Can personality affect the prediction of music preference for externalising behaviour in adolescence?

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Abstract

Non-mainstream music styles (i.e. Intense and Rebellious, and Energetic and Rhythmic) have shown in previous studies to predict externalizing behaviour like aggression and delinquency (e.g. ter Bogt, Keijsers, & Meeus, 2013). The current study explored the underlying mechanism of the media effects of music preference, with help of the differential susceptibility to media effects model (DSMM; Valkenburg & Peter), by investigating whether personality can amplify the prediction of music preference for delinquent and aggressive behaviour. Data were used from the longitudinal conflict and management of relationships study (CONAMORE; N = 1257; 48% boys*;* M^{age} = 15.57). The findings showed that, after controlling for gender and education, a preference for Energetic and Rhythmic music predicted aggressive behaviour. Other music styles in this study were not significant predictors for delinquent or aggressive behaviour. Furthermore, in this study personality did not amplify the prediction of music preferences. As extra, all music genres were analysed on predicting both behaviours. Each behaviour was predicted by seven different genres, with three overlapping. New questions arise, for example: do different music genres, instead of music styles, predict different types of behaviour? Future research is needed to gain more knowledge about media-effects for future policies to be effective.

Introduction

Media plays a central part in most adolescents' lives (Furlong, 2013; Lemish, 2015) and public concerns have arisen regarding the effect of media on adolescents' behaviour (Lemish, 2015). One way to examine media effects is by the *differential susceptibility to media effects model* (DSMM; Valkenburg & Peter, 2013). The DSMM proposes that the selection of media and the response to it can be affected by a) developmental, b) dispositional (i.e. inherited qualities and character), and c) social factors. It has been used to examine various media effects, for example (violent) games and TV-shows on aggression (Fikkers, 2016), but has not for music preferences. Therefore, with help of the DSMM, this study will examine the role music preference plays for predicting adolescents' behaviour.

In adolescence a more refined music preference is being developed, and becomes more stable over time (Delsing, ter Bogt, Engels, & Meeus, 2008; Halam, Cross, & Thaut, 2016). One factor that is thought to determine music preference is personality (Halam et al., 2016). According to *the uses of gratification theory* (Arnett, 1995) individuals make media choices that depend on their personal characteristics. Thus, adolescents listen to specific music genres that reflect or satisfy their personality, issues and needs. While there are many ways to categorize music, this study will follow a frequently used categorization of music genres by Rentfrow and Gosling (2003). They have carried out a study that clustered 14 music genres into four main music preference styles, described as "*Reflective and Complex"* (classical, jazz, blues, and folk), "*Intense and Rebellious*" (alternative, rock, and heavy metal), *"Upbeat and Conventional*" (country, pop, religious, and soundtracks), and *"Energetic and Rhythmic"* (rap/hip-hop, soul/ funk, and dance/electronica) (p. 264, Rentfrow & Gosling, 2003). Studies have shown that non-mainstream music genres (i.e. Intense and Rebellious, and Energetic and Rhythmic music) are positively associated with internalizing and externalizing behaviour problems of the listener (for a review see Lozon & Bensimon, 2014).

The current study is aiming to investigate the prediction of music preference for externalizing behaviour, more specifically delinquency and aggression, with help of the DSMM. In scope of this study, one of the four propositions of the DSMM is being examined, namely the argument that dispositional factors can be assigned to multiple roles (e.g. predictor, mediator, moderator). Therefore, it will be examined whether personality, according to the Big Five dimensions (Goldberg, 1992; Gosling, Rentfrow, & Swann, 2003), amplifies or weakens the prediction of music preference.

Music preference, delinquency and aggression

Longitudinal studies showed that that adolescents with a preference for heavy metal (i.e. Intense and Rebellious music) or hip-hop (i.e. Energetic and Rhythmic) reported more externalizing behaviour (i.e. aggression and delinquency), and showed that a preference for heavy metal or hip-hop at one point predicted aggressive and delinquent behaviour at a later point (Franken, Keijsers, Dijkstra, & ter Bogt, 2017; Selfhout, Delsing, ter Bogt, & Meeus, 2008; ter Bogt, Keijsers, & Meeus, 2013) Furthermore, people with a preference for Intense and Rebellious music or Energetic and Rhythmic music reported more delinquent and aggressive behaviour than those without a preference for those music styles (Mulder, ter Bogt, Raaijmaker, & Vollebergh, 2006).

In contrast, two other studies found either no effect (North, Desborough, & Skarstein, 2005) or a negative effect (Chen, Miller, Grube, & Waiters, 2006) between non-mainstream genres and delinquency, and aggression. However, these studies (Chen et al., 2006; North et al., 2005) are cross-sectional and Chen et al. (2006) has a small sample size in comparison to other studies. Therefore, it seems that there is an overall more consistent relationship between a preference for Intense and Rebellious music or Energetic and Rhythmic music, and delinquent and aggressive behaviour in adolescence (Franken et al., 2017; Mulder et al., 2006; Selfhout et al., 2008; ter Bogt et al., 2013).

Music preference and personality

Valkenburg and Peter (2013) state with the *disposition-content congruency hypothesis* in the DSMM that media (e.g. music) that are in line with an individual's dispositions are more likely to influence the individual's behaviour, than media that are not in line with the dispositions. Individuals select media based on their cognitions, emotions, attitudes, beliefs, and behaviour, which is congruent with the uses of gratification theory. This makes the processing of the content less effortful, and leaves more room for processing less noticeable content. Thus, in general, adolescents whose personalities are more in line with their music preference, will likely be more affected by the music than adolescents whose personality is less in line with their music preference. It would be expected that personality dimensions that are in line with certain music preferences will amplify the effect of that music style (Valkenburg & Peter, 2013). Therefore, before selecting personality dimensions as moderators, it is necessary to know what personality dimensions are in line with what music preference. As stated earlier, this study will examine personality according to the Big Five personality dimensions, being: *Extraversion, Agreeableness, Conscientiousness, Emotional Stability*, and *Openness*.

Extraversion is characterized by warmth, gregariousness, assertiveness, active, sensation seeking, and positive emotions. Agreeableness is characterized by trust, compliance, altruism, straightforwardness, modesty and tender-mindedness. Conscientiousness is characterized by competence, order, dutifulness, achievement striving, self-discipline and deliberation. Emotional stability is characterized by unenvious, unemotional, relaxed, imperturbable, unexcitable and undemanding personality characteristics. And Openness is characterized by fantasy, aesthetics, feelings, actions, ideas, and values (Gosling et al., 2003).

The study of Rentfrow and Gosling (2003) is one of the first (more) comprehensive studies that has examined the relationship between the Big Five personality dimensions and music preference. Their main findings show that a preference for Reflective and Complex music or for Intense and Rebellious music was positively related to Openness. They suggest that individuals with a preference for Reflective and Complex music were more open to others and unconservative ideals, while individuals with a preference for Intense and Rebellious music were more open to try different things and take risks. Furthermore, a preference for Upbeat and Conventional music was positively associated with Extraversion, Agreeableness and Conscientiousness. Individuals who prefer Upbeat and Conventional music tend to be socially outgoing, reliable and relatively conventional. Finally, Rentfrow and Gosling (2003) found that a preference for Energetic and Rhythmic music was positively related to Extraversion and Agreeableness. They suggest that individuals who prefer Energetic and Rhythmic music are talkative and energetic, and that they abstain from conservative ideals. Other studies (Bonneville-Roussy, Rentfrow, Xu, & Potter, 2013; Delsing et al., 2008; Fricke & Herzberg, 2017; George, Stickle, Rachid, & Wopnford, 2007; Langmeyer, Guglhör-Rudan, & Tarnai, 2012; Zweigenhaft, 2008) found closely matching results to those of Rentfrow and Gosling (2003). Noteworthy are the results of George et al. (2007) and Zweigenhaft (2008) concerning the correlation between Energetic and Rhythmic music and Agreeableness differed. Instead of a positive association, their results showed a negative association between Energetic and Rhythmic music and Agreeableness. Remarkably, there was little to no correlation between Emotional Stability and any music preference. This may indicate that persistent emotional states do not influence music preference (Rentfrow & Gosling, 2003). However, overall it seems that personality and music preference are congruent (Bonneville-Roussy et al., 2013; Delsing et al., 2008; Fricke & Herzberg, 2017; George et al., 2007; Langmeyer et al., 2012; Rentfrow & Gosling, 2003; Zweigenhaft, 2008).

The current study

This study is of explorative nature, aiming to provide more knowledge about the complexity of media effects, specifically of music preferences. The current study will examine whether delinquent and aggressive behaviour in youth are predictable by music preference, with personality dimensions of the Big Five as amplifiers of these predictions. Up to today, no study has examined personality as a moderating factor on the relationship between music preference, and delinquent and aggressive behaviour. Based on the notion of Valkenburg and Peter (2013) that dispositional variables can be assigned to different roles, in this study Openness will be assigned as moderator for the effect of Reflective and Complex music, and Intense and Rebellious music. Extraversion, Agreeableness and Conscientiousness will be assigned as moderators for the effect of Upbeat and Conventional music, and Extraversion will be assigned as moderator for the effect of Energetic and Rhythmic music. Agreeableness will not be included because of less consistent evidence that this dimension is in line with Energetic and Rhythmic music (Bonneville-Roussy et al., 2013; Delsing et al., 2008; Fricke & Herzberg, 2017; George et al., 2007; Langmeyer et al., 2012; Rentfrow & Gosling, 2003; Zweigenhaft, 2008). The hypothesizes of this study are formed by mixing the theory behind the DSMM (Valkenburg & Peter, 2013) with empirical evidence (e.g. Delsing et al., 2008; Rentfrow & Gosling, 2003). The following hypotheses are schematically presented in figures 1 to 4:

1. a). A preference for Reflective and Complex music negatively predicts aggressive and delinquent behaviour

   b). Higher scores on Openness strengthen these relationships
2. a). A preference for Intense and Rebellious music predicts aggressive and delinquent behaviour.

   b). Higher scores on Openness strengthen these relationships.
3. a). A preference for Upbeat and Conventional music negatively predicts for aggressive and delinquent behaviour.

   b). Higher scores on Extraversion, Agreeableness, and Conscientiousness strengthen these relationships.
4. a). A preference for Energetic and Rhythmic music predicts aggressive and delinquent behaviour.

   b). Higher scores on Extraversion strengthen these relationships.

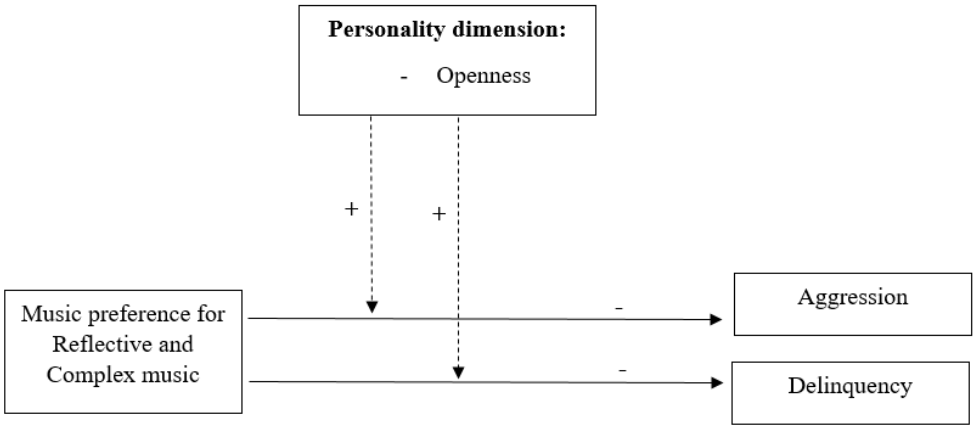

Figure 1. Research Model for Hypothesis 1

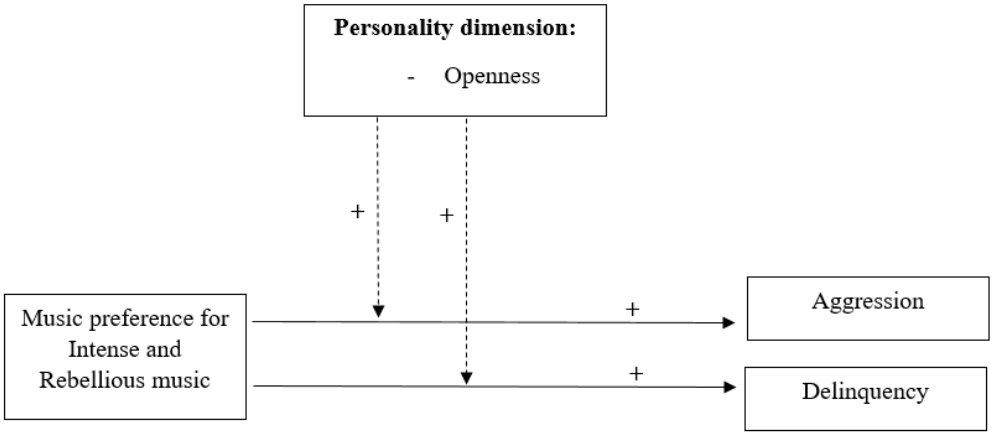

Figure 2. Research Model for Hypothesis 2

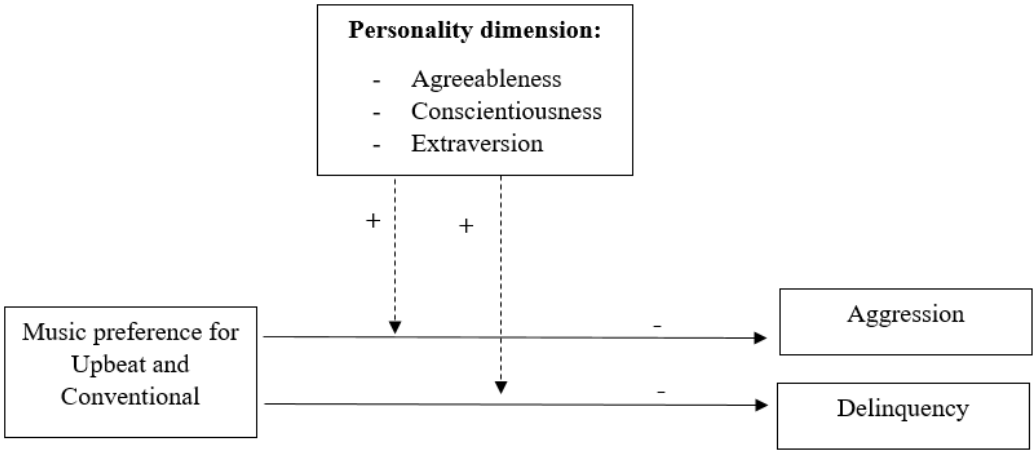

Figure 3. Research Model for Hypothesis 3

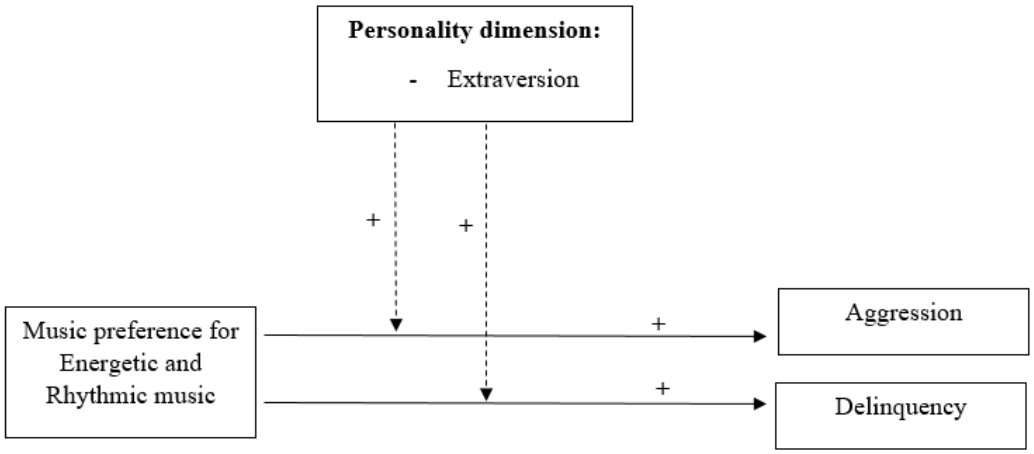

Figure 4. Research Model for Hypothesis 4

Method

Procedure

The data for this cross-sectional study came from the fifth wave of the conflict and management of relationships (CONAMORE) 2001-2006 longitudinal study, in which 12 schools were participating (Meeus et al., 2006). A letter was sent to the students and their parents describing the aims of the study and information about participation. If students wanted to participate, they were required to have a written consent from their parents. In addition, informed consents of the participating schools were also obtained. After school hours the participants completed the questionnaires in their classrooms. Written instructions were included, and verbal instructions were given by the research assistants who were present during the administration of the questionnaires. Students who were absent on the day of administration were not assessed. For completing the questionnaires each participant received €10.

Participants

In total, 1331 Dutch adolescents aged between 14 and 19 years (M = 15.6) participated in the fifth wave of the CONAMORE study. Boys represented 48.5% (N = 645) and girls 51.5% (N = 686) 51.5% of the sample. Of all participants 19.2% (N = 255) were enrolled in vocational education and 80.8% of participants (N = 896) were enrolled in higher education.

Measurements

Music preference. Adolescents' music preferences were measured by a questionnaire that consist of 17 items, in which different music genres were addressed. Adolescents' indicated to what extended they were attracted to each genre based on how 'good' they thought one genre was on a Likert scale ranging from 1 (bad) to 5 (really good), and 6 (I don't know) if the adolescent was not familiar with a genre (ter Bogt, 2000). The various genres were categorized in four music styles. Based on the categorization of Rentfrow and Gosling (2003) it was expected that 10 of the 17 music genres will load on the music styles as following: classical music and jazz would load on Reflective and Complex music, rock, heavy metal, and punk would load on Intense and Rebellious music, chart pop top 40 and Dutch pop would load on Upbeat and Conventional music, and at last that hip-hop and R&B would load on Energetic and Rhythmic music. The other 7 music genres, which were not included in the study of Rentfrow and Gosling (2003), were categorised based on the content of the music genre in comparison with others. It was expected that tearjerkers, gospel, and rai would load

on Reflective and Complex music, gothic would load on Intense and Rebellious music, trance, club house, and gabber house would load on Upbeat and Conventional music, and that reggae will load on Energetic and Rhythmic music.

After the factor analysis the 17 music genres were categorized as follows (see table 1). The music style Reflective and Complex music consisted of the genres classical music, jazz, gospel, rai, and tearjerkers, with Cronbach's α = 0.731. The music style Intense and Rebellious music consisted of the genres rock, heavy metal, punk, and gothic, with Cronbach's α = 0.851 The music style Upbeat and Conventional music consisted of the genres chart pop top 40, Dutch pop music, trance, club house, gabber house with Cronbach's α = 0.662. The music style Energetic and Rhythmic music consisted of the music genres hip-hop, R&B, and reggae, with Cronbach's α = 0.643.

Table 1

Rotated factor solution for music preference categorization. Item content, factor loadings, and Cronbach's alpha for each factor.

Items	*Reflective & Complex*	*Intense & Rebellious*	*Conventional & Upbeat*	*Energetic & Rhythmic*
Classical Music	0.649			
Jazz	0.676			
Gospel	0.694			
Rai	0.718			
Tearjerkers	0.556			
Rock		-0.732		
Heavy Metal		-0.886		
Punk		-0.737		
Gothic		-0.850		
Chart Pop Top 40			0.307	
Dutch Pop Music			0.430	
Trance			0.790	
Club House			0.751	
Gabber House			0.757	
Hip-Hop				0.847
R&B				0.800
Reggae				0.446
Cronbach's α	0.731	0.851	0.662	0.643

***Personality*.** Adolescents' personalities were assessed by a questionnaire that measured the Big Five personality dimensions (Goldberg, 1992). The adolescents indicated for 30 items to what extend the attribute in question fits them on a Likert scale ranging from 1 (not correct al all) to 7 (completely correct). For example: "In the following list you see words about people's characteristics. Indicate now to which extent you own those properties yourself:

irritable". By conducting a factor analysis (see table 2), the items were selected for one of the five dimensions. The Agreeableness dimension consisted of 6 items with Cronbach's α = 0.836. The Extraversions dimension consisted of 5 items with Cronbach's α = 0.820. The Conscientiousness dimensions consisted of 6 items with Cronbach's α = 0.813. The Emotional Stability dimension consisted of 7 items with Cronbach's α = 0.820. The Openness dimension consisted of 6 items with Cronbach's α = 0.739. Based on the hypotheses, four of the five dimensions were included in the analyses, which are: Agreeableness, Extraversion, Conscientiousness, and Openness.

Table 2

Rotated factor solution for the Big Five personality dimensions. Item content, factor loadings, and Cronbach's alpha for each factor.

	Agreeableness	*Extraversion*	*Conscientiousness*	*Emotional Stability*	*Openness*
Item					
Prettig	0.759				
Hulpvaardig	0.704				
Vriendelijk	0.799				
Behulpzaam	0.747				
Aangenaam	0.761				
Sympathiek	0.527				
Terughoudend		0.716			
Stil		0.803			
Gesloten		0.762			
Schuchter		.0396			
Teruggetrokken		0.723			
Spraakzaam		-0.654			
Slordig			0.818		
Zorgvuldig			-0.727		
Ordelijk			-0.799		
Nauwkeurig			-0.770		
Netjes			-0.860		
Systematisch			-0.475		
Prikkelbaar				-0.594	
Zenuwachtig				-0.655	
Snel geraakt				-0.728	
Ongerust				-0.792	
Angstig				-0.672	
Nerveus				-0.693	
Fantasierijk					-0.704
Onderzoekend					-0.425
Veelzijdig					-0.448
Vernieuwend					-0.441
Artistiek					-0.820
Creatief					-0.755
Cronbach's α	0.836	0.820	0.813	0.820	0.739

***Delinquency and aggression*.** Adolescents' delinquent and aggressive behaviour was measured by the questionnaire by Baerveldt, van Rossem, and Vermande (2003). Their original scale consisted of 16 items. In the current study these items have been divided over two factors: delinquency and aggression. For making the subscales, the items were checked on their content and a factor analysis was performed (see table 3). Three items loaded on aggression, but one was excluded for a higher reliability. Two items concerned substance use and were excluded because they had a factor loading lower than 0.35 on both factors. Thus, delinquent behaviour is measured by 11 items that indicate how often they have participated in the delinquent behaviour in question in the last 12 months on a Likert scale ranging from 1 (never) to 4 (four or more times). For example: "Have you in de the past 12 months done any of the following things: Stolen a bike". Cronbach's α = 0.839. Moreover, aggressive behaviour was measured by 2 items that indicated how often they have participated the aggressive behaviour (i.e. fought or hit others) in the last 12 months on a Likert scale ranging from 1(never) to 4 (four or more times) with Cronbach's α = 0.710.

Table 3
Rotated factor solution for delinquency and aggression. Item content, factor loadings, and Cronbach's alpha for each factor.

Items	*Delinquency*	*Aggression*
Door de politie opgepakt omdat je iets had gedaan	-0.493	
Een fiets gestolen	-0.582	
Iets gekocht of verkocht waarvan je eigenlijk wel wist of het idee had dat het gestolen was	-0.539	
Ergens in een gebouw, huis, of winkel ingebroken	-0.756	
Een brommer of scooter gestolen	-0.822	
Met stiften of een spuitbus dingen bewerkt	-0.588	
Iets in een bus, tram, metro of trein moedwillig beschadigd of kapot gemaakt	-0.543	
Een wapen (bijv. een mes) op zak gehad[a]		0.581
Iets op straat moedwillig beschadigd of kapot gemaakt	-0.435	
Een brandje aangestoken, bv. In de kleder, fietsenhok of op straat	-0.359	
Iets uit een winkel gestolen	-0.546	
Iets gestolen uit iemand z'n jaszak of tas	0.588	
Betrokken geweest bij een gevecht		0.762
Met opzet iemand op straat, in de kroeg of op school geslagen of geschopt		0.730
Marihuana of hasj gebruikt[b]	-0.210	0.313
Andere drugs gebruikt[b]	-0.191	0.222
Cronbach's α	0.839	0.710

Note. [a] = excluded from scale for higher reliability, [b] = excluded from scale because factor loading < .35

Data analysis

The data analysis is conducted with SPSS. First, to determine whether there were gender differences, an independent t-tests was conducted to compare boys and girls for delinquent and aggressive behaviour. A one-way ANOVA was conducted for whether there were educational differences in vocational and higher education for delinquent and aggressive behaviour. When group differences emerged, the variables were included as covariates in the model analyses. Second, Pearson correlations have been executed to analyse the coherence between music preferences, personality, education, and gender. Third, for analysing the prediction of delinquent and aggressive behaviour based on music preference a hierarchical regression is conducted for each musical preference. In the first model of the hierarchical regression the music preference is included. In the second model covariates, gender and educational, were controlled for if necessary. In the third model the interaction variable for music preference and personality is added.

Results

First, participants who had not reported on all the items of at least 1 of the research variables were excluded from the analyses (N = 74), so the research sample consists of 1257 adolescents. Second, it is important to note that the current data was not normally distributed for delinquent and aggressive behaviour. Therefore, the analyses are conducted by the bias-corrected and accelerated bootstrap method advised by Field (2013). Furthermore, outliers were only to be excluded from the analysis if they were influential cases. None of the cases in the data had a higher Cook's Distance than 1, therefore all 1257 cases were included in the analyses.

Descriptive statistics

Demographic variables. In table 4 the descriptive statistics of the analyzed sample are displayed. The sample consisted of 1257 Dutch adolescents in high school who were at the time 14-19 years old (M = 15.57, SD = 1.95), of whom 603 were boys (48%) and 654 were girls (52%). Of the total sample 24.9% (N = 313) were enrolled in vocational education and 75.1% (N = 944) were enrolled in higher education. Furthermore, table 5 portrays the scale means for all participants. It shows that on average the participants had a small preference for Reflective and Complex music (M = 2.09, SD = 0.73) and Intense and Rebellious music (M = 2.11, SD = 1.00), somewhat more for Upbeat and Conventional music (M = 2.74, SD = 0.78*)*, and preferred Energetic and Rhythmic music (M = 3.24, SD = 0.79) the most. Moreover, the participants showed low delinquent (M = 1.12, SD 0.29) and aggressive behaviour (M = 1.26, SD = 0.60). The participants reported on average that the characteristics of the personality dimensions Conscientiousness (M = 4.18, SD = 1.18), Openness (M = 4.62, SD = 1.00), and Extraversion (M = 4.87, SD = 1.11) were a little fitting to themselves. Regarding Agreeableness (M = 5.3, SD = 0.87), the overall sample reported that those characteristics were somewhat more fitting to themselves.

Gender differences for delinquent and aggressive behaviour. Boys (M = 1.19, SD = 0.37) reported significantly more delinquent behaviour, than girls (M = 1.06, SD = 0.37), $t(1255) = 8.54$, $p = 0.001$. The same was true for aggressive behaviour: boys (M =1.42, SD = 0.74) reported significantly more aggressive behaviour, $t(1255) = 9.25$, $p = 0.001$, than girls (M = 1.12, SD = 0.37). Thus, gender was included as a covariate in the main analyses.

Differences in education for delinquent and aggressive behaviour. There was no significant effect of education on delinquent behaviour, $F(7, 1249) = 1.752$, $p = 0.093$. On the

other hand, there was a significant effect of education on aggressive behaviour, $F(7, 1249) = 3.487$, $p = 0.001$. Adolescents enrolled in vocational education reported more aggressive behaviour, than those enrolled in higher education. Therefore, education was only included as covariate in the main analysis for aggressive behaviour.

Table 4
Descriptive statistics of demographic variables (N=1.257)

Variables	N (%)
Gender	
Boy	603 (48)
Girl	654 (52)
Age	
14-15 years	890 (70.8)
16-19 years	367 (29.2)
Education	
High school for lower level tertiary or lower level jobs	313 (24.9)
High school for higher education	944 (75.1)

Table 5
Descriptive statistics of music preference, delinquent behaviour, aggressive behaviour, and personality (N=1.257)

Variable	Mean	Standard Deviation
Music preference		
Reflective and Complex	2.09	0.73
Intense and Rebellious	2.11	1.00
Upbeat and Conventional	2.74	0.78
Energetic and Rhythmic	3.24	0.97
Delinquent behaviour	1.12	0.29
Aggressive behaviour	1.26	0.60
Personality		
Agreeableness	5.31	0.87
Conscientiousness	4.18	1.18
Openness	4.62	1.00
Extraversion	4.87	1.11

Correlations

Delinquent behaviour was negatively correlated with Reflective and Complex music, $r = -.083$, $p < .001$, and positively with Intense and Rebellious music, $r = .065$, $p = .021$. Aggressive behaviour was negatively correlated with Reflective and Complex music, $r = -$

.100, $p < .001$, and positively with Energetic and Rhythmic music, $r = .109$, $p < .001$. These results are in line with hypotheses 1a, 2a, and 4a. Table 6 further shows the correlations between music preference and personality dimension. Reflective and Complex music correlated positively with Openness, $r = .144$, $p < .001$, which is in line with hypothesis 1, Agreeableness, $r = .078$, $p < .001$, Conscientiousness, $r = .101$, $p < .001$, and negatively with Extraversion, $r = -.057$, $p < .05$. Intense and Rebellious music correlated positively with Openness, $r = .168$, $p < .001$, which is in line with hypothesis 2, and negatively with Conscientiousness, $r = -.165$, $p < .001$, and Extraversion, $r = -.100$, $p < .001$. Upbeat and Conventional music correlated positively with Agreeableness, $r = 0.77$, $p < .001$, and Extraversion, which is in line with hypothesis 3. However, Upbeat and Conventional music did not significantly correlate with Openness, which is not in line with hypothesis 3. Finally, Energetic and Rhythmic music was positively correlated with Extraversion, $r = .064$, $p < .05$, which is in line with hypothesis 4, and Agreeableness, $r = .096$, $p < .001$.

Table 6

Pearson correlations between music preferences, personality, education, and gender (N = 1257)

Variable	1	2	3	4	5	6	7	8	9	10	11
1. R&C	-										
2. I&R	.259**	-									
3. U&C	.270**	.106**	-								
4. E&R	.301**	-.073**	.212**	-							
5. Delinquent Behaviour	-.083**	.065*	.035	.038	-						
6. Aggressive behaviour	-.100**	-.006	.040	.109**	.622**	-					
7. Agreeableness	.078**	.001	.077**	.096**	-.176**	-.145**	-				
8. Conscientiousness	.101**	-.165**	.028	.037	-.148**	-.143**	.321**	-			
9. Openness	.144**	.168**	.036	.050	-.058*	-.070*	.576**	.229**	-		
10. Extraversion	-.057*	-.100**	.083**	.064*	.019	.059*	.142**	-.091**	.004	-	
11. Education	.084**	.089**	.139**	-.026	-.056*	-.064**	.337**	.097**	-.038	.291**	-
12. Gender	.176**	0.26	.000	.116**	-.234**	-.253**	.168**	.145**	.083**	.008	.016

Note. * p <0.05, ** p < 0.01. R&C = Reflective and Complex, I&R = Intense and Rebellious, U&C = Upbeat and Conventional, E&R = Energetic and Rhythmic. Gender: 1 = boy 2, 2 = girl.

Model analyses

Reflective and Complex music. In table 7 and 8 a summary of the hierarchal regression of research model 1 is portrayed. In model 1, Reflective and Complex music negatively predicted delinquent behaviour (β = -.083, p = .008), explaining 0.7% of the variance (R^2 = *.007*, F(1,1256) = 8.640, p = .003), as well as aggressive behaviour (β = -.100, p = .005), explaining 1% of the variance in aggressive behaviour (R^2 = .010, F(1, 1256) = 12.596, p < .001). When covariates in model 2 are added, the significant prediction of Reflective and Complex music for delinquent (β = -.043, p = .124) and aggressive behaviour (β = -.0572, p = .112) disappears. The model now explained 5.7% of the variance in delinquent behaviour (R^2 = .057, F(2, 1255) = 37.721, p < .001), and 7% in aggressive behaviour (R^2 = .007, F(3, 1254) = 10.363, p < .001). These changes were significant for both behaviours. Gender was a significant covariate for delinquent (β = -.227, p < .001) and aggressive behaviour (β =-.242, p = .001). In contrast, education was not a significant covariate for aggression (β = -.055, p = .077). These effects remain in model 3. Furthermore, in model 3, no significant interaction-effect was found for Reflective and Complex music and Openness, suggesting that Openness did not influence the prediction of Reflective and Complex music for delinquent (β = -.024, p = .464) and aggressive behaviour (β = .001, p = .973). Moreover, the variance change was non-significant. Thus, according to the findings the best fitting model for predicting delinquent and aggressive behaviour would be model 2. These findings contradict hypothesis 1.

Table 7

Summary of hierarchical regression analysis for Reflective and Complex music predicting delinquent behaviour (research model 1) (N = 1257), with 95% corrected and accelerated confidence interval. Confidence intervals and standard errors based on 1000 bootstrap samples.

Variable	*B*	*SE B*	*β*	*p*	R^2	ΔR^2
Model 1					.007*	.007*
R&C	-0.03 (-0.60, -0.01)	0.01	-.08	.008		
Model 2					.057**	.050**
R&C	-0.02 (-0.04, 0.01)	0.01	-.04	.124		
Gender	-0.13 (-0.17, -0.10)	0.01	-.23	.000		
Model 3					.057**	.001
R&C	-0.02 (-0.04, 0.10)	0.01	-.04	.151		
Gender	-0.13 (-0.17, -0.10)	0.01	-.23	.001		
Education[1]	-	-	-	-		
R&C * Openness	-0.01 (-0.03, 0.02)	0.01	-.02	.464		

Note. * p < 0.05, ** p < 0.01. R&C = Reflective and Complex music.

Table 8

Summary of hierarchical regression analysis for Reflective and Complex music predicting aggressive behaviour (research model 1) (N = 1257), with 95% corrected and accelerated confidence interval. Confidence intervals and standard errors based on 1000 bootstrap samples.

Variable	*B*	*SE B*	*β*	*P*	R^2	ΔR^2
Model 1					.010**	.010**
R&C	-0.08 (-0.13, -0.03)	0.03	-.10	.005	.	
Model 2					.070**	.060**
R&C	-0.04 (-0.09, 0.01)	0.09	-.05	.112		
Gender	-0.29 (-0.35, -0.23)	0.03	-.24	.001		
Education[1]	-0.02 (-.03, 0.00)	0.01	-.06	.077		
Model 3					.070**	.000
R&C	-0.04 (-0.09, 0.01)	0.03	-.05	.112		
Gender	-0.29 (-0.35, -0.23)	0.03	-.24	.001		
Education[1]	-0.02 (-0.04, 0.00)	0.10	-.06	.073		
R&C * Openness	0.00 (-.06, 0.06)	0.03	.00	.973		

Note. * $p < 0.05$, ** $p < 0.01$. R&C = Reflective and Complex music.

Intense and rebellious music. In table 9 and 10 the results of the hierarchal regression of research model 2 are shown. In model 1 the results show that Intense and Rebellious music did not significantly predict delinquent behaviour ($\beta = .065$, $p = .106$) or aggressive behaviour ($\beta = -.006$, $p = .853$). In model 2 it is shown that gender was a significant covariate for delinquent ($\beta = -.236$, $p = .001$) and aggressive behaviour ($\beta = -.252$, $p = .001$). Model two explained 5.9% of the variance in delinquent behaviour ($R^{2\,=}$ .059, $F(2, 1255) = 40.024$, $p <$ .001), and 6.7% of the variance in aggressive behaviour ($R^2 = .067$, $F(3, 1254) = 30.169$, $p <$ .001). These changes in variances in comparison to model 1 were significant. Furthermore, education was a significant covariate for aggressive behaviour ($\beta = .065$, $p = .049$). In model 3 only the effects for gender remained when the interaction variable Intense and Rebellious music * Openness was added. The interaction did not show a significant interaction effect for delinquent ($\beta = .006$, $p = .875$) or aggressive behaviour ($\beta = .008$, $p = .836$). This suggest that the personality dimension Openness did not influence the relationship between Intense and Rebellious music and delinquent or aggressive behaviour. Thereby, model 3 did not significantly change the variance in both behaviours. The results indicated that model 2 was the best model for predicting both behaviours. These findings contradict hypothesis 2.

Table 9

Summary of hierarchical regression analysis for Intense and Rebellious music predicting delinquent behaviour (research model 2) (N = 1257), with 95% corrected and accelerated confidence interval. Confidence intervals and standard errors based on 1000 bootstrap samples.

Variable	*B*	*SE B*	*β*	*p*	R^2	ΔR^2
Model 1					.004*	.004*
I&R	0.025	0.01	.07	.106		
	(-0.00, 0.04)					
Model 2					.059**	.056**
I&R	0.02	0.01	.07	.071		
	(0.00, 0.05)					
Gender	-0.14	0.02	-.24	.001		
	(-0.17, -0.11)					
Model 3					.058**	.000
I&R	.02	.01	.07	.075		
	(0.00, 0.04)					
Gender	-0.14	0.02	-.24	.001		
	(-0.17, -0.10)					
Education[1]	-	-	-	-		
I&R * Openness	.00	0.01	.00	.875		
	(-0.02, 0.02)					

Note. * $p < 0.05$, ** $p < 0.01$. I&R = Intense and Rebellious music.

Table 10

Summary of hierarchical regression analysis for Intense and Rebellious music predicting aggressive behaviour (Model 2) (N = 1257), with 95% corrected and accelerated confidence interval. Confidence intervals and standard errors based on 1000 bootstrap samples.

Variable	*B*	*SE B*	*β*	*p*	R^2	ΔR^2
Model 1					.000	.000
I&R	-0.00	0.02	-.01	.852		
	(-0.04, 0.04)					
					.067**	.067
Model 2						
I&R	0.00	0.02	.01	.862		
	(-0.03, 0.04)					
Gender	-0.30	0.03	-.25	.001		
	(-0.37, -0.23)					
Education[1]	-0.02	0.10	-.06	.049		
	(-0.04, 0.00)					
					.067**	.000
Model 3						
I&R	0.00	0.02	.01	.844		
	(-0.03, 0.04)					
Gender	-0.30	0.03	-.25	.001		
	(-0.37, -0.23)					
Education[1]	-0.02	0.01	-.06	.055		
	(-0.04, 0.00)					
I&R * Openness	-0.00	0.02	-.00	.836		
	(-0.05, 0.04)					

Note. * $p < 0.05$, ** $p < 0.01$. I&R = Intense and Rebellious music.

Upbeat and Conventional music. Tables 11 and 12 portray the results of the hierarchal regression of research model 3. In model 1 the findings showed that Upbeat and Conventional music did not significantly predict delinquent behaviour or ($\beta = .035$, $p = .360$) or aggressive behaviour ($\beta = .040$, $p = .161$). In model 2 gender showed to be a significant

covariate for delinquent behaviour (β = -.234, p = .001), explaining 5.6% of the variance (R^2 = .056, F(3, 1254) = 37.336, p < .001), and for aggressive behaviour (β = -.251 p = .001). Also in model 2 for aggressive behaviour education showed to have be a significant covariate (β = -.067, p = .037), explaining 7% of the variance (R^2 = .007, F(3, 1254) = 31.283, p < .001). All the non-significant and significant effects in model 1 and 2 remained in model 3 when the interaction variables were included. Upbeat and Conventional music * Agreeableness did not show a significant effect for delinquent (β = .022, p = .638) or aggressive (β = .031, p = .361) behaviour. Neither did the interaction with Conscientiousness or Extraversion for delinquent (β = -.019, p = .584; β = .003, p = .877) or aggressive behaviour (β = -.013, p = .721; β = .010, p = .709). This indicates that the personality dimensions Agreeableness, Conscientiousness, and Extraversion do not moderate the relation between Upbeat and Conventional music and delinquent or aggressive behaviour. The variance in both behaviours did not change significantly in model 3. For predicting both behaviours model 2 showed to be the best model. Therefore, hypothesis 3 is contradicted by these findings.

Table 11

Summary of hierarchical regression analysis for Upbeat and Conventional music predicting delinquent behaviour (research model 3) (N = 1257), with 95% corrected and accelerated confidence interval. Confidence intervals and standard errors based on 1000 bootstrap samples.

Variable	*B*	*SE B*	*β*	*p*	R^2	ΔR^2
Model 1					.001	.001
U&C	0.01 (-0.01, 0.04)	0.01	.04	.360		
Model 2						
U&C	0.01 (-0.02, 0.04)	0.01	.04	.348	.056**	.055**
Gender	-0.14 (-0.17, -0.11)	.02	-.23	.001		
Model 3					.057**	.001
U&C	0.01 (-0.01, 0.04)	0.01	.04	.344		
Gender	-0.14 (-0.17, -0.10)	.02	-.23	.001		
Education[1]	-	-	-	-		
U&C * Agreeableness	0.01 (-0.03, 0.05)	0.02	.02	.638		
U&C * Conscientiousness	-0.01 (-0.03, 0.01)	0.01	-.02	.584		
U&C * Extraversion	0.00 (-0.01, 0.020)	0.01	.00	.877		

Note. * p < 0.05, ** p < 0.01. U&C = Upbeat and Conventional music.

Table 12

Summary of hierarchical regression analysis for Upbeat and Conventional music predicting aggressive behaviour (research model 3) (N = 1257), with 95% corrected and accelerated confidence interval. Confidence intervals and standard errors based on 1000 bootstrap

Variable	*B*	*SE B*	*β*	*p*	R^2	ΔR^2
Model 1					.002	.002
U&C	0.03 (-0.02, 0.09)	0.03	.04	.251		
Model 2					.070**	.068**
U&C	0.03 (-0.01, 0.09)	0.03	.05	.141		
Gender	-0.30 (-0.37, -0.24)	0.03	-.25	.001		
Education	-0.02 (-0.04, 0.00)	0.10	-.07	.037		
Model 3					.071**	.001
U&C	0.04 (-0.01, 0.09)	0.03	0.5	.133		
Gender	-0.30 (-0.37, -0.24)	0.3	-.25	.001		
Education[1]	-0.02 (-0.04, 0.00)	0.01	-.06	.037		
U&C * Agreeableness	0.03 (-0.03, 0.08)	0.03	.03	.361		
U&C * Conscientiousness	-0.01 (-0.05, 0.04)	0.02	-.01	.721		
U&C * Extraversion	0.01 (-0.03, 0.04)	0.02	.01	.709		

Note. * $p < 0.05$, ** $p < 0.01$. U&C = Upbeat and Conventional music.

Energetic and rhythmic music. Table 13 and 14 present the findings of the hierarchal regression for research model 4. In model 1, Energetic and Rhythmic music did not significantly predict delinquent behaviour ($\beta = .038$, $p = .310$), but did significantly predict aggressive behaviour ($\beta = -.100$, $p = .005$), explaining 1.2% of the variance ($R^2 = .012$, $F(1, 1256) = 15.037$, $p = .001$). The significance for aggressive behaviour remained in model 2 (β = .138, $p = .001$), and in model 3 ($\beta = .138$, $p = .001$). In model 2 gender showed to be a significant covariate for delinquent ($\beta = -.242$, $p = .001$) explaining 5.9% of the variance ($R^2 = .059$, $F(2, 1255) = 39.548$, $p < .001$, and for aggressive behaviour ($\beta = -.268$, $p = .001$). Education on the other hand was not have a significant covariate for aggressive behaviour ($\beta = -.056$, $p = .079$). Model 2 changed the variance in aggressive behaviour significantly with 7.4%, $F(3, 1254) = 39.420$, $p < .001$. In model 3, the interaction variable Energetic and Rhythmic music * Extraversion was included, and was not significant for neither delinquent ($\beta = -.013$, $p = .614$), nor aggressive behaviour ($\beta = -.020$, $p = .466$), indicating that Extraversion does not moderate the relationship of Energetic and Rhythmic music and

delinquent or aggressive behaviour. Model 3 did not significantly change the variance in both behaviours. Model 2 showed to be the best model for predicting both behaviours. These results are partly in line with hypothesis 4a and contradict hypothesis 4b.

Table 13

Summary of hierarchical regression analysis for Energetic and Rhythmic music predicting delinquent behaviour (research model 4) (N = 1257), with 95% corrected and accelerated confidence interval. Confidence intervals and standard errors based on 1000 bootstrap samples.

Variable	*B*	*SE B*	*β*	*p*	R^2	ΔR^2
Model 1					.001	.001
E&R	0.01 (-0.01, 0.03)	0.01	.04	.310		
Model 2					.059**	.058**
E&R	0.02 (-0.00, 0.04)	0.01	.07	.086		
Gender	-0.14 (-0.18, -0.10)	0.02	-.24	.001		
Model 3					.059**	.000
I&R	0.02 (-0.00, 0.04)	0.01	.07	.087		
Gender	-0.14 (-0.18, -0.10)	0.02	-.24	.001		
Education[1]	-	-	-	-		
E&R * Extraversion	-0.00 (-0.01, 0.01)	0.01	-.01	.614		

Note. * $p < 0.05$, ** $p < 0.01$. E&R = Energetic and Rhythmic music

Table 14

Summary of hierarchical regression analysis for Energetic and Rhythmic music predicting aggressive behaviour (research model 4) (N = 1257), with 95% corrected and accelerated confidence interval. Confidence intervals and standard errors based on 1000 bootstrap samples

Variable	*B*	*SE B*	*β*	*p*	R^2	ΔR^2
Model 1					.012**	.012**
E&R	0.07 (0.03, 0.10)	0.02	.11	.001		
Model 2					.086**	0.74**
E&R	.09 (0.05, 0.12)	0.02	.14	.001		
Gender	-0.32 (-0.39, -0.25)	0.03	-.27			
Education[1]	-0.02 (-0.04, 0.00)	0.01	-.06	.073		
Model 3					.087**	000
E&R	0.09 (0.05, 0.12)	0.02	.14	.001		
Gender	-0.32 (-0.39, -0.25)	0.03	-.27	.001		
Education[1]	-0.02 (-0.04, 0.00)	0.01	-.06	.081		
E&R * Extraversion	-0.01 (-0.04, 0.01)	0.02	-.02	.466		

Note. * $p < 0.05$, ** $p < 0.01$. E&R = Energetic and Rhythmic music

Exploration: genres and externalizing behaviour

An extra explorative regression was conducted since 1 out of 4 music categories predicted aggressive or delinquent behaviour. With this exploration it was determined whether the musical genres themselves can predict one or both externalizing behaviours. In table 8 the findings are presented; all genres were included in one model. The 17 different genres explained 33.2% of the variance for delinquent behaviour (R^2 = 0.332, F (17, 1239) = 9.020, p < .001), and 34.6% of the variance for delinquent behaviour (R^2 = 0.346, F (17, 1239) = 9.903, p < .001). Out of the 17 different genres 7 tended to significantly (negatively) predict delinquent behaviour, namely: punk (β = .10, p = .026), chart pop top 40 (β = -.21, p = .001), hip-hop (β = .11, p = .010), club house mellow (β = .20, p = .044), gabber house (β = .07, p = .003), reggae (β = .07, p = .036), and rai (β = -.10, p = .007). Also 7 out of the 17 different genres significantly (negatively) predict aggressive behaviour, namely: rock (β = -.08, p = .032), Chart pop top 40 (β =.-.16, p = .001), hip-hop (β =.16, p = .001), trance (β = .07, p = .029) gabber house (β = .12, p = .007), jazz (β = -.08, p = .026), and tearjerkers (β = .10, p = .030) did not. Three genres overlapped predicting both behaviours, those being: chart pop top 40, hip-hop and gabber house.

Table 15

Summary of hierarchical regression analysis for all genres predicting delinquent and aggressive behaviour (N = 1257), with 95% corrected and accelerated confidence interval. Confidence intervals and standard errors based on 1000 bootstrap samples.

	Delinquent behaviour					Aggressive behaviour				
Variable	*B*	*SE B*	*β*	*p*	*R2*	*B*	*SE B*	*β*	*p*	*R2*
Model 1					.332**					.346**
Rock	-0.03 (-0.07, 0.00)	0.01	-.04	.179		-0.03 (-.07, 0.00)	0.01	-.08	.032	
Heavy Metal	0.02 (-0.02, 0.06)	0.01	-.02	.633		.02 (-0.01, 0.06)	0.01	0.05	.211	
Gothic	0.01 (-0.05, 0.03)	0.01	.04	.303		-0.01 (-0.05, 0.030	0.02	-0.02	.662	
Punk	0.02 (0.00, 0.05)	0.01	.10	.026		0.02 (0.0, 0.07)	0.02	.05	.306	
Chart Pop Top 40	-0.05 (-0.08, -0.03)	0.01	-.21	.001		-0.09 (-0.13, -0.05)	0.02	-.16	.001	
Dutch Pop Music	0.00 (-0.01, 0.02)	0.01	.00	.978		-0.03 (-0.07, 0.01)	0.02	-.06	.088	
Hip Hop	0.03 (0.01, 04.)	0.01	.11	.010		0.07 (0.04, 0.11)	0.02	.16	.001	
R&B	-0.01 (-0.03, 0.01)	0.01	-.04	.440		0.01 (-0.02, 0.04)	0.02	.02	.662	
Trance	0.01 (0.00, 0.03)	0.01	.07	.069		0.03 (0.01, 0.06)	0.02	.07	.029	
Club House Mellow	0.01 (-0.01, 0.03)	0.01	.02	.044		-0.01 (-0.05, 0.04)	0.02	-.02	.667	
Gabber House	0.02 (0.00, 0.04)	0.01	.07	.003		0.06 (0.01, 0.10)	0.02	.12	.007	
Classic Music	-.03 (-0.05, -0.01)	0.01	-.12	.884		-0.04 (-0.08, -0.01)	0.02	-.08	.018	
Jazz	0.00 (-0.02, 0.02)	0.01	-.01	.884		-0.04 (-0.07, 0.00)	0.02	-.08	.026	
Reggae	0.02 (0.00, 0.03)	0.01	.07	.036		0.03 (0.00, 0.06)	0.02	.06	.066	
Gospel	-0.01 (-0.03, 0.01)	0.01	-.03	.313		-0.01 (-0.05, 0.01)	0.02	-.03	.339	
Rai	-.03 (-0.05, -0.01)	0.01	-.10	.007		-0.04 (-0.08, 0.02)	0.02	-.06	.136	
Tearjerkers	0.02 (-0.01, 0.05)	0.01	.06	.260		0.06 (0.01, 0.10)	0.02	0.10	.030	

Note. ** p < 0.01.

Discussion

The current study examined whether musical preference in adolescence can predict delinquent or aggressive behaviour, and whether certain personality traits can influence this prediction. The research models were based on a proposition of the differential susceptibly to media effects model (DSMM; Valkenburg & Peter, 2013) with hypothesizes formed by mixing the theory behind the DSMM with empirical evidence. The prediction of four music styles (i.e. Reflective and Complex music, Intense and Rebellious music, Upbeat and Convention music, and Energetic and Rhythmic music) were analysed with a hierarchical regression with three models. The first model included music preference, in the second model gender was added as covariate for both delinquent and aggressive behaviour and education was only added as covariate for aggressive behaviour, and in the third model the interaction effect between personality and music preference was added. For each music preference the findings of this study showed that model 2 (music preference and covariate(s)) was the best for predicting delinquent and aggressive behaviour. The results showed that 3 out of 4 of our clustered music preferences did not predict aggressive or delinquent behaviour, after controlling for covariates gender and education. However, before controlling for covariates Reflective and Complex music did negatively predict delinquent and aggressive behaviour. This is partly in line with hypothesis 1, while the effect diminished after controlling for gender and education. Even though, for future research it is interesting to research whether some music genres or styles can act as protective factors. Moreover, the results showed that a preference for Energetic and Rhythmic music, after controlling for covariates, significantly predict aggressive behaviour. Thus, for this sample, those with a preference for Energetic and Rhythmic music, significantly reported more aggressive behaviour than others. This outcome is in line with hypothesis 3a. The study contradicts hypothesis 2a and 3a, Intense and Rebellious music, and Upbeat and Conventional music did not significantly predict delinquent or aggressive behaviour in this sample. These findings partly contradict outcomes of other studies, which did find Intense and Rebellious music to be a significant predictor (Franken et al., 2017; Mulder et al., 2006; Selfhout et al., 2008; ter Bogt et al., 2013). For a little exploration on the non-significant predications a hierarchical regression, containing all the different music genres in one model, was conducted. The findings showed that each behaviour was significantly predicted by seven music genres, of which three the same, being: chart pop top, hip-hop, and gabber house. New questions arise: may it be that only specific genres can (negatively) predict externalizing behaviour? And, do different music genres predict different kinds of, as well externalizing as internalizing, behaviour?

Furthermore, the findings of this study indicated that personality did not amplify the prediction of music preferences. Adding the interaction factor in the third model did not significantly change the explained variance in delinquent or aggressive behaviour, and the interaction factor personality * music preference had no significant effect on all predictions. The findings contradict all hypothesis covering the moderating effect of personality, and is not in line with the disposition-content congruency hypothesis; stating that media that are in line with one's disposition (e.g. personality) are more likely to influence one. Even though significant correlations between music preferences and the expected personality in line were present, except for Upbeat & Conventional music and Conscientiousness, it seems like the connection between music preference and personality is not strong enough to act as a moderator. A review study by Schäfer & Melhorn (2017) showed that most studies found small effects for the prediction of personality on music preference. Altogether this is contradicting to one of the four dispositions of the DSMM, stating that dispositional factors can act as either predictor or moderator. While in studies on other media-effects, for example violent media, found that personality traits, such as temperament, have a moderating effect on how violent media affects the consumers thinking and behaviour (Krcmar, 2009; Schultz, Izard, Ackerman, & Youngstrom, 2001), it may be that the mechanism of the effects music preference work differently. Schäfer & Melhorn (2017) propose a functional approach, individuals listen to music in specific situations, rather than an interaction approach, like the uses gratification of theory, stating that people seek out for media that can fulfill their personal needs. Future research is needed to research these two different approaches more deeply to understand the prediction of music preferences and its effects.

Limitations

Despite the big data set, the data for delinquent and aggressive behaviour was (right) skewed, meaning that the data was not equally distributed. On average the sample reported that they had little to never shown delinquent and aggressive behaviour. Even though there was controlled for by bootstrapping, having a normally disturbed data would increase the reliability of the results. It may be that this skewness is a consequence of socially desirable answers, while the survey was a self-report. Another explanation for the skewness may be that the current study was overrepresented by 14 and 15-year olds. According to Moffit (1993) anti-social behaviour like delinquency and aggressiveness peaks at 17 years. So, because the adolescents of this sample are relatively younger in relation to older adolescents they do show less externalizing behaviour (Moffit, 1993). A methodological limitation is the low reliability

of the scale for measuring the music preferences Conventional and Upbeat (Cronbach's α = 0.662), and Energetic and Rhythmic (Cronbach's α = 0.643). These low reliabilities may be caused by the different ways people talk and think about music styles and genres (Schäfer & Melhorn, 2017). Furthermore, the current study is of cross-sectional nature. For predicting externalizing behaviour by music preferences a longitudinal study would be preferable, because then change in music preference and behaviour can be researched, and longitudinal studies would be one step closer to uncovering whether there is a causal relation between music preference and externalizing behaviour.

Conclusion and implication

As the currents results show the mechanism of media-effect is complex. Especially since few to none studies have researched other factors that could play a role in the effects of music preference. The current study aimed for getting a clearer view on the effect of music preference on externalizing behaviour in adolescence. Rather than getting clear answers, new questions have arisen to be explored. It is important to note that current study was not flawless, and the some of the results contradict other findings. Anyhow, more knowledge needs to be gained to fully understand the way media-effects work. Nowadays media in all forms plays a bigger role than it ever has before. Therefore, it is important to learn about the effects media can have to withstand any negative effects with effective policies.

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