

PSYCHOLOGICAL AND BEHAVIORAL PREDICTORS OF MUSIC MEDIA PREFERENCES: A BINARY LOGISTIC REGRESSION BASED ON A SURVEY AMONG GREEK ADOLESCENTS

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ABSTRACT

Music is an integral part of the social and emotional world of adolescence. In this paper, we investigate: a) The degree of addiction of adolescents to music and music media, b) The relation of adolescents' preoccupation with blogs and social media, alcoholic addiction with their habit to listen over a long time everyday to a particular kind of music and music videos.

We analyze statistically the results of a sample survey between Greek adolescents. We are doing Factor Analysis and Reliability Analysis of the different psychosocial factors that contribute to music addiction. We are doing a Binary Logistic Regression with depended variable: Perceived music addiction and independent variables: continuous and uncontrollable preoccupation with music and existence of quarrels with relatives about listening many hours per day to music.

Results are indicating existing statistically significant relationships between the particular psychological and behavioral characteristics of a person and the perception that he is addicted to music.

Key-Words: Addiction to Music, Drug Addiction, Alcohol Addiction, Factor Analysis, Blog, Social Media, Logistic Regression.

1. Introduction

1.1 Importance of music to adolescents and influence of music lyrics on their lives

Music is a way of life for adolescents and reflects feelings, values, needs and conflicts (Arnett, 1995; Larson, 1995, Schwartz and Fouts, 2003). An important component of the social and emotional world of adolescents is music. As the young people grow and develop their personality, in the same way the preferences for music develop and change. In April 2007 there was the double suicide of two Australian teenage girls, and the media linked the preferences of "emo" music, (short for emotional music), by the girls with their mental state, (Schliebs M. (2007)). In 1999 two American students went on a shooting rampage, killing 12 students, while having the habit of listening to Marilyn Manson's music coined shock-rock or industrial metal. Felicity Baker and William Bar, in an important paper¹ express the following question: "Does music contribute to the acting out of behaviours described in the music lyrics or the preferred music represents the already existing behavioural tendencies of the subject"

Research by Rustad et al. (2011) and the American Academy of Pediatrics advisory Council (2009) shows that there is correlation between certain behavioural patterns of children and adolescents and certain types of music and music videos to which they are listening continuously. Further more, the articles by *Roberts and Christensen. (2001)*, *Leming, (1987)* and *North et al. (2000)*, emphasize that the perception and the effect of music-video messages are important, because social surveys have shown that exposure to violence, sexual messages and use of substances of abuse in music videos might produce significant changes in behaviors and attitudes of young viewers. Pediatricians and parents should be aware of this information.

1.2 Studies on the relation between Music Preference and Personality

Ekinci et al. (2012) argue that there is an association of music preferences and depressive behavior in High School students. They use the Children's Depression Inventory (CDI). Statistical analysis of their sample survey results on adolescents revealed that the children who were listening to heavy metal music and experienced problematic parent relations had higher scores on the CDI instrument than the children with normal parent relations and other types of favorite music.

Rap music has been found to be associated with alcohol and illicit drug use (Chen et al. 2006; Diamond, Bermudez and Schensul, 2006; Doak, 2003; Took and Weiss, 1994, Miranda and Claes, 2004). Heavy metal music has been found to be associated with depression, suicidal tendencies, alcohol abuse and recklessness (Arnett, 1991, 1992; Martin, Clarke and Pearce, 1993; Scheel and Westefeld, 1999; Schwartz and Fouts, 2003; Took and Weis, 1994, Baker and Bor, 2008).

Two studies in the United States of University Students used the NEO Personality Inventory to investigate the relationships between listeners' to music characteristics and music preference. (Costa and McCrae, 1992; Rawlings and Ciancarelli, 1997) The results indicate that aggressive behavior, indifference to the feelings of others, pessimism and low self esteem is associated with listening to heavy metal music.

Two Canadian researchers (Swartz and Fouts, 2003) have applied the Millon Adolescent Personality Inventory to find that, listening to Pop music was linked with a variety of values such as: being overly responsible, struggling with issues of sexuality and peer acceptance, being autonomous and having a strong sense of identity.

A Canadian study associated the music preference of 14-18 -year -olds with the Parental Bonding Instrument (Parker, Tuping and Brawn, 1979) to find that self-perception of alienation drug use and serious suicide ideation was linked with listening to rock and heavy metal music. (Rustad et al., 2003). Related to this scale is the hopelessness scale by Beck et al. (1974).

1.3 Investigating music addictive behavior in Greek adolescents

In this paper we investigate through a sample survey the following: a. The percentage of heavy listeners to music lyrics in our sample. b. The socioeconomic and psychological predictors of a continuous listening to music. c. The parallel or resulting habits, like drug use and smoking which are associated with listening to a certain type of music.

2. Methods of Research

2.1 Sample survey and Procedure

We have carried out a sample survey among 159 Greek adolescents with ages from 6 to 35 years. We distributed a structured questionnaire contained the parts: Demographics, types of music listening to and time devoted to music, psychosocial characteristics of the person listening for a long time to music and videos and other

habits, like alcohol drinking, use of substances and smoking. The aim of the questionnaire is to identify the factors of addiction to music and videos and the consequences of this addiction. 87 respondents were women and 72 were men. Their age was as follows: 60% were 20-24 years of age, 23, 5% were 6-19 years of age and 16, 5% were 25-35 years of age. The statistical analysis of the questionnaires has been carried out with the help of Statistical Package for the Social Sciences (SPSS) 21.0, (Pallant, 2007).

3. Statistical Analysis of Answered Questionnaires

3.1 χ^2 tests of independence

We perform χ^2 tests of independence in order to test the hypothesis:

H_0 : The variable: Do you think that you are addicted to listening to music and music videos

Is independent of the variable V_k

where

V_k ($k=1, \dots, n$) is a variable related to the psychosocial characteristics of the heavy listeners to music, as they are described in column 1 of the following table 1

H_1 : The variable: Do you think that you are addicted to listening to music and music videos

Is dependent of the variable V_k ,

The following table shows the results of the χ^2 tests:

Table 1. χ^2 tests of independence. χ^2 statistic, Degrees of Freedom, p-value, Level of significance: 0, 05.

Variable V_k $K=1, 2, 3, \dots, 8$	Variable V:	χ^2 Statistic	Degrees of Freedom	p-value
Psychosocial characteristics of the person who listens for a long time to music and music videos	DO YOU THINK THAT YOU ARE ADDICTED TO LISTENING TO MUSIC AND TO MUSIC VIDEOS?			
1. ARE YOU ABSORBED CONTINUOUSLY BY LISTENING TO MUSIC AND YOU ARE NOT THINKING OF ANYTHING ELSE?		22, 82	1	0, 001
2. WHEN YOU TURN ON THE RADIO IN ORDER TO LISTEN TO MUSIC FOR A GIVEN TIME(EG 1 HOUR) DO YOU, FINALLY CONTINUE TO LISTEN TO MUSIC OVER 1 HOUR?		9, 40	1	0, 002
3. WHEN YOU TURN ON THE RADIO IN ORDER TO LISTEN TO MUSIC FOR A GIVEN TIME(EG 1 HOUR) DO YOU, FINALLY CONTINUE TO LISTEN TO MUSIC OVER 1 HOUR?		4, 25	1	0, 039
4. WHEN YOU TURN ON THE RADIO IN ORDER TO LISTEN TO MUSIC FOR A GIVEN TIME(EG 1 HOUR) DO YOU, FINALLY CONTINUE TO LISTEN TO MUSIC OVER 1 HOUR?		3, 32	1	0, 06
5. HAVE YOU EVER LOST AN IMPORTANT MEETING IN ORDER TO SIT IN YOUR ROOM AND LISTEN TO MUSIC?		6, 10	1	0, 014

6. HAVE YOU EVER LIED TO YOUR RELATIVES WHO HAVE ASKED YOU WHAT YOU ARE DOING IN YOUR ROOM AND YOU DID NOT WANT TO REVEAL TO THEM THAT YOU ARE LISTENING TO MUSIC?		9, 43	1	0, 009
7. IS LISTENING MUSIC FOR YOU A WAY OUT FROM THE PROBLEMS OF LIFE?		5, 99	1	0, 014
8. HAVE YOU EVER HAD A QUARREL WITH YOUR PARENTS/ FRIENDS BECAUSE THEY TOLD YOU THAT YOU ARE SPENDING TOO MUCH TIME LISTENING TO MUSIC?		4, 85	1	0, 028
9. LENGTH OF TIME(IN HOURS PER DAY) SPENT IN LISTENING MUSIC AND MUSIC VIDEOS		21, 16	7	0, 004
10. GENDER		7, 96	1	0, 005

It is worth mentioning that 80, 1% of the people who spend six (6) hours and more per day listening to music think that they are addicted to music.

We note, also, that 73% of the people that they are absorbed by listening continuously and thinking about music lyrics think that they are addicted to music and music videos. The overall percentage of the respondents who think that they are addicted to music is 27, 7 %, with 32 women and 12 men out of 159 respondents, who think that they are addicted to music.

3.1.1. Reliability Analysis of the group of variables which represent the psychosocial Characteristics V(i), i=1, 2, 3, ...10) of Table 1.

We found Cronbach's Alfa Correlation Coefficient of the 10 items V(i), (i=1, 2, 3, 4, ...10) to be 0, 773, which is a satisfactory result for our questionnaire.

3.2. Factor Analysis

The 10 items of the Questionnaire which identify the Psychosocial characteristics of the person who listens for a long time to music and music videos, were subjected in Principal Component Analysis(PCA) using SPSS Version 21. Prior to performing PCA, the suitability of data for Factor Analysis was assessed. Inspection of the Correlation matrix revealed the presence of many coefficients of. 5 and above. The Kaiser-Meyer-Olkin value was 0, 747, exceeding the recommended value of 0, 6 (Kaiser, 1970, 1974) and Bartlett's Test of Sphericity (Bartlett 1954) is 236, 56 reaching statistical significance, supporting the factorability of the correlation matrix.

Principal Components Analysis revealed the presence of 3 components with eigenvalues exceeding 1, explaining 26, 1%, 12, 18% and 10, 08 of the variance respectively.

We name the three components as follows: psychological, social and demographic characteristics of perceived addicted persons to music, respectively. Table 2, shows, the three factors, the variables which belong to each factor and all the dimension coefficients:

Table 2. Pattern Matrix for PCA with Oblimin Rotation of three Factor solution of the Questionnaire variables, with factor loadings of each of the variables.

Pattern Matrix ^a	Component		
	1	2	3
IS LISTENING MUSIC FOR YOU A WAY OUT FROM THE PROBLEMS OF LIFE?	,800		
WHEN YOU TURN ON THE RADIO IN ORDER TO LISTEN TO MUSIC FOR A GIVEN TIME(EG 1 HOUR) DO YOU, FINALLY CONTINUE TO LISTEN TO MUSIC OVER 1 HOUR	,768		
WHEN YOU LISTEN TO MUSIC AND FOR SOME REASON YOU STOP LISTENING, ARE YOU FEELING BAD TEMPER AND MELANCHOLIC ?	,597		
HOW MANY HOURS PER DAY DO YOU SPEND LISTENING TO MUSIC?			
HAVE YOU EVER LOST AN IMPORTANT MEETING IN ORDER TO SIT IN YOUR ROOM AND LISTEN TO MUSIC			
HAVE YOU EVER LIED TO YOUR RELATIVES WHO HAVE ASKED YOU WHAT YOU ARE DOING IN YOUR ROOM AND YOU DID NOT WANT TO REVEAL TO THEM THAT YOU ARE LISTENING TO MUSIC		-,731	
HAVE YOU EVER HAD A QUARREL WITH YOUR PARENTS/FRIENDS BECAUSE THEY TOLD YOU THAT YOU ARE SPENDING TOO MUCH TIME LISTENING TO MUSIC		-,667	
ARE YOU ABSORBED CONTINUOUSLY BY LISTENING TO MUSIC AND YOU ARE NOT THINKING OF ANYTHING ELSE?		,536	
WHEN YOU LISTEN TO MUSIC IS IT DIFFICULT OR IMPOSSIBLE TO STOP LISTENING AND TO BE OCCUPIED TO SOMETHING ELSE?		-,502	
AGE OF RESPONDENT			873
GENDER OF RESPONDENT			

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.
a. Rotation converged in 14 iterations.

3.3 Logistic Binary Regression

Direct Logistic Regression was performed to assess the impact of a number of factors on the likelihood that respondents would report that they were music and music videos addicted. The model contained six independent variables (Gender, choice of preferred kind of music, easy funding for buying cd's and videos, state of complete absorption by listening to music, answer with lies to relatives asking questions about activities in own room, length of time in hours per day spent listening to music).

The dependent variable is: Perceived music and music videos addiction. The full model containing all predictors was statistically significant, $\chi^2(25, N=159)=77,71$, $p<0,0001$, indicating that the model was able to distinguish between respondents who reported and did not report that they were music addicted. The model as a whole explained between 38,7% (Cox and Snell R Squared) and 55,8% (Nagelkerke R Squared) of the variance in frequency of music addiction, and correctly classified 84,3% of cases. The Hosmer and Lemeshow test (7,71 with 8 degrees of freedom, $p=0,46$) is showing a good fit of the model. As shown in the following Table 3 all six independent variables made a unique statistically significant contribution to the model (Perceived music and music videos addiction).

Table 3. Logistic Regression Predicting Likelihood of music perceived addiction by respondents.

INDEPENDENT VARIABLE	B	WALD TEST	DF	p	EXP(B) Odds Ratio	95% C.I. For Odds Ratio	
						Lower	Upper
Gender	1,680	7,13	1	0,008	5,36	1,56	18,40
Choice of preferred kind of music(Rock music)	3,42	13,5	1	0,001	30,5	4,9	189,2
Easy funding for buying cd's and videos	-2,2	2,97	1	0,085	0,11	0,009	1,35
State of complete absorbtion by listening to music	2,79	10,2	1	0,001	16,3	2,94	90,84
Answer with lies to relatives ask- ing questions about activities in own room	2,71	3,74	1	0,053	15,1	0,96	236,3
Length of time in hours per day spent listening to music	1,91	3,21	1	0,073	6,8	0,83	55,3
CONSTANT	-3,95	8,5	1	0,004	0,02	0,01	0,04

3.4 Discussion

In this paper we have proved through the x2 tests that the perceived addiction to music is related to the continuous and uncontrollable preoccupation of the addicted person with music and music videos, the behavioral change of him regarding the lies to his relatives asking for his preoccupation with music, the loss of important meetings because of his addiction to music, the finding of music as a way out of his problems and the great length of time devoted every day listening to music. Parallel to the mentioned psychosocial characteristics of the addicted is the possible lack of sleep and the slow educational progress.

The exploratory factor analysis has shown that there are two factors of addiction to music: the psychology factor, which includes the state of psychological preoccupation with music and the inability of controlling the habit of the continuous listening to music and the social behavior factor, which includes the quarrels and lies to relatives asking for control of the habit and the isolation from the outside world because of the music addiction.

The Logistic Regression Analysis has shown that the components of the two factors found in factor Analysis as well as the length of time devoted every day listening to music are statistically significant predictors of music addiction and they could be used as a tool for the diagnosis of this addiction.

A limitation of the study is the small sample (N=159) and the absence of respondents beyond 35 years of age. Another important dimension which is worth exploring through further research is the influence of social media (facebook, twitter e.t.c. to music addiction). Indeed, if we test the hypothesis H0: The variable :Do you have your own blog, with main subject playing songs and discussing social themes, is independent from the variable: I think that I am addicted to music, we reject H0 because $\chi^2=6,66$, $N=159$, $p=0,010$.

The following table 4 shows the percentages of the state of uncontrollable preoccupation with music for continuous listeners to music and perceived music addiction.

Table 4. Percentages (N;%) of the answers of respondents as regards the state of preoccupation with music. N=159 respondents.

Psychosocial characteristics of the person who listens for a long time to music and music videos	Percentage of accepting the statement by respondents (Answer 'YES')	Percentage of rejecting the statement by respondents (Answer 'NO')
1. ARE YOU ABSORBED CONTINUOUSLY BY LISTENING TO MUSIC AND YOU ARE NOT THINKING OF ANYTHING ELSE?	11,9	88,1
2. WHEN YOU TURN ON THE RADIO IN ORDER TO LISTEN TO MUSIC FOR A GIVEN TIME(EG 1 HOUR) DO YOU, FINALLY CONTINUE TO LISTEN TO MUSIC OVER 1 HOUR?	57,9	42,1
3. WHEN YOU TURN ON THE RADIO IN ORDER TO LISTEN TO MUSIC FOR A GIVEN TIME(EG 1 HOUR) DO YOU, FINALLY CONTINUE TO LISTEN TO MUSIC OVER 1 HOUR?1	28,9	71,1
4. WHEN YOU TURN ON THE RADIO IN ORDER TO LISTEN TO MUSIC FOR A GIVEN TIME(EG 1 HOUR) DO YOU, FINALLY CONTINUE TO LISTEN TO MUSIC OVER 1 HOUR?	30,2	69,8
5. HAVE YOU EVER LOST AN IMPORTANT MEETING IN ORDER TO SIT IN YOUR ROOM AND LISTEN TO MUSIC?	7,5	92,5
6. HAVE YOU EVER LIED TO YOUR RELATIVES WHO HAVE ASKED YOU WHAT YOU ARE DOING IN YOUR ROOM AND YOU DID NOT WANT TO REVEAL TO THEM THAT YOU ARE LISTENING TO MUSIC?	5	95
7. IS LISTENING MUSIC FOR YOU A WAY OUT FROM THE PROBLEMS OF LIFE?	72,3	27,7
8. HAVE YOU EVER HAD A QUARREL WITH YOUR PARENTS/ FRIENDS BECAUSE THEY TOLD YOU THAT YOU ARE SPENDING TOO MUCH TIME LISTENING TO MUSIC?	8,2	91,8
9. LENGTH OF TIME(IN HOURS PER DAY) SPENT IN LISTENING MUSIC AND MUSIC VIDEOS	<=3 hours : 73	>=4 hours : 27
10. DO YOU THINK THAT YOU ARE ADDICTED TO LISTENING TO MUSIC AND TO MUSIC VIDEOS?	27,7	72,3

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