-.546	
*Reverse score item						
¹ MFDC = Most Favorite Dead Celebrity	Mean	18.97	17.68	13.29	15.76	12.01
	Std. Dev.	8.21	7.52	6.36	6.52	4.15
	Coefficient Alpha	.92	.90	.80	.83	.73

Variation Explained (%)	21.1	16.1	12.7	10.6	7.1
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The second and third most influential predictors of Celebrity Identification were the nostalgia sub-scale focused on tradition followed by the nostalgia sub-scale focused on progress. Although both have roughly equivalent impacts, the direction of those impacts is in different directions with tradition being a positive influence and progress being negative. This would suggest that the image of the celebrity in question could influence an individual’s Celebrity Identification.

Table 2
Regression Model Results

Predictor Variables (Table entries are std. coefficients)	Outcome Variables	
	Celebrity Identification	Celebrity Enjoyment
Risk	-.478**	-.109**
Nostalgia - Tradition	.307***	.304***
Nostalgia - Progress	.288***	.006
Gender	-.156**	-.195**
R ²	.166	.144
Adj. R ²	.142	.121
Model F-ratio	6.958***	6.211***
n	144	152
* p ≤ .10; ** p ≤ .05; *** p ≤ .01		
Gender coded as dummy variable (male = reference category)		

Finally, gender was a significant determinant of an individual’s Celebrity Identification. Females scored lower on this sub-scale than males. Although the implications of this aren’t totally understood, it could suggest that either females are not as prone to dead celebrity worship as males, or, it could be specific to the respondents used in this study.

The results of the Celebrity Enjoyment regression were produced using the same predictors as the Celebrity Identification model. The overall regression equation is significantly different from zero (F=6.21, p < .01), with an adjusted R² of .121. The level of explained variance, while significant, is relatively small.

The most influential predictor of Celebrity Enjoyment is the nostalgia sub-scale focused on tradition. This result may not be surprising as Wildschut et al (2006) contend that nostalgia can be seen as a coping mechanism in which individuals respond to negative moods with positive memories. Another predictor that was significant in the prediction of Celebrity Enjoyment was gender, which may suggest that there is a consistent gender effect on dead celebrity worship, however, there is still the question of whether this would hold for living celebrities. Finally, risk also displayed a significant relationship in this regression equation.

In order to determine the overall popularity of the celebrities included in the survey, the respondent’s selection for their respective celebrities were weighted according to the position listed. For example, if a respondent listed a celebrity in the first position (CELEB1), that

celebrity would receive a score of seven (7), and if a celebrity was listed in the last available position (CELEB7), that celebrity would receive a score of one (1). These scores were summed for all celebrities across all respondents to calculate the overall popularity of the celebrities in the survey as well as to rank order the celebrities. This resulted in a list of all the included celebrities ranked from 1 to 60. The most popular dead celebrity was Chris Farley, followed by Heath Ledger, Bernie Mac, Bob Marley, Tupac Shakur, and Elvis Presley. These results can be found in Table 3, but, due to space limitations, only the top 30 are listed.

Table 3

Overall Celebrity Popularity

Celebrity	Overall Popularity	Age at Death	Year Since Death
Chris Farley	395	33	11
Heath Ledger	356	28	0
Bernie Mac	317	50	0
Bob Marley	314	36	27
Tupac Shakur	299	25	12
Elvis Presley	265	42	31
Marvin Gaye	201	34	24
Jimi Hendrix	183	27	38
Marilyn Monroe	166	36	46
Kurt Cobain	164	27	14
Aaliyah	160	22	7
Johnny Cash	157	71	5
Richard Pryor	146	65	3
Lucille Ball	144	77	19
Audrey Hepburn	143	63	15
John Lennon	128	40	28
George Carlin	103	71	0
John Wayne	88	72	29
Paul Newman	81	83	0
Lisa ‘Left Eye’ Lopes	81	31	6
Redd Foxx	80	69	17
Mitch Hedberg	72	37	3
Selena	67	23	13
Anna Nicole Smith	59	39	1
Judy Garland	56	47	39
James Dean	52	24	53
Phil Hartman	34	49	10
Gilda Radner	28	42	19
Jerry Garcia	26	53	13
Janis Joplin	24	27	38

Discriminant analysis is used to determine which variables discriminate between two or more naturally occurring groups (Hair et al. 2006) and is used in this study in an attempt to see what factors contributed to predicting whether or not the respondent mentioned the most popular celebrity in the survey (Chris Farley). Table 4 shows the results of the discriminant analysis. The discriminant model for Chris Farley is significant ($X^2 = 17.8$, $df=7$, $p=.013$). However, the classification results are marginal with the correct classification of 67.1% being somewhat better than the predicted 51% as displayed in Table 5.

Table 4

Overall Model Fit: Canonical Discriminant Functions for CELEB9 - Chris Farley

Predictor Variables (Table entries for group membership are means)	Structure Matrix*	Group Membership	
		Did not mention (n=70)	Did mention (n=73)
Gender	.682	.643	.397
Age Difference	-.521	14.200	20.795
Celebrity Enjoyment	-.457	15.443	17.575
Risk	.125	12.471	12.096
Nostalgia-Tradition	.087	19.700	19.192
Celebrity Identity	.050	13.543	13.301
Nostalgia-Progress	.037	17.486	17.288
Eigenvalue	.138		
Canonical Correlation	.348		
Wilk's Lambda	.879		
Chi-square	17.773		
df	7		
p-level	.013		
*Variables ordered by absolute size of correlation within function.			
Gender coded as dummy variable (male = reference category)			

The structure matrix of the discriminant analysis shows that gender of the respondent has the greatest influence on the discriminant function followed by age difference, and then by the respondent's response to the Celebrity Enjoyment scale. There are also differences in the means of these measures for individuals who did select Chris Farley and those who didn't chose him, further showing the differences between the groups is strong.

Table 5
Prior Probabilities for CELEB9 – Chris Farley

		0	1	
Count	0	46	24	70
	1	23	50	73
%	0	65.7	34.3	100
	1	31.5	68.5	100
67.1% of original grouped cases correctly classified, 0 = Did not mention, 1 = Did mention				

DISCUSSION

The hypotheses that were put forth in this paper proposed that: (a) the age of the celebrity at the time of their death; (b) the number of years that have passed since the celebrity’s death; and (c) the gender of the celebrity will have a stronger impact on respondents’ attitudes towards that celebrity as the similarity between the celebrity and respondent increases. Discriminant analysis results suggest that the primary influence on respondents’ dead celebrity worship is gender, followed by difference in ages between the dead celebrity and the respondent, and finally response to the Celebrity Enjoyment scale.

The overall strength of the regression model for Celebrity Identification was low, but significant (i.e., adjusted $R^2 = .14$, $F=6.958$). Regression analysis results suggest that for Celebrity Identification, gender, nostalgia-tradition, nostalgia-progress, and risk were all significant. Gender was significantly related to the identification of the respondent’s MFDC, however, it is not know whether this holds true for living celebrities.

The results of the regression for Celebrity Enjoyment were low, but significant (i.e., adjusted $R^2 = .12$, $F=6.211$). Regression analysis results suggest that for Celebrity Enjoyment, only gender and nostalgia-tradition were significant. This may suggest that similarity in gender between the dead celebrity and respondent could influence the choice of MFDC. Further, nostalgia-tradition suggests that individuals may be attracted to dead celebrities who exhibit qualities they associate more with traditional values.

There is no doubt that the earning power of dead celebrities shouldn’t be underestimated. This is evident in the fact that, despite being dead for over 30 years, Elvis Presley earned \$52 million dollars (www.forbes.com/deadcelebs) this past year. This amount outpaces the earnings by some of the most popular current celebrities with Justin Timberlake earning \$44 million and Madonna earning \$40 million in the same time frame. And, although the success of Warner Brother’s movie *The Dark Knight* cannot be attributed solely to one individual, living or dead, the appearance of Heath Ledger in the film could have pushed the box office figures beyond those which were projected.

This study produced some valuable knowledge into the attitude formation toward dead celebrities. Based on our results, marketing of dead celebrities to fans needs to emphasize gender-relevant information and highlight nostalgia-relevant aspects for the intended market segments. In other words, there should be similarity in gender between the target market and dead celebrity chosen to endorse a product or service. Also, depending on the type of product or service being offered, the various components of nostalgia should be emphasized.

This study certainly has its own limitations. There are no studies, known by the authors, addressing attitude formation towards dead celebrities. The utilization of measures designed to capture the attitudes toward living celebrities may not transfer completely to the concept and measurement of dead celebrity worship. Second, the utilization of a student sample to measure the concept of

nostalgia may be weak due to the contention that Holbrook (1993) states that nostalgia may not become prevalent until the early 20's.

Finally, as with the early study of any concept, the clear demarcation of concepts and definitions surrounding dead celebrity worship need to be modified and refined over time as more research is performed on the subject.

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Original article

Celebrity Worship and Incidence of Elective Cosmetic Surgery: Evidence of a Link Among Young Adults

John Maltby, Ph.D.^{a,*}, and Liz Day, Ph.D.^b^a School of Psychology, College of Medicine, Biological Sciences and Psychology, University of Leicester, Leicester, UK^b Psychology Subject Group, Sheffield Hallam University, Sheffield, UK

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A B S T R A C T

Purpose: The purpose of the current study was to explore among young adults whether celebrity worship predicted the incidence of elective cosmetic surgery within the period of 8 months after controlling for several known predictors of elective cosmetic surgery.

Methods: A total of 137 young adults completed questionnaire measures of attitudes toward a celebrity whose body image they admired, previous and vicarious experience of elective cosmetic surgery, attitudes toward cosmetic surgery, and a range of psychological and demographic measures at time 1. Participants were then asked to report whether they had undergone elective cosmetic surgery 8 months later.

Results: After controlling for several known predictors of elective cosmetic surgery, intense-personal celebrity worship of a celebrity whose body shape was admired by the participant predicted the incidence of elective cosmetic surgery within an 8-month period.

Conclusions: The current findings suggest that the type of para-social relationship that young adults form with celebrities, particularly with those whose body shape is admired, may need to be considered by those when speaking to, and educating, young people about their choices around elective cosmetic surgery.

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In 2009, more than 209,000 cosmetic plastic surgery procedures were performed on individuals aged 13–19 years in the United States [1]. Within the review literature, the psychological reasons that surround young adults' choices for elective cosmetic surgery are a focus of discussion, noting a lack of empirical research that completely considers the dynamics that emerge around the incidence of elective cosmetic surgery among young adults [2]. However, the wider empirical published data suggest that numerous variables predict a willingness to have, or the incidence of, elective cosmetic surgery. Sex, age, body mass index (BMI), friends, and family having elective cosmetic surgery

and greater media exposure to cosmetic surgery are all associated with the incidence of elective cosmetic surgery [3–8]. From a psychological perspective, poorer body image, physical attractiveness, self-esteem, and life-satisfaction, all predict the incidence of elective cosmetic surgery [9–11].

The possible influence celebrities have on the incidence of elective cosmetic surgery among young people is often cited in the media [12,13], but has not been considered in the empirical published data. Moreover, how individuals form relationships with celebrities (commonly referred to as celebrity worship) may be useful to exploring the relationship between celebrities and elective cosmetic surgery [8]. In broad terms, celebrity worship is described as a para-social relationship (one-sided relationship in which an individual knows the other, but the other does not [14]). Research suggests that differences in how individuals worship celebrities are important [15]. Celebrity worship

* Address correspondence to: John Maltby, Ph.D., School of Psychology, College of Medicine, Biological Sciences and Psychology, University of Leicester, Leicester LE1 9HN, UK.

E-mail address: jm148@le.ac.uk (J. Maltby).

typically comprises three factors: “Entertainment-social,” where the attraction to the celebrity results from their perceived ability to entertain and become a social focus; “Intense-personal,” reflecting personal intensive and compulsive feelings about the celebrity; and “Borderline-pathological,” typified by reports of uncontrollable behaviors and fantasies regarding the celebrity [16]. Theoretically, the association between these dimensions of celebrity worship has been described as increasing in severity from Entertainment-social, through Intense-personal, to Borderline-pathological. This increasing severity has been labeled the absorption-addiction hypothesis, which at its highest level is thought to result in a compromised identity structure and a greater identification with a celebrity in an attempt to establish a self-image [15].

The differences in how individuals form relationships with celebrities and the absorption-addiction hypothesis have previously proved useful in exploring how celebrity worship is related to prospective elective cosmetic surgery. Among 401 British female undergraduates, findings suggest an association between particular aspects of celebrity worship and a willingness to have cosmetic surgery [8]. Celebrity worship, alongside several demographic variables, predicted half the variance for the intrapersonal (self-oriented benefits of cosmetic surgery) and social (social motivations for having cosmetic surgery) subscales of the Acceptance of Cosmetic Surgery Scale (ACSS; [17]). Specifically, entertainment-social celebrity worship predicted unique variance in both the interpersonal ($b = .30$) and social ($b = .32$) subscales of the ACSS and the intense-personal celebrity worship was found to be a particularly strong predictor in the social subscale ($b = .53$) of the ACSS.

These findings present compelling evidence for a strong association between celebrity worship and a willingness to undergo cosmetic surgery. However, no evidence exists that examines whether celebrity worship is related to individuals actually undergoing elective cosmetic surgery. Such a consideration is important because research suggests a large variability in attitude-behavior consistency [18]. Furthermore, because celebrity worship and incidence of elective cosmetic surgery have associations with the same variables (e.g., body image [19]), it is necessary to examine whether any relationship between celebrity worship and the incidence of elective cosmetic surgery is maintained after controlling for several existing predictors of the incidence of elective cosmetic surgery. The aims of the current study were twofold. The first aim of the study was to examine whether celebrity worship was able to predict the incidence of elective cosmetic surgery. The second aim of the study was to test the veracity of any relationship between celebrity worship and the incidence of elective cosmetic surgery by controlling for several known predictors of elective cosmetic surgery.

Methods

Participants

A total of 137 participants sampled from two cities in United Kingdom took part in the study (51 males and 86 females). Ages ranged from 18 to 23 years (mean age = 19.74 years, standard deviation [SD] = 1.5). The highest predominance of ethnicity in the sample was white (44.5%), with the next highest being black (28.5%). Respondents were drawn from several occupations including the Service Industry (28.5%), Government (14.6%), and Sales (12.4%). In all, 63.5% of the sample had a General Certificate

of Secondary Education (GCSE) (High School equivalent) and 27% had an “A” level (Scholastic Aptitude Test (SAT) equivalent) as their highest qualification. A total of 89.8% of respondents had a marital status of single. In all, 105 participants (76.6%) reported of never having cosmetic surgery previously.

Measures

At time 1 of the study, the following measures were administered:

The Celebrity Attitude Scale

In all, 27 items can be used to form three measures of Celebrity Worship [20]; Entertainment-social (seven items, e.g., “I love to talk with others who admire my favorite celebrity”), Intense-personal (13 items, e.g., “The successes of my favorite celebrity are my successes too”), and borderline-pathological (seven items, e.g., “I would gladly die in order to save the life of my favorite celebrity”) [15]. Responses are scored using a 5-point “Strongly Disagree” to “Strongly Agree” response format. Consistent with previous research [8], respondents were asked to select a same-sex living “favourite celebrity” whose body/figure they liked and admired.

Personal experience of elective cosmetic surgery

Replicating previous methods of measuring personal experience of cosmetic surgery [3], respondents were asked about the frequency and types of elective cosmetic surgery they had experienced. Within the current study, the classification of elective cosmetic surgery used definitions given by the American Society of Plastic Surgeons [1]. Therefore, elective cosmetic surgery encompassed cosmetic surgery procedures (e.g., Breast Augmentation and Liposuction) and minimally-invasive cosmetic surgery procedures (e.g., Botulinum Toxin Type A, Soft-Tissue Fillers), but we did not include reconstructive (e.g., birth defect correction) and noninvasive (e.g., teeth whitening) procedures. The measurement of previous elective cosmetic surgery was used to consider the extent to which past behavior predicted future elective cosmetic surgery [21] as some individuals may have multiple cosmetic surgeries, particularly those that are minimally invasive [22].

ACSS

This scale comprises three 5-item subscales to measure three dimensions of attitudes toward cosmetic surgery; (1) Intrapersonal (e.g., “Cosmetic surgery can be a big benefit to people’s self-image”); (2) Social (e.g., “If it would benefit my career I would think about having cosmetic surgery”); and (3) Consider (e.g., “I have sometimes thought about having cosmetic surgery”) [17]. Responses are scored using a 7-point “Strongly disagree” to “Strongly agree” response format.

Vicarious experiences of elective cosmetic surgery

Replicating previous methods to measure vicarious experiences of elective cosmetic surgery [3,4], respondents were asked four further questions about their experiences relating to cosmetic surgery. Respondents were asked how many people they knew who had undergone elective cosmetic surgery, scored on a 5-point scale (1 = None, 2 = <2, 3 = <10, 4 = >10, and 5 = Unsure, but many >10). Additionally, respondents were asked about exposure to cosmetic surgery through the media and how often they (1) read articles, (2) saw advertisements, and (3)

watched television programs about cosmetic surgery. Each question was scored on a 5-point “Never” to “Often” response format.

The Body Shape Questionnaire-Revised

A 10-item scale (e.g., “have you ever felt ashamed of your body?”) designed to measure body image preoccupation based on the Body Shape Questionnaire [23,24]. Responses are scored using a 6-point “Never” to “Always” response format. Higher scores indicate greater body image preoccupation. The current scale was adopted because it was brief, derived from an established measure, and could be adapted for use with men (e.g., “have you noticed the shape of other men and felt your own shape compared unfavourably?”). The scale has shown adequate internal reliability and construct validity [23].

The Rosenberg Self-Esteem Scale

The Rosenberg Self-Esteem Scale is a 10-item measure of global self-esteem measuring overall feelings of self-worth or self-acceptance (e.g., “I feel that I have a number of good qualities”) [25]. Responses were scored using a 4-point “Strongly Disagree” to “Strongly Agree” response format. Research suggests that the scale demonstrates adequate reliability statistics and construct validity [26].

The Satisfaction with Life Scale

This 5-item measure identifies global judgments about life satisfaction (e.g., “The conditions of my life are excellent”) [27]. Responses were scored using a 7-point “Strongly Disagree” to “Strongly Agree” response format. The scale demonstrates satisfactory internal reliability and construct validity [27].

Self-rated attractiveness and other personal variables

Several further questions were asked. Consistent with previous research in this area [3] participants were asked to rate their own physical attractiveness using a 7-point “Unattractive” to “Very attractive” response format. In addition to the demographic variables mentioned in the participant section, participants were also asked to indicate their height, weight (used to calculate BMI using kg/m^2), and estimated household income (1 = ‘£0–£10,000’, 2 = ‘£10,000–£20,000’, 3 = ‘£20,000–£30,000’, 4 = ‘£30,000–£40,000’, and so on).

Participants were followed up 8 months later (time 2) and asked to provide information on the amount and type of elective cosmetic surgery procedures they may have undergone. Respondents were given a list of previous reported cosmetic surgery experiences to allow them to clarify or correct possible discrepancies or overlaps in their reports. Again procedures were classified using the American Society of Plastic Surgeons definitions that were used at time 1. An 8-month period was selected as the study started in early Fall and there was an anticipation that a longer period (e.g., a year) would increase attrition from the study because of potential changes in educational or work status.

Procedure

Ethical approval was obtained from a relevant university ethics committee and completed in line with the British Psychological Code of Ethics. Respondents aged >18 years were sought because 18 is the legal age for an individual to undergo the large majority of elective cosmetic surgery procedures without needing parental consent. Recruitment of participants was opportunistic with advertisements displayed, after seeking relevant per-

mission, via fliers in more than 50 local workplaces, community groups, and colleges that were expected to include large proportions of young people. There was a complete disclosure about the nature of the study. As the prevalence of celebrity worship and cosmetic surgery are relatively low among the general population [1,28], we purposely sought to attract participants interested in celebrities or cosmetic surgery by emphasizing the potential relevance and interest of these topics to participants (although the advertisements stressed that anyone was welcome to take part). This was designed to attain a final sample that consisted of people who demonstrated higher levels of celebrity worship and who were likely to undergo elective cosmetic surgery over the duration of the study. Consequently, there is an inherent bias in this sampling procedure that should be noted in terms of incidence and prevalence of celebrity worship and cosmetic surgery reported among this sample.

Initially, 215 respondents took part in the study, with only 137 respondents participating at time 2, representing a 63.7% retention rate. Those failing to take part at time 2 did not differ significantly on any of the variables included in the study. Mean (SD) statistics for all the measures for those respondents completing and leaving the study are provided in Table 1, with independent groups *t* test statistics ranging from $t = -1.275$ to $t = 1.457$ (all $p > .05$).

Results

Descriptive, reliability, and correlational statistics

The most frequent elective cosmetic procedures reported among the current sample were Botulinum Toxin Type A, Soft Tissue Fillers, Liposuction, Breast augmentation, Breast lift, Laser skin resurfacing, and Nose reshaping. The prominence of Botulinum Toxin Type A and Soft Tissue Fillers at this age may be unexpected, but is perhaps because of a relative lower cost to the other reported procedures (e.g., Breast lift), the prominent use of collagen (a Soft Tissue Filler) to enhance lip shape, and a preoccupation to correct single skin lines at an early age, or skin damage from the sun or sunbed use. Moreover, this incidence is consistent with the most common procedures reported among younger patients in the United States [1]. No respondents reported returning to alter a previous unsatisfactory surgery. The suggested criteria to assess the prevalence of celebrity worship in a sample are to use scores above the mid-point score for each subscale of the Celebrity Attitude Scale (CAS) [29], although these statistics need to be treated with caution as the use of the mid-point is arbitrary. Using these criteria, 22.8% of the sample was classified as entertainment–social, 8% as intense–personal, and 2.5% as borderline–pathological. These statistics are higher than estimates among previous adult general population samples (entertainment–social, 15.1%; intense–personal, 5.1%; and borderline–pathological, 1.9%), but consistent with the view that younger people are more interested in celebrities than older adults [19].

Table 1 reports the Cronbach’s alphas [30] for the multi-item scales, descriptive statistics (Means and SDs), and all the Pearson product moment correlation coefficients between all the variables. All the multi-item scales are above an acceptable internal reliability criteria of $\alpha = .7$ [31].

In terms of the relationship between celebrity worship and incidence of elective cosmetic surgery, only intense–personal celebrity worship shares a statistical significant relationship,

Table 1

Mean (standard deviations) for all the variables for the final sample (n = 137) and those individuals who left the study (n = 78) and Cronbach's alpha coefficients for multi-item measures and Pearson product moment correlation coefficients between all the variables for the final sample (n = 137)

Measures	α	Mean (SD) final sample (n = 137)	Mean (SD) study leavers (n = 78)	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
1. Incidence of CS	N/A	.31 (.5)	NA	.11	.30**	.07	.41**	-.04	.23**	.27**	.49**	.46**	.41**	.51**	.19*	.31**	.15	.29**	-.21*	.54**	-.46**	-.07	
2. Entertainment–social	.71	18.85 (5.0)	18.94 (4.5)		.10	.09	.06	-.09	-.18*	.11	.08	.04	.01	.01	.10	.11	.12	.08	-.08	.08	-.16	-.09	
3. Intense–personal	.84	28.07 (8.1)	28.91 (8.8)			.13	.03	.16	.07	.03	.21*	.15	.18*	.18*	-.01	.09	-.02	.10	-.03	.26**	-.06	.05	
4. Borderline– pathologic	.70	11.10 (4.5)	10.38 (3.9)				.14	-.15	.07	.01	.15	.05	.05	.03	.12	.08	.15	.18*	.10	.03	.11	.10	
5. Sex	N/A	1.63 (.5)	1.71 (.5)					.08	-.06	.15	.18*	.29**	.30**	.36**	.56**	.60**	.56**	.56**	-.02	.03	-.25**	.01	
6. Age	N/A	19.74 (1.5)	19.82 (1.7)						-.12	-.10	.02	.05	.05	.05	.01	.12	.02	.12	-.10	.09	-.08	-.05	
7. Body mass index	N/A	23.11 (3.6)	23.43 (3.4)							.045	.26**	.28**	.27**	.28**	-.03	-.02	-.12	-.01	.06	.32**	-.22*	-.02	
8. Income	N/A	1.55 (1.0)	1.73 (1.1)								.19*	.08	.12	.13	-.02	-.01	.01	-.02	-.07	.16	-.12	-.10	
9. Previous frequency of CS	N/A	.33 (.7)	.39 (.6)									.53**	.47**	.48**	.04	.14	-.01	.05	-.15	.57**	-.44**	-.16	
10. "Consider" ACSS	.92	8.82 (6.1)	9.01 (6.3)										.82**	.87**	.28**	.45**	.29**	.32**	.02	.55**	-.56**	-.15	
11. "Social" ACSS	.89	8.61 (5.3)	8.81 (5.1)											.86**	.29**	.49**	.35**	.37**	.06	.51**	-.49**	-.11	
12. "Intrapersonal" ACSS	.90	13.55 (9.3)	14.00 (8.9)												.24**	.57**	.39**	.45**	-.03	.58**	-.56**	-.03	
13. Known others' experience	N/A	2.17 (1.0)	2.37 (1.0)													.61**	.63**	.62**	.27**	-.01	-.09	-.03	
14. Television programs	N/A	2.86 (1.5)	2.90 (1.3)														.71**	.84**	.08	.25**	-.30**	-.06	
15. Advertisements	N/A	2.72 (1.7)	2.83 (1.4)															.72**	.08	-.02	-.21*	-.03	
16. Articles	N/A	2.34 (1.6)	2.58 (1.4)																.13	.14	-.18*	-.04	
17. Self-rated attractiveness	N/A	3.93 (1.3)	3.95 (1.1)																	-.18*	.08	.06	
18. Body image preoccupation	.90	40.99 (19.4)	40.38 (17.0)																			-.47**	-.14
19. Self-esteem	.82	31.80 (8.9)	33.50 (8.6)																				.29**
20. Satisfaction with life	.72	19.22 (6.1)	20.24 (5.6)																				

Incidence of Cosmetic Surgery (Didn't undertake cosmetic surgery = 0, did undertake cosmetic surgery = 1).

Sex (Male = 1, female = 2).

Key and Scoring: 1.

CS = cosmetic surgery; ACSS = Acceptance of Cosmetic Surgery Scale.

* $p < .05$; ** $p < .01$.

Table 2

Hierarchical Logistic Regression analysis with incidence of elective cosmetic surgery used as the dependent variable and demographic, previous experience and attitudes towards cosmetic surgery, vicarious experience of cosmetic surgery, psychological variables, celebrity worship and interaction terms used as the predictor variables

Step	Predictor	β	SE	Wald	OR
Step 1: demographic variables	Sex	2.97	.73	16.57***	19.56
	Age	-.10	.23	.19	.91
	Income	.49	.22	4.95*	1.63
	Body mass index	.75	.24	9.40**	2.12
Step 2: previous experience/attitudinal	Previous experience	.92	.30	9.54**	2.50
	Consider ACSS	-.05	.62	.01	.95
	Social ACSS	-.37	.58	.41	.69
	Intrapersonal ACSS	1.17	.54	4.73*	3.21
Step 3: social influences	Known others' experience	.18	.41	.18	1.19
	Television	-.44	.60	.54	.64
	Advertisements	-1.176	.54	4.82*	.31
	Articles	1.53	.65	5.50*	4.59
Step 4: psychological influences	Self-rated attractiveness	-.72	.45	2.57	.49
	Body image preoccupation	1.90	.63	9.21**	6.71
	Self-esteem	-1.25	.50	6.23*	.29
	Satisfaction with life	.42	.46	.82	1.52
Step 5: celebrity worship	1. Entertainment–social	.35	.57	.38	1.42
	2. Intense–personal	2.19	.80	7.43**	5.42
	3. Borderline–pathologic	-.65	.64	1.05	.31
Step 6: gender interactions	4. Gender* entertainment–social	-1.61	5.23	.10	.20
	5. Gender* intense–personal	2.96	3.70	.64	1.29
	6. Gender* borderline–pathologic	.77	5.70	.02	1.65

For step 1, $\chi^2(4, n = 137) = 44.95 (p < .001)$, Δ Nagelkerke $R^2 = .40$.

For step 2, $\Delta\chi^2(1, n = 137) = 29.41 (p < .001)$ Δ Nagelkerke $R^2 = .19$.

For step 3, $\Delta\chi^2(4, n = 137) = 7.85 (p = .097)$ Δ Nagelkerke $R^2 = .05$.

For step 4, $\Delta\chi^2(4, n = 137) = 24.88 (p < .001)$ Δ Nagelkerke $R^2 = .13$.

For step 5, $\Delta\chi^2(3, n = 137) = 17.07 (p = .001)$ Δ Nagelkerke $R^2 = .07$.

For step 6, $\Delta\chi^2(3, n = 137) = 1.09 (p = .779)$ Δ Nagelkerke $R^2 = .01$.

ACSS = Acceptance of Cosmetic Surgery Scale.

Note all continuous variables are standardized; $n = 137$; * $p < .05$, ** $p < .01$, *** $p < .001$, Δ = Change.

with a medium effect size. Of the other variables, the incidence of elective cosmetic surgery shares a statistical significant correlation, in expected directions, with all the measures, with the exception of age, advertisements seen for cosmetic surgery, and life satisfaction, thereby noting a general consistency with the general published data [3,9]. The largest associations with the incidence of elective cosmetic are body image preoccupation, previous frequency of having elective cosmetic surgery, self-esteem, acceptance of cosmetic surgery, and sex. The Spearman rank correlation coefficients between celebrity worship and the incidence of elective cosmetic surgery suggest that intense–personal celebrity worship shares a statistical significant correlation with the incidence of elective cosmetic surgery ($r = .32$, $p < .001$), the entertainment–social celebrity worship ($r = .12$, $p > .05$), and borderline–pathological celebrity worship ($r = .08$, $p > .05$) do not.

Hierarchical logistic regression

In all, 42 participants (30.7%) reported having elective cosmetic surgery over the 8-month period since time 1. A 6-step Hierarchical Logistic Regression was performed to test whether intense–personal celebrity worship could predict the incidence of elective cosmetic surgery, after controlling for other known predictors. All continuous variables were standardized, consequently the odds ratios represent the increase in likelihood of undergoing cosmetic surgery associated with being 1 SD higher on the predictor variable. Groups of predictors were entered into the regression in a series of steps based around conceptual differences between sets of variables. Step 1 consisted of demo-

graphic variables, step 2 encompassed previous experience and attitudes toward cosmetic surgery, step 3 consisted of vicarious experience of cosmetic surgery, and step 4 encompassed psychological predictors of elective cosmetic surgery. Step 5 consisted of the three celebrity worship measures. To test whether the predictive value of celebrity worship varied between men and women, a further step (step 6) was introduced to conduct a moderator analysis. This involved computing three new variables representing the interaction between sex and each celebrity worship dimension. The moderation analysis followed recommendations forming interaction variables based in the multiplication of the standardized variables with the dummy-coded sex variable [32]. For each step the criteria for entry was set at $p = .05$, removal at $p = .10$, and confidence interval for odds ratio set at 95%. The Regression model is presented in Table 2, with unstandardized regression coefficients, Nagelkerke R^2 , and odds ratio statistics presented for each predictor variable. Changes in the χ^2 and Nagelkerke R^2 statistics are shown for each step to show changes in explained variance.

In step 1, the demographic variables reached statistical significance, with sex, BMI, and income demonstrating statistical significant regression coefficients. In step 2, frequency of previous elective cosmetic surgery and the ACSS subscales reached statistical significance with previous experience and the intrapersonal subscale of the ACSS statistical significant regression coefficients. In step 3, the vicarious experience of cosmetic surgery measures did not reach statistical significance indicating that these four variables together were unable to predict the incidence of elective cosmetic surgery. In step 4, the psychological constructs reached statistical significance with body image preoccupation

and lower self-esteem demonstrating statistical significant regression coefficients. Together these four steps explained 73% of the variance of whether people underwent elective cosmetic surgery. In step 5, the three celebrity worship subscales reached statistical significance, explaining an additional 5.2% of the variance, with intense–personal celebrity worship demonstrating regression coefficients which reached statistical significance. At step 6, the interaction terms did not increase the variance explained, accounting for 1% of the variance. This suggests that intense–personal celebrity worship predicts elective cosmetic surgery equally for both men and women.

Discussion

The current findings suggest that intense–personal celebrity worship, specifically of a celebrity whose body shape is admired, does not only predict the incidence of elective cosmetic surgery over the period of 8 months, but does so after controlling for a number of standardized known predictors of the incidence of elective cosmetic surgery. This new finding is consistent with the previous finding that intense–personal celebrity worship is related to a willingness to have elective cosmetic surgery [8].

It is important not to over-state the relationship between intense–personal celebrity worship and the incidence of elective cosmetic surgery. When this relationship is compared with the effect sizes and odds ratios of other variables in this study; sex, body image preoccupation, self-esteem, previous cosmetic surgery experience, and willingness to have cosmetic surgery all share associations of greater or equal influence with the incidence of elective cosmetic surgery. There is also a caveat about some of the figures presented in this study. A 23.3% of the sample reported having had elective cosmetic surgery at time 1 and 30.7% of the sample reported having cosmetic surgery over an 8-month period. The high incidence of cosmetic surgery within our sample results from intentionally trying to attract respondents who were interested in cosmetic surgery. Consequently, there is a bias within our sample and this should be a consideration with our findings. Most certainly, no generalizations about the incidence or prevalence of cosmetic surgery among young people outside of this sample should be drawn from this study. Finally, the findings are limited to one sample of young people and therefore further research exploring the statistical power and accuracy of our findings across adequate and different populations of young people is now indicated.

The association between intense–personal celebrity worship and the incidence of elective cosmetic surgery is, in part, consistent with the absorption–addiction hypothesis. This hypothesis suggests that higher levels of celebrity worship will be associated with elective cosmetic surgery with the individual establishing an identity using the celebrity as a physical exemplar. However, the findings are not completely consistent with the hypothesis as borderline–pathological celebrity worship, thought to reflect the highest levels of celebrity worship, was not associated with the incidence of elective cosmetic surgery. The absence of a statistical association may result from the low frequency of individuals falling into that category; however, other theoretical contexts, other than the absorption–addiction hypothesis, may need exploring to explain this finding. For example, previous research has linked intense–personal celebrity worship to depression and poorer friends and family attachments among young age groups [28,33] and it may be that the relationship between intense–personal celebrity worship and elective cosmetic surgery is better

understood within the context of attempts to alleviate depression or improve their social relationships. Furthermore, the Prototype Willingness Model [34] might be used to integrate concepts such as prototypes of beauty portrayed by celebrities, alongside assessments of subjective norms (e.g., familial support) and perceived behavioral constraints (e.g., cost). These considerations may be particularly pertinent when taking into account whether the celebrities, with whom individuals identify, report having undergone surgeries themselves and then to what extent cosmetic surgery emerges from the attempted emulation of a beauty ideal.

Future research may examine the relationship between intense–personal celebrity worship and elective cosmetic surgery to a greater granularity. Studies need to examine whether the effect varies across specific elective cosmetic surgery procedures, such as breast augmentation [2]. Researchers might explore whether the satisfaction from celebrity-worship-influenced surgeries differ from satisfaction with surgeries carried out for other motives and to what extent this influences the incidence of further prospective surgeries. Within this context, research might consider the extent to which elective cosmetic surgery may comprise multiple procedures to achieve a certain beauty ideal, or whether there is a ceiling effect to undergoing elective cosmetic surgery once a certain beauty ideal has been achieved, limiting the incidence of further prospective surgeries.

The practical implications of the current findings are that they can provide a focus for clinicians who are trying to understand young adults' decisions for using a celebrity as inspiration for elective cosmetic surgery. Specifically, including a measure of celebrity worship may allow clinicians to consider these possible motivations for the elective cosmetic surgery among these patients.

In summary, the current findings present the first evidence that intense–personal celebrity worship predicts incidence of elective celebrity worship among young adults after controlling for several known predictors of elective cosmetic surgery.

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EFFECTS OF PERCEIVED CONTROL ON COLLEGE STUDENTS' EVALUATION OF HIGHER EDUCATION INSTITUTIONS

Jungki Lee, Korea University at Sejong

ABSTRACT

Students are known to experience significant amounts of stress and challenges during their academic pursuit at college. This study explores a way to enhance student satisfaction by incorporating a concept called perceived control to the existing service quality model. To be specific, this study proposes and tests that perceived control could be a promising factor which may enhance service quality, satisfaction, and recommendation intention among college students. Data were collected at a major college in South Korea. A set of three hypotheses developed for this study were partially supported. Managerial implications are provided.

JEL: A2

KEYWORDS: marketing, services, perceived control, service quality, and student satisfaction

INTRODUCTION

Colleges, like other business, are under constant pressure to provide quality service and to win satisfaction among students to survive in a highly competitive arena. Administrators of colleges have adopted both business concepts and marketing orientation, regarding students as customers. A majority of higher education institutions have set student satisfaction as one of most important strategic goals. Those who score high on student satisfaction are considered to deliver quality education service and to have long-term program viability (Bailey and Dangerfield, 2000). In contrast, those who fail to deliver satisfactory services may fall into the trap of a vicious circle, composed of low satisfaction among students, weak academic performance among them, high dropout rates, reduced revenue, poorer service quality, and even lower satisfaction (Tinto, 1994).

Maintaining a high level of service quality and customer satisfaction at a higher education institution is very difficult, if not impossible. The customers (*i.e.*, students) are facing challenges from many different sources in their college lives: academic, social, interpersonal, financial, among others. For many, college is a stressful time, forcing one to deal with new educational and social environments (Towbes and Cohen, 1996). If these stressors are not dealt with effectively, negative consequences such as feelings of loneliness, nervousness, sleeplessness and excessive worrying may result (Wright, 1967). If one was under stress, it would be fairly difficult to experience satisfaction in that environment. To support this perspective, Ross, Niebling, and Heckert (1999, p. 312) have argued that "it is important that stress intervention programs be designed to address stress of college students."

Regardless of the pervasiveness of stress among college students, the literature on student satisfaction has paid limited attention to the stress. Studies on student satisfaction are mostly based upon the service quality paradigm. Many scholars, for example, have adopted either the SERVQUAL or SERVPERF perspective, and have tried to approach student satisfaction by enhancing the so-called five dimensions of service quality: tangibles, reliability, responsiveness, assurance, and empathy (Cronin and Taylor, 1993; Parasuraman et al., 1985). Albeit useful, the limitations of such approach are many (Buttle, 1996).

The purpose of this study is to explore a way to enhance student satisfaction by incorporating a concept

called perceived control to the existing service quality model. To be specific, this study proposes that perceived control could be a promising variable which would enhance service quality, satisfaction, and recommendation intention among college students. This study is organized as follows: it first provides a literature review on service quality and perceived control. Based upon the review, the study introduces its hypotheses, methodology and findings. Finally, the article concludes with implications of the findings and future research directions.

LITERATURE REVIEW

Service Quality

Service quality is an elusive concept, and there has been a considerable amount of disagreements in literature about how best to conceptualize the construct. Lewis and Booms (1983, p.10) pioneered the area and suggested a definition of service quality as a "...measure of how well the service level delivered matches the customer's expectations." This perspective was adopted by Parasuraman, Zeithaml, and Berry (1985) who developed a gap model by synthesizing (1) the expectation-disconfirmation theory concerning consumer satisfaction (Churchill and Surprenant, 1982; Lewis and Booms, 1983; Oliver, 1980), and (2) previous explorations of the dimensions of service quality (Gronroos, 1982; Sasser, Olsen, and Wyckoff, 1978). They proposed a multiple-item scale, called SERVQUAL which measures elements of service from service customers' viewpoints (Parasuraman, Zeithaml, and Berry, 1988). According to the SERVQUAL conceptualization, service quality can be assessed by five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. Parasuraman et al. (1988) maintained that the 22-item scale and its five dimensions are reliable and valid in measuring service quality. SERVQUAL has been adopted and applied by many scholars. At the same time, the SERVQUAL scale has been criticized by many and the most notable challenge was made by Cronin and Taylor (1992). They proposed a "performance-based" service quality approach called SERVPERF by noting that a customer's perception of service quality is based upon his/her "perceived" attitude about the service. Cronin and Taylor (1992) reported that their unweighted performance-based SERVPERF scale was found as a better method than the gap model based SERVQUAL in measuring service quality.

The importance of service quality has been recognized in the field of higher education settings as well. Because service quality is reported to be closely related to the profit and other financial outcomes of service firms (Zeithaml, Bitner, and Gremler, 2006), administrators of colleges have adopted both service quality and student satisfaction as a cornerstone of their competitive strategy. Nowadays, no colleges are free from the necessity of understanding the antecedents, determinants, and consequences of service quality. A direct application of the service quality approach developed in other sectors to higher education contexts, however, may warrant some cautions. Customers of colleges (*i.e.*, students) are different from customers of conventional service customers. They have been described as customers in subordinate roles (Lee, 2010) where a majority of them perceive power inferiority to their service providers and have a higher likelihood to experience stress and frustration. Considering such a propensity to experience negative emotions among students, there is a surprising paucity in literature on education service quality dealing with students stress. The concept of perceived control discussed below has a high potential to incorporate that issue.

Perceived Control

The concept of perceived control has been examined in psychology in conjunction with an individual's interaction with his/her surroundings. Perceived control has been defined as one's perceived competence, superiority, and mastery over an environment (White, 1959). A number of studies have reported the crucial role of perceived control in determining negative consequences such as stress, helplessness, meaninglessness, and intention to abuse substances, as well as positive consequences such

as self-efficacy, competence, satisfaction, and physical and psychological well-being (Cohen, 1981; Langer and Saegert, 1977). Averill (1973) has offered a typology of control that makes one feel in charge of a situation. The three types of control proposed by Averill (1973) include behavioral, cognitive, and decisional controls. Averill (1973) maintained that each type of perceived control reduces one's stress and perceived risk in dealing with a potentially stressful event. In the following, each of these controls is reviewed.

1. Behavioral Control. The most widely accepted conceptualization of perceived control is one's belief of his/her ability to change the objective nature of an impending event. A group of researchers demonstrated that an individual's perception of control over a situation is largely affected by his/her belief regarding the ability to modify the objective nature of the situation (Litt, 1988; Thompson, 1981). A number of studies have found a positive relationship between the availability of responses one possesses and the ability to respond adaptively to a stressful event. One of the most notable research findings in that aspect was made by Langer and Rodin (1976) who found that one's ability to exert influences on one's environment had significant effects on one's well-being. In their study carried at nursing homes, residents of the institutions who had behavioral control (i.e., opportunities for choices, possibility of influencing nursing home policies, and small decisions to make and small responsibilities to fulfill) reported a higher level of happiness and satisfaction than those that did not have such behavioral control (Langer and Rodin, 1976). Several other studies involving medical settings have confirmed the effects of behavioral control on a person's well-being (Deci, 1980; Folkman and Moskowitz, 2000; Helgeson, 2003). According to Averill (1973), behavioral control is perceived in two conditions: (1) when one believes that s/he is capable of determining "such things as who administers the stimulus and how/when the stimulus will be encountered" (p. 287) and (2) when one believes that s/he has the right to modify the nature of an aversive event by using his/her behavioral response (e.g., avoidance, escape, attack, and so on). Thus, the theory of behavioral control suggests that perceived risk and stress in an environment can be reduced when one believes that one is able to make changes in that environment or when one is provided with a set of behavioral options from which s/he can freely choose.

2. Cognitive Control. A group of researchers observed that people become less averse to a potentially stressful event when they understand the nature of the event and when they are able to predict the consequences of the interaction (Seligman and Miller, 1979). The theory of cognitive control is built upon one's ability to subjectively incorporate the stressful event into one's cognitive plan. In Langer and Saegert's study (1977) involving a crowded supermarket, the shopping condition was reported to be felt more crowded among individuals who did not know about the crowded conditions until they entered the store than those who had been informed about it before. Langer and Saegert (1977, 181) explained that "anticipation of crowding does result in behavioral and attitudinal adjustment ... [and] information about possible reactions to an environment not only makes a person feel better, but may actually increase the attention available for tasks." Averill (1973) described such ability to subjectively incorporate an aversive stimulus into one's cognitive plan as cognitive control. The theory of cognitive control has been elaborated in subsequent studies (Seligman and Miller, 1979; Taylor, 1989). Findings of those studies summarize that cognitive control is perceived as a person acquires both the specific information about an imminent event and the consequences of the event for that individual. Thus, a person would perceive less stress in dealing with a potentially stressful event when provided with sufficient information about the nature of that event in advance.

3. Decisional Control. Scholars founded upon action-theoretical perspectives noted that individuals perceive less stress in dealing with a potentially stressful event when they believe that they may gain personally desirable outcomes through their interactions with that event (Kelley, 1955; Skinner, Chapman, and Baltes, 1988). The theory of decisional control is founded upon a premise that human actions are goal-directed and therefore, an individual may perceive that s/he is in charge of a situation when s/he believes that s/he will eventually obtain a personally desirable outcome from that situation. For one to

feel such type of control, one does not need to have either predictability or a range of choice. Averill (1973, p. 300) made note on that form of control by explaining that “it is not the objective range of choices which determines whether or not a person experiences ... control; rather it is the degree to which he agrees or identifies with the choices he does have, no matter how limited.” Thus, when we are sure that we will eventually gain personally desirable outcomes from a potentially stressful situation, we become more tolerant of ambiguity, discomfort, and stress that are pertinent to the situation.

In summary, a person facing a potentially stressful event may find the situation less stressful when s/he perceives control in that environment. Perceived control, however, is not a simple concept but a complicated compound of interrelated yet different concepts (Rodin, Rennert, and Solomon, 1980). The theory in essence suggests that one may feel in command of a situation (1) when one believes that one can effectively influence an environmental event, (2) when one is fully informed about the nature and consequences of an event, and (3) when one knows that one may gain a personally desirable outcome by exercising one’s influence, choice, or action in dealing with the event (Averill, 1973). This study applies the perspective of perceived control to the higher education setting and posits that the stress-reducing effects and satisfaction-enhancing effects of perceived control can also be observed among college students.

HYPOTHESES

The purpose of this paper is to examine whether the perception of control over their school life among college students affects their satisfaction with the school. Although attaining a college degree is considered an important career path by many people, the admission process for getting in can be quite demanding. Students who make it successfully through this process and get admitted into a rigorous program find themselves facing the challenges of academic life at a completely different level from their respective high school experiences. The competition for academic achievement, the need to perform, the enormous volumes of work and the time constraints of study, work and family are all the obvious stressors that come to mind when people think of college life (Ross et al. 1999). A significant number of students are found to experience frustration, stress, and dissatisfaction with their colleges (Zajacova et al., 2005). The academic pursuit in a college, indeed, is a potentially stressful event to many people. This study hypothesizes that students who perceive control in dealing with their colleges will evaluate their colleges more favorably than those who feel lack of control in dealing with them. Specifically, college programs that foster enhanced perceived control among their students would be evaluated as having higher quality. Furthermore, the students would experience higher levels of satisfaction from such college programs. Those students who see quality and experience satisfaction from their schools would have a higher intention to recommend their schools.

For a robust test of theory, this study adopts a macro perspective by incorporating a set of perceived control variables (behavioral control, cognitive control, and decisional control) into conventional SERVQUAL variables (tangibles, reliability, responsiveness, assurance, and empathy) to empirically test if the addition of perceived control variables would enhance service quality, satisfaction, and recommendation intention among college students. First, behavioral control is likely to affect the student’s evaluation of their colleges. Students seem to prefer to make influences on their academic and non-academic aspects of college life. Compared to a program where students feel that they have no choice in their academic life but have to uniformly follow school-required procedures, a program that allows students to make choices with regard to their academic life (*i.e.*, behavioral control) is likely to foster a high level of student satisfaction. Second, students are likely to evaluate their college more favorably when the school provides them with sufficient information about the program, courses, requirements, and so on. Being fully informed about the nature of school life and specific aspects of the academic requirements (*i.e.*, cognitive control), students may be able to include possible future academic and non-academic challenges in their cognitive plan. After all, those ones having cognitive control are

more likely to actively deal with and overcome challenges that they may experience during their academic endeavor. Finally, students are likely to evaluate their school more positively when they believe that they will obtain the desired benefits from the program in the long run. When a student believes that s/he will eventually obtain desirable outcomes from college (*i.e.*, decisional control), the student is likely to deal with academic challenges with less stress and frustration and retain high hopes, which would make him/her evaluate the school more favorably. Based upon this reasoning, the following set of hypotheses was developed to test the effects of perceived control on program evaluation among college students.

H1^{a, b, c}. Perception of behavioral control has positive influence on perceived quality^a, satisfaction^b, and recommendation intention^c of education service among college students.

H2^{a, b, c}. Perception of cognitive control has positive influence on perceived quality^a, satisfaction^b, and recommendation intention^c of education service among college students.

H3^{a, b, c}. Perception of decisional control has positive influence on perceived quality^a, satisfaction^b, and recommendation intention^c of education service among college students.

METHODS

Data for this study were collected via a self-reported questionnaire administered to 155 students enrolled at a major college in South Korea. The questionnaire was composed of four sections: SERVPERF measures, perceived control measures, dependent measures (*i.e.*, service quality, satisfaction, and recommendation intention), and demographic questions. Likert scales were adopted as a response category for independent measures (both SERVPERF and perceived control). Service quality was measured by a modified version of SERVPERF proposed by Cronin and Taylor (1992). Cognitive control was measured by using a four-item scale, which includes the students' understanding, capability of predicting, familiarity with the program, and ability to tell strengths and weaknesses of the program in which they were enrolled.

Behavioral control was incorporated into the questionnaire by using a five-item scale that includes the choice availability in course selection, availability of exercising influence on school policies, and availability of auditing courses before registering. Decisional control was measured by a six-item scale, addressing the desirability of being in the program, appropriateness of requirements for graduation, and program efficiency. Three dependent measures (*i.e.*, service quality, satisfaction, and recommendation intention) were measured by using a 7-point scale ranging from 1 (very poor quality/very dissatisfied/least likely to recommend) to 7 (excellent quality/very satisfied/very likely to recommend).

A total of 131 useable responses were collected. Background characteristics of the participants are summarized in Table 1. Demographically, 45 percent of the respondents were female and 55 percent male. Almost all of them (98%) were in their twenties. As far as academic standings were concerned, about 92 percent of the students had cumulative GPA of 3.0 or above, and about 80 percent of them between 3.0 and 3.9. A review of demographic characteristics of the sample made by two college administrators confirmed that the sample represented the entire student population enrolled at the school appropriately.

Table 1: Background Characteristics of the Sample

Characteristics	Frequency	Percentage (*)
GENDER		
Male	72	55
Female	59	45
AGE		
< 20	1	1
21-29	129	98
> 30	1	1
GPA		
< 3.0	10	8
3.0 - 4.0	105	80
> 4.0	16	12

(*) Percentages are rounded.

RESULTS

Measurement properties of the scales developed for this study were evaluated using reliability, convergent validity, and nomological validity. The five scales regarding service quality, in general, had acceptable reliability. The scales of tangibles, reliability, responsiveness, assurance, and empathy had reliability coefficients of .68, .76, .77, .75, and .75 respectively. The scales of perceived control also had high levels of reliability. The scales of cognitive control, behavioral control, and decisional control had cronbach alpha coefficients of .79, .81, and .81, respectively.

All items of each construct had significant factor loadings greater than 2, thus providing evidence of significant convergent validity (Anderson and Gerbing, 1988). Constructs used in this study were found to behave consistently with pertinent theories in both marketing and psychology, as evidenced by the significant correlations among service quality constructs and among perceived control constructs. In summary, the measures used in this study were found to have adequate measurement properties for a theory testing. For the purpose of hypothesis testing, average scores of items making up the constructs (tangibles, reliability, responsiveness, assurance, empathy, cognitive control, behavioral control, and decisional control) were used.

Hypotheses were tested by using a series of regression analyses. The results of the hypothesis test are presented in Table 2. The table shows the regression estimates of the effects of both SERVPERF factors and perceived control factors on service quality, satisfaction, and recommendation intention, respectively. The figures in the table represent the standardized regression coefficients.

The hypothesis test revealed that students' evaluation of their college was affected by both service quality and perceived control variables. When it comes to the service quality of a college, the students' evaluation is significantly affected by reliability dimension of service quality and decisional control factor of perceived control. Thus, H3_a is supported while H1_a and H2_a are not supported. On the contrary, the students' satisfaction is significantly affected by assurance and behavioral control. Thus, H2_b is supported while H1_b and H3_b are not supported. Finally, the recommendation intention among students was found to be affected by both assurance and decisional control. Thus, H3_c is supported while H1_c and H2_c are not supported.

Table 2: Effects of SERVPERF and Perceived Control on Dependent Measures

Independent Variables	Service Quality	Satisfaction	Recommendation Intention
SERVPERF			
Tangibles	0.012	0.09	0.297
Reliability	.287*	0.078	0.101
Responsiveness	0.079	0.059	0.178
Assurance	0.194	.482*	.338*
Empathy	0.145	0.168	0.145
Perceived Control			
Behavioral Control	0.112	.232*	0.016
Cognitive Control	0.054	0.089	0.062
Decisional Control	.215*	0.147	.295*
Adjusted R ²	0.178	0.268	0.289

*: Significant at .01

DISCUSSION AND CONCLUSIONS

Findings in this study offer several insights into understanding the influence of perceived control on students' evaluation of education services rendered at higher education institutions. One of the most notable findings of this study is that perceived control variables being proposed in this study as meaningful variables in affecting students' evaluation of college services indeed contribute to the variation of the dependent variables (service quality, satisfaction, and recommendation intention) as much as those service quality variables that have been heavily studied in the literature.

Specifically, behavioral control was found to significantly affect students' satisfaction with college. Students seem to experience higher levels of satisfaction when they have the right to design their own courses for academic or non-academic activities. Decisional control exerts significant influence on both perceived service quality and recommendation intention of their colleges. When the students believe that they will obtain personally desirable outcomes through their college education, they see quality from the program and they are willing to make recommendations of their schools. Not all perceived control variables, however, were found to have significant influences on the dependent variable. Cognitive control, for example, was a variable that did not exert any significant influence on the dependent variables. In hindsight, just knowing what will happen to them may not be a sufficient condition to enhance service quality, satisfaction, and recommendation of the school.

In summary, students were found to prefer having control over their school lives. The findings of this study suggest that students want to have the ability to make influences on their academic and non-academic school lives. In addition, they prefer to have confidence that the school will offer them personally desirable outcomes. Such findings of this study should provide many managerial implications.

First, colleges should establish program diversity for their students. A college would be highly appreciated when its programs accommodate an individual's preferences and allow its students to design their course of academic and nonacademic pursuits. In addition, colleges should inform their students that they are allowed and encouraged to make suggestions that would possibly change their academic and non-academic environments. Most of all, colleges should be able to instill confidence among their

students in terms of the desirability of their efforts at the college. Those who have strong confidence that their college education will be a rewarding experience are found to not only perceive service quality but also have higher recommendation intention.

In conclusion, this article presents a perspective in enhancing student evaluation of education services rendered at colleges. Although service literature has made a notable progress over the years in enhancing our understanding of service quality and satisfaction, most of them have been guided by the service quality paradigm. The perspective of perceived control provided in this study is expected to complement our understanding on service quality and satisfaction. Future research using the perspective is highly expected.

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BIOGRAPHY

Dr. Jungki Lee (jungkilee@korea.ac.kr) earned his Ph.D. at the University of Alabama. Currently, he is a professor of marketing at Korea University, Sejong Campus. He has authored a number of articles in refereed journals such as *Journal of Retailing*, *Journal of Services Marketing*, *Service Industries Journal*, *Journal of Contemporary Business Issues*, *Journal of Academy of Business and Economics*, *Review of Business Research*, *Services Marketing Quarterly*, and *The International Journal of Business Administration*. He also presented papers at national and international conferences.

Idol worship, religiosity, and self-esteem among university and secondary students in Hong Kong

Jacky K. K. Liu

Abstract

Objectives: this study aims to provide psychometric validation of the Idol Worship Questionnaire (IWQ), and investigate the relationship between idol worship, religiosity, and self-esteem. It was hypothesised that idol worship was negatively correlated with religiosity and with lower self-esteem, religiosity would boost self-esteem, females would have more intensive idol worship attitudes than males and idol worship across participants' age would show an inverted V-shape pattern.

Method: the Idol Worship Questionnaire (IWQ), the Celebrity Attitude Scale (CAS), the Age-Universal I-E Scale-12 (AUIE), and the Rosenberg's Self-Esteem Scale (RSES; 1962) were given to 800 participants for completion.

Results: Five factors were identified in the IWQ: Romantic Fantasy, Physical Attractiveness, Psychological Identification, Worship Decision, and Worship Expenditure. It also showed positive correlations between idol worship and religiosity. Two regression analyses also showed that idol worship or religiosity does not predict self-esteem significantly. Sex acts as a more reliable construct in idol worship attitudes, whereby females have higher idol worship attitudes and males have higher self-esteem. It also moderates the effect of worship conformity attitude in predicting self-esteem. A delayed transition from adolescence to adulthood is also observed in the pattern of idol worship attitudes.

Conclusions: this study serves to validate the IWQ and AUIE with regard to their applicability and factor components in Hong Kong. It also shows evidence for the concurrent validity of the IWQ with another measurement on idol worship, the Celebrity Attitude Scale (CAS). Participants with various religious beliefs and backgrounds should be sampled. Further validations for the AUIE should also be conducted in the future. Last but not least, the types of idols people worship should also be measured and assessed to see if there is any difference.

Introduction and Literature Review

Definitions of Idol Worship and Celebrity Worship

According to Cheung and Yue (2000), an idol is a person whose talents, achievements, status, or physical appearances are recognised and appreciated by his/her fans. Fromm (1967) defines idol worship as the excessive admiration of and attachment to a given idol figure, whose personal attributes are overly enhanced or idealised. It can also be treated as

a process by which false perceptions are created and worshipped. In addition, idol worship in adolescence is regarded as a kind of secondary or unreciprocated attachment towards a favourite idol.

Celebrity worship is defined as a particular kind of idol worship of a widely recognised person who commands a high degree of public and media attention. Whereas idol worship covers a wider range of people, including famous figures in history, peers and family members, celebrity worship covers a relatively narrower range as it only includes stars and luminaries (Yue & Cheung, 2000). Stars consist of singers, actors, and athletes, whereas luminaries consist of scientists, politicians, artists, and businessmen. These figures are mainly worshipped for their charisma, physical appearance, wealth, personal achievements, and social influence.

Types of Celebrity Worship

According to past studies, celebrity worship can be categorised into three types: entertainment-social, intense-personal, and borderline-pathological. As regards the entertainment-social type, people worship their favourite celebrities solely for entertainment purposes and they have a normal level of interest in their favourite celebrities' lives. The behaviours of worshippers of this type include reading news about the celebrities and gossiping about the celebrities. Intense-personal attitudes tend to indicate some neurotic traits. A person might believe that he/she has a strong personal connection with the celebrities, and treat the celebrities as his/her faultless soulmates. Behaviours of this type of celebrity worship include frequent intrusive thoughts about the celebrities. The most radical type of celebrity worship is borderline-pathological behaviours and traits displayed by those who believe in the benevolent omnipotence of the celebrities. They also have an obsession with the details of celebrities' lives, over-identify with the celebrities, and believe that they can communicate with their favourite celebrities through a shared secret code. These beliefs and behaviours may even cause harm to their psychological development (Maltby, Day, McCutcheon, Houran, & Ashe, 2006; North, Sheridan, Maltby, & Gillett, 2007).

Theories and Studies of Idol Worship

There are three major theories which elaborate on the importance of adolescent idol worship: social learning, identification, and attachment theory. According to the social learning theory (Bandura, 1986), through imitating someone's behaviour, a person can obtain certain appropriate social skills that enable him/her to enhance the regulation of his/her behaviours by watching others being punished or reinforced for engaging in certain behaviours. Yue (2010) suggests that idol worship and role modelling are inseparable. Worshippers imitate their idols' behaviours when they regard their idols as successful people. Second, Erikson (1968) claims that during the stage of identity crisis, an adolescent suffers from uncertainty and confusion about his/her present and future

roles, and identification with an adult or peer idols helps him/her seek information of value and prepares him/her for the adult role. Identification can also prevent them from being able to engage in delinquent activities. Rowe and Marcia (1980) also believe that adolescents need to explore more in order to establish their identities and adopt a doctrine.

Third, Greene and Adams-Price (1990) described two major types of secondary attachment: romantic attachment and identification attachment. People with strong romantic attachment, dream of being their idol's romantic partner being like them or even becoming them. On the other hand, identification attachment refers to people who recognise their idols in terms of instrumentality. It is believed that idol worship serves as a compensation for the vacuum after separating from one's parents. It also leads to a sense of remote intimacy and unrealistic fantasies. This phenomenon is known as compensational individuation (Cheung & Yue, 2012).

In terms of the relationship between idol worship and other constructs, it has been found that idol worship is related to the acceptance of cosmetic surgery (Swami, Taylor, & Carvalho, 2009), body image (Maltby, Giles, Barber, & McCutcheon, 2005; Swami et al., 2009), coping styles, (Maltby et al., 2004), fantasy proneness and dissociation (Maltby et al., 2006), aspects of religiosity (Maltby, Houran, Lange, Ashe, & McCutcheon, 2002), and self-esteem (North et al., 2007).

In particular, according to Jenson (1992), idol worship impairs adolescents' school achievement. Indulgence in celebrity worship also enhances adolescents' alienation, violence, suicide, sex, use of drugs and objectionable language (Lynxwiler & Gay, 2000). In addition, intense personal celebrity worship is associated with poorer mental health (Maltby et al., 2004). Numerous studies have reflected associations between low self-esteem and mental illness, since idol worship is related to anxiety, depression, and social dysfunction symptoms (North et al., 2007).

Studies of Idol Worship in Chinese Societies

Recent studies have revealed that adolescents generally worship stars and luminaries, these movie stars, music stars, and athletes have dominated the world of idol worship, which is known as 'tri-star worship' culture (Boyd, 1998; Cheung & Yue, 2003; Greene & Adams-Price, 1990; Yue, Wong & Cheung, 2010). In comparison with adolescents in Mainland China, Hong Kong adolescents tend to adopt the 'tri-star worship' culture, which is idealism-romanticism-absolutism (I-R-A) oriented. People view their idols in an irrational way. Adolescents in China adopt the 'model worship' culture, which is rationalism-realism-relativism (R-R-R) oriented. People learn from the desirable attributes of their idols and appreciate them in a rational manner. It is further agreed that Hong Kong adolescents care about their idols' sexual and romantic features whereas Mainland Chinese adolescents focus on their idols' ideological and dispositional features (Yue, Cheung, & Wong, 2010).

In research with a sample of 2000 Hong Kong secondary students, Chan and Zhang (2007) found that almost 70% of the participants regarded ‘tri-stars’ as their idols. It was also found that pop singers and movie stars were at the top of the preferred list. At the same time, adolescents in Taiwan share a similar pattern of idol selection with that of Hong Kong (Lin & Tong, 2007). In a study by Chan and Zhang (2007), idol worship was seen to have a negative impact on adolescents in the Chinese context. Adolescents in Hong Kong are more likely to lack problem-solving confidence, commit delinquent behaviours, and favour less positive moral values. If one becomes a member of certain fan clubs, one has lower self-esteem (Cheng, 1997).

In the past, idol worship affected people's behaviour, motivation, and emotions (Jeong et al., 2012). According to Yue and Cheung (2000), idol worship is a special psycho-social phenomenon which starts when humans idolise the power of Mother Nature. Therefore, the appreciation and admiration of Mother Nature in Chinese culture may be associated with religious orientation. In a more recent study, Yue and Leung (2008) found that religious idol worship, which is the expression of emotion and admiration towards religious figures through ceremonies and rituals, had a negative relationship with religiosity. Literature regarding the relationship between the two constructs is discussed in Section 1.1.5 but it is interesting to note that there has not been much research done on the relationship between idol worship and religiosity in Chinese contexts. The present study serves to fill the gap and explores the relationship between idol worship, religiosity, and self-esteem.

Theories and Studies of Idol Worship and Religiosity

Recent studies have revealed that idol worship is negatively correlated with religiosity (Giles, 2000; Maltby et al., 2002). In the Judaeo-Christian tradition, and according to the first of the Ten Commandments, ‘thou shalt worship no other gods’, apart from God Himself; worship of anyone else is forbidden. The word ‘gods’ mean religious deities. But it is also generalised to non-religious figures and concepts, certainly including celebrities. Jews and Christians thus know that it is sinful to worship other idols, including tri-stars and any other famous persons. It has been shown that many Christians, for example, practise their faith sincerely (DiBlasio & Benda, 1991; Troiden & Jendrek, 1987). Consistently negative correlations are found between idol worship and religiosity for both sexes, even though the mean correlation coefficient is weak, implying that practising Christians refuse to worship any figures or persons, but the rest of them may ignore the aforementioned teaching or simply fail to see idol worship as a violation of the teaching (Maltby et al., 2002).

Theories and Studies of Idol Worship and Self-Esteem

A lot of studies suggest that different levels of idol worship can lead to different kinds of psychological problems (Maltby, McCutcheon, Ashe, & Houran, 2001; North et al.,

2007). According to some scholars (Caughey, 1988; Giles, 2000), fans with a high level of idol worship may engage in different pathological behaviours such as attempting to harm celebrities, sending threatening letters to celebrities (Dietz, Matthews, Van Duyne, & Martell, 1991), and even confusing celebrities' fictional characters and their real lives (Caughey, 1978; Giles, 2000). The Absorption-Addiction Model (McCutcheon, Lange, & Houran, 2002) suggests that people are attracted by celebrities in order to establish a sense of identity and fulfilment (which leads to illusions of having actual relationships with their idols) which is later reinforced by *addiction* (strengthening the desire for intimacy with the idols to feel connected with them). People with this condition find it difficult to escape, cope with, or enrich their everyday life. The theory has evidenced that different levels of idol worship predict social dysfunction, anxiety, and depressive symptoms. They also believe that celebrity worship is a behavioural expression of poor global psychological well-being.

Demographic Characteristics Affect Idol Worship and Self-Esteem

Even though it is clear that idol worship is negatively related to self-esteem, this effect may be influenced by other demographics such as gender and age. According to Yue and Yan (2007), females generally have a more intense feeling toward their idols, thanks to a greater drive to escape from social and traditional pressure. Furthermore, a lot of studies have reported that females generally have lower self-esteem than males (Derdikman-Eiron et al., 2012; Kling, Hyde, Showers, & Buswell, 1999; Major, Barr, Zubek, & Babey, 1999; Pipher, 1994; Twenge & Campbell, 2001).

It has also been found that age contributes to the degree of idol worship. Shi (2004) calculated that the mean age of people when they begin to worship idols is 11.98 years. Li and Han (2004) collected a sample of secondary school students. They discovered that the older the students get, the more they tend to worship famous people and athletes. Scholars have found that participants in secondary school (aged 12 to 18) begin to display idol worship behaviours at 14 and reach the peak between 14 and 16 (Shi, 2005; Teng & Yi, 2001). Yue and Yan (2007) discovered that participants in secondary school display the most intensive idol worship behaviours, and the trend gradually declines after they go to university. It is also claimed that as people age from adolescence to young adulthood, their idol worship attitude is less romance-oriented and more logic-oriented.

Studies of Religiosity and Self-Esteem

Krause (1995) indicated that greater religious involvement enhances self-worth. Sherkat and Reed (1992) also indicate that there is a positive relation between self-esteem and degree of religious orientation. Studies in Canada and Iran have also found a significant positive correlation between religious belief practice or degree of religious participation and self-esteem. A more recent study found that there is a positive correlation between religiosity and self-esteem, and it exhibits positive mental health outcomes (Colbert,

Jefferson, Gallo, & Davis, 2009). Therefore, since religiosity is negatively correlated with idol worship and positively correlated with self-esteem, it is hypothesised that religiosity will yield opposite results from idol worship in predicting self-esteem.

Objectives and Formulation of Hypotheses

It is important to understand the pattern of the idol worship phenomenon in Asian contexts. In addition, the effect of religiosity on idol worship is not examined in the Chinese context, where Chinese Christians may display different religious expressions (Hui & Fung, 2009). It is therefore worth exploring the relationship between idol worship, self-esteem, and religiosity among adolescents in Hong Kong. Based on the above reviews, the following hypotheses were proposed:

H₁: Members of fan clubs score significantly higher on measures of idol worship than non-club members.

H₂: Christians score significantly lower on measure of idol worship than non-Christians.

H₃: Females score significantly higher on measures of idol worship than males.

H₄: Males score significantly higher on measures of self-esteem than females.

H₅: Senior secondary students score significantly higher on measures of idol worship than junior secondary students and university students. There is no significant difference between measures of idol worship between junior secondary students and university students.

H₆: Idol worship is significantly and negatively correlated with religiosity.

H₇: High idol worship significantly predicts lower self-Esteem.

H₈: High religiosity significantly predicts higher self-esteem.

Methodology

Participants and Procedure

Eight hundred secondary school and university students (456 males, 332 females, 14 missing data) were sampled to participate in this study. Of these eight hundred participants, 217 (composed of 55 males, 142 females, and 20 unknown) participants did not complete the questionnaire properly, so they were deleted from the analysis. Five hundred and ninety-four students, aged between 11 to 28 years, with a mean of 16.12, were therefore included. Of the junior secondary school students (103 males, 79 females), 57 of them were Christians, and 94 were not (31 missing data), and they were aged from 11 to 14, with a mean of 13.09 ($SD = 0.89$). Of the senior secondary school participants (141 males, 114 females), 86 of them were Christians and 141 were not (28 missing data). They were aged from 15 to 18, with a mean of 16.22 ($SD = 1.03$). Of the university students (64 males, 82 females), 55 of them were Christians and 74 were not (17 missing data). They were aged from 19 to 28, with a mean of 20.68 ($SD = 1.64$). It should be noted that the secondary school participants were mainly recruited from three local

Christian schools in Hong Kong Island district. University participants were recruited mainly from the City University of Hong Kong, but also included other colleges and universities in Hong Kong.

Ethical approval from the research board of the City University of Hong Kong was sought before commencement of the study. Subsequently, 800 participants were recruited. The purpose and procedures of the study and participants' rights of confidentiality were stated at the top of the front page of the questionnaire. When they agreed to participate in the study, questionnaires were distributed. They were asked to complete every item on the questionnaire and return it upon completion.

Measures

A six-page self-reported questionnaire was used for this study. It was divided into four parts. The first part contained two scales about idol worship: the 23-item Celebrity Attitude Scale (CAS) and the 26-item Idol Worship Questionnaire (IWQ). The CAS was developed by McCutcheon et al. (2002), and revised by Maltby and Day (2003), and it assesses the favourableness of behaviours and attitudes toward participants' favourite idols. It consists of three factors of idol worship behaviour, i.e. Entertainment-Social, Intense-Personal, and Borderline-Pathological, on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). The three factors are composed of ten, nine, and four items respectively. The psychometric integrity of the scale was demonstrated with a US and a British sample. A good reliability (Cronbach's $\alpha = 0.89$; McCutcheon, Lange, & Houran, 2003) has been found. The scale has also been used in several recent studies (Ashe & McCutcheon, 2001; Maltby et al., 2002; Maltby & McCutcheon, 2001, 2003; McCutcheon et al., 2002). Since the scale used for assessing celebrity worship does not include items measuring the process of idol selection or which characteristics attract fans to their favourite idols, another scale, the Idol Worship Questionnaire (IWQ), which is employed for measuring idol worship behaviours and attitudes, was also used. The IWQ was developed by Yue (2000), and is measured on a five-point Likert scale (1 = Never feel this way, 5 = Always feel this way). All 26 items are grouped and summed up to form 12 scores. No analysis validating the factor loadings of the scale has been performed, so it was necessary to conduct a factor analysis in order to see how the items were grouped statistically.

In part 2, to measure religiosity in terms of intrinsic and extrinsic religious orientation, participants were asked to complete a modified 12-item Age Universal I-E Scale (AUIE; Maltby, 1999). Six items were used to measure intrinsic religious orientation; another six items were used to measure both extrinsic-personal and extrinsic-social religious orientations, with three items for each factor respectively. AUIE's reliability and validity have also been proven in US, UK, and Irish samples (Francis & Stubbs, 1987; Lewis & Maltby, 1994; Maltby, 1994). AUIE can be used for both religious and non-religious samples across age (Maltby & Lewis, 1996). The items are

scored on a three-point scale from (3 = Yes, 2 = Not Certain, and 1= No). To maintain equivalence in meaning across languages, the translated version was further validated by a panel of bilingual experts in China and in Canada, using the method of backward translation.

In the third part, the 10-item Rosenberg's Self-Esteem Scale (RSES) was given to the participants to complete to indicate their global self-esteem, also known as the overall evaluative aspect of their self-concept (Gray-Little, Williams, & Hancock, 1997). The scale is scored on a four-point Likert-type scale (from 1 = strongly disagree to 4 = strongly agree). It has been widely used across the globe and has obtained a high level of reliability and validity (Gray-Little et al., 1997; Kong & You, in press; Zhao et al., 2012).

Last but not least, participants were asked to provide some demographic information, namely their gender, education level, age, membership of fan clubs, their religious beliefs, and the time they spend socialising with people from church and on religious activities, and the time they spend on private religious observance.

Results

Descriptive Statistics

The demographic characteristics of the participants, including their gender, age, fan club membership, religious beliefs, time spent at church, and time spent in private religious practices are shown on Table 1. Of the total, 314 were males and 277 were females. The distribution of age was even: 31.2% were junior secondary school students, 43.8% were senior secondary school students, and 25% were university students. The majority of the sample was not members of any fan clubs (93.5%). Around half of them did not have any religious beliefs (52%); approximately 30% of them were Protestant and Catholic Christians.

Table 1
Demographic Information of the Participants (n = 591)

		<i>n</i>	Percentage
Gender	Male	314	46.6
	Female	277	52.9
Age	14 or below	182	31.2
	15 - 18	255	43.8
	19 or above	146	25.0
Fan club membership	Yes	38	6.5
	No	549	93.5
Religious belief	None	316	54.0
	Protestant	175	29.9
	Catholic	23	3.9
	Buddhist	24	4.1
	Other	47	8
Time spent in church or with church friends per month	5 hours or below	339	78.3
	6 - 10 hours	37	8.5
	11 - 15 hours	17	3.9
	16 - 20 hours	19	4.4
	21 hours or above	21	4.8
Time spent in private religious activities per month	5 hours or below	371	86.1
	6 - 10 hours	26	6.0
	11 - 15 hours	14	3.2
	16 - 20 hours	7	1.6
	21 hours or above	13	3.0

Factor Analysis for Idol Worship Questionnaire

As factor analysis of the Idol Worship Questionnaire (IWQ) had not been conducted before (Yue, 2000), a factor analysis was employed to investigate the possible factors involved in the IWQ. The items of the IWQ were analysed with the principal components factor analysis (PCA) method. Before the procedure, the data were checked to see if they were suitable for factor analysis. The correlation matrix showed that many coefficients were above 0.3. Bartlett's Test of Sphericity (Bartlett, 1953) reached statistical significance, the Kaiser-Meyer-Olkin value was 0.89, meaning that it supported the

suitability of the data for factor extractions. The PCA showed that there were five components in the data with eigenvalues larger than one which explained a total of 56.52% of the variance, respectively 30.25%, 9.00%, 6.95%, 5.42%, and 4.90%. Oblimin rotation was conducted and it revealed that there was a simple structure (Thurstone, 1947), with five components obtaining a number of strong loadings, with most variable loadings lying on one of the components. The loadings and communalities of each item are shown in Table 2.

The loadings of the first factor suggested a component of '*Romantic Fantasy*' in the IWQ; items such as 'I wish I could be my idol's lover' (item 2) loaded highly on this factor. People scoring high in the items of this factor tend to display idealisation and romantic fantasies toward their favourite idols. The second factor included items such as 'I believe that as a male idol, he has to be tall and handsome' (item 9), so it represented the '*Physical Attractiveness*' element in IWQ. People who scored high in the items of this factor worship idols because of their physical appearance. Items in the third factor mainly revealed participants' admiration of their idols as role models: 'I wish I could be someone like my idol' (item 1). It showed that the participants who scored high in these items internalised the accomplishments and achievements of their idols as their own motivations to excel, so this factor was labelled '*Psychological identification*'.

For the fourth factor, loadings of the corresponding items represented the '*Worship Decision*', stating how much a person chose his/her idol to conform to the expectations of their friends and families. The higher a participant scored in the items, the more he/she chose to worship his/her idol under peer, teacher, or parental influence. Items in this factor included statements like 'I choose my idol mainly because my friends also like him/her' (item 8). Last but not least, a '*Worship Expenditure*' factor was found. Items with high loadings of this subset reflected pathological purchasing behaviours regarding idols' products. Items included in this factor were 'I always spend money on buying things that are related to my idol (e.g. CDs, video tapes, books, clothes, film or concert tickets' (item 4).

Table 2
 Pattern Matrix of PCA with Oblimin Rotation of Five-Factor Solution of IWQ (n = 591)

	1	2	3	4	5	Communality
Romantic Fantasy						
Item 2	.856	.067	-.129	.044	-.040	.694
Item 3	.562	-.035	.282	.061	.147	.583
Item 5	.363	.156	.350	-.334	.034	.544
Item 12	.818	.022	-.064	.145	.054	.705
Item 13	.507	-.128	.257	-.012	.276	.585
Item 14	.401	-.026	.359	.190	.256	.584
Item 16	.432	.108	.287	-.299	.098	.546
Item 21	.698	.231	-.016	.000	-.031	.608
Item 22	.610	.148	.069	-.059	.061	.519
Physical Attractiveness						
Item 7	.160	.461	.409	-.276	-.027	.632
Item 9	.200	.632	-.110	.166	.057	.544
Item 18	.035	.636	.076	-.083	.171	.523
Item 20	.113	.733	-.193	.001	.112	.585
Item 23	.204	.435	.380	-.203	-.081	.558
Item 24	.014	.528	.201	.412	-.001	.589
Psychological Identification						
Item 1	.090	.016	.675	-.216	-.029	.553
Item 6	.069	.272	.567	.085	-.144	.485
Item 10	.011	-.244	.815	.059	.102	.668
Item 11	.304	-.257	.570	-.008	.247	.635
Item 17	-.214	.234	.414	.236	.004	.298
Worship Decision						
Item 8	.149	.297	.108	.603	.036	.582
Item 19	-.069	.050	.062	.391	.301	.263
Item 25	-.225	.172	.147	-.614	.415	.590
Worship Expenditure						
Item 4	-.013	.060	-.130	-.044	.726	.506
Item 15	.356	.015	.017	.143	.456	.482
Item 26	.160	.098	.051	-.030	.698	.659

Note. Major loadings of each item are in **bold type**.

Reliability Coefficients of the Measures Used

Reliability analyses using the Cronbach’s α were computed in order to test the internal consistencies of the scales. Table 3 presents the Mean, Standard Deviation, and Cronbach’s α for each of the factors in each scale. The Idol Worship Questionnaire (IWQ) obtained coefficients from 0.52 to 0.86. The Celebrity Attitude Scale (CAS) had coefficients from 0.74 to 0.90. The Age Universal I-E Scale (AUIE) had coefficients from 0.56 to 0.79. The Rosenberg’s Self-Esteem Scale (RSES) had a Cronbach’s α of 0.83. The results showed that the scales used in the current study were all reliable measures.

Table 3

Mean, Standard Deviation, and Reliability of the Variables (n = 591)

	<i>M</i>	<i>SD</i>	<i>α</i>
Idol Worship Questionnaire (IWQ)			
Romantic Fantasy (9 items)	23.56	8.46	.86
Physical Attractiveness (6 items)	16.32	5.06	.75
Psychological Identification (5 items)	15.84	4.37	.64
Worship Decision (3 items)	5.25	3.00	.52
Worship Expenditure (3 items)	7.07	3.44	.60
Celebrity Attitude Scale (CAS)			
Entertainment-Social (10 items)	26.83	8.92	.85
Intense-Personal (9 items)	22.30	8.30	.90
Borderline-Pathological (4 items)	9.90	3.58	.74
Age Universal Intrinsic-Extrinsic Scale (AUIE)			
Intrinsic (6 items)	11.75	3.81	.79
Extrinsic-Personal (3 items)	6.39	2.17	.68
Extrinsic-Social (3 items)	5.48	1.90	.56
Rosenberg’s Self-Esteem Scale (RSES) (10 items)	26.65	4.74	.83

Prevalence of Idol Worship, Religiosity, and Self-Esteem

The next table (Table 4) shows the differences between members of fan clubs and non-club members in terms of idol worship, the three subscales of religiosity, and self-esteem. It shows that fan club members had a more intensive attitude towards their idols than those who were not members of any fan club. Among the eight factors measuring idol

worship attitudes, fan members scored significantly higher than non-club members in six factors, from Romantic Fantasy (for members, $M = 28.47$, $SD = 9.61$; for non-club members, $M = 23.26$, $SD = 8.29$, $t(568) = 3.70$, $p < 0.001$), Psychological Identification (for members, $M = 17.37$, $SD = 2.76$; for non-club members, $M = 15.76$, $SD = 4.45$, $t(568) = 2.20$, $p < 0.05$), Worship Expenditure (for members, $M = 9.76$, $SD = 3.06$; for non-club members, $M = 6.90$, $SD = 3.40$, $t(568) = 5.05$, $p < 0.001$), Entertainment-Social (for members, $M = 33.03$, $SD = 8.51$; for non-club members, $M = 26.46$, $SD = 8.80$, $t(568) = 4.40$, $p < 0.001$), Intense-Personal (for members, $M = 28.08$, $SD = 8.34$; for non-club members, $M = 21.94$, $SD = 8.15$, $t(568) = 4.37$, $p < 0.001$), to Borderline-Pathology (for members, $M = 12.08$, $SD = 3.39$; for non-club members, $M = 9.76$, $SD = 3.54$, $t(568) = 3.87$, $p < 0.001$). Fan club members had greater idealistic fantasies toward their idols, and at the same time engaged in more pathological behaviours such as buying everything related to their idols. Therefore, Hypothesis 1 was partly supported.

Table 4

Fan Club Membership Differences in the Variables (n = 591)

	Club Member (n = 38)		Non-Club Member (n = 531)		t
	M	SD	M	SD	
IWQ					
Romantic Fantasy	28.47	9.61	23.26	8.29	3.70***
Physical Attractiveness	17.16	4.30	16.24	5.10	1.07
Psychological Identification	17.37	2.76	15.76	4.45	2.20*
Worship Decision	5.84	8.37	5.21	2.19	1.25
Worship Expenditure	9.76	3.06	6.90	3.40	5.05***
CAS					
Entertainment-Social	33.03	8.51	26.46	8.80	4.40***
Intense-Personal	28.08	8.34	21.94	8.15	4.37***
Borderline-Pathological	12.08	3.39	9.76	3.54	3.87***
AUIE					
Intrinsic	11.73	4.15	11.76	3.79	-.05
Extrinsic-Personal	6.08	2.20	6.42	2.17	-.92
Extrinsic-Social	5.79	1.96	5.46	1.89	1.05
RSES	26.84	4.77	26.66	4.72	.22

Note. IWQ = Idol Worship Questionnaire, CAS = Celebrity Attitude Scale, AUIE = Age Universal Intrinsic-Extrinsic Scale, RSES = Rosenberg's Self-Esteem Scale

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5 shows the differences between Christians (Protestants and Catholics) and non-Christians. There were only differences on the subscales of religiosity, which were Intrinsic (for Christians, $M = 14.58$, $SD = 2.91$; for non-Christians, $M = 10.07$, $SD = 3.45$, $t(496) = 15.26$, $p < 0.001$), Extrinsic-Personal (for Christians, $M = 7.67$, $SD = 1.55$; for non-Christians, $M = 5.55$, $SD = 1.88$, $t(496) = 13.77$, $p < 0.001$), and Extrinsic-Social (for Christians, $M = 6.04$, $SD = 1.64$; for non-Christians, $M = 5.19$, $SD = 2.04$, $t(496) = 4.90$, $p < 0.001$). For the other variables, even though all the subscales on idol worship showed higher mean scores for non-Christians, no significant difference was found between the two groups; therefore Hypothesis 2 was not supported.

Table 5
Religious Belief Differences in the Variables (n = 591)

	Christian (n = 192)		Non- Christian (n = 305)		t
	M	SD	M	SD	
IWQ					
Romantic Fantasy	23.16	8.21	23.37	8.29	-.27
Physical Attractiveness	16.01	4.69	16.55	5.00	-1.20
Psychological Identification	15.55	4.03	15.82	4.03	-.73
Worship Decision	5.14	2.20	5.29	3.49	-.52
Worship Expenditure	6.75	2.99	7.21	3.76	-1.46
CAS					
Entertainment-Social	26.35	8.79	26.74	8.94	-.48
Intense-Personal	21.62	8.12	22.29	8.33	-.89
Borderline-Pathological	9.83	3.57	9.90	3.49	-.24
AUIE					
Intrinsic	14.58	2.91	10.07	3.45	15.26***
Extrinsic-Personal	7.67	1.55	5.55	1.88	13.77***
Extrinsic-Social	6.04	1.64	5.19	2.04	4.90***
RSES					
	27.06	4.60	26.65	4.81	.94

Note. IWQ = Idol Worship Questionnaire, CAS = Celebrity Attitude Scale, AUIE = Age Universal Intrinsic-Extrinsic Scale, RSES = Rosenberg’s Self-Esteem Scale

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 6 shows the differences between the sexes. Females generally scored higher on idol worship. There is a significant difference in Romantic Fantasy (for females, $M = 24.71$, $SD = 8.58$; for males, $M = 22.58$, $SD = 8.26$, $t(590) = -2.99$, $p < 0.01$). Females also scored higher on Intense-Personal attitude than males (for females, $M = 22.83$, $SD = 8.23$; for males, $M = 21.83$, $SD = 8.34$, $t(590) = -2.47$, $p < 0.05$). They were also more

intrinsically (for females, $M = 12.12$, $SD = 4.14$; for males, $M = 11.42$, $SD = 3.45$, $t(590) = -2.23$, $p < .05$) and Extrinsic-Personally (for females, $M = 6.61$, $SD = 2.06$; for males, $M = 6.19$, $SD = 2.26$, $t(590) = -2.32$, $p < 0.05$) Religious than males. Lastly, males had higher self-esteem than females (for females, $M = 26.11$, $SD = 4.61$; for males, $M = 27.14$, $SD = 4.77$, $t(590) = 2.62$, $p < 0.01$). Therefore, Hypotheses 3 and 4 are partly supported.

Table 6
Gender Differences in the Variables (n = 590)

	Male (n = 314)		Female (n = 277)		t
	M	SD	M	SD	
IWQ					
Romantic Fantasy	22.58	8.26	24.71	8.58	-2.99**
Physical Attractiveness	16.09	5.43	16.54	4.64	-1.08
Psychological Identification	15.59	4.24	16.15	4.52	-1.55
Worship Decision	5.29	2.28	5.20	3.65	1.53
Worship Expenditure	6.95	3.63	7.22	3.23	-.367
CAS					
Entertainment-Social	25.96	9.04	27.80	8.73	-.946
Intense-Personal	21.83	8.34	22.83	8.23	-2.47*
Borderline-Pathological	9.83	3.74	9.96	3.39	-1.43
AUIE					
Intrinsic	11.42	3.45	12.12	4.14	-2.23*
Extrinsic-Personal	6.19	2.26	6.61	2.06	-2.32*
Extrinsic-Social	5.51	2.02	5.43	1.74	.51
RSES	27.14	4.77	26.11	4.61	2.62**

Note. IWQ = Idol Worship Questionnaire, CAS = Celebrity Attitude Scale, AUIE = Age Universal Intrinsic-Extrinsic Scale, RSES = Rosenberg's Self-Esteem Scale

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

A one-way ANOVA and numerous post-hoc tests were conducted to test the differences in education levels in various variables. The sample was divided into three groups, junior secondary students (aged 11 to 14), senior secondary students (aged 15 to 18), and university students (aged 19 or above). The results are shown in Table 7, and are represented by graphs in Figures 1 to 4. Interestingly, there is a difference in Romantic Fantasy across the three groups, $F(2, 551) = 4.76$, $p < 0.01$ (with junior secondary school students having less fantasy than the other two groups, but there is no significant difference between senior secondary students and university students); Physical Attractiveness, $F(2, 560) = 11.28$, $p < 0.001$ (with junior secondary students having a lower score than the other two groups, but there is no significant difference between

senior secondary students and university students); Psychological Identification, $F(2, 563) = 3.61, p < 0.05$ (with only junior secondary students having less psychological identification than senior secondary students, but there is no significant difference between university students and junior secondary students or between university students and senior secondary students); as well as Self-Esteem, $F(2, 569) = 7.61, p < 0.01$ (with junior and senior secondary students having lower self-esteem than university students, but there is no significant difference between junior and senior secondary students). Therefore, Hypothesis 5 is not supported.

Table 7
 Educational Level Differences in the Variables ($n = 563$)

	Junior Secondary Students (age 11-14) ($n = 182$)		Senior Secondary Students (age 15-18) ($n = 255$)		University Students (age 19 or above) ($n = 146$)		<i>F</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
IWQ							
Romantic Fantasy	22.12	8.99	23.83	8.11	25.04	8.19	4.76**
Physical Attractiveness	14.92	5.29	16.67	5.13	17.44	4.25	11.28***
Psychological Identification	15.15	5.30	16.30	4.04	15.96	3.58	3.61*
Worship Decision	5.16	4.33	5.20	2.14	5.50	2.22	.60
Worship Expenditure	7.01	3.18	6.87	3.02	7.58	4.36	2.00
CAS							
Entertainment-Social	25.96	10.37	26.76	8.41	28.08	7.87	2.24
Intense-Personal	21.61	8.79	22.18	8.26	23.40	7.80	1.87
Borderline-Pathological	9.43	3.82	10.06	3.57	10.16	2.24	2.18
AUIE							
Intrinsic	12.02	3.98	11.59	3.55	11.84	4.01	.68
Extrinsic-Personal	6.55	1.89	6.33	2.01	6.33	2.70	.64
Extrinsic-Social	5.40	1.57	5.41	2.08	5.68	1.90	1.12
RSES	26.56	4.89	25.94	4.67	27.84	4.33	7.61**

Note. IWQ = Idol Worship Questionnaire, CAS = Celebrity Attitude Scale, AUIE = Age Universal Intrinsic-Extrinsic Scale, RSES = Rosenberg's Self-Esteem Scale

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

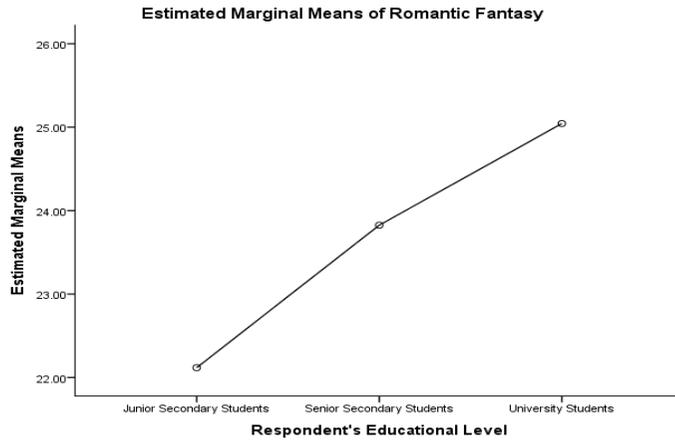


Figure 1. Plots of the mean differences across education levels for Romantic Fantasy

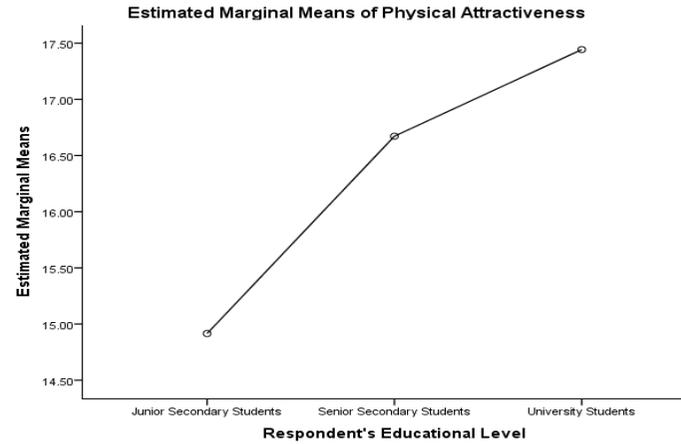


Figure 2. Plots of the mean differences across education levels for Physical Attractiveness

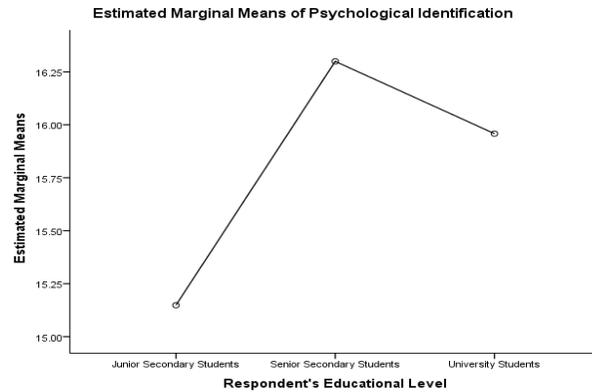


Figure 3. Plots of the mean differences across education levels for Psychological Identification

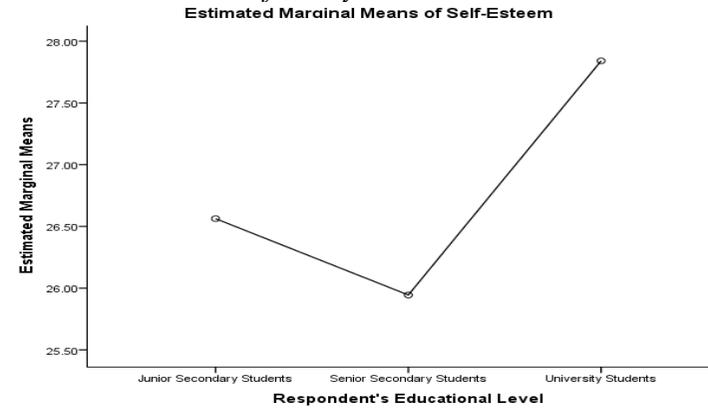


Figure 4. Plots of the mean differences across education levels for Self-Esteem

Table 8 shows correlations among the variables. In general, measures of idol worship in the Celebrity Attitude Scale (CAS) and Idol Worship Questionnaire (IWQ) were significantly and positively inter-correlated. There were only two significant positive correlations between the factors of idol worship and religiosity, however, which were Worship Decision with other religiosity factors having positive correlations, and Extrinsic-Social with other idol worship factors having positive correlations (except for non-significant correlation with Psychological Identification).

Therefore, surprisingly, religiosity was somehow positively correlated with idol worship, and thus Hypothesis 6 was not supported. Furthermore, no significant correlation was found either between self-esteem and constructs of idol worship, or between self-esteem and religiosity in general. In order to investigate Hypotheses 7 and 8, two multiple regression analyses were conducted to predict self-esteem from measures of idol worship and religiosity respectively. None of the subscales could significantly predict self-esteem. For the subscales of idol worship, $R^2 = 0.02$, $F(8, 473) = 0.96$, n.s. For the subscales of religiosity, $R^2 = 0.01$, $F(8, 564) = 1.36$, n.s. Therefore, Hypotheses 7 and 8 were not supported.

Table 8
 Correlations between the Variables (n = 591)

	1	2	3	4	5	6	7	8	9	10	11	12
IWQ												
1.Romantic Fantasy	-											
2.Physical Attractiveness	.55***	-										
3.Psychological Identification	.50***	.40***	-									
4.Worship Decision	.17***	.21***	.10**	-								
5.Worship Expenditure	.54***	.35***	.31***	.13**	-							
CAS												
6.Entertainment-Social	.71***	.45***	.48***	.19***	.57***	-						
7.Intense-Personal	.77***	.47***	.50***	.25***	.61***	.84***	-					
8.Borderline-Pathological	.66***	.48***	.46***	.23***	.52***	.80***	.76***	-				
AUIE												
9.Intrinsic	.08	.01	.03	.10**	.04	.11**	.13**	.12**	-			
10.Extrinsic-Personal	.06	.03	.03	.09**	.02	.07	.05	.10*	.63***	-		
11.Extrinsic-Social	.13**	.15**	.03	.11**	.11**	.14**	.18***	.15***	.41***	.35***	-	
RSES												
12.Self-Esteem	-.05	-.02	-.02	.04	-.03	-.09*	-.08	-.07	.01	.03	-.02	-

Note. IWQ = Idol Worship Questionnaire, CAS = Celebrity Attitude Scale, AUIE = Age Universal Intrinsic-Extrinsic Scale, RSES = Rosenberg's Self-Esteem Scale,
 * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Relationship between Idol Worship, Sex and Self-Esteem

Another correlation table after splitting the sexes was performed in Table 9. There seemed to be some differences in the correlations between religiosity and idol worship attitude, whereby males had 14 significantly positive correlations and females had only a significantly negative correlation. Moreover, as regards correlations with self-esteem, males had significant negative ones with all of the factors in CAS and Worship Decision in IWQ, and there was no correlation with self-esteem in the factors of CAS but a significantly positive correlation in Worship Decision in IWQ for females.

As regards the relationship between Worship Decision and Self-Esteem across sexes, it was believed that sex served as a moderator between the two constructs. As suggested by Todman and Dugard (2007), a regression analysis was done to investigate the moderating effect of sex on the relationship between Worship Decision and Self-Esteem. As represented by Table 10, sex and Worship Decision were centred, and an interaction variable was created by multiplying the two centred scores together. Gender and Worship Decision were entered into a hierarchical regression analysis as the groups, followed by the entry of the interaction variable. The value R^2 changed when the interaction variable was added to the predictor and the moderator variable was 0.03, that change was significant, F change(1, 563) = 14.95, $p < 0.001$. The significant interaction told us that sex moderated the effects of the predictor (Worship Decision) on the outcome variable (Self-Esteem).

To further interpret the interaction effect, a plot of the interaction effect was noted, as suggested by Aiken and West (1991). It showed a moderation effect, which can be seen clearly in Figure 5. The figure indicates that the relationship pattern between Self-Esteem and Worship Decision for male and female participants were opposite to one another. The moderation effect was a negative influence on the relationship between Worship Decision and Self-Esteem for males, but a positive influence on the relationship for females. It reflected that the more a male participant conformed to others' expectations to choose his idol, the lower self-esteem he would have, but in the same situation a female would have an increase in self-esteem if she conformed to others' expectations in selecting her favourite celebrity.

Table 9
 Correlations between the Variables across Sexes (n = 591)

	1	2	3	4	5	6	7	8	9	10	11	12
IWQ												
1.Romantic Fantasy	-	.47***	.43***	.09	.61**	.73***	.77***	.68***	-.02	.02	.10	-.04
2.Physical Attractiveness	.62***	-	.27***	.15*	.37**	.38***	.39***	.44***	-.07	-.04	.10	.04
3.Psychological Identification	.56***	.51***	-	.04	.34**	.43***	.43***	.41***	-.10	-.06	-.05	-.09
4.Worship Decision	.32***	.31***	.20**	-	.08	.10	.08	.12*	.04	.09	.08	.17**
5.Worship Expenditure	.48***	.33***	.29***	.21***	-	.67***	.70***	.60***	-.03	-.05	.11	-.02
CAS												
6.Entertainment-Social	.69***	.50***	.53***	.32***	.48**	-	.84***	.82***	-.00	.01	.11	.04
7.Intense-Personal	.77***	.53***	.56***	.38***	.53**	.84***	-	.73***	-.01	-.06	-.16**	.00
8.Borderline-Pathological	.65***	.51***	.50***	.38***	.47**	.79***	.79***	-	-.02	.01	.09	-.01
AUIE												
9.Intrinsic	.17**	.07	.17**	.19**	.09	.20**	.26***	.24***	-	.64***	.47***	.01
10.Extrinsic-Personal	.08	.07	.09	.10	.06	.10	.12*	.16**	.64***	-	.43***	.02
11.Extrinsic-Social	.15**	.18**	.09	.15**	.11	.16**	.19**	.18**	.36***	.30***	-	-.09
RSES												
12.Self-Esteem	-.04	-.06	.06	-.16**	-.04	-.19**	-.16**	-.13*	.01	.04	-.07	-

Note. Correlations below the diagonal are for male participants (n = 314), those above the diagonal are for female participants (n = 277). IWQ = Idol Worship Questionnaire, CAS = Celebrity Attitude Scale, AUIE = Age Universal Intrinsic-Extrinsic Scale, RSES = Rosenberg's Self-Esteem Scale

*p < 0.05, **p < 0.01, ***p < 0.001.

Table 10
 Multiple Regression Analysis for Sex Moderating Worship Decision in Predicting Self-Esteem ($n = 591$)

	ΔR^2	B	SE	β
Step 1	.02*			
Gender		1.09**	.40	.12
Worship Decision		.05	.07	.03
Step 2	.03***			
Gender		-3.04**	1.14	-.32
Worship Decision		.22**	.08	.14
Worship Decision x Gender		-.55***	.14	-.48

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

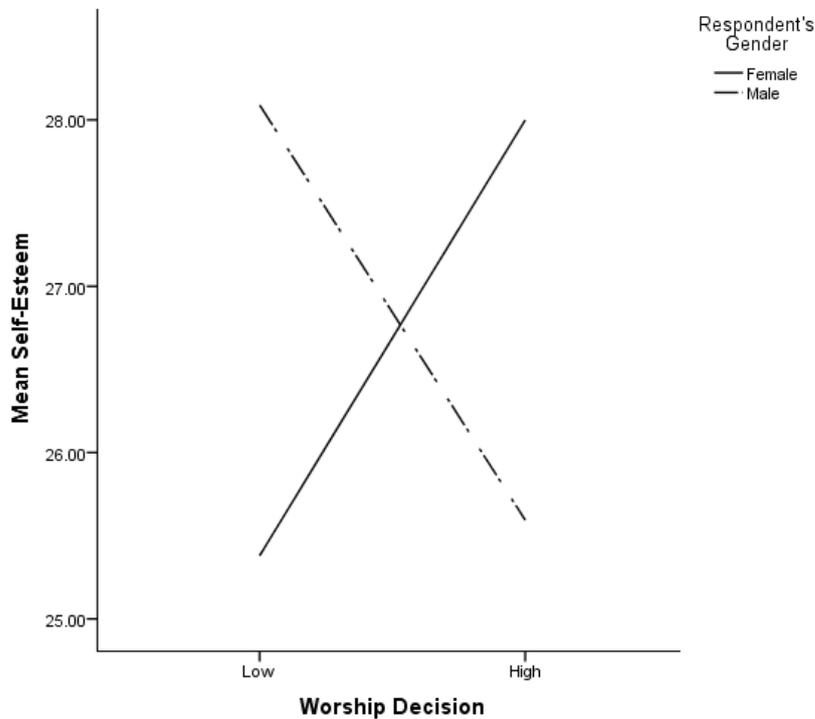


Figure 5. Plots of the Interactions between Sex and Worship Decision in Predicting Self-Esteem

Discussion

Major Findings

Five factors were found through factor analysis in the Idol Worship Questionnaire (IWQ: *Romantic Fantasy, Physical Attractiveness, Psychological Identification, Worship Decision, and Worship Expenditure*). Among all the demographic characteristics, sex shows the most consistent results with the previous finding that females have more intensive attitudes toward their Idols than males. Males also have higher self-esteem, as hypothesised. Fan club members have significantly higher idol worship than non-fan club members.

The present study obtained some inconsistent findings. There was no significant group difference in idol worship between Christians and non-Christians, and there were positive correlations between religiosity and idol worship which rejected Hypotheses 2 and 6. There were some underlying explanations for that. According to Freud (1907/1961, 1912-13/1961, 1927/1961), religion may serve as an illusion that protects individuals' psychological health from unwanted feelings and desires, and their inner unconscious. Similarly, there are some similarities between religious ritual practices and obsessive actions in idol worship. It is possible that idol worship serves certain similar functions to religious worship.

Michael Jindra (1994), an anthropologist, regards fandom as a 'civil' religion. It includes an organisation (the fan club), dogma (the need to maintain consistency in fan literature relating to the media), and a form of recruitment system. Some rituals and ceremonies may also be held in these organisations: for example, a boy was 'baptised' into a 'Temple of Trek' in a fan club of the film *Star Trek*. According to Giles (2000), religious practices and idol worship behaviours share certain similarities. For example, fans extend exclusivity to their idols, only listening to that person's music, similarly to Christians who only worship their God. Therefore, some of the attitudes and belief characteristics of religiosity may share attitudes and behaviours with idol worship. Both activities serve the same function for psychological needs, thus leading to positive correlations between constructs of idol worship and those of religiosity.

As regards Hypothesis 5, the result of this study is also inconsistent with the past observations of an inverted V-shape pattern of idol worship across age, where idol worship reaches its peak during adolescence and declines during university. In this study, senior secondary students have higher romantic fantasy and psychological identification with their idols, and they are more physically attracted by the idols than the participants in junior secondary level. The differences between senior secondary school and university students are diminishing. It seems that university students experience delayed growth in terms of their maturity. This can be explained by previous findings. According to Yue and Yan (2007), there is an extension of adolescence in society. Even though the beginning of adolescence is defined by puberty, the transition of adolescents to young

adults is not biological but culturally defined (Arnett & Taber, 1994). The sociologist Michael Kimmel (2008) also claims that there is an extension in adolescence, whereby 16-26-year-old men refuse to grow up, choose a career, or establish a long-term relationship. O'Farrell (2011) believes that people can delay their psychological maturity up to a decade, and will only transform into adulthood at the age of 30. This supports the present finding that the differences between senior secondary students and university students are diminishing. This may be a new trend of idol worship.

The results show that the effect of idol worship on self-esteem is not significant. It was initially hypothesised that higher idol worship would predict a decrease in self-esteem owing to the harm caused by idol worship. This can be explained by the fact that there are a number of benefits conferred by idol worship which counterbalance the drop in self-esteem. Maltby et al. (2001) stated that individuals can benefit from participating in a fan club, or any sort of social network of fans, where they are able to respect and share information with each other. Thus, idol worship enhances productive social relationships and serves as a psychological buffer against daily hassles. When they integrate with the social world, gaining support and social skills from interacting with the fans of the same idol, these experiences boost fans' psychological well-being. Besides, according to the social identity theory (SIT, Tajfel, 1978), participants gain self-esteem through favourable comparisons of the in-group (namely the fan clubs) with the out-group (Houston & Andreopolou, 2003; Hunter, 2003; Tarrant, North, & Hargreaves, 2001), North et al. (2007) also claim that when fans agree with the positive statements about people's favourite idols this will also elevate their self-esteem. Therefore, these factors may have confounded the negative relationship between idol worship and self-esteem.

As regards the hypothesis on religiosity which predicted an increase in self-esteem, no significant prediction was found. There are reasons for this. To begin with, some results show a negative correlation between religiosity and self-esteem, particularly on the extrinsic orientation (Abbotts, Williams, Sweeting, & West, 2004; Maltby et al., 1999; Ventis, 1995), more exposure of religious media is also correlated with trait anxiety (Koenig, George, Blazer, & Pritchett, 1993). If the Christian community is a minority and a less powerful group in society, the members will also suffer from a drop in self-esteem (Muldoon, 2000). The positive association between religiosity and self-esteem is also confounded by other factors such as age and gender (Maltby et al., 1999). This study also supports it as females are more religious than males, whereas males enjoy higher self-esteem than females, which is also consistent with previous observations (Beit-Hallahmi & Argyle, 1977). Another confounder is the peer-group norm of the person. If the norm regards religiousness as 'uncool', it could result in embarrassment, rejection, and stigmatisation for Christians. Thus, this impairs their self-esteem (Abbotts et al., 2004). Lastly, different denominations also affect one's self-esteem. In the study by Abbotts et al. (2004), weekly church attendance is positively associated with self-esteem for Catholics,

but negatively for Christians affiliated to the Church of Scotland. They reason that more attendance at that church is associated with excessive teasing or bullying. Members of that church may be victimised. A recent study by Colbert et al. (2009) also shows no significant prediction for religiosity towards self-esteem. Therefore, the relationship between religiosity and self-esteem is still under discussion, and may be affected by many other sociological and cultural factors.

Apart for the rejected hypotheses, it is found in the results that there is a moderation effect of sex on Worship Decision in predicting Self-Esteem. As shown in Figure 5, males suffer from a drop in self-esteem when they increase their conformity regarding idol selection, whereas females enjoy a rise in self-esteem when they conform to the expectations of their peers, parents, or teachers in terms of their idol selection. This is because if females do not conform in worshipping the same idols to their significant others, they may be abandoned by their friends. Males, however, have less pressure to conform and prefer idols which they have chosen themselves (Han, 2000; Shi, 2004, 2005; Yue & Yan, 2007).

It is supported by previous findings that females conform more to group pressure to form impressions of each other's likeability or expertise (Eagly, 1978; Eagly, Wood, & Fishbaugh, 1981; Eagly & Chryala, 1986; Maccoby & Jacklin, 1974). Good and Sanchez (2010) also reveal that pressured motivation to conform is negatively correlated with self-esteem, and autonomous motivation to conform is positively associated with self-esteem. At the same time, males are viewed as less competent when they behave communally, whereas females are viewed less favourably when they are assertive and dominant (Eagly, Makhijani, & Klonsky, 1992). To conclude, if females are autonomously motivated to worship a particular idol to get into a social group, they enjoy a rise in self-esteem as it is gender-appropriate. On the other hand, if males are pressured to conform to others' expectations in picking their favourite idols, it will make them view themselves as less competent and will thus lead to a decrease in self-esteem.

Significance and Implications of the Present Study

First, this study serves to validate the Idol Worship Questionnaire (IWQ). Factor analysis explained the different elements in pathological idol worship behaviours, such as conforming blindly, focusing on idealisation and romantic fantasies, emphasising one's physical attractiveness, and spending extravagantly on idols' products. This study helps us understand which specific aspects of pathological behaviours in idol worship apply to people in Hong Kong across different demographic characteristics. This also supplements the Celebrity Attitude Scale (CAS) where the Borderline-Pathological factor is shallowly defined (Maltby et al., 2002). They Maltby and his colleagues believe that currently there is no other assessment on idol worship containing any factor similar to the Borderline-Pathological factor. IWQ serves to provide insights into what particular pathological behaviours or attitude may be involved in idol worship. Second, the strong, significant,

and positive correlations between the factors in IWQ and those in CAS also provide evidence for the concurrent validity of the two scales measuring similar constructs. Third, the study shows a new trend of idol worship across age in Hong Kong, which supports Yue and Yan's (2007) belief in the possibility of an extension of the transition from adolescence to adulthood. This delayed adulthood may be a new trend in Hong Kong, as supported by the results.

In addition, this study also encourages us to explore religiosity in Chinese contexts. Since there have not been many publications on the relationship between religiosity and other constructs in Chinese culture, it is worth investigating further the difference between people's attitudes toward Eastern and Western religions across cultures. People in the East may be more prone to extrinsic-social religious orientation because of their collectivist culture. The positive correlation between idol worship and religiosity may also imply a cultural difference. Besides, since religiosity is positively correlated with idol worship, it is possible that there are pathological behaviour patterns in religiosity that are worth studying. People may also engage in maladaptive behaviours in worshipping their god, thus impairing different perspectives of their lives cognitively, socially, and psychologically.

Limitations of the Present Study and Further Study

Despite its significance the study also has a number of limitations. First, the types of idols people worship were ignored. It is believed that idol type affects one's idol worship behaviours (Yue & Yan, 2007), whereby different forms or presentations of idol worship toward different kinds of idols obtain. For instance, people of different ages tend to worship different types of idols to serve their developmental functions. People also hold different attitudes toward different idols. They have more psychological identifications with relatives or peers, and more fantasies regarding tri-stars.

Second, the study mainly focuses on the religiosity of Christians and non-Christians, but neglects participants of other religions such as Buddhism, Taoism, and Islam, owing to the small sample size. Therefore, it may not be applicable to use the Age-Universal I-E Scale (AUIE) for Buddhists, Taoists, and Muslims. This study also largely gathered secondary students from Christian schools in Hong Kong Island district, which may affect the external validity of the study as the sample may not represent the whole Hong Kong population appropriately.

The following recommendations are offered for further investigations. To begin with, the Idol Worship Questionnaire (IWQ) and Age-Universal I-E Scale (AUIE) should be further validated in terms of the factors and their applicability in Hong Kong. Second, measures of religiosity apart from AUIE should also be used, such as the Quest Religious Questionnaire (QRQ) (Maltby & Day, 1998), and more participants from religions such as Taoism and Buddhism should be included in the analyses to check if the relationship

between idol worship and religiosity can also be generalised to these people. Third, different types of idols worshipped across age should also be investigated and analysed.

Conclusion

It was hypothesised that idol worship is negatively correlated with religiosity, whereas idol worship would reduce self-esteem and religiosity would boost self-esteem. In addition, it was believed that females would have more intensive idol worship attitudes than males, whereas males would have higher self-esteem than females. Idol worship across participants' age would also show an inverted V-shape pattern.

Five components were found in the Idol Worship Questionnaire (IWQ) as a result of factor analysis: *Romantic Fantasy*, *Physical Attractiveness*, *Psychological Identification*, *Worship Decision*, and *Worship Expenditure*. It was shown that there is a positive correlation between idol worship and religiosity in Hong Kong, suggesting that religious people neglect the Biblical teaching that 'Thou shalt worship no other gods'. Two regression analyses also showed that idol worship or religiosity cannot predict lower or higher self-esteem respectively. Sex acts as a more reliable construct in idol worship attitudes and self-esteem, whereby females have higher idol worship attitudes, and males have higher self-esteem. It also moderates the effect of worship conformity attitude in predicting self-esteem, meaning that the more females conform to their peers' expectations in selecting their idols, the higher their self-esteem will be, but the more males conform to their peers' expectations in selecting their idols, the lower their self-esteem will be. A delayed transition from adolescence to adulthood was also observed in the pattern of the idol worship attitudes. The inverted V-shape pattern gradually increases from junior secondary school level to senior secondary school level, and maintains the same intensity throughout the university level.

This study serves to validate the Idol Worship Questionnaire (IWQ) and Age Universal I-E Scale (AUIE) regarding their applicability and factor components in Hong Kong. It also shows evidence for concurrent validity of the Idol Worship Questionnaire with another measurement on idol worship, the Celebrity Attitude Scale (CAS). In future studies, participants with various religious beliefs and backgrounds should be sampled. Further validations for the Age-Universal I-E Scale (AUIE) should also be conducted in the future. Last but not least, the types of idols people worship should also be measured and assessed to see if there is any difference.

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Biographic Note

Jacky K. K. Liu is the 2013 graduate of Bachelor of Social Sciences (Honours) in Psychology at City University of Hong Kong. His email address is jackyoliu@gmail.com.

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Is Analytic Thinking Related to Celebrity Worship and Disbelief in Religion?

Lynn E. McCutcheon
NAJP

Robert Lowinger
Bluefield State College

Maria Wong
Idaho State University

William Jenkins
Mercer University

We administered the *Celebrity Attitude Scale*, the intrinsic subscale from the *Age-Universal I-E scale-12* and an *Analytic Thinking Task* to 164 undergraduates from three institutions. An expanded version of the *Analytic Thinking Task* correlated negatively with *Celebrity Attitude Scale* scores, as predicted, but not with the intrinsic subscale from the *Age-Universal I-E scale-12*. Results were discussed in light of a previous study by Gervais and Norenzayan (2012) in which scores on the *Analytic Thinking Task* were negatively related to three measures of religiosity. Suggestions were made for the further study of the relationships among celebrity worship, religious values, and analytical thinking.

Research in information processing supports dual-process theories of human thinking. We often rely on intuition/peripheral processing to solve problems that appear to be easily solved. Intuitions come to us quickly and easily and require little time and mental effort to reach a decision (Gervais & Norenzayan, 2012). Our second system, analytic processing, can override intuition when cognitive resources are available and analytic tendencies are activated (Evans, 2003; Frederick, 2005; Petty & Cacioppo, 1986). Analytic processing requires more deliberation, but, it is often more accurate and it seems to characterize the thinking of persons who score high on cognitive ability tests (Frederick, 2005).

Recently Gervais and Norenzayan, citing evidence linking intuitive thinking with religious beliefs, conducted a correlational study which showed that analytical thinking is related to religious disbelief; Furthermore, four related experiments provided evidence for causation, inasmuch as subtle manipulations that are known to encourage analytic processing also encouraged religious disbelief (2012). Their four experiments used analytic word primes (analyze, reason, think, rational) or neutral primes (hammer, shoes, jump, brown) subsequently resulting in lower religiosity scores for the experimental group.

Author info: Correspondence should be sent to: Dr. Lynn E. McCutcheon, 240 Harbor Dr., Winter Garden, FL 34787
najp@embarqmail.com

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Gervais and Norenzayan (2012) explained their results by arguing that several intuitive cognitive processes support a belief in supernatural agents, which is a central part of religious beliefs. If analytic processing can override intuitive processing, then analytic thinking might undermine a support for religious belief. This finding, if it can be replicated, might help to explain individual differences in the tendency to believe in religious teachings. Analytical thinkers tend to score higher on a variety of cognitive measures than intuitive thinkers (Frederick, 2005), and this link between analytical thinking and religious disbelief might explain why atheists/agnostics tend to be less dogmatic, more intelligent, more committed to intellectualism and more scientifically proficient than religious believers (Beit-Hallahmi, 2007; Zuckerman, 2009).

Gervais and Norenzayan's measure of analytical thinking, the Analytic Thinking Task (ATT), contains only three items. We reasoned that we could improve the predictive power of the ATT by adding eight syllogistic items and calling it the Expanded Analytic Thinking Task (EATT).

Research from studies relating religious beliefs with celebrity attitudes during the last decade reveal that there is more than one kind of "true believer." Results from several studies using the Celebrity Attitude Scale (CAS) have shown that some "true believers" form very powerful, worshipful, parasocial bonds with their favorite celebrities (Ashe, Maltby, & McCutcheon, 2005; Maltby, Houran, Lange, Ashe, & McCutcheon, 2002; McCutcheon, Lange, & Houran, 2002; see McCutcheon, Maltby, Houran, & Ashe, 2004, for a review). Moreover, these two types of believers overlap minimally with each other. One study showed that commitment to a favorite celebrity was weakly but negatively related to a commitment to one's favorite religion (Maltby, et al., 2002).

Another line of research using the CAS has focused on the relationship between CAS scores and cognitive measures. McCutcheon, Ashe, Houran, and Maltby (2003) found that those with high cognitive measure scores tended to score low on the CAS. In other words, those with higher levels of cognitive ability tended not to be strongly attached to their favorite celebrity. Of the six cognitive variables used in that study, the best predictor of CAS scores was scores on a test of critical thinking ($r = -.42$). A recent attempt to conceptually replicate this study yielded much weaker correlation coefficients, but again the best predictor of CAS scores ($r = -.23$) was scores on a critical thinking test (McCutcheon, Griffith, Aruguete, & Haight, 2012).

In the religion study cited above, Maltby, et al. (2002) found a pattern of weak negative relationships between six measures of commitment to religion and scores on the CAS. Given the importance of the

implications of the Gervais and Norenzayan study for the psychology of religion, we thought it would be worthwhile to conceptually replicate their study. The Age-Universal I-E Scale-12(I-E; Maltby, 1999) contains a six-item subscale that measures an intrinsic orientation toward religion, as does the 10-item scale used by Gervais and Norenzayan. The content of the items from these two measures is strikingly similar. For example, “My whole approach to life is based on my religion” (from the Age-Universal I-E Intrinsic subscale) seems very much like “My religious beliefs are what really lie behind my whole approach to life” (from the Intrinsic religiosity scale used by Gervais & Norenzayan). We predicted a weak negative correlation between I-E Intrinsic scores and scores on the same Analytic Thinking Task that they used (hypothesis 1), and a stronger negative correlation between I-E Intrinsic scores and an expanded version (EATT) of that task (hypothesis 2).

Does analytical thinking overlap considerably with critical thinking? Critical thinking can be defined as the ability to identify, analyze, and evaluate arguments and make reasonable decisions about what to believe and do (Bassham, Irwin, Nardone, & Wallace, 2002). Thoughtful consideration seems to lie at the core of both. If they do overlap, then the negative correlations between CAS and critical thinking scores might result partly from individual differences in analytical thinking. If analytical thinkers are less likely to believe in God, might they also be skeptical about the lesser gods that we call celebrities? We hypothesized a weak negative correlation between CAS scores and scores on the ATT (hypothesis 3) and the EATT (hypothesis 4).

METHOD

Participants

The total sample consisted of 164 college students (77 females, 87 males; ranging in age from 17 to 52 years, $M = 22.98$, $SD = 6.95$) from two universities, one each in Georgia and Idaho, and a college in West Virginia. The majority reported being White (80%), the second most frequent category was Other (12.5%), followed by Black (7.5%). Most participants (71.3%) were single.

Measures

The 23-item version of the *Celebrity Attitude Scale* (CAS) has been shown to have good psychometric properties (Ashe & McCutcheon, 2001; Maltby, et al., 2002; Maltby & McCutcheon, 2001; McCutcheon, Lange, & Houran, 2002). The response format for the CAS is a 5-point scale with anchor points being “strongly agree” equal to 5 and “strongly disagree” equal to 1. The scale measures three aspects of celebrity worship that were identified through factor analysis (McCutcheon et al.,

2004). These three subscales address *Entertainment-Social* (ES; 10 items), *Intense-Personal* (IP; 9 items), and *Borderline Pathological* (BP; 4 items) forms of celebrity worship. Across several studies total scale Cronbach alphas ranged from .84 to .94 (McCutcheon et al., 2004). The Cronbach's alpha for the total CAS scale in the present study was .94.

Maltby's (1999) factor analysis of a set of items designed to measure attitudes about religiosity resulted in the *Age-Universal I-E Scale-12(I-E)*. Six items loaded high on an intrinsic orientation toward religion ("My whole approach to life is based on my religion," "I try hard to live all my life according to my religious beliefs").

Scores for each item range between 2 ("no") and 0 ("yes"), with a "?" scored as 1. Low scores on each subscale/factor indicate a high degree of religiosity. The total scale was designed as a psychometric improvement on earlier scales that measured attitudes about religiosity (Maltby, et al., 2002). We administered the entire 12-item scale as part of another study reported elsewhere. Cronbach's alpha for the six-item I-E intrinsic subscale used in the present study was .88.

We used the same three-item *Analytic Thinking Task* (ATT) used by Gervais and Norenzayan (2012) and Frederick (2005), although the latter referred to it as the *Cognitive Reflection Test*. Unfortunately, they did not report the internal reliability of the ATT. Each item is designed such that the easy, intuitive answer is incorrect. Each correct answer scores one point. Scores ranged on this measure from zero to three. Noting that Gervais and Norenzayan obtained a correlation coefficient of only -.22 between scores on the *Analytic Thinking Task* and their measure of intrinsic religiosity, we reasoned that we might increase the predictive power by adding additional items and calling this the *Expanded Analytic Thinking Task* (EATT). We borrowed eight syllogistic items that had been successfully used previously by Markovits and Nantel (1989). Items four through eleven on the EATT ask participants to "evaluate the logical validity of this argument. In other words, does the conclusion follow logically from the premises (the statements preceding the conclusion)?" Each correct answer scores one point. Items four through seven use fictional groups, such as Lapidars and Salacians, to minimize the likelihood that answers are mere belief-based responses that stem from intuitive thinking. "Lapidars walk" is the logically valid conclusion based on the premises in item four ("All mammals walk," & "Lapidars are mammals"). Since participants are unlikely to have beliefs about fictional groups like Lapidars, we reasoned that neutral items four through seven would add little to our ability to predict scores on I-E, QRO, and the CAS.

On the other hand, items eight through eleven have two premises followed by a conclusion that is belief-based. "Cigarettes are good for the

health” is the logically valid conclusion based on the premises in item eight (“All things that are smoked are good for the health,” & “Cigarettes are smoked”), but we reasoned that intuitive thinkers would have lower scores on items eight through eleven than analytic thinkers, because the former would be more likely to answer based on their common-sense intuition/peripheral processing that cigarettes are *not* good for one’s health. Item four is identical in form to item eight, item five is identical in form to item nine, and so on. Markovits and Nantel found that belief-based items (8-11 on the EATT) were significantly more difficult to solve than neutral items (4-7 on the EATT). Retaining the neutral items allowed us to attempt to replicate the results of Markovits and Nantel (hypothesis 5).

An example of one of the *Analytic Thinking Task* items is found in the Appendix, along with one pair of examples from the *Expanded Analytic Thinking Task*.

Procedure

Students were recruited from introductory level courses at their respective institutions to participate in a study of attitudes about celebrities and religion. They were awarded a small amount of research credit for participating. Students participated in groups ranging in size from five to 35. They were given a survey consisting of three pages, one of which requested demographic information, asked participants to name their favorite celebrity, rate the strength of their attraction to this celebrity on a scale from 1 (“very weak”) to 7 (“very strong,”) and rate their interest in celebrities generally on a scale from 1 (“very weak”) to 7 (“very strong”). Participants were also asked to complete the CAS. Another page presented the I-E. An additional page presented the EATT, which included the same three analytic thinking tasks used by Gervais and Norenzayan (2012), along with the eight syllogisms used by Markovits and Nantel (1989). The presentation order of these pages was varied to minimize the likelihood of a systematic order effect. Participants were thanked for their participation and awarded research credit.

RESULTS

Scores for all the measures can be found in Table 1. They are consistent with results from previous studies. For example, McCutcheon, Maltby, Houran, & Ashe, (2004) found means, standard deviations, and alpha coefficients for the CAS and its subscales that were very similar to those reported here. Because of the large number of comparisons we used the .01 level of significance throughout to adjust for possible inflation of Type 1 error.

We found no support for hypotheses one and two, namely that there would be inverse relationships between Analytic Thinking Task and Expanded Analytic Thinking Task scores on the one hand, and I-E Intrinsic scores. I-E Intrinsic correlated $r = -.01$ with EATT Total scores and $+.04$, $-.03$, and $-.02$ with EATT ATT, EATT Neutral, and EATT Belief-based scores, respectively (see Table 2). The difference between the correlation coefficient obtained by Gervais and Norenzayan ($-.22$) and the one we obtained ($.04$) between comparable measures of traditional religiosity and analytical thinking (EATT ATT) was significant at the $.01$ level.

We also found no support for hypothesis three. Scores on CAS Total correlated $-.05$ with scores on the EATT ATT, the same measure used by Gervais & Norenzayan (see Table 2).

On the other hand, we found modest support for hypothesis four, the relationship between CAS scores and two of the other EATT scores. CAS Total correlated $r = -.23$ ($p < .003$) with EATT Total, $r = -.21$ ($p < .007$) with EATT Neutral, and $r = -.15$ (ns) with EATT Belief-based scores. Further, each of the three CAS subscales correlated negatively with EATT Total, EATT Neutral, and EATT Belief-based, with coefficients ranging from $-.10$ (ns) to $-.26$ ($p < .001$).

A dependent samples t – test comparing EATT Neutral ($M = 2.40$, $SD = 1.04$) and EATT Belief-based ($M = 1.30$, $SD = 1.12$) revealed a significant difference in the predicted direction, $t(163) = 12.80$, $p < .0001$ (hypothesis 5).

TABLE 1 Means, SDs, & Range of Scores for All Measures Used in the Present Study

Scale	Range	Mean	SD	Cronbach's Alpha
1 CAS Total	92	46.93	16.02	.94
2 CAS ES	40	25.00	8.19	.88
3 CAS IP	36	14.77	6.25	.89
4 CAS BP	16	7.18	2.97	.69
5 I-E Intrinsic	12	7.50	4.07	.88
6 EATT Total	10	5.07	1.85	.07
7 EATT ATT	3	1.36	.83	.30
8 EATT Neutral	4	2.40	1.04	.30
9 EATT B-b	4	1.30	1.12	.49

TABLE 2 Correlation Matrix for All Measures

Scale	2	3	4	5	6	7	8	9
1 CAS Total	.94	.92	.86	-.12	-.23	-.05	-.21	-.15
2 CAS ES		.75	.74	-.13	-.19	-.08	-.17	-.10
3 CAS IP			.76	-.12	-.26	-.03	-.24	-.20
4 CAS BP				-.05	-.16	.01	-.16	-.13
5 I-E Intrinsic					-.01	.04	-.03	-.02
6 EATT Total						.22	.79	.76
7 EATT ATT							-.13	-.25
8 EATT Neutral								.48
9 EATT B-b								

Note: Correlations of .19 or higher are significant at the .01 level

DISCUSSION

Our first two hypotheses could be conceptualized as attempts to replicate a previous finding, namely a link between analytic processing and religious disbelief, stemming from dual process theories of human thinking. Our attempt to show a link between analytical thinking and religious disbelief was an apparent failure.

When an attempt at conceptual replication fails there is usually more than one possible reason why. One possibility is the difference between the 10-item religious measure used by Gervais and Norenzayan and the 6-item measure we used. However, we believe this is unlikely. Our measure, the I-E Intrinsic, had a Cronbach’s alpha of .88 in the present study, and has items like “I have often had a strong sense of God’s presence” and “I try to live all my life according to my religious beliefs.” This is comparable to their “Intrinsic Religiosity” scale with a Cronbach’s alpha of .90 and items like “In my life I feel the presence of the Divine,” and “I try hard to carry my religion over into all my other dealings in life.”

We think the failure to replicate is more likely due to unknown differences in the samples, noting that ours came from college students at three different parts of the United States, whereas their college students came from one rather selective institution on the Canadian west coast. We also note that their attempts to correlate analytical thinking (ATT) with brief measures of “Intuitive Religious Belief” and “Belief in Supernatural Agents” resulted in correlation coefficients of -.15 and -.18, respectively. Taken as a whole, they suggest only a weak relationship between analytical thinking and religious belief. Our results suggest that the link between analytical thinking and religious disbelief is weak at best, and not very robust.

The modest support we found in hypothesis four, for the relationship between CAS scores and EATT scores (except for EATT ATT, hypothesis 3) is consistent with results from the two previous studies in which those with high critical thinking skills tended not to “worship” celebrities (McCutcheon, et al., 2003; McCutcheon, et al., 2012). The critical thinking tests used in the previous studies were heavily laden with items for which a command of logic served one in good stead, as was the case in the present study for EATT Neutral, EATT Belief-based, and, to a lesser extent, EATT Total.

At the outset of our study we assumed that analytical thinking and logical thinking were essentially the same. Our results suggest otherwise. CAS Total correlated $-.23$ with EATT Total, and $-.21$ with EATT Neutral, but CAS Total correlated only $-.05$ with EATT ATT. Our findings strengthen the hypothesized link between celebrity attraction and ability to reason logically, but not the ability to think analytically.

The significant difference we found in our fifth hypothesis, between scores on EATT Neutral and EATT Belief-based, successfully replicated the results obtained by Markovits and Nantel (1989), who found that the former were easier to solve than the latter, presumably because the logically correct answer to the latter contradicted common sense. For example, the logically correct answer to item nine is “Poodles do not have four legs.” However, common sense tells us that poodles really do have four legs.

One of the limitations of our study is the use of correlational statistics, preventing us from drawing causal conclusions from our data. Future research on this topic should use more sophisticated designs. Path analysis and controlled experiments might shed more light on the link between analytic thinking and religious disbelief. The work of Gervais and Norenzayan used primes for analytic processing that yielded group differences, but none of their obtained p values reached the $.01$ significance level. In light of our findings we suggest that more research is needed on this topic. Another limitation is the low alpha reliability coefficients for the EATT subscales. Some of this is doubtless due to the brevity of these subscales. The extremely low ($.07$) alpha for EATT Total is probably due to the fact that ATT correlates negatively with the other two subscales. We recommend that the ATT subscale as it currently exists, be expanded with items that actually do reflect analytical thinking, rather than logical reasoning. Our participants achieved mean scores of only 1.36 correct out of a possible three on the EAT. The resulting restricted range may have been at least partly responsible for the near-zero correlations we obtained.

In very recent years several controversial research reports have surfaced, the controversy stemming from the inability of other

researchers to replicate original findings. This has led to heated discussions within the scientific community, and eventually the decision that unsuccessful replications should not be swept under the scientific rug. The Association for Psychological Science (APS) recognized that the failure to publish studies in which null was not rejected (often the fate of unsuccessful attempts to replicate) creates the mistaken impression that all is well with the original research finding (DeWall & Myers, 2014; Registered replication, nd). The APS has originated an ongoing project that encourages the publication of studies such as ours. We support their initiative and encourage others to attempt to conceptually replicate the findings of Gervais and Norenzayan, with the hope that eventually we will come to a clearer understanding of the phenomenon they originally investigated.

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APPENDIX ONE

Sample items from the Analytic thinking task (item one) and the Expanded Analytic Thinking Task

Item One)

A bat and a ball cost \$1.10 in total. The bat costs \$1.00 more than the ball. How much does the ball cost? ____ cents

(Intuitive answer = 10; Analytic Answer = 5)

Item Five)

Premise 1 – All Animals like water.

Premise 2 – Salacians do not like water.

Conclusion – Salacians are not animals

Item Nine)

Premise 1 – All animals with 4 legs are dangerous

Premise 2 – Poodles are not dangerous

Conclusion – Poodles do not have 4 legs

Note: Items five and nine take the same form and the conclusions for both are valid, but the belief that poodles really do have four legs makes item nine harder.

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