"I Can See Clearly Now"

On the time varying associations between self-concept clarity and music preferences across adolescence into young adulthood

Authors:

Andrik Becht[1*] & Tom ter Bogt[2*]

[1]Department of Education and Pedagogy, Utrecht University, The Netherlands

[2]Interdisciplinary Social Science, Utrecht University, The Netherlands

[*] Shared first authorship

Abstract

This longitudinal study explored the connections between Self-Concept Clarity (SCC) and music preferences across early adolescence into young adulthood. Six times, N = 900 Dutch adolescents and young adults (M_{age} T1 = 12.48 years, 51% females) completed a survey assessing SCC and their music preferences, categorized into mainstream music (including Pop, Hip-hop, Popular Rock, and Dance/Trance) and non-mainstream music (Heavy Metal, Goth, and Hardstyle dance). Latent Growth Curve analyses with SCC as time varying covariates confirmed that there was no systematic association between SCC and preferences for Pop, Hip-hop, and Dance/Trance in mid- to late adolescence, but that this relationship became mostly positive in young adulthood. SCC was negatively associated with a preference for another type of mainstream music: Popular Rock. As predicted, adolescents and young adults with low SCC preferred thematically complex, non-mainstream genres such as Heavy Metal and Goth, or music that is linked to a non-mainstream subculture: Hardstyle dance. Lower SCC levels remained linked to higher preferences for Goth and Heavy Metal music even into young adulthood. This suggests that Goth and Heavy Metal continue to hold significant importance for young people who struggle with clarifying their identity.

"I Can See Clearly Now"

On the time varying associations between self-concept clarity and music preferences across adolescence into young adulthood

I can see clearly now the rain is gone

I can see all obstacles in my way

Gone are the dark clouds that had me blind

It's gonna be a bright (bright)

Bright (bright) sunshiny day

Johnny Nash (1972)

Establishing a clear sense of identity is a crucial developmental task during adolescence and young adulthood (Erikson, 1968). A key element of this identity formation process is the development of a coherent and consistent sense of self across contexts and time, commonly referred to as self-concept clarity (SCC, Campbell et al., 1996). In clarifying their identity, adolescents and young adults may find support in listening to music (Dys et al., 2017; Schäfer et al., 2013; Tarrant et al., 2002), but whether and when SCC and music are most strongly connected has not been studied before. The aim of this paper is to explore these relationships by examining the associations between SCC and liking various types of Popular music, both mainstream –such as Pop, Hip-hop, Popular Rock, and Dance/Trance– and non-mainstream –Heavy Metal, Goth, and Hardstyle dance– during adolescence and into young adulthood.

Self-concept clarity during adolescence and young adulthood

SCC refers to the structural aspects of the self, distinct from evaluations of self-esteem (Weber et al., 2023). Individual differences in SCC and identity become more pronounced during middle to late adolescence. For instance, individual differences in identity

certainty (commitment) and identity uncertainty (reconsideration of identity commitments) seem to become most differentiated during middle to late adolescence (e.g., Becht et al., 2016). Similarly, individual differences in self-concept clarity seem to increase from early to middle adolescence and become most pronounced and stable during middle to late adolescence (see Figure S1 in the study by de Moor et al., 2023).

Music Style Preferences in Adolescence and Young Adulthood

The music industry maintains an elaborate scheme of genres and subgenres that includes hundreds of categories. Research among adolescents and adults in a large number of countries consistently identified that five or six of "meta-genres" or overall music styles dominate the field (Greenberg et al., 2022). The first style comprises the music that is literally the most popular, Pop music, such as can be found in the charts. Pop is a category in itself, but the best sounding songs –melodic, soft, fun, catchy– from Hip-hop, R&B, rock and dance can also land in the charts and thus also be labeled Pop. The second style, Hip-hop or Rap, comprises Black American and Afro-Caribbean music (e.g. Hip-hop, R&B, reggae). A third style, Rock, can be characterized as loud, energetic and rebellious music, and comprises music with a degree of mainstream attractiveness (rock itself) and far heavier, if not extreme genres competing in loudness, shock, and tempo (e.g. heavy metal, hardcore, punk, gothic). In the fourth music style, different types of electronic Dance music (e.g., house, trance, techno, hardstyle, deep house, gabber, dubstep) are subsumed. A fifth music style, Sophisticated music, comprises cultured and complex music such as jazz and classical music, but older genres in the tradition of Black American music (blues, rhythm and blues, soul) and so-called world music may now also reside under this label (Mulder et al., 2009a; North, 2010; Rentfrow et al., 2011; Schäfer & Sedlmeier, 2009). The overwhelming majority of adolescents know all these styles and a number of sub-genres, they value particular ones or combinations of genres (Ter Bogt et al., 2011).

At a more general level, music genres can be labeled as *mainstream* and *non-mainstream* music genres. Mainstream music includes the most melodic, easily accessible, sing-along types of pop, rap, rock, and dance that dominate the charts and other lists indicating the most listened-to music. Mainstream music appeals to a broad spectrum of young audiences. Pop music inherently falls into this mainstream category, encompassing not only pop itself but also the most catchy and light-hearted forms of rap and rock.

Conversely, less accessible or more musically and lyrically radical forms of popular music are deemed non-mainstream. This category caters to a much smaller audience of fans. Examples include certain subgenres of rock such as heavy metal and goth, as well as specific styles of hip-hop such as gangsta rap and drill (Frith, 1978; North, 2010; Steinbrecher, 2021).

Music preferences and Identity

Music and music videos contain a wide range of messages that can be important to young people trying to find out who they are and what they want to become, as persons, friends, romantic partners, fellow students or colleagues. Music helps define their place in the world. Macdonald & Saarikallio (2022) note that music preferences can be part of how adolescents view themselves or relate to the world around us. Music tastes are used as a psychological resource to negotiate and construct identities. Since its emergence in the mid-fifties, popular music has consistently prioritized themes of romance and sexuality, particularly within heterosexual relations. However, alongside these themes, the exploration of "who I am," "my place in the world," has also played a significant role (Schäfer et al. 2013). Furthermore, a considerable portion of pop music centers around themes of partying, drinking, drug use, and enjoying leisure with peers. Consequently, the portrayal of (social) identity has consistently been a focal point in music. Social, political and religious ideals and ideas are addressed in pop music as well, but to a lesser degree than romance, sex and, (social) identity (Christenson and Roberts, 1998; Christenson et al., 2019). While the most popular type of popular music, Pop, such as the music found in the charts, may heavily lean

on the boy meets girls motive and the ups and downs of love relationship, other genres have embraced a wider range of issues relevant to youth. For instance, starting from the late seventies, non-mainstream music genres such as the heavier derivatives of rock, including heavy metal, goth and punk, have delved into peer outsider status, alienation, depression, social anxiety, societal issues and politics. Additionally, these genres have often depicted and sometimes glorified the use and abuse of drugs and alcohol (Mulder et al., 2009b). Since the eighties Hip-hop artists have added an impressive array of themes into the musical landscape. While Hip-hop undeniably celebrates having a good time, partying, dancing, and the recreational use of alcohol and drugs, there is a strong undercurrent addressing pressing social issues such as poverty, racial relations, discrimination, police brutality, the drug economy, and drug addiction (Christenson et al., 2019; Rabaka, 2013). Though lyrically far less sophisticated than these types of rock or Black American music, Dance has evolved as a distinct mainstream genre thriving on strong rhythms. Dance fosters exuberant nightlife experiences offering an escape from the monotony and challenges of everyday life. Originating from and deeply rooted in the gay (Black) community, dance music has long provided a sanctuary for young adults seeking refuge from the constraints of societal norms and routines (Collin, 2010).

Artists, their music, videos, and social media presence, serve as crucial resources for identity construction as they provide examples of how to present oneself (clothing, makeup, hairstyles, tattoos, jewelry, accessories, and even preferred vehicles). They may show how to move (gestures, poses, gait), how to talk (typical expressions, slang), and what to consume (cigarettes, alcohol, licit and illicit drugs). Artists can even exemplify how to perceive (appraisal), how to feel (emotions, mood) and how to think and evaluate (attitudes, values, ideas, ideals, expectations, Fisher et al, 2011; Greitemeyer, 2009). Particularly in the field of ethnographic research and cultural studies, a plethora of papers and books have shown that artists may, thus, consciously or implicitly propagate a definite *style* that is attractive to their

fans and at the heart of youth subcultures, even when their members are aging (Bennett & Hodkinson, 2020; Hebdige, 1979; Willis, 1978). Thus, there is extensive scientific literature on music in relation to adolescents' development of their personal and subcultural identity (Erikson, 1968; Hargreaves et al., 2017). However, whether and how preferences for the five major genres of music and, more specifically mainstream and non-mainstream genres are related to SCC, has never been investigated.

Based on the existing literature on music, identity, and psychosocial functioning of different groups of adolescents, it is challenging to predict the nature of these associations. Research does indicate that young people who enjoy the most popular music genre, Pop, generally do not encounter many psychosocial problems across adolescence. They typically exhibit upbeat moods, maintain positive relationships with parents and friends, and transition into young adulthood smoothly (Laffan, 2021; Mulder et al., 2006). Having a clear SCC may go hand in hand with liking pop music. What applies to pop music can be extended to other forms of popular music found on the charts: popular rock, Hip-hop and dance. Once more, there may be a positive association between SCC and liking Hip-hop and dance. However, it's important to acknowledge that mainstream music holds widespread appeal among young audiences. It offers enjoyable, easy-to-listen-to melodies and lyrics that invite sing-alongs, thus uplifting or maintaining the mood of large groups of young people. This suggests that there may not be a consistent association between levels of SCC and liking mainstream popular music. Mainstream music remains a favored choice regardless of one's level of SCC. In summary, we predict that SCC is either not associated with or positively associated with liking mainstream music.

The situation differs for young people who are less inclined towards mainstream pop music. It is evident from the literature that those who prefer more extreme genres of rock music, such as heavy metal and goth, tend to experience higher levels of depression and anxiety on average (Arnett, 1993; Bowes et al., 2015). For young people with lower levels of

SCC (i.e., a less clear sense of who they are), it might be hypothesized that their preferences for non-mainstream music stems from internal of social challenges that make them question their identity and place in the world more often. If they do not fit in or know who they are and where they belong, non-mainstream music may be attractive as it reflects and thematizes an outsider perspective and suggests that not fitting in is understandable and clarity about one's identity not self-evident.

On the other hand, non-mainstream forms of music often lie at the core of subcultures where young people find a sense of belonging. Sharing a love for the same music creates strong bonds, fostering a sense of community where individuals can openly discuss issues and problems among peers (Bešić & Kerr, 2009). In this sense, non-mainstream musical subcultures may indeed contribute to the development of a clear self-image, as they provide clear guidelines on identity, appearance, and values. Within these subcultures, it's evident who one should aspire to be, what appearance to adopt, and which ideas and ideals to embrace.

In summary, there appears to be no consistent correlation between levels of SCC and preferences for mainstream Pop, Hip-hop, Rock, and Dance music; or if such an association exists, it tends to be positive. Individuals with lower SCC may prefer non-mainstream music. However, it's worth noting that engaging with this music and connecting with peers who share similar tastes can be an enlightening experience, strengthening SCC (Baker & Brown, 2016; Sharman & Dingle, 2015; Travis Jr., 2015).

So far, no longitudinal empirical studies have examined how SCC and music taste development are associated. However, preliminary empirical evidence suggests that both individual differences in identity and music preferences become most consolidated during middle to late adolescence. For instance, individual differences in identity certainty and uncertainty seem to become most differentiated during middle to late adolescence (e.g., Becht et al., 2016), and a dip in self-concept clarity was strongest at this same age period too (de

Moor et al., 2023). Similarly, prior studies suggest that individual differences in rock music taste become most consolidated during middle to late adolescence (Ter Bogt et al., 2021). These findings highlight the critical period of adolescence for the development and consolidation of both identity and music preferences, underscoring the need for further research into their interrelationship during this formative stage of life.

Present Study

In this longitudinal study, we investigated the associations between SCC and music preferences for both mainstream and non-mainstream music genres, from adolescence into young adulthood. We included four mainstream genres (Pop, Hip-hop, Popular Rock, Dance/Trance, and) and three non-mainstream genres (Heavy Metal, Goth, and Hardstyle). Our first step was to examine the development of music preferences over time and subsequently link SCC to music preference scores, assessing these associations at six time points spanning early adolescence to young adulthood. Exploratory Hypothesis 1 predicts that SCC is weakly positive or not associated with a preference for mainstream music. Hypothesis 2 posits that SCC is negatively associated with non-mainstream preferences, that is, youth with lower levels of SCC will have a stronger preference for non-mainstream music compared to youth with higher levels of SCC. We then zoomed in on time-varying associations between SCC and music preferences, examining three developmental stages: early adolescence, mid to late adolescence, and young adulthood. Hypothesis 3 predicted that SCC is similarly associated with mainstream music preferences across these three periods. In contrast, Hypothesis 4 predicts that the negative association between SCC and non-mainstream music is strongest in mid to late adolescence, that is, young people characterized by lower SCC will like non-mainstream music most during the period when individual differences in SCC and music preferences are most pronounced (De Moor et al., 2023; Ter Bogt et al., 2021), relative to early adolescence and young adulthood.

Method

Participants

Participants were 900 adolescents (M_{age} T1=12.48 years, *SD* = 0.49, 50.1% female) who participated in the longitudinal CONAMORE study (Conflict And Management Of RElationships (Meeus & Branje, 2001). For the current study, we used data from all six waves with a 1-year interval between waves 1-5 and 5-year interval between waves five and six.

Procedure

Participants came from various high schools from the Dutch province of Utrecht, the Netherlands. Parents and students received a letter outlining the study's aims and the option to opt-out. Less than 1% chose not to participate. Participating students provided written informed consent and completed questionnaires in their classrooms after school hours. Research assistants provided verbal and written instructions, ensuring confidentiality. For absent students, a second assessment was organized, but those absent on both testing days were not assessed. Participants received 10 euros at each of the 5 yearly waves. Five years later, when the students were young adults (mean age at T6: ~21 years), they were re-approached. The CONAMORE study was approved by the Ethical Review Board of the Faculty of Social Sciences at Utrecht University.

Measures

Mainstream and Non-Mainstream Music Genres

We assessed adolescents' music preferences with the Music Preference Questionnaire (Ter Boigt et al., 2003). This questionnaire includes 13 music genres such as rock, heavy metal, pop and goth. Participants were instructed to indicate how much they liked each music style (1 item per music style), rated on a 5-point Likert scale (1=*do not like at all*, 5 = *like very much*).

Self-Concept Clarity

Participants reported on their self-concept clarity using the 12-items Dutch version of the Self-concept clarity scale (Campbell et al., 1996). An example item reads, "*In general I have a clear sense of who I am and what I am"*. Items were rated on a 5-point Likert scale (1 (*strongly disagree*) to 5 (*strongly agree*). We computed a mean based on all items (Cronbach's *a* ranged from 0.83 - 0.90 across waves).

Statistical analyses

We conducted a series of latent growth curve models (LGMs) with time varying covariates to examine the associations between SCC and music preferences across adolescence into young adulthood. First, to establish the baseline growth curve models, we conducted seven univariate LGMs to compare linear with quadratic growth models for mainstream and non-mainstream music preferences over time. Second, we added SCC as a time varying covariate to examine the four hypotheses. We predicted that SCC is unrelated or weakly positively related to preferring mainstream music at each wave (Hypothesis 1). Next, we predicted negative associations between SCC and non-mainstream music at each wave (Hypothesis 2). We used Wald tests to examine Hypothesis 3 and 4 on differences in the strength of the associations between SCC and mainstream music preferences (Hypothesis 3) and non-mainstream music preferences (Hypothesis 4) during early adolescence (T1-T2), middle to late adolescence (T3-T5) and young adulthood (T6). To this end, we compared constrained T1-T2 associations with constrained T3-T5 and T6 associations. All associations were evaluated at $\alpha = .05$.

All LGMs were estimated with the robust MLR estimator to account for non-normal distribution of some music preferences (e.g., non-mainstream music preferences). We evaluated absolute model fit with the comparative fit index (CFI), the root mean square error of approximation (RMSEA) and the standardized mean squared residual (SRMR). CFI values of $\geq .90$, and RMSEA and SRMR values of $\leq .08$ indicate acceptable fit (Byrne, 2013). We compared model fit of the linear and quadratic growth models with the Satorra Bentler chi-

square difference test. All analyses were conducted in Mplus version 8 (Muthén & Muthén, 1998). Missing data of the dependent variables (i.e., music genres) were handled using full information maximum likelihood (FIML).

Missing value analyses

For the LGMs with SCC as time-varying predictors, only participants with complete SCC data from T1-T6 were included (default setting in Mplus because SCC T1-T6 variables were exogenous variables). A total of 653 participants had complete SCC data for all waves. To check if dropout affected the main results, we conducted missing value analyses using MANOVAs with missing vs. non-missing as the grouping variable and T1-T6 music preferences as dependent variables, separately for each music genre. The analyses showed no differences in music preferences between participants with complete and incomplete SCC data across T1-T6 (F-values: 0.29 - 1.94, all ps > .178, effect sizes $\eta 2$: 0.00 - 0.02). Participants with incomplete SCC data were slightly older (M = 12.47 vs. M = 12.34 years), $F(1, 898) = 13.01$, $p < .001$, $\eta 2 = 0.014$, and more often male, X^2 (1, N = 900) = 16.00, $p <$ .001, $\varphi c = 0.13$.

Results

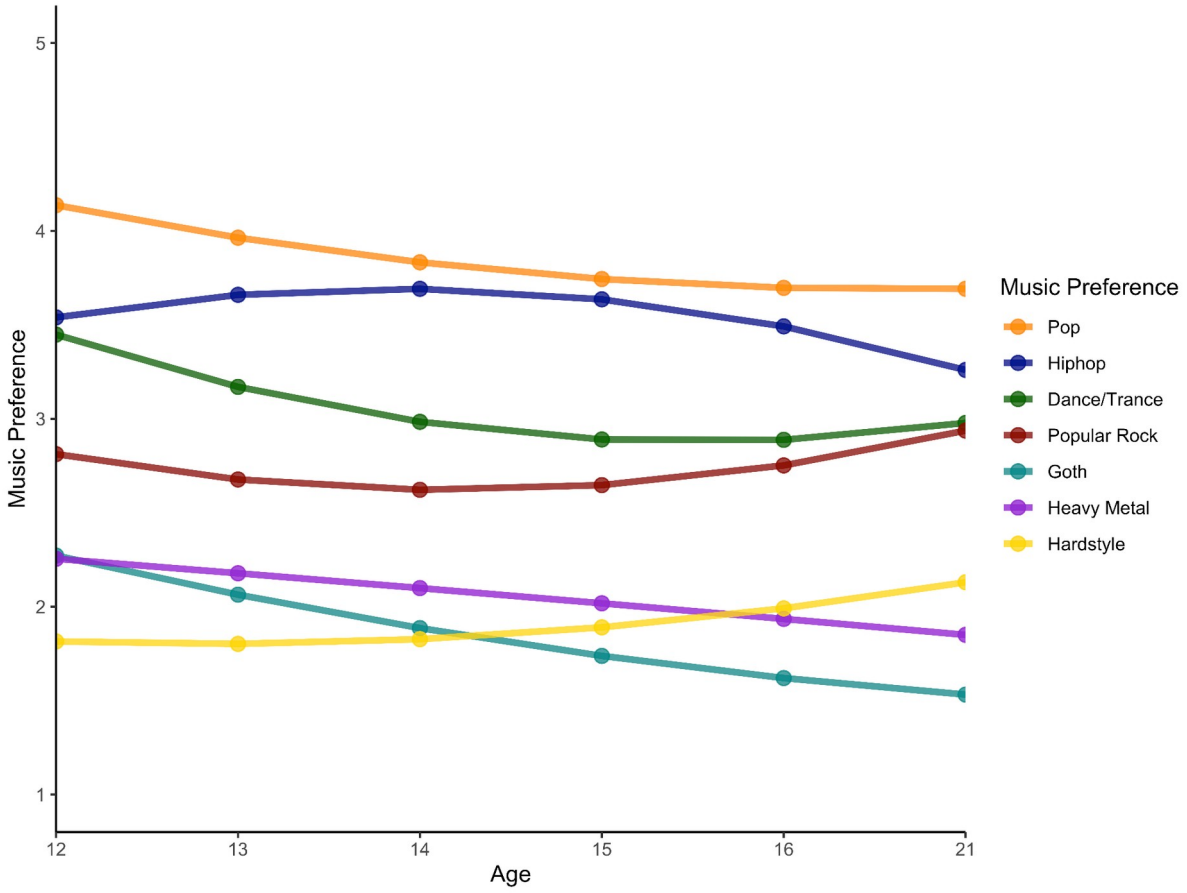
Music preference development

Model comparisons of the linear versus quadratic growth models revealed that all developmental trajectories of mainstream and non-mainstream music types were best described by a quadratic model, with Satorra Bentler chi square difference tests ranging from 117.88 to 213.86, all ps <.001, df = 4. Absolute model fit results are presented in the online supplementary material Table S1. Mean development trajectories of all music preferences are presented in Figure 1. Figure 1 supports the distinction between mainstream and non-mainstream music preferences with the intercepts and mean levels of mainstream music (i.e., Pop, Hip-hop, Popular Rock, Dance/Trance) being highest across adolescence into young adulthood and mean levels of non-mainstream music (Heavy Metal, Goth, Hardstyle) being

the lowest and mostly declining (except for hardstyle) across adolescence and young adulthood.

Figure 1

Mean developmental trajectories for mainstream and non-mainstream music preferences across early adolescence into young adulthood



Note. For presentation purposes, the age intervals are presented at equal distance. Yet, there was a 5 year distance between waves 5 and 6 (respectively representing a mean age of 16 and 21 years).

Mainstream music preferences

Pop, Popular Rock and Dance/Trance all decreased in early to middle adolescence and showed a small increase or leveling off into young adulthood. Hip-hop music preference showed an increase and subsequent decrease across adolescence into young adulthood.

Non-mainstream music preference

Levels of Heavy Metal and Goth were relatively low and further decreased across adolescence into young adulthood. Hardstyle music preference was lowest during early adolescence and increased during late adolescence into young adulthood.

Time varying associations between SCC and mainstream and non-mainstream music preferences

To test hypotheses 1 and 2 we examined the time varying associations between SCC and mainstream and non-mainstream music preferences. All models provided good fit with the data (Table S2 presents all fit indices). Table 1 presents all time varying associations between SCC and mainstream and non-mainstream music preferences.

Table 1

Standardized time varying associations between self-concept clarity and music preference across mainstream and non-mainstream preferences

	Waves (Years)					
Mainstream music preferences	T1 (12)	T2 (13)	T3 (14)	T4 (15)	T5 (16)	T6 (21)
Pop	-0.05	0.01	0.00	0.01	0.03	0.07*
Hip-hop	-0.09*	-0.00	-0.01	0.02	0.05*	0.07*
Popular Rock	-0.05	-0.06*	-0.09***	-0.09***	-0.10***	-0.05
Dance/Trance	-0.10**	-0.03	-0.03	-0.02	-0.01	0.02
Non-mainstream music preferences						
Heavy Metal	-0.03	-0.04	-0.11***	-0.13***	-0.11***	-0.10**
Goth	-0.10*	-0.07*	-0.12***	-0.12***	-0.13***	-0.14***
Hardstyle	-0.06	-0.04	-0.07**	-0.06*	-0.04	-0.02

Note. *p <.05, **p <.01, ***p <.001.

Mainstream music preferences

We found limited support for Hypothesis 1 that SCC did not or positively predict mainstream preferences. During mid- to late adolescence virtually no associations were found

between SCC and Pop, Hip-hop and Dance/Trance and at T6 SCC was positively related to Pop and Hip-hop. Contrary to hypothesis 1, SCC negatively predicted Dance/Trance and Hip-hop at T1 and Popular Rock across T2-T5.

Non-mainstream music preferences

We found evidence for hypothesis 2, indicating that SCC would be negatively related to non-mainstream preferences. Indeed, SCC negatively predicted Goth music preference across T1-T6. SCC also predicted lower levels of Heavy Metal music from T3-T6 and Hardstyle music preferences at T3 and T4.

In sum, we found some evidence for Hypothesis 1 that SCC is not or a positively related to mainstream music preference. We found more consistent support for Hypothesis 2 that SCC is a negative predictor of non-mainstream music preferences, most consistently for Goth music.

Time varying associations between SCC and music preferences across three developmental stages

Next, we tested hypotheses 3 and 4 on the time specific associations between SCC and mainstream and non-mainstream music across three developmental stages; early adolescence, middle to late adolescence and young adulthood. Table 2 presents all comparisons of the time-varying associations between different developmental stages.

Table 2

Wald test results comparing the strength of the unstandardized associations between SCC and music preferences at different developmental ages

	Early	Middle to late	Young

	adolescence (T1-T2)	adolescence (T3-T5)	adulthood (T6)
Mainstream music preferences			
SCC → Pop	0.03a	-0.01b	0.06ac
SCC→ Hip-hop	0.08a	-0.04b	-0.01bc
SCC → Popular Rock	-0.11a	-0.18b	-0.07ac
SCC → Dance/Trance	-0.03a	-0.09b	0.01ac
Non-mainstream music-preferences			
SCC → Heavy Metal	-0.08a	-0.20b	-0.16c
SCC → Goth	-0.08a	-0.20b	-0.15c
SCC → Hardstyle	-0.03a	-0.10b	-0.09bc

Note. Associations with the same subscripts do not differ significantly from each other.

Mainstream music preferences

Contrary to hypothesis 3, suggesting that SCC is similarly associated with mainstream music preferences across these three periods, we found evidence of differential associations. First, SCC showed a weaker association with Pop music during middle to late adolescence than before or after. Second, higher levels of SCC uniquely predicted higher preferences for Hip-hop music during early adolescence compared to middle to late adolescence and young adulthood. Third, higher levels of SCC were most strongly associated with lower preferences for Popular Rock and Dance/Trance music during middle to late adolescence compared to early adolescence and young adulthood.

Non-mainstream music preferences

We found partial evidence for hypothesis 4 which proposed that SCC was most strongly associated with non-mainstream music genres during middle to late adolescence compared to early adolescence and young adulthood. Specifically, higher levels of SCC,

indeed, most strongly predicted lower preferences for Heavy Metal and Goth music during middle to late adolescence compared to early adolescence and young adulthood. In contrast, SCC was similarly negatively associated with Hardstyle music preferences during middle to late adolescence and young adulthood. These associations were stronger compared to the association during early adolescence.

In sum, hypothesis 3 that associations between SCC and mainstream music preferences were similar across developmental stages was not supported. In contrast, we found evidence for unique associations especially during middle to late adolescence. Hypothesis 4 was mostly supported as we found that SCC was most strongly associated with two types of non-mainstream music preferences during middle to late adolescence compared to early adolescence and young adulthood.

Discussion

During adolescence and young adulthood, music serves as a tool for clarifying one's identity. Lyrics, music videos, and the expressions of artists themselves often serve as examples for young individuals to emulate. While numerous cross-sectional studies have explored the relationship between identity in general and music listening, the specific longitudinal associations between SCC and music preferences have yet to be investigated. Through longitudinal analyses, we aimed to elucidate the relationship between SCC and music preferences throughout the developmental stages of adolescence and young adulthood.

We hypothesized, firstly, that young individuals who enjoy mainstream music, encompassing Pop, Hip-hop, Popular Rock, and Dance/Trance in this study, would generally not encounter significant issues regarding their SCC. In other words, a relatively clear SCC would have a positive relationship with liking mainstream pop music. But it was also noted that mainstream popular music is an appealing music to the vast majority of all young people, that is, regardless of their SCC. That would imply that there is no systematic relationship between SCC and liking mainstream music. Additionally, we anticipated that individuals

with lower SCC levels would be more inclined to favor non-mainstream music genres such as Goth, Heavy Metal, or Hardstyle dance music, particularly during middle and late adolescence, when individual differences in both SCC and music preferences become most salient. But it is also possible that listening to non-mainstream music contributes to a clarification of identity. If so, the association between lower SCC and liking non-mainstream music would disappear in late adolescence or young adulthood.

Our investigation yielded several noteworthy results. First, during adolescence, a preference for mainstream music genres such as Pop, Hip-hop, Popular Rock, and Dance/Trance did not show a systematic association with SCC. However, in young adulthood, higher levels of SCC positively predicted higher preferences for Hip-hop and Pop music. Second, we observed that individuals with lower SCC are more inclined to lean towards non-mainstream music genres such as Heavy Metal or Goth. This tendency also extends, albeit to a lesser degree, to the association between SCC and non-mainstream hardstyle dance music. Third, contrary to our expectations, results revealed that particularly young adolescents with lower SCC levels showed a preference for two types of mainstream music: Dance/Trance and Hip-hop. Fourth, and also unexpected, slightly older adolescents with lower SCC tend to prefer another type of mainstream music: Popular Rock music. Fifth, as expected, the associations between SCC and music preferences are evident during middle adolescence. However, even in young adulthood, individuals who continue to struggle with SCC favored non-mainstream rock genres, specifically Heavy Metal and Goth.

How can these findings be explained? Our first assumption was that there would be a positive association between SCC and linking mainstream music, or that no systematic associations between SCC and non-mainstream Pop, Hip-hop, Rock, and Dance music would be present. Mainstream music, which typically covers themes of adolescent life in an engaging way, holds universal appeal, regardless of adolescents' level of SCC. Themes such as infatuation, love, and socializing with peers resonate with all young people (Christenson &

Roberts, 1998). Our results seem to align with this observation. We did not find links between SCC and liking Pop, Hip-hop and Dance/Trance in middle and late adolescence. But it is noteworthy that in young adulthood, a higher SCC is associated with a stronger preference for, specifically, Pop and Hip-hop music. This suggests that youth with fewer personal issues and a clearer sense of self indeed gravitate towards more conventional and mainstream forms of music when they grow into young adulthood (Laffan, 2021; Mulder et al., 2006).

But, second, when adolescents grapple with lower SCC, other non-mainstream music genres become more pertinent. Genres such as Heavy Metal and Goth delve into themes of not belonging to the mainstream, of not knowing who you are or where you belong. They explore the experiences of feeling unable to keep up with peers, or even facing active exclusion (e.g., Skutlin, 2016). For individuals navigating these feelings of alienation or exclusion, music genres that articulate such experiences may resonate more deeply. Our results seem to corroborate findings from an earlier study on shyness and preferring goth music. Bešić and Kerr (2009) proposed that "radical" youth cultures centered around music, such as punk and goth, are safe havens particularly for shy, introverted and sometimes anxious individuals who find it easier to express themselves among like-minded peers.

For young people with relatively low SCC, not only are Goth and Metal attractive, but also another type of non-mainstream music, especially in middle and late adolescence: Hardstyle dance. Although less texturally sophisticated than non-mainstream rock music, this music and the scene associated with it could provide an outlet for young people who don't yet know exactly who they are. The loud, energetic music can lift the mood, and a dance party offers fun, and a degree of oblivion. As in the case of fan scenes of goth and metal, the dance community offers togetherness and a place for young people who may not yet know or feel quite what their place is (Collin, 2010). It is interesting to note, however, that the negative link between SCC and hardstyle disappeared into young adulthood.

Third, the link between low SCC and liking mainstream Hip-hop and Dance/Trance in early adolescence presents a somewhat puzzling finding. While it's possible that these results are coincidental, a cautious interpretation suggests a potential explanation. During early adolescence, it is common for young people to gravitate towards upbeat, sing-along, and low-complexity pop music. In contrast, Hip-hop tends to be more layered and less straightforwardly happy-go-lucky than pop, while Dance/Trance music typically becomes more relevant as young people mature and begin going out to dance. Therefore, a preference for Hip-hop or Dance/Trance in early adolescence could be viewed as a somewhat unconventional pattern. In line with one of our hypotheses, it's plausible that music that deviates from the mainstream holds greater appeal to young individuals with low SCC. This could explain why Hip-hop and Dance/Trance, while still classified by us as mainstream music, attract those with lower SCC during early adolescence. It is, furthermore, intriguing to observe that in early adolescence, lower SCC is connected to a stronger preference for Hip-hop music, whereas in young adulthood, the relationship is reversed. In this stage, a higher SCC is associated with a preference for Hip-hop. Further replication research is necessary to ascertain whether this trend is merely coincidental or holds meaningful implications.

Fourth, an unexpected result was that young people with lower levels of SCC also preferred another type of mainstream music: Popular Rock. A possible explanation could be that young people with a less clear sense of who they are do not only prefer Goth and Metal more often, but also the popular music that most closely aligns with those preferences: Popular Rock. This type of rock, while generally more melodic and more comfortable with most young people, perhaps also addresses some of the issues that are certainly addressed in the non-mainstream varieties of rock: rebellion, maladjustment, fear and alienation.

Fifth, as anticipated the associations between SCC and music preferences are evident during middle adolescence. Overall, we indeed found a negative association between SCC and, particularly non-mainstream music in middle and late adolescence. We have raised the

possibility that while adolescents with lower SCC initially exhibit a greater inclination towards non-mainstream music, the exposure to this music and the discussions with peers within their music scene could potentially elevate their SCC levels later on in life. While music and conversations with peers may indeed play a role in clarifying SCC, our primary finding suggests that lower levels of SCC are associated with preferences for non-mainstream music, such as Goth and Heavy Metal, not only in adolescence but also in young adulthood. As noted before, these types of music may hold important messages and the associated music scenes can provide a sense of belonging and camaraderie, but they might not inherently address deeper emotional or psychological challenges such as feelings of alienation, depression, or lack of SCC. If SCC maintains relatively low, non-mainstream Goth and Heavy Metal seems to remain attractive in young adulthood.

Calling for an interdisciplinary approach

At a more general level, the current longitudinal study reveals that two key developmental tasks of youth –identity development and music taste development– are meaningfully associated across adolescence and young adulthood. This underscores the importance of future research to integrate different fields of study, such as developmental psychology and the psychology of music, to increase our understanding of how these processes interact and evolve over time.

Limitations

Longitudinal studies on music listening, music preferences and music fandom in relation to a range of adolescent developmental outcomes are scarce. The current study fills this gap. It is the first longitudinal study to examine a crucial feature of identity formation, namely SCC development, in relation to music preferences across ten years from early adolescence into young adulthood. Despite this strength, this study also has limitations. First, while we illustrated the development of SCC and its relationship with music preferences at different stages of adolescence and young adulthood, we did not explicitly explore the

dynamic interaction and mutual influence between SCC and music preferences. This dynamic relationship warrants further investigation. Second, although we operationalized music preferences, we lacked detailed information on the specific music young people listened to, the frequency of their listening habits, and the significance they attributed to it. Understanding these processes of listening, interpretation, and meaning-making is crucial for elucidating identity formation and should be explored in follow-up studies. Third, our dataset did not include an item specifically related to the more radical non-mainstream varieties of Hip-hop. It would have been insightful to examine whether the associations between SCC and non-mainstream rock and dance music also apply to Hip-hop.

Conclusion

In this study, we once again observed that enjoying upbeat mainstream music rarely signals problems, while a preference for non-mainstream music often correlates with problematic outcomes in adolescent development. However, we caution against stereotyping or stigmatizing this music. Particularly for young people facing challenging situations, such music can offer solace, elevate mood, and provide a sense of belonging in a social context where those feeling marginalized can find acceptance (Baker & Brown, 2016; Sharman & Dingle, 2015; Travis Jr., 2015). Over 30 years ago, Christenson and Roberts, in their groundbreaking book "It's Not Only Rock 'n Roll" (1998), observed that there is no such thing as "problem music," but rather that young people facing difficulties are more likely to resonate with what adults may deem as "problematic music." We wholeheartedly support this conclusion. Our findings suggest that adults working with young people in school, youth work, or therapeutic settings should be particularly attentive to those who have a preference for music that many adults perceive as harsh, norm-defying, chaotic, or nihilistic. These young individuals deserve empathy, care, and focused attention, especially in the context of

clarifying their identity. Understanding their musical preferences can provide valuable insights into their emotional and psychological needs,

Online supplementary materials

Table S1

Absolute model fit statistics of latent growth curve models

LGM	CFI	RMSEA	SRMR
Mainstream music			
Pop music	0.946	0.077	0.066
Popular Rock music	0.902	0.111	0.092
Dance/Trance	0.946	0.077	0.056
Hip-hop	0.925	0.094	0.083
Non-mainstream music			
Heavy Metal	0.938	0.088	0.067
Goth	0.936	0.080	0.063
Hardstyle	0.954	0.058	0.052

Note. CFI= comparative fit index, root mean square error of approximation

SRMR = standardized mean squared residual

Table S2

Model fit statistics of latent growth curve models with self-concept clarity as time varying predictor

LGM with SCC as time varying covariate	CFI	RMSEA	SRMR
Mainstream music			
Pop music	0.969	0.037	0.056
Popular Rock music	0.951	0.048	0.050
Dance/Trance	0.975	0.032	0.043
Hip-hop	0.991	0.020	0.035
Non-mainstream music			
Heavy Metal	0.988	0.023	0.036
Goth	0.961	0.039	0.064
Hardstyle	0.985	0.022	0.042

Note. CFI= comparative fit index, root mean square error of approximation

SRMR = standardized mean squared residual

References

Arnett, J. (1993). Three profiles of heavy metal fans: A taste for sensation and a subculture of

alienation. *Qualitative Sociology*, *16*(4), 423–443. https://doi.org/10.1007/bf00989973

Baker, C., & Brown, B. (2016). Suicide, self-harm and survival strategies in contemporary Heavy Metal music: A cultural and literary analysis. *Journal of Medical Humanities 37*, 1–17. https://doi-org.proxy.library.uu.nl/10.1007/s10912-014-9274-8

Becht, A. I., Nelemans, S. A., Branje, S. J., Vollebergh, W. A., Koot, H. M., Denissen, J. J., & Meeus, W. H. (2016). The quest for identity in adolescence: Heterogeneity in daily identity formation and psychosocial adjustment across 5 years. *Developmental Psychology*, *52*, 2010–2021. https://doi.org/10.1037/dev0000245

Bešić, N., & Kerr, M. (2009). Punks, Goths, and other eye-catching peer crowds: Do they fulfill a function for shy youths? *Journal of Research on Adolescence., 19*(1), 113-121.

Bowes, L., Carnegie, R., Pearson, R., Mars, B., Biddle, L., Maughan, B., ... & Heron, J. (2015). Risk of depression and self-harm in teenagers identifying with goth subculture: A longitudinal cohort study. *The Lancet Psychiatry*, *2*(9), 793-800 https://doi: 10.1016/S2215-0366(15)00164-9

Campbell, J. D., Trapnell, P. D., Heine, S. J., Katz, I. M., Lavallee, L. F., & Lehman, D. R. (1996). Self-Concept Clarity: Measurement, personality correlates, and cultural boundaries. *Journal of Personality and Social Psychology*, *70*(1), 141–156.

Collin, M. (2010) *Altered State: The Story of Ecstasy Culture and Acid House.* Profile Books.

De Moor, E. L., Nelemans, S. A., Becht, A. I., Meeus, W., & Branje, S. (2023). Personality development across adolescence and young adulthood: The role of life transitions and Self-Concept Clarity. *European Journal of Personality*, *37*(5), 587–604. https://doi.org/10.1177/08902070221119782

Dys, S. P., Schellenberg, E. G., & McLean, K. C. (2017). Musical identities, music preferences, and individual differences. In R. MacDonald, D. J. Hargreaves, & D. Miell (eds.), *Handbook of Musical Identities* (pp. 247–266). Oxford University Press.

https://doi.org/10.1093/acprof:oso/9780199679485.003.0014

Erikson, E. (1968). Youth and crisis. *WW Norton & Company, New York-London*, *17*. https://doi.org/10.1126/science.161.3838.257

Frith, S. (1978) *The Sociology of Rock.* Constable & Robinson.

Hargreaves, D. J., Macdonald, R., & Miell, D. (2017). The changing Identity of musical identities. In R. MacDonald, D. J. Hargreaves, & D. Miell (eds.), *Handbook of Musical Identities* (pp. 3–24). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199679485.003.0001

Lacasa, P., Fuente, J. de la, García-Pernía, M. R., & Cortés, S. (2017). Teenagers, fandom and identity. *Persona Studies*, *3*(2), 51–65. https://doi.org/10.21153/ps2017vol3no2art648

Laffan, D. A. (2021). Positive psychosocial outcomes and fanship in K-pop fans: A social identity theory perspective. *Psychological Reports*, *124*(5), 2272-2285. https://doi.org/10.1177/003329412096152

MacDonald, R., & Saarikallio, S. (2022). Musical identities in action: Embodied, situated, and dynamic. *Musicae Scientiae*, *26*(4), 729-745. https://doi.org/10.1177/10298649221108305

Meeus, W. H. J., & Branje, S, 2001, "CONAMORE (CONflicts And Management Of RElationships)", https://doi.org/10.17026/dans-z33-krgr, DANS Data Station Social Sciences and Humanities, V3

Mulder, J., Ter Bogt, T., Raaijmakers, Q., & Vollebergh, W. (2006). Music taste groups and problem behavior. *Journal of Youth and Adolescence*, *36*(3), 313–324. https://doi.org/10.1007/s10964-006-9090-1

Mulder, J., Ter Bogt, T. F., Raaijmakers, Q. A., Gabhainn, S. N., & Sikkema, P. (2009). From death metal to R&B? Consistency of music preferences among Dutch adolescents and young adults. *Psychology Of Music*, *38*(1), 67–83.

https://doi.org/10.1177/0305735609104349

Mulder, J., Ter Bogt, T. F., Raaijmakers, Q. A., Gabhainn, S. N., Monshouwer, K., & Vollebergh, W. A. (2009b). The soundtrack of substance use: Music preference and adolescent smoking and drinking. *Substance Use & Misuse*, *44*(4), 514-531. https://doi.org/10.1080/10826080802347537

North, A.C. (2010) Individual differences in musical taste. *American Journal of Psychology*, *123*(2), 199–208. https://doi.org/10.5406/amerjpsyc.123.2.0199

Rabaka, R. (2013). *The Hip Hop Movement: From R&B and the Civil Rights Movement to Rap and the Hip Hop Generation*. Lexington Books.

Schäfer, T., & Sedlmeier, P. (2009). From the functions of music to music preference. *Psychology of Music*, *37*(3), 279-300. https://doi.org/10.1177/0305735608097247

Schäfer, T., Sedlmeier, P., Städtler, C., & Huron, D. (2013). The psychological functions of music listening. *Frontiers in Psychology*, *4*. https://doi.org/10.3389/fpsyg.2013.00511

Sharman, L., & Dingle, G. A. (2015). Extreme metal music and anger processing. *Frontiers in Human Neuroscience*, *9*. https://doi.org/10.3389/fnhum.2015.00272

Skutlin, J. M. (2016). Goth in Japan: finding identity in a spectacular subculture. *Asian Anthropology*, *15*(1), 36–51. https://doi.org/10.1080/1683478x.2015.1103937

Steinbrecher, B. (2021). Mainstream popular music research: A musical update. *Popular Music*, *40*(3-4), 406-427. https://doi.org/10.1017/S0261143021000568

Tarrant, M., North, A.C., & Hargreaves, D.J. (2002) Youth identity and music. In: Macdonald, R.A.R., Hargreaves, D.J., Miell, D. (eds.), *Musical Identities*. pp. 134–150, Oxford University Press.https://doi.org/10.1093/oso/9780198509325.003.0008

Ter Bogt, T., Raaijmakers, Q., Vollebergh, W., Van Wel, F., Sikkema, P. (2003). Youngsters and their musical taste: Musical styles and taste groups. *The Netherlands Journal of Social Sciences* 39(1):35–52.

Travis Jr, R. (2015). *The Healing Power of Hip Hop*. Bloomsbury Publishing USA.

Weber, E., Hopwood, C. J., Nissen, A. T., & Bleidorn, W. (2023). Disentangling self-concept clarity and self-esteem in young adults. *Journal of Personality and Social Psych*ology, *125*(6), 1420–1441. https://doi.org/10.1037/pspp0000460