

Music Taste Groups and Problem Behavior

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Abstract Internalizing and externalizing problems differ by musical tastes. A high school-based sample of 4159 adolescents, representative of Dutch youth aged 12 to 16, reported on their personal and social characteristics, music preferences and social-psychological functioning, measured with the Youth Self-Report (YSR). Cluster analysis on their music preferences revealed six taste groups: *Middle-of-the-road (MOR)* listeners, *Urban* fans, *Exclusive Rock* fans, *Rock-Pop* fans, *Elitists*, and *Omnivores*. A seventh group of

musically *Low-Involved* youth was added. Multivariate analyses revealed that when gender, age, parenting, school, and peer variables were controlled, *Omnivores* and fans within the *Exclusive Rock* groups showed relatively high scores on internalizing YSR measures, and social, thought and attention problems. *Omnivores*, *Exclusive Rock*, *Rock-Pop* and *Urban* fans reported more externalizing problem behavior. Belonging to the *MOR* group that highly appreciates the most popular, chart-based pop music appears to buffer problem behavior. Music taste group membership uniquely explains variance in both internalizing and externalizing problem behavior.

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Keywords Music preferences · Taste groups · Adolescents · Internalizing problems · Externalizing problems

Introduction

Pop music is an important medium for young people and music plays a central, often binding role in youth cultures (Zillmann and Gan, 1997; Ter Bogt, 1997). Though pop music is highly valued by most adolescents (North *et al.*, 2000), some adult observers consider particular genres of music potentially dangerous to young people, as the music and its performers are perceived as glorifying and propagating adolescent substance use, transgressive behavior or even delinquency (Christenson and Roberts, 1998). Certain genres, for example, heavy metal and rap/hip-hop, have a particularly negative image, especially in the media (Binder, 1993; Fried, 2003). This has led researchers to compare youngsters liking ‘deviant’ music types with youngsters liking ‘mainstream,’ i.e., socially acceptable types of music, on several assessments of emotional and/or behavioral problems

(Arnett, 1991, 1996; Lacourse *et al.*, 2001; Martin *et al.*, 1993; Miranda and Claes, 2004; Roe, 1995; Scheel and Westefeld, 1999). In this article we make finer distinctions between adolescent music taste groups and reach beyond the simple dichotomy of ‘mainstream’ versus ‘deviant’ music preferences. We have examined to what degree seven distinct taste groups differ with regards to adolescent emotional and behavioral problems.

Achenbach (1991) has conceptualized adolescent emotional and behavioral problems as internalizing and externalizing problem behavior. These two forms of problem behavior co-vary to some extent, however several studies have demonstrated convincingly that internalizing and externalizing problems are two conceptually and empirically discrete aspects of problem behavior (e.g. Loeber *et al.*, 1998), and Achenbach’s distinction has been used as a model for numerous studies on problem behavior in the nineties (Steinberg and Morris, 2001). Achenbach’s Youth Self-Report (YSR), the survey designed to assess adolescent problem behavior, contains items on both Internalizing Problems (somatic complaints, symptoms of anxiety and depression, and withdrawn behaviors) and Externalizing Problems (aggressive and delinquent behaviors, and substance abuse) next to measures of social, attention and thought problems. The seven taste groups that were subject of our research were compared on all these types of problem behavior.

Previous studies have addressed the link between a preference for deviant genres such as heavy metal and rap/hip hop, and internalizing distress. Martin *et al.* (1993) used the YSR to compare fans of heavy metal music with those liking less brash pop music. For both boys and girls significant associations appeared to exist between a preference for rock/metal music and suicidal thoughts, acts of deliberate self-harm and depression, however especially the (small) group of girls who favored this loud, guitar driven music seemed to face problems more often. Stack *et al.* (1994) have stated that heavy metal music reflects and possibly nurtures suicidogenic alienation, despair, and hopelessness among metal fans. Scheel (1995) concluded that adolescent heavy metal fans have higher than average rates of depression and low self-esteem, and Scheel and Westefeld (1999) reported that both female and male metal fans showed higher levels of suicide ideation than their mainstream peers, with, again, girls showing more problems than boys. In a Canadian sample Lacourse *et al.* (2001) found that boys preferring metal music did not differ from their peers in feelings of alienation, anomie, nor did they differ in suicidal risk. However, girls liking heavy metal reported more feelings of alienation and anomie, and seemed to be at a higher risk for suicide. Together these results seem to imply that a preference for heavy metal is linked to more internalizing distress, but that liking metal music has more negative consequences for girls than for boys.

Externalizing problem behaviors have also been associated with music preferences. A number of studies have shown that adolescents preferring non-mainstream music types engage in more rule-violating and risky behaviors than their mainstream-oriented peers. A preference for heavy metal, a predominantly white, working class genre in the USA- has been linked to reckless behavior: drunk driving, speeding, elevated use of alcohol, cannabis and hard drugs, risky sexual behavior (Arnett, 1991; Martin *et al.*, 1993). Scheel (1995) concluded that metal fans appear to vary (in a uniformly negative direction) from the general adolescent population on delinquency, recklessness, strained family relationships and greater school-related problems. Some authors have observed that metal video fans foster more aggressive thoughts and feeling (Anderson *et al.*, 2003) and find sexist behavior and violence acceptable more easily than their (male) peers who dislike the genre (Hansen, 1989; Hansen and Hansen, 1990). Carpentier *et al.* (2003) found an association between a liking of both metal and rap songs with socially deviant lyrics and edgy rhythms, and overall trait rebelliousness. Miranda and Claes (2004) studied the association between a preference for different types of rap music and deviant behaviors (e.g., street gang involvement, theft and drug use) in a Canadian sample. Overall, like metal, loud and brash forms of rap are a predominantly male choice of music and a preference for these types of music is linked to externalizing problems. The nature of the relationship differed according to specific rap genres. French-Canadian rap was associated with more violence, street gang involvement and drug use, and subgenre preference for gangstarap held a relationship with more thefts. Hip-hop/soul fans and American rap fans (to youth in Quebec commercialized rap genres) committed fewer thefts and the first group scored relatively low on drug use, indicating that subtle within-genre differences may be important for the potential link between music and problem behavior. In sum, both ‘hardcore’ metal and rap fans -young people favoring the most deviant and noisiest types of metal and rap- seem prone to more externalizing problems.

Some of the studies reviewed here involved more than bivariate relations between music preference and internalizing and externalizing distress. As noticed, metal and rap fans may also be more likely to report unsupportive family relationships, and more often dislike or oppose basic social institutions like school, church, or society in general (e.g. Arnett, 1991, 1996; Miranda and Claes, 2004; Weinstein, 1991). Deviant music fans’ social positioning may at least partially explain the link between their music preferences and their problems (Took and Weiss, 1994). For example, Lacourse *et al.* (2001) found that the correlation between a preference for heavy metal and suicidal risk disappears when controlling for other risk factors, i.e., feelings of alienation in terms of self-estrangement or powerlessness, and drug use. Contrary, Arnett (1991) and Miranda and Claes (2004)

conclude that even when is controlled for a set of confounding factors -quality of family and peer relations, alienation, deviant behavior of peer group members- the relationship between music preference and (externalizing) problem behavior remains significant, implying that fandom of some types of music is a unique contributing factor for the explanation of adolescent distress.

In sum, a preference for ‘deviant’ forms of popular music has been linked to internalizing behavior and especially adolescent girls liking heavy metal may be at risk for elevated problems. For both boys and girls a link has been established between metal or hip hop preferences, and externalizing problem behavior. Some studies show that the association between music preference and internalizing distress may be spurious, as the link is attributable to concurrent feelings of helplessness and alienation from family or school, and drug use. Others have concluded that music preference uniquely contributes to the explanation of (at least) externalizing problems by showing a significant association even when confounders are included in the analysis. Together these studies may imply that externalizing problem behavior, more so than internalizing behavior is interwoven with deviant music choices and that music preference is a distinct operating factor for the emergence of this type of problems.

The present study

Most studies of the relationships between music preference and problem behavior have focused on non-mainstream music with a poor public reputation heavy metal and rap/hip hop. The basic approach has been to compare problem behavior scores of adolescents with a preference for these deviant music styles to the scores of adolescents who like mainstream, i.e., socially acceptable music. However, this simple dichotomy does not reflect to the nature and structure of the pop music audience among adolescents. Pop music taste is far more than a single preference for one of these styles. Music taste amounts to an elaborate judgment of genres in terms of likes and dislikes, or neutrality, and audiences are segmented according to these judgments.

Using cluster analysis Ter Bogt *et al.* (2003) constructed a typology of the pop music audience by classifying respondents into groups of listeners. This approach to music taste preference constitutes a shift from a ‘variable-centered’ –single preference scores to a ‘typological’ –taste group membership– approach (Mandara, 2003), and illustrates a move from a one-dimensional to a multidimensional and more conceptual classification (Bailey, 1994). In this study we use the same analytical tools to typify music taste groups and subsequently link taste group membership to adolescent adjustment.

In addition, previous studies have studied only small numbers of adolescents, and their samples were limited in repre-

sentativity, i.e. drawing participants from one geographical area only. In this study, 4159 adolescents aged 12 to 16, and representative of the Netherlands, completed questionnaires, as part of the WHO Health Behavior of School-aged Children (HBSC) study, with items assessing socio-demographic profile, (dis)liking of a representative range of music genres (Ter Bogt *et al.*, 2003; Vollebergh, Van Dorsselaer, Monshouwer, Verdurmen and Ter Bogt, submitted), and social-psychological functioning by means of the Youth Self-Report (Achenbach, 1991).

With this study we intend to sketch a more detailed picture of the structure of the music taste group field and we will try to examine the full front of music taste groups in relation to problem behavior. Exploring a new domain, using hitherto seldom used techniques of music preference classification and, in that way, moving away from variable centered models, we find it against the gist of this study to propose hypotheses on the music problem behavior link derived from studies addressing only one or two forms of (defiant) music preference against a backdrop of mainstream choice. The aims of this study then are, first, to identify types of pop music taste groups, and, second, assess differences in internalizing, externalizing, social, though and attention problems between these groups, while controlling for relevant personal and background characteristics.

Method

Sample

In the HBSC study a two stage random sampling frame was used, that is described in the international protocol of the HBSC-study (2000). First, a random sample of secondary schools in the Netherlands was selected proportionally within urbanization strata. Response rate at school level was 45% (first four grades). This resulted in a school sample of 66 schools. Next, within schools a selection of classes of pupils was conducted. The schools provided a list of classes. Out of this list, one class per grade was selected at random for participation. Within classes, the response rate was 95%. This sampling strategy resulted in a representative sample of Dutch secondary school pupils aged 12 to 16.

The total number of participants in this study was 5695. However, in the multivariate GLM procedure testing differences in problem behavior, a total of 1536 participants were excluded from the analysis, due to missing values. Within the resulting sample ($n = 4159$), the mean age was 13.96 (SD 1.29), and 51.5% were female, 84.4% was of Dutch origin, 15.6% belonged to different ethnic minorities. The group of 1536 respondents excluded from the final analyses differed slightly from the analyzed sample, i.e. in the excluded group there were proportionately more boys, they were younger, and functioned academically at a somewhat

lower level (all eta-squared $<.02$). However, they did not differ in terms of social support from parents and friends. Most importantly, they also did not differ in terms of the outcome measures.

Measures

Background characteristics and parent and peer relations

Students were asked to report on their socio-demographic characteristics: gender, age and educational level. In the Netherlands Secondary education is subdivided into four different levels, each of which leads into a particular educational career or occupational opportunity. Educational level ranges from low to high on the following scale; 1 = 'Vbo' (lower technical and vocational training), 2 = 'Mavo' (lower intermediate level), 3 = 'Havo' (higher intermediate level), and 4 = 'Vwo' (Pre-university education). Perceived school achievement was measured on a four-point scale ranging from 1 = 'less than average' to 4 = 'above average.'

Family wealth was assessed with the Family Affluence Scale (FAS), which was developed for and validated with adolescents (Currie *et al.*, 1997). As it is difficult to assess parental occupation or family income through children, in this measure the focus is on variation in income that is expressed in the consumption of material goods in the family. The FAS is conceptually related to common indices of material deprivation (Townsend, 1987) and is similar to an index of home affluence (Wardle, Robb, and Johnson, 2002). The FAS consists of four questions reporting on the presence of material goods in the family: number of cars, pupil having a bedroom on his/her own, number of computers in the home, number of times the family goes on a holiday. The FAS has been validated in earlier research.

Support of parents (mother and father) and friends was assessed by three items of the HBSC-version of the role-relation-method (Fisher, 1982; Meeus, 1989). Children were asked to indicate on a 5-point scale the degree of support they received from reference persons (father, mother, best friend, respectively) when things bothered them. The question asked was: 'How easy is it for you to talk to the following persons about things that really bother you?', with the response categories 'very easy,' 'easy,' 'difficult,' 'very difficult,' or 'don't have or see this person.' Prior research using this scale has indicated good validity for these items (Vollebergh *et al.*, submitted). The above variables are associated with both music preference and problem behavior and therefore represent confounds in the model (Ter Bogt, 2004a; Vollebergh *et al.*, submitted).

Music preference

Music preference was assessed using thirteen music genres that students could rate on 5-point scales ranging from 'dislike strongly' to 'like very much,' and a separate option for 'unfamiliar with' (Ter Bogt *et al.*, 2003). The presented genres were heavy metal, punk/hardcore/grunge, rock, gothic/wave, rap/hip-hop, soul/RandB, reggae, top40/charts, Dutch pop, house/trance/techno, club/mellow, classical music and jazz. Missing scale item values were imputed using the relative means substitution approach developed by Raaijmakers (1999).

Outcome measures

Problem behaviors were measured using the Youth Self-Report (Achenbach, 1991). The Youth Self-Report is designed to be completed by adolescents aged 11–18 years, and contains 101 problem items. Pupils are asked if they have experienced these problems in the preceding 6 months and the response options are 'not present,' 'somewhat or sometimes true,' or 'very true or often true.' The Youth Self-Report provides the following eight subscales: withdrawn (Cronbach's α in this research: .69), somatic complaints (α : .74), and anxious/depressed (α : .80) (these three subscales assess the wider construct 'internalizing problems'), delinquent behavior (α : .70) and aggressive behavior (α : .83) (these scales assess 'externalizing problems'), social problems (α : .60), thought problems (α : .62), and attention problems (α : .67) (these latter scales are not part of either the internalizing or externalizing scale). Originally, the reliability and validity of the Youth Self-Report scales have been documented by Achenbach (1991), these measures were translated and validated for the Netherlands by Verhulst *et al.* (1997).

Strategy for analysis

To operationalize the group of youngsters not or low-involved with music, we set as a minimum test of involvement: knowledge of at least two of the most well known main genres of (pop) music (Ter Bogt, 2004a). As test genres we used heavy metal, rap/hip hop, classical music, and chart-based music. Those participants indicating not knowing more than two of these, were grouped together and labeled musically 'low-involved.' They were excluded from the subsequent factor and cluster analyses.

In order to create a musical taste group typology, first a factor analysis was conducted on the music genre ratings to reveal the underlying dimensions of music taste. A four-factor solution provided the best solution, with eigenvalues over 1 and 71.46% variance explained

Table 1 Music styles: Factors representing music preferences

Genres	I Rock	II Urban	III Pop-Dance	IV Elitist
Heavy metal	.900	.018	–.022	–.014
Punk/Hardcore/Grunge	.874	.048	.065	–.031
Gothic	.837	.072	.084	.103
Rock	.771	.002	.085	.160
Rap/Hip-hop	.042	.834	.184	–.083
Soul/ RandB	–.119	.804	.271	.051
Reggae	.211	.732	–.027	.311
Club/ Mellow	.222	.168	.785	.061
House/Trance/ Techno	.152	.132	.784	–.167
Top40/Charts	–.143	.088	.753	.098
Classical music	.037	–.077	–.010	.884
Jazz	.140	.388	.025	.735

Note. Principal Component Analysis, Varimax rotation, with eigenvalues over 1 and 71.2% variance explained.

(see Table 1). The four extracted components comprised the musical styles of ‘Rock’ (heavy metal, punk/hardcore/grunge, rock and gothic), ‘Urban’ (hip hop, soul/ RandB), ‘Pop-Dance’ (charts, house/trance/techno and club/mellow house), and ‘Elite’ (classical music and jazz). This compares well to previous Dutch, Flemish and American research on the structure of music preferences using factor analysis or multi-dimensional scaling techniques (Christenson and Peterson, 1988; Tillekens, 1993; Stevens, 2001; Ter Bogt *et al.*, 2003).

The average appreciation of the genres belonging to the four major musical styles, i.e. music style scores, were used as input for the cluster analysis in order to define taste groups that reflect the complexity of musical preference patterning. Finally, a MANOVA was employed to investigate whether the taste groups that resulted from cluster analysis, plus the low involved group, differed on YSR scores on internalizing, externalizing, social, thought and attention problems while controlling for the association of background characteristics and the quality of social relations. In order to compare our findings with those of an Australian high-school based study by Martin *et al.* (1993), also using Youth Self-Report, we ran an identical, separate MANOVA with the items ‘deliberate self-harm’ and ‘suicidal thoughts.’ taken out of the subscale anxious-depressed, as they did.

Results

Participants were grouped according to their relative attraction to and/or rejection of the four basic music styles: Rock, Urban, Pop-Dance and Elite. For this purpose several consecutive hierarchical cluster analyses were performed on the style scores, with each style score representing the individual participant’s overall evaluation of a specific musical style.

In order to maximize within group similarity in taste, the method of clustering participants was based on intra-group similarity in the pattern of evaluation of the four musical styles, rather than between group differences in these evaluations.

Seven consecutive hierarchical, agglomerative cluster analyses were tested empirically using within-groups linkage based on squared Euclidean distance. Each cluster analysis differed in the number of clusters (or groups of participants) that were allowed to emerge, ranging from four to ten clusters. Criteria had to be formulated to determine which solution best fitted the data. This entailed testing the substantiality of the differences in explanatory power of potential cluster solutions, rather than differences in statistical significance between the seven cluster solutions (Cohen, 1988). The best possible cluster solution was chosen on the basis of employing a combination of five criteria. The solution should: optimally explain the overall variance of the four music styles (1); explain the univariate variance of the distinct styles (2); explain the variance in the patterning of individual style scores (3); be parsimonious (4) and well interpretable (5) (for a detailed description of this procedure: see Ter Bogt *et al.*, 2003).

First, as a measure of general efficacy, the solution should explain at least 35 percent of the variance in musical style ratings. The chosen six cluster solution explained 39.6% of the variance in music style preferences (Pillai’s $F(20, 17888) = 587.30$, $p < 0.001$). Second, partial eta-squared had to be at least 0.14 per style, so that each style separately was to a large extent explained by the cluster solution, as indicated by the univariate results. Eta-squared values ranged between 0.22 for Pop-Dance ($F(5, 4472) = 253.51$, $p < 0.001$), 0.46 for Urban ($F(5, 4472) = 747.54$, $p < 0.001$), 0.51 for Elite ($F(5, 4472) = 920.67$, $p < 0.001$) and 0.61 for Rock ($F(5, 4472) = 1372.18$, $p < 0.001$) in the six cluster solution. Third, the amount of explained variance in the individual patterning of music style ratings should be as large as possible. This was checked in repeated measures MANOVA with the scores on the 4 styles used as dependent variables ($F(15, 13416) = 554.03$, $p < 0.001$, partial eta-squared = 0.38) for the six cluster solution), meaning that the pattern of the differences in appreciation of the styles is as consistent as possible with differences between styles maximal (the within-subjects factor had to be maximal). In addition, the solution had to be parsimonious, in the sense that greater number of clusters should imply only marginal improvements of the fit according to the three, previously mentioned, criteria, and it should be well interpretable (see also Ter Bogt *et al.*, 2003). According to these criteria a six cluster model was preferred as a parsimonious, well interpretable solution that showed an optimal fit to the music style data. Solutions with more clusters did not substantially improve the variances explained and resulted in the

Table 2 Composition of Taste Groups and Their Appreciation of Music Styles

	Rock	Urban	Elite	Dance	N	%	% female	Age (SD)	School level ¹
1. Middle-of-the-Road	1.54 (0.55)	2.58 (0.83)	3.31 (0.81)	1.61 (0.62)	758	18.1	54.2	14.1 (1.26)	2.38
2. Urban	1.59 (0.56)	4.10 (0.53)	3.47 (0.87)	2.35 (0.72)	847	20.2	60.3	14.1 (1.27)	2.46
3. Exclusive Rock	3.92 (0.68)	1.93 (0.83)	1.58 (0.45)	1.24 (0.34)	78	1.9	35.9	14.3 (1.14)	2.47
4. Rock-pop	3.28 (0.75)	3.47 (0.75)	3.80 (0.74)	1.97 (0.66)	1358	32.4	44.2	13.9 (1.23)	2.41
5. Elitist	2.16 (0.60)	2.92 (0.57)	2.76 (0.59)	3.13 (0.59)	316	7.5	62.7	13.8 (1.34)	2.79
6. Omnivores	3.37 (0.87)	4.24 (0.57)	3.77 (0.74)	3.48 (0.58)	584	13.9	49.5	13.9 (1.37)	2.50
7. Low Involved					253	6.0	47.8	13.6 (1.36)	2.00
Overall	2.52 (1.10)	3.47 (0.94)	3.50 (0.88)	2.30 (0.93)	4194	100.0	51.5	14.0 (1.29)	2.43

Note. Music scores represent means (and standard deviations) on Likert-type scales ranging from 1 (dislike strongly) to 5 (like strongly). School level ranges from low to high, with values 1 = Vbo (low); 2 = Mavo; 3 = Havo; 4 = Vwo (high)(see text in the method section).

identification of hard to qualify clusters with small group sizes. Higher order solutions thus decreased the power of subsequent analyses to discern differences in problem behavior, and this counted as an additional argument to prefer the six cluster solution.

Table 2 shows the average appreciation of the four musical styles (Rock, Urban, Pop-Dance, Elite) by each cluster. The clusters were labeled according to their relative preference or dislike of these styles. The first music taste group does not show an overwhelming enthusiasm for music. Their scores for liking the most popular type of music, chart-based Pop-Dance, are above the scale medium 3, indicating that they value this type of music somewhat positively, but they are not particularly fond of other types of music and because of their conventional mainstream taste this group was labeled *Middle-of-the-Road (MOR)*. The second group, *Urban* fans, show an exceptional interest for music in the Afro-American tradition of pop, nowadays called Urban. They are marked further by their distaste of Rock music, a predominantly white genre. Contrary, the small group of *Exclusive Rock* fans has a narrow admiration of metal and other loud music and these fans virtually dislike all other music. With their severe rejection of chart-based music this is a truly non-mainstream group. The *Rock-Pop* group shows a far broader taste than the *Exclusive rockers*. They also like Rock music but appreciate Pop-Dance music as well, while scoring neutral on Urban music. The *Elitist* group stands out with their single preference of classical and jazz music. *Omnivores* rate the Elite genres even higher than the *Elitists* themselves, but this group is also marked by a general enthusiasm for all other styles of music.

Taste groups and problem behavior

Results of the MANOVA with music taste group membership and confounders as independents and the range of YSR problem behavior assessments as dependents showed that, overall, music is a significant (Pillai's $F(48, 24774) = 6.51$,

$p < 0.001$) and substantial (eta-squared = 0.01) factor associated with the range of problem behavior. Next, univariate tests of the link between music taste group membership and the separate problem behavior scales indicated that for all YSR assessments individually, group membership showed to be a significant (all p 's < 0.001) and substantial (all eta-squared values approximately in the range 0.01–0.03) factor (Table 3). The effect sizes of the taste group variable must be qualified as small (eta-squared < 0.06) for all problem behaviors (Cohen, 1988). Other known predictors of problem, behaviors included in the model as confounds, nearly all revealed effect sizes in the small (0.01–0.06) range as well. This shows that, when is controlled for a set of relevant confounders music taste membership remains a relevant factor for the explanation of variance in problem behavior.

Internalizing problem behavior

Withdrawn behavior

Table 4 summarizes the between group differences on the range of problem behaviors. Tests revealed that groups differ in withdrawn behavior ($F(6, 4131) = 6.00$, $p < 0.001$). Post hoc comparisons with Bonferroni corrections for multiple comparisons showed that both the *Omnivores* and the *Elitists* report relatively high levels of withdrawing tendencies. The *Exclusive Rock* group also reported relatively high levels of withdrawn behavior but their scores did not differ from other groups significantly, due to small group size, and therefore lack of statistical power to discern differences. The *MOR* and *Rock-Pop* groups report relatively little withdrawn behavior.

Somatic complaints

Omnivores report most somatic complaints, and their average differs significantly from nearly all other groups ($F(6$,

Table 3 Effect Sizes of Factors Associated With the Measures of Problem Behaviors

	Withdrawn Behavior	Somatic Complaints	Anxious-Depressed	Aggressive Behavior	Delinquent Behavior	Social Problems	Thought Problems	Attention Problems
Music group	.01	.01	.01	.02	.03	.01	.02	.01
Gender	.02	.06	.04	–	.01	–	.01	.01
Age	.01	–	–	.01	.02	–	–	–
FAS	.01	–	–	–	–	.01	–	–
School-level	.01	.01	–	–	.01	.02	.01	–
School Achievement	.01	.01	.01	.04	.04	.01	.02	.09
Social Support								
Mother	.03	.01	.05	.02	.03	–	.02	.02
Father	.02	.01	.02	.02	.01	.01	.01	.02
Friends	.02	–	.01	–	–	–	.02	.02

Note: Effect sizes reported concern the partial eta-squared values within the multivariate GLM analysis. The overall multivariate effect was significant at the $p < .001$ level. The effects sizes associated with the specific behavioral scales are reported here. A partial eta-squared between .01 and .06 reflects a small effect size, and partial eta-squared within the .06-.13 range concerns a medium effect size, a value of .14 or higher represents a large effect (Cohen, 1988).

4131) = 6.31, $p < 0.001$). The *Rock-Pop* group scored higher than the *MOR* group that, again, had the lowest prevalence of somatic complaints.

Anxious-depressed

Omnivores also tend to be more anxious and depressed; they have higher scores than most other groups ($F(6, 4131) = 6.29, p < 0.001$). The *Exclusive Rock* and *Elite* clusters also had relatively high prevalence rates, but results with other groups were not significant. The *MOR*, *Rock-Pop* and *Urban* groups revealed low levels of anxiety/depression. A separate MANOVA testing two items of the anxious-depressed subscale and included the influence of confounders, revealed that *Exclusive Rock* fans and the *Omnivores* report engaging in deliberate self-harm more often than other groups. The taste groups did not dif-

fer significantly from each other on the item on suicidal thoughts.

Externalizing problem behavior

Aggressive behavior

The *Omnivores*, *Rock-Pop* and *Urban* fans report engaging in aggressive behavior more often than the *MOR*, *Elitist*, and *Low-Involved* groups ($F(6, 4131) = 18.39, p < 0.001$). *Exclusive Rock* fans tend to aggressive behavior as well, but differences with other groups were not significant.

The same pattern emerges in the reports on delinquent behaviors ($F(6, 4131) = 10.93, p < 0.001$), with *Omnivores*, *Rock-Pop* and *Urban* fans engaging in more delinquent behavior. Here the differences between the high scoring *Exclusive Rock* fans and the less delinquent *MOR*, *Elitist*, and *Low-Involved* groups were significant.

Table 4 Taste Groups and Average Scores on the Youth Self-Report

	Withdrawn Behavior	Somatic Complaints	Anxious-Depressed	Aggressive Behavior	Delinquent Behavior	Social Problems	Thought Problems	Attention Problems
MOR	1.65 ^a	1.58 ^a	1.40 ^a	1.77 ^a	1.62 ^a	1.42 ^a	1.19 ^a	2.53 ^a
Urban	1.82 ^{a,b}	1.83 ^{a,b}	1.52 ^a	2.04 ^b	2.00 ^b	1.47 ^{a,b}	1.36 ^{a,b}	2.67 ^a
Exclusive Rock	2.19 ^{a,b,c}	1.69 ^{a,b,c}	1.70 ^{a,b}	2.17 ^{a,b}	2.51 ^b	1.76 ^{a,b,c}	2.31 ^c	2.94 ^{a,b,c}
Rock-Pop	1.68 ^a	1.87 ^b	1.48 ^a	2.02 ^b	1.99 ^b	1.45 ^a	1.39 ^b	2.75 ^{b,c}
Elite	2.01 ^{b,c}	1.70 ^{a,b}	1.65 ^{a,b}	1.65 ^a	1.30 ^a	1.72 ^c	1.22 ^{a,b}	2.50 ^{a,b}
Omnivore	2.07 ^c	2.03 ^c	1.82 ^b	2.18 ^b	1.98 ^b	1.69 ^c	1.79 ^c	2.91 ^c
Low-involved	1.91 ^{a,b,c}	1.72 ^{a,b}	1.59 ^{a,b}	1.59 ^a	1.44 ^a	1.91 ^{b,c}	1.27 ^{a,b}	2.27 ^a
Overall	1.80	1.76	1.55	1.95	1.85	1.53	1.40	2.67

Note. Scales range from 0 to 10, with 0 indicating total absence of problems, and 10 indicating maximum scores on problem measures. None of the group averages were in the clinical range of problematic functioning. Significance of differences between groups was tested in the multivariate GLM Pairwise Posthoc Comparisons, using the *Bonferroni* correction method ($p < .05$). Due to the small group size of the *Exclusive Rock* fans their higher group averages do not always differ significantly from other groups.

Social, thought and attention problems

Both the Omnivores, the Elitists and the Low-Involved groups report relatively high prevalences of social problems ($F(6, 4131) = 6.44, p < 0.001$). The MOR and Rock-Pop groups encounter relatively few problems in this domain.

Thought problems

Omnivores and Exclusive Rock fans indicate having more thought problems than the other groups ($F(6, 4131) = 615.83, p < 0.001$). The MOR group, again, shows relatively few problems.

Attention problems

Omnivores and the Rock-Pop group report relatively high prevalences of attention problem ($F(6, 4131) = 8.71, p < 0.001$). The Exclusive Rock fans again even exceed these groups in their attention problem ratings but differences with other groups are not significant. The MOR and Low-involved groups reveal little problems.

Several authors have observed that a preference for deviant music, more specifically heavy metal, may be associated with more internalizing distress for girls. In a separate analysis interactions between gender and taste group membership with regards to all types of problem behavior were tested. No significant interactions were found, indicating that on the whole, male and female members of taste groups show the same levels of problem behavior.

Discussion

The aim of this study was to create a typology of the adolescent pop music audience, and to assess differences in problem behavior associated with taste group membership. In order to create a useful typology of adolescent pop music audiences, first the underlying structure of music preferences was explored, resulting in the identification of four major styles: Rock (e.g. heavy metal and punk), Urban (hip-hop, and soul/ RandB), Pop-Dance (e.g. chart-based music and different types of Dance music), and Elite (jazz and classical music). From the late eighties onward, research on the underlying structure of music preferences has reported similar findings, indicating large cross-cultural and diachronic stability in the way audiences categorize genres of pop music. (Christenson and Peterson, 1988; Tillekens, 1993; Stevens, 2001; Ter Bogt *et al.*, 2003). While the popularity of individual artists may rise and fall in relatively short periods, popular musical styles seem to have a prolonged existence. Rock, Pop, Urban, and Elite styles have been described with similar labels during the last two decades.

Approaches to music taste using either multi-dimensional scaling, factor-analysis or simple genre preference all fall short of identifying taste groups within the audience, i.e. a factor (style) is not identical to a group (cluster). Assuming that different taste groups hold different composites of likes, dislikes, and neutrality towards different types of music, we have tried to identify groups of fans with similar taste patterns by applying cluster analysis to music style scores. As our structuring of genres in styles corroborated earlier efforts to do the same, we assumed that the style scores formed a robust input for the cluster analysis, performed to reveal a more detailed segmentation of the music audience than in prior studies. Six different taste groups were exposed through using this clustering procedure – *Middle-of-the-Road (MOR)* fans; *Urban* fans; *Exclusive Rock* fans; *Rock-Pop* fans; *Elitists*; and *Omnivores*. Our findings compare well to the clustering of respondents in the study by Ter Bogt *et al.* (2003), that was based on music preferences of an older sample of Dutch adolescents and young adults in 1999, and revealed a similar six cluster structure. This shows that it is possible to model the audience for music into more detail than when using a simple dichotomy of mainstream and non-mainstream music as a structuring principle.

Among our sample of 12 to 16 years old adolescents, the *MOR* and *Urban* taste groups are oriented positively only towards the popular styles Pop-Dance and Urban respectively, and comprise approximately two-fifths of the sample. Females are over-represented in these two groups, as well as in the *Elitist* group. The *Exclusive Rock* and *Rock-Pop* groups constitute roughly a third of the sample, males are overrepresented in these groups. Both groups have a strong liking for rock music, however, for the *Exclusive Rock* group this preference is rather narrow. They avidly dislike all other types of music while the *Rock-pop* group shows a far broader approval of other music types than Rock alone. The gender differences in group composites seem to reflect broader social and cultural patterns (Christenson and Peterson, 1988). In his seminal work on the sociology of popular music, Simon Frith (1978) already discerned melodic, catchy love songs that populate the charts as music to be predominantly liked by females, as opposed to noisy, ‘cocky’ rock music favored more often by males. Thereby, not only the structuring of styles, but also the gendered differences in taste group composition and their adherence to softer and harder forms of music, indicate the existence of rather persistent cultural patterns in the appreciation of music.

Omnivores, as the term implies, indicated liking all kinds of music. Respondents with an omnivorous music taste have been described before (e.g. Bryson, 1996; Peterson and Kern, 1996; Van Eijck, 1999), however, these studies focused on a much older population. These studies showed that musical exclusiveness, i.e., disliking of genres, decreases with age and education. It is therefore remarkable to find among

young music consumers, a group so open towards such divergent music styles. The identification of groups such as the *Omnivores* evidences the use of clustering methods to sketch the composition of the music audience. Simply equalizing respondents' music preferences with taste group membership cannot reveal the existence of groups with a complex taste, in other words, the multi-style preference input probably results in a more realistic picture of the adolescent music audience.

Adolescent problem behavior

In this research project, for the first time, a large representative sample of adolescents was assessed on the link between music preference and problem behavior. Using the results of cluster analysis as input for discerning differences in problem behavior between groups within the music audience this research constitutes a shift from studying risk *factors* to uncovering the effects of membership of risk *groups*. Multivariate analyses showed that taste group membership is a relevant factor in explaining variance in psychosocial functioning, even when controlling for known predictors, such as gender, age, family affluence, school-level, school achievement, and social support from parents and friends. Moreover, we found effect sizes, be it small, for music taste group membership, but as other predictors of problems, included in the model as confounds, revealed effect sizes of similar magnitude, it is important to notice that music preference as a factor in the etiology of problem behavior can compete with well-known predictors of adolescent distress.

While on average none of the musical taste groups were within the clinical range of scores of psychosocial functioning, clear differences between taste groups emerged in the level of psychosocial problems they reported experiencing. The group that prefers mainstream, happy-go-lucky chart music, the *MOR*-group, shows relatively few internalizing problems. Contrary, *Exclusive Rock* fans and *Omnivores* report experiencing internalizing problems and deliberate self-harm more often than others. However, *Exclusive Rock* fans, no more 2% of the sample, did not always significantly differ from other groups, due to small group size, and therefore lack of statistical power to discern differences. *Elitists* scored relatively high as well on withdrawing tendencies.

Our results corroborate previous studies reporting higher levels of internalizing problems among fans with a strong preference for loud Rock music (Arnett, 1999, 1996; Lacourse *et al.*, 2001; Martin *et al.*, 1993; Scheel and Westveld, 1999), however, we must add that this seems to only typify the *Rock* fans with an exclusive taste for this type of music. It is not a preference for loud, brash Rock music per se that predicts elevated problem scores: on two of the three internalizing distress scales Rock fans from the *Rock-Pop* group even show relatively few problems. Fur-

thermore, analyses examining the gender and taste group membership interaction did not bring up any significant results. This seems to imply that while female Rock fans in the US, Canada and Australia may experience more internalizing problems, Dutch females liking the same type of music, even within the group that prefers exclusively Rock music, do not show elevated problem levels, compared to males. This may hint at cross-cultural differences, with loud music being a less unconventional choice for girls in the Netherlands, as signified by the great popularity of one specific Rock subgenre -Gothic- in the Netherlands (and across Western and Southern Europe). Even though the majority of fans for Rock music in the Netherlands is still male, females do not form a tiny minority next to them, and they may specifically be attracted to Rock genres that combine sheer volume with delicate melodies, casting a symbolic universe that recreates and enhances the thrills and delights of gothic novels and fairy tales.

Somewhat surprising are the relative high internalizing problem scores for *Elitists* and *Omnivores*. *Elitists* seems to adhere to music choices that reflect those of their parents and, more in general, this group is not characterized by a rebellion against parental authority (Ter Bogt *et al.*, 2003). However, it may just be that their choice of music alienates them from their peers who massively prefer other types of music (North *et al.*, 2000). Elitism in music taste may reflect an outsider position in the adolescent peer culture, and this social position may cause more internalizing distress. On the other hand emotionally unstable adolescents may be drawn to music that is at the same time complex, reflexive, moody and full of comfort (Ter Bogt, 2004b; Rentfrow and Gosling, 2004). In our research *Omnivores* do not come from families with a higher social economic status, as indicated by their scores on the Family Affluence Scale, but other research has qualified *Omnivores* as a cultural elite (Bryson, 1996; Peterson and Kern, 1996). The socio-cultural position of adolescents with a broad taste does not seem to protect them from internalizing distress. Music is obviously a source of mood enhancement (Christenson and Roberts, 1998) and it seems that the group with the broadest taste needs this effect of music most.

Regarding externalizing problems, the *MOR*, *Elitist* and *Low-Involved* groups on the whole showed less transgressive behavior and aggression than the *Urban*, *Rock-Pop*, *Exclusive Rock* and *Omnivore* groups. Thus, it may be concluded that groups with tastes that are more adult-oriented (*Elitist*) or mainstream-oriented (*MOR*), and groups that are not particularly tied in to pop culture (*Low-involved*) show relatively little externalizing problem behavior. The higher scores among the *Urban*, *Exclusive Rock* and *Rock-Pop* groups on externalizing problem behaviors may be partially explained by the fact that hip hop and the harder rock forms project images of resistance to adult authority combined with increased peer

orientation. Previous studies focusing exclusively on adolescents liking either hip hop (Miranda and Claes, 2004) or heavy metal music (e.g. Martin *et al.*, 1993; Arnett, 1991, 1996) have also reported these preferences as risk factors for risk-taking, transgressive behavior and substance misuse. A certain degree of rebelling against adult institutions and transgression of their rules is normative in adolescent development (Arnett, 1996; Steinberg, 2002) and this seems to be particularly apparent among the *Urban* and *Rock*-liking groups of young people, who appear to synchronize their music preferences with their own behavior. In addition to the *Urban*, and the *Exclusive Rock* and *Rock-Pop* fans, all likely candidates for the prevalence of more externalizing distress, we have uncovered one other risk group: the *Omnivores*. Again, their potential position among the cultural elite does not prevent them from showing more aggressive and delinquent behavior.

Regarding social, thought and attention problems the *Omnivores* stand out with more problems than most other groups, and the *Exclusive Rock* group shows elevated problems as well. Youth belonging to groups liking the most popular, mainstream types of music, i.e., those in the *Middle-of-the-Road (MOR)* group seem to experience fewer social, thought and attention problems.

Previous findings on the relationship between a preference for rock and/or heavy metal and externalizing problems (e.g. Martin *et al.*, 1993; Arnett, 1996; Scheel and Westefeld, 1999) have been partially explained by adverse family circumstances (Lacourse *et al.*, 2001), or a problematic relation to the school system and social institutions in general (Roe, 1995; Arnett, 1991, 1996). We have controlled for these factors and still found music taste group membership predictive of psychosocial functioning among adolescents. In contrast with earlier research we also found that music taste membership is indicative of internalizing distress. It may be that our research entailed a large sample of respondents and therefore it disposed over far more power to statistically discern differences. Another possibility is that we differentiated more into detail among the pop audience and more clearly identified taste groups - *Exclusive Rock* fans, *Elitists* and *Omnivores*-that have not been described in relation to internalizing distress before.

Claes and Miranda (2004) found that music taste plays a unique role in explaining adolescent transgressive behaviors. They compared different types of hip hop fans, i.e., ranging from preference of less to more deviant types of hip hop, on reported behavioral deviancy, while controlling for amount of peer's deviancy (the most relevant factor in this type of behavior), amount of violent media consumption, and importance given to lyrics. They suggest that the unique explanatory value of music taste lies in the strength of the cultural identity some types of music can offer. This is especially obvious in the case of gangstarap, which has a

strong (antisocial) identity to offer. We found the two types *Rock* fans, the *Urban* fans and the *Omnivores* to be more prone to externalizing distress, thus finding more evidence for the intricate link between membership of taste groups liking rebellious, high energy types of music and transgressive behavior.

Furthermore, it is interesting to notice that the *Omnivores* and *Exclusive Rock* fans overall show higher levels of problem behavior while the *MOR* group consistently reports relatively few problems. In the fifties the development of new forms of popular music, i.e. Rock 'n Roll, lead to grave concerns over its impact on the mental health and moral behavior of youth. About five decades after Rock'Roll surfaced it can be concluded that, indeed, a link exists between a fondness for certain types of music or a general enthusiasm for all kinds of music, and problem behavior, but results also show that at least a preference for mainstream pop music may buffer problems. And though we found that membership of groups that are routinely labeled as 'deviant' indeed is a risk factor for internalizing and externalizing problem behavior, it is important to stress that listening to music, even 'deviant' music may play an important role in coping with stress. For example, Lacourse *et al.* (2001) found that for girls vicarious listening to heavy metal decreases suicide risk and therefore, this type of music use may constitute an effective coping mechanism. This was also put forth by Weinstein (1991) and Arnett (1996) who conducted extensive ethnographic studies on the heavy metal subculture and its fans. They consistently found that the music's main appeal lies in the expression of social defiance, and this expression of resistance to the 'respectable' adult society lends the music its function as a tool for coping. Recognition of experiences shared throughout a subculture, whether heavy metal or the socially less accepted forms of rap, can be sufficient in itself, if not a means to cathartic release of negative emotions.

In the present study only patterns of taste and associations between taste group membership and problem behavior were examined. As for all the associations reported upon in this project we can only speculate on the causal mechanisms that may play a role. Three possible developmental models seem plausible: adolescents with specific emotional or behavioral characteristics may tune in to certain types of music (selection), the music itself or the symbolic universe of which music is an integral part may trigger people to certain emotions and behaviors (direct influence of music), or music may be a cultural marker for the formation of groups and those groups may in turn influence their members' behavior (indirect influence of music) (Brown *et al.*, 1994; Miranda and Claes, 2004; Ter Bogt, 2004b). In order to further understand the possible role that music can play in adolescence, and more specifically the development of psychosocial distress, it is necessary to follow individuals over time. What is needed next, is research assessing just how these groups

develop and differ in the way they use music, and how this relates to their social position and to their well-being and behavior. Moreover, prospective studies may in turn uncover the mechanisms through which development of musical taste and development of problem behavior are linked within the course of growing up, and may enable distinguishing between reflective and causative aspects of the association of music taste with psychosocial functioning of adolescents.

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