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Improvement in South African students' outlook due to music involvement

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In the spring of 2009, we started a concert band programme at a high school in KwaZulu-Natal, South Africa. In the fall of 2011, we returned to the school to measure the impact of participating in a concert band on the students' attitude and outlook. During our initial and return visits, we measured feelings of self-esteem, optimism, positive affect, negative affect, motivation to avoid losses and motivation to seek gains. We compared participants in our music group to a group of same-age students at the same school who were not part of the music programme. At the second testing, the band members, and not members of the control group, showed increased levels of optimism and motivation to seek gains. The music programme appears to have certain psychosocial benefits, improving aspects of attitude and outlook for participants in the band.

Keywords: music; South Africa; optimism; self-esteem; motivation

Introduction

In the spring of 2009, we started a concert band programme at a disadvantaged public high school in the KwaZulu-Natal province of South Africa; this project was funded by Elizabethtown College. In the fall of 2011, we returned to the school to measure the impact of the intervention. Here we examine the impact of the intervention on the participants' outlook on life.

Benefits of music instruction

There is extensive research to suggest that individual and group music lessons have a number of cognitive and academic benefits (see Hallam 2010 and Schellenberg 2001 for reviews), including gains in general intelligence (Costa-Giomi 1999; Schellenberg 2004, 2005, 2006), spatio-temporal performance (Graziano, Peterson, and Shaw 1999; Rauscher and Zupan 2000), verbal memory (Ho, Cheung, and Chan 2003; Rickard et al. 2010) and academic achievement (Gardiner et al. 1996; Hodges and O'Connell 2005; Southgate and Roscigno 2009).

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Despite much anecdotal evidence from music educators and therapists about the social and emotional benefits of music (Rickard et al. 2010), less is known about the psychosocial outcomes of being involved in music training. It has been shown that three years of one-on-one piano lessons increase students' self-esteem (Costa-Giomi 2004); music instruction prevents self-esteem decreases in adolescents (Rickard et al. 2013); classroom-based music interventions can reduce students' depression scores (Hendricks et al. 1999); and music instruction is associated with lower levels of the stress hormone cortisol (Lindblad, Hogmark, and Theorell 2006). In older adults, taking part in programmes such as 'Music for Life' has been found to increase well-being as well as conferring other social and emotional benefits (Creech, Hallam, McQueen et al., 2013; Creech, Hallam, Varvarigou et al., 2013; Hallam et al. 2011).

Although promising work has been done on the benefits of music training, more research is warranted on (1) non-Western and disadvantaged populations, (2) group instruction and (3) psychosocial outcomes of music interventions. The present study meets all three of these criteria and thus provides an important extension to previous research. The three criteria are discussed in turn below as they relate to the present study.

Non-Western and disadvantaged population

The educational policies of the National Party led Apartheid Government had a devastating impact on the educational development of South African youth. Resources were disproportionately allocated to schools that were segregated along racial lines (Mare 1993). The result being that most historically black schools had little to no facilities, human and financial resources, or curricula to support music programmes. Instrumental music programmes were practically non-existent in historically black schools and although the birth of democracy in 1994 paved the way for inclusion of music into the mainstream curriculum, most schools still do not have instrumental music programmes due to a lack of resources and the Department of Education's focus on math, science and technology. The World Economic Forum's international ranking of math and science education ranked South Africa second to last. Accordingly, the Department of Education has put into place-targeted interventions for the sole purpose of improving math and science; unfortunately, this has come at the expense of arts education.

While South Africa celebrates 20 years of democracy in 2014, the country is still plagued by a host of social and educational problems. According to the World Health Organization (WHO 2014), drug consumption in South Africa is twice the world norm with almost 15% of the population afflicted with a drug problem. The WHO report indicates that the youth drug problem costs the country approximately two billion dollars per year and could pose a bigger threat to the country than the AIDS pandemic. Drugs are easily accessible in most schools at low costs. According to the South African Human Sciences Research Council (HSRC 2013), there has been a decline of HIV prevalence rates among youth aged 15–24 years old in the last 10 years. Unfortunately, prevalence rates are still as high as 7.3% for this age bracket. The large number of orphaned and homeless youth, coupled with the lack of parental supervision, could be contributing factors to the high rates of HIV prevalence and drug abuse.

In 2012, the National School Violence Study was conducted with a sample of approximately 6000 learners (Burton and Leoschut 2012). Results indicated that 22.2% of high school students were either threatened with violence or had been a

victim of assault, robbery or sexual assault in high school in the previous year. The study found that weapons, drugs and alcohol were easily accessible to most learners. In fact, nearly a quarter of the sample could identify individuals who brought weapons to school. Clearly, South African schools are plagued by a host of sociocultural and educational problems; accordingly, the need for social programmes and interventions such as the introduction of music programmes are important.

In attempting to address the need for a social intervention, we chose to establish the concert band in Pietermaritzburg in the Kwazulu-Natal province on the east coast of the country. The school was a historically black school located in the township of Eastwood (coloured/mixed) that borders two previously racially segregated residential areas, Sobantu (African) and Allandale (South Asian/Indian). Accordingly, the population of approximately 1000 students at the school was comprised of primarily African, coloured/mixed and South Asian/Indian students.

The majority of the students at the school were from severely disadvantaged backgrounds. Crime, poverty, drugs, HIV/AIDS and prostitution impacted many students. Lack of parental supervision was a huge problem among students because many had lost one or both parents. According to the school principal, many students were classified as ‘head of household’ as they lived by themselves while taking care of their younger siblings. The lack of parental supervision led many students to become soft targets for drug peddlers. Accordingly, many students became drug users or drug runners for peddlers. The lack of a stable financial income led many students to live in informal housing historically referred to as ‘shacks’ with no running water or electricity. These shacks were located close to the school. Students who did have a stable family environment were often from a very low-income bracket.

School concert band programme

Similar to the model of El Sistema in Venezuela (see Tunstall 2012 for a description of the programme), this project sought to improve students’ lives through music. We chose to establish the concert band at this particular school based upon a few pre-existing conditions including but not limited to: strong leadership by the school principal and a willingness on his part to include music within the school curriculum, the availability of a faculty member who had a qualification in music and could be trained to manage the concert band, a classroom that could be utilised as a music rehearsal room and security of the musical instruments and equipment. Prior to establishing the programme, musical instruments were solicited for donation from US schools, churches, colleges and individuals. These instruments were subsequently repaired by music stores in the USA and shipped to South Africa. Funding was secured to purchase additional equipment and supplies and to transport the research/teaching team from the USA to South Africa. The team spent a week in 2009 teaching and establishing the concert band, and over the subsequent years additional assistance was provided to help sustain and develop the music programme.

The concert band that was established was comprised of 44 students and was modelled after the standard US high school concert bands. The ensemble included flutes, clarinets, saxophones, trumpets, trombones and concert percussion. During the initial set-up, the research/teaching team spent a week working daily with students and the music faculty member for approximately seven hours per day. Subsequent to the initial programme set-up, the concert band has been rehearsing

regularly approximately two to three times per week for the past four years. During rehearsals, the ensemble focuses on the fundamentals of wind band performance including tone production, scales and technical exercises, short unison pieces and standard concert band arrangements. Over the past few years, the ensemble has developed into a fully functional concert band with regular rehearsals and concerts.¹

Psychosocial benefits

During our initial and return visits, we measured students' feelings of positive affect (PA) and negative affect (NA), self-esteem, optimism and regulatory focus (a tendency to focus on either seeking gains – promotion – or avoiding losses – prevention). These measures were chosen because of their links, as detailed below, to well-being, health and life outlook. Any gains in these domains as a result of participating in the music programme would thus provide evidence that music provides psychosocial benefits in addition to previously researched cognitive and academic benefits. To ensure that possible gains were due to the music intervention programme and not simply to natural development, same-age students at the school who were not part of the music programme served as a control group.

Positive and negative affect

We examined participants' levels of PA and NA using the Positive and Negative Affect Schedule (PANAS; Watson and Tellegen 1985; Watson, Clark, and Tellegen 1988). The PANAS has been found to be a reliable and valid measure of children's (age range 9–17) affect (see Lonigan et al. 1999). PA and NA have been linked to overall disposition and personality (Costa and McCrae 1980; Schmukle, Egloff, and Burns 2002; Watson and Clark 1984), with PA highly correlated with extraversion and openness (DeNeve and Cooper 1998; Lucas and Fujita 2000; Mitte and Kämpfe 2008), and NA linked to neuroticism (Costa and McCrae 1992; DeNeve and Cooper 1998). In relation, PA has been linked with better coping mechanisms and increased well-being (Burns et al. 2008; Fredrickson and Joiner 2002), while NA has been linked with anxiety and depression (Zautra, Berkhof, and Nicolson 2002).

Self-esteem

Higher levels of self-esteem have been linked with a number of positive outcomes, such as improved psychological well-being (Rosenberg et al. 1995) and increased ability to deal with anxiety (Pyszczynski et al. 2004). One study found that higher levels of self-esteem early in life were predictive of better health, increased earning and less criminal activity in adulthood (Trzesniewski et al. 2006). Although it does appear that high self-esteem is beneficial, the pursuit of self-esteem as an end may be detrimental (Crocker and Park 2004).

Optimism

Similar to self-esteem, people high in optimism experience lower levels of stress (Scheier, Carver, and Bridges 1994; Vollman et al. 2011) and benefit from a number of positive health outcomes (Rasmussen, Scheier, and Greenhouse 2009). For example, higher optimism has been linked to lower levels of perceived stress after

a cancer diagnosis (Friedman et al. 2006; Hulbert and Morrison 2006), during and after illness or death of a family member (Kivimäki et al. 2005), during physical recovery (Brenes et al. 2002; Scheier et al. 1989) and during college and career decisions (Creed, Patton, and Bartrum 2002; Solberg Nes, Evans, and Segerstrom 2009).

Regulatory focus

It has been proposed that a person's regulatory focus consists of two distinct motivational states, a promotion focus centred on accomplishments and aspirations and a prevention focus concerned with safety and responsibilities (Higgins 1997). People with a promotion focus tend to seek gains whereas people with a prevention focus tend to avoid losses. People high in promotion focus are more likely to emphasise the 'big picture' (Förster et al. 2006; Förster and Higgins 2005) and be more flexible and inventive in their thoughts (Crowe and Higgins 1997; Friedman and Förster 2001; Markman, Baldwin, and Maddox 2005). A higher promotion focus has also been linked to increased health-conscious behaviours such as exercising and eating well (Joireman et al. 2012).

Method

Participants

At time 1, there were 44 students in the band programme and 28 students in the control/non-band group. The principal of the school before our arrival selected students taking part in the band programme. The principal picked students whom he thought would likely do well in the programme. Participants in the control group were same-age students at the same school not selected for the programme who, for ease of testing, were all in class together. There were no differences between the two groups in terms of age or race.

Two and a half years later (time 2), there were 20 students remaining in the band programme due to participants no longer going to the school, dropping out of the band programme or having been removed from the band due to academic issues (time 1 mean age: $M = 13.5$; 13 females, 7 males; 18 participants of African descent and 2 of Mixed descent). We were able to give follow-up surveys to 11 of the original control group members (time 1 mean age: $M = 13.7$; 6 females, 5 males; all participants of African descent) due to time constraints and because students were no longer all in the same class (and possibly no longer at the school).

Measures

Positive and Negative Affect Schedule

This is a 20-item questionnaire measuring current positive and negative temperaments. Participants rated themselves on 10 single-word items for PA (e.g. excited, interested; Cronbach's alpha: $\alpha = .76$) and 10 single-word items for NA (e.g. worried, nervous; $\alpha = .77$). Participants rated on a five-point scale (1 = very slightly or not at all; 2 = a little; 3 = moderately; 4 = quite a bit; 5 = extremely) how much they 'feel this way right now, that is, at the present moment' (Watson and Tellegen 1985; Watson, Clark, and Tellegen 1988).

Rosenberg self-esteem scale (RSES)

This 10-item survey uses a four-point scale (1 = strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree) to assess general feelings of self-esteem ($\alpha = .66$). There are five positively keyed items (e.g. 'I feel that I have a number of good qualities') and five negatively keyed items (e.g. 'I feel I do not have much to be proud of') (Rosenberg 1965).

Optimism scale (from the International Personality Item Pool (IPIP))

This 10-item survey uses a five-point scale (1 = very inaccurate; 2 = moderately accurate; 3 = neither accurate nor inaccurate; 4 = moderately accurate; 5 = very accurate) to assess general feelings of optimism ($\alpha = .76$). Participants indicate how well five positively keyed items (e.g. 'I never give up hope') and five negatively keyed items (e.g. 'I am not sure where my life is going') describe them. Items on the IPIP scale are similar to those found on the Temperament and Character Inventory (Cloninger 1994; Goldberg et al. 2006).

General regulatory focus measure (GRFM)

This is an 18-item questionnaire measuring promotion focus and prevention focus. Items are rated on a nine-point scale (anchored at the ends with 1 = not at all true of me; 9 = very true of me). Nine items measure participants' promotion focus (e.g. 'I typically focus on success I hope to achieve in the future'; $\alpha = .83$) and the other nine items measure participants' prevention focus (e.g. 'I am anxious that I will fall short of my responsibilities and obligations'; $\alpha = .35$) (Lockwood, Jordan, and Kunda 2002).

Procedure

Participants filled out the PANAS, RSES, Optimism Scale, GRFM and demographic question in large group settings. Participants worked individually on the questionnaires at their desks in their classrooms. At time 1, participants also filled out a number of other questionnaires assessing the role that music plays in their lives and what types of music they listen to (see Getz et al. 2012). Because English was not the first language for a number of the students, the experimenters and members of the school's faculty were available while the students filled out the surveys to answer any questions they had about survey items. If the student had questions about a particular question, the experimenters or teachers would help the student; otherwise, the experimenters remained unobtrusive.

Results*Positive and negative affect*

Overall, there were no changes in either the control or the band groups from time 1 to time 2 in affect measured by the PANAS as indicated by a 2×2 mixed-model ANOVA with one within-subjects factor (time 1 vs. time 2) and one between-subjects factor (band vs. control). The members of the band reported higher levels of PA overall, $F(1, 29) = 20.32, p < .001, \eta^2 = .41$, but this difference was stable over time,

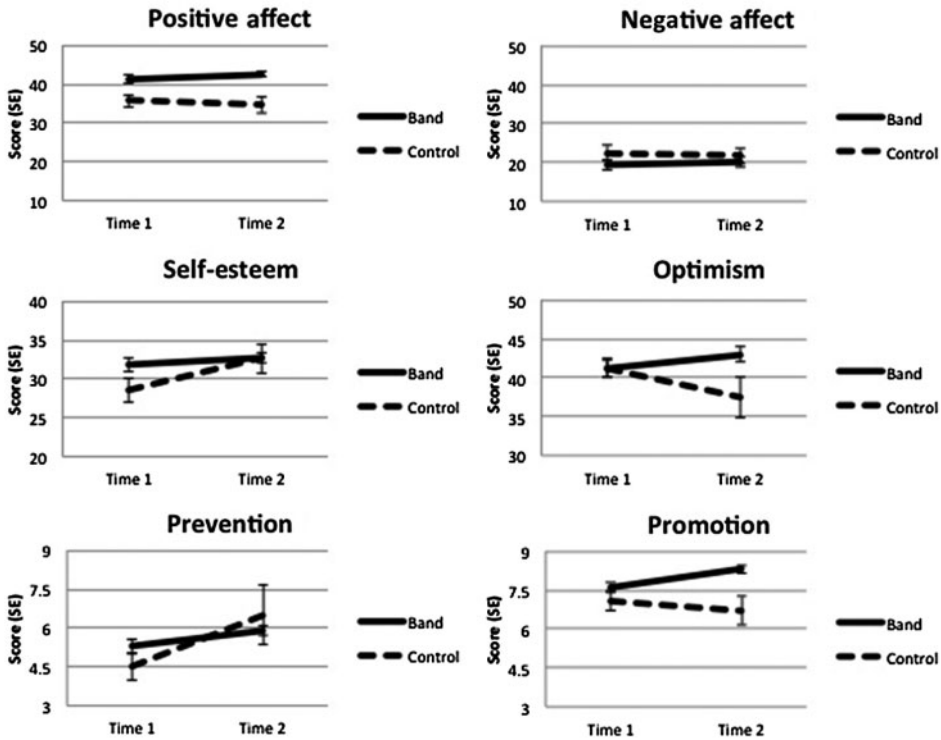


Figure 1. Differences in psychosocial domain scores from time 1 to time 2 of testing for band and control groups.

$F(1, 29) = .03, p = .86$ (non-significant (n.s.)), $\eta^2 = .001$, and there was no interaction between group (band or control) and time of assessment, $F(1, 29) = 1.01, p = .32$ (n.s.), $\eta^2 = .03$ (see Figure 1). There were no differences between the band and control groups in NA overall, $F(1, 29) = 2.13, p = .16$ (n.s.), $\eta^2 = .07$, no changes over time, $F(1, 29) = .003, p = .96, \eta^2 < .001$, and no interaction, $F(1, 29) = .22$ (n.s.), $p = .64, \eta^2 = .01$.

Self-esteem

All students (band and control) experienced a small increase in self-esteem from time 1 to time 2, $F(1, 29) = 4.48, p = .04, \eta^2 = .13$. There was no difference between the band and control groups in self-esteem, $F(1, 29) = 2.29, p = .14$ (n.s.), $\eta^2 = .07$, and no interaction between group and time of assessment, $F(1, 29) = 1.83, p = .19$ (n.s.), $\eta^2 = .06$ (see Figure 1).

Optimism

There was no overall change in optimism levels from time 1 to time 2, $F(1, 29) = .44, p = .52$ (n.s.), $\eta^2 = .02$. However, there was an interaction between group and time of assessment, $F(1, 29) = 3.81, p = .06, \eta^2 = .12$, and a marginal overall difference between the band and control groups' optimism scores, $F(1, 29) = 2.91, p = .10$,

$\eta^2 = .09$ (see [Figure 1](#)). Post hoc Simple Effects tests indicate that the band and control groups were not different in optimism at time 1 ($p = .99$), but the band group was significantly more optimistic than the control group at time 2 ($p = .03$). Thus, only band members had improved levels of optimism at time 2.

Regulatory focus

All participants exhibited an increase in prevention motivation from time 1 to time 2, $F(1, 29) = 5.61$, $p = .03$, $\eta^2 = .16$. There was no significant difference between the band and control groups in prevention motivation, $F(1, 29) = .04$, $p = .84$ (n.s.), $\eta^2 = .002$, and no significant interaction between group and time of assessment, $F(1, 29) = 1.79$, $p = .19$ (n.s.), $\eta^2 = .06$.

For promotion motivation, the overall pattern of results was similar to that found for optimism. Although there was no overall change in promotion focus over the intervening period, $F(1, 29) = .55$ (n.s.), $p = .47$, $\eta^2 = .02$, there was a significant difference between band and control members in promotion focus, $F(1, 29) = 9.17$, $p = .01$, $\eta^2 = .24$, that was qualified by an interaction between group and time of assessment, $F(1, 29) = 4.27$, $p = .05$, $\eta^2 = .13$. Simple Effects tests indicate that the band and control groups were not different in promotion focus at time 1 ($p = .19$), but the band group was significantly more promotion oriented than the control group at time 2 ($p = .002$). Although all students increased in prevention focus, only band members exhibited increased promotion focus.

Discussion

The introduction of the music programme appeared to improve the outlook of participants in the programme. Students were more likely to be motivated to seek gains in life and were more likely to have an optimistic attitude. These results suggest that introducing group music programmes to students in disadvantaged schools can have positive psychosocial benefits for the students involved. We thus extend previous research showing cognitive, academic and social benefits of individual music training for Western students to include potential benefits in outlook and attitude for non-Western and disadvantaged students due to being part of a school-based group music programme.

Positive and negative affect

Results suggest that there were no changes due to maturation or involvement in the band programme in affect. This may be because PA and NA are linked to more stable dispositional traits that are less likely to change over time (Costa and McCrae 1980, 1992; DeNeve and Cooper 1998; Lucas and Fujita 2000; Mitte and Kämpfe 2008; Schmukle, Egloff, and Burns 2002; Watson and Clark 1984). Band members did exhibit more PA than did non-band members, but this difference was stable over time.

Self-esteem

Students in both the band and the control groups exhibited gains in self-esteem. These gains may potentially be explained by normal development over the nearly

three years in secondary school from time 1 to time 2. Previous research indicates that this period of ‘emerging adulthood’ (Arnett 2004) is marked by changes in beliefs and personality (Erikson 1964; Roberts, Caspi, and Moffitt 2001). For example, both South African and American students have been shown to change their beliefs about leadership in the years from secondary school to college (Getz and Roy 2013). Whatever the reason for the shift, all students seem likely to experience the benefits that come with increased self-esteem such as increased well-being (Rosenberg et al. 1995) and greater ability to deal with anxiety (Pyszczynski et al. 2004).

Optimism

Gains in optimism for band members, in comparison to control students, are important because optimism has been linked with an increased ability to deal with stress and with better overall health (Creed, Patton, and Bartrum 2002; Brenes et al. 2002; Friedman et al. 2006; Hulbert and Morrison 2006; Kivimäki et al. 2005; Rasmussen, Scheier, and Greenhouse 2009; Scheier, Carver, and Bridges 1994; Scheier et al. 1989; Solberg Nes et al. 2009; Vollman et al. 2011). Band members exhibiting gains in optimism is noteworthy because previous research with Western musicians has found that musical training is often associated with lower levels of optimism overall (Getz, Marks, and Roy 2014) and that musicians tend to be more prone to negative thought patterns (Cohen and Ferrari 2010; Jones, Roy, and Verkuilen, 2014; Verhaeghen, Khan, and Joorman 2005) and depression (Jamison 1993; Young, Winner, and Cordes 2013).

The fact that these gains in optimism are opposite from what may be expected in Western musicians highlights the need to take context into account when assessing the possible impact of musical training. The gains we found here might be specific to this population, or to similar populations. Further, given the high levels of stress experienced by this population due to factors such as the high incidence of violence (Seedat et al. 2009) and the HIV/AIDS epidemic (Chersich and Rees 2008; Chopra et al. 2009; Coovadia et al. 2009; Wood and Webb 2008), music programmes such as this might help those involved cope with these stressors.

Regulatory focus

Similar to optimism, gains found for band members in promotion motivation might be indicative of other potential benefits such as increased cognitive flexibility (Crowe and Higgins 1997; Friedman and Förster 2001; Markman, Baldwin, and Maddox 2005) and health-conscious behaviours (Joiremen et al. 2012). Overall, participants might be more likely to seek out opportunities in life (Higgins 1997; Lockwood, Jordan, and Kunda 2002) or be more approach motivated (Summerville and Roese 2008).

Students in both the band and control groups exhibited gains in prevention focus. Nearing the end of secondary school could help explain the overall gains in prevention focus, which is concerned with ‘oughts’ and ‘obligations’ (Lockwood, Jordan, and Kunda 2002). Previous research has found that a prevention focus is more prevalent as people come nearer to the deadline for certain tasks (Pennington and Roese 2003). Of course, this potential explanation is speculative and changes could have been due to other causes.

Limitations and summary

The difference in PA for band and non-band members found here highlights one limitation of this study: participants were not randomly assigned to the band programme, but rather were chosen by the school principal. Thus, the criteria for selection may have been somehow related to PA. This creates the possibility that the differences found at follow-up were due to selection of the participants and not the band programme. It may be that having high PA leads to higher optimism and promotion focus later in life, but does not result in changes in NA, self-esteem or prevention focus. This would seem like a somewhat unlikely pattern of results, but due to the design, this possibility cannot be ruled out.

It should be noted that the main goal of the programme was to start a concert band that would thrive, not to specifically test the psychosocial effects of being in a school-based music programme. Therefore, relying on the principal to choose students who would be most interested and likely to persevere in the programme was our top priority. Our goal here was to measure the impact of this programme as best we could, given these constraints, and results need to be taken as somewhat preliminary. Further, the small number of participants in the study made it impossible to do more sophisticated statistical analyses. Unfortunately more participants were not available during our follow-up, limiting our ability to examine the results in greater detail and calling into question issues of reliability.

Overall, band members showed increased levels of optimism and motivation to seek gains as a result of being involved in a school-based band programme. The music programme appears to have certain psychosocial benefits, improving aspects of attitude and outlook for participants in the programme. More work with larger groups and over longer periods of time are necessary to measure the full impact of being involved in music programmes, but the results indicate that there are benefits that result from starting music programmes in disadvantaged schools. The participants in the band appeared to be better able to envision a brighter future and were more motivated to seek that future.

The goal of this project was to utilise music as a tool for social change. Based upon the widely recognised model of El Sistema in Venezuela, this project sought to empower students through music with the ultimate goal of positively impacting their social environment and hopefully affecting certain psychological variables such as motivational focus and optimism. To date, the project has been in existence for over seven years and hundreds of disadvantaged South African youth across the country have been impacted through music. Although not initially a goal of this project, several of the students from the initial concert band programme have embarked on undergraduate studies in music thereby attesting to the sustainability and growth of the project. It is hoped that this project could pave the way for a new era of music education in South Africa while addressing some of the social and educational challenges facing the country.

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Note

1. For more details on a similar programme, see Devroop (2008).

Notes on contributors

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Karendra Devroop is a professor of music and the Deputy Director of the Unisa Music Foundation at the University of South Africa. His primary area of research is on the career development of amateur and professional musicians. He has published and presented his research in several countries including the USA, China, Canada, Mexico, UK, Italy, Germany, Taiwan, Thailand, Singapore and South Africa. In addition to his research and teaching, he is a professional jazz saxophonist with a string of recordings and performances at several international jazz festivals.

Laura M. Getz is a Cognitive Psychology graduate student at the University of Virginia, USA. The first wave of data presented here were collected while she was an undergraduate at Elizabethtown College, where she was a double major in music and psychology. Her current research focuses on the understanding of complex musical rhythms at a perceptual level and performance differences between individuals with informal and formal musical expertise.

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