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Religious Music and Health in Late Life: A Longitudinal Investigation

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Abstract

Listening to religious music is often an important part of religious life. Yet there has been little empirical research on it. The purpose of this study is to test a conceptual model that specifies one way in which religious music may be associated with change in health over time. This model contains the following core relationships: (1) people who attend worship services more often will have stronger emotional reactions to religious music; (2) individuals who are more emotionally involved in religious music will be more likely to feel a close sense of connectedness with other people; (3) people who feel more closely connected with others will be more hopeful about the future; and (4) individuals who feel more hopeful will be more likely to rate their health in a favorably over time. The data provide support for each of these relationships. Significant variations by race were also observed in the findings.

People who are involved in formal religious institutions typically engage in a wide range of behaviors, such as attending worship services (Barna, 2006), tithing (Stark, 2008), attending Bible study or prayer groups (Wuthnow, 1994), and volunteering to help those in need (Musick & Wilson, 2003). Researchers have devoted a good deal of attention to these religious behaviors. However, one aspect of formal religious involvement has been largely overlooked in empirical research - listening to religious music. There are two reasons why it is surprising to find this gap in the literature.

First, theologians and other scholars have argued for over 100 years that music occupies a place in the lives of the faithful that is both central and unique. For example, writing in 1813, Marcellus maintained that, "From the earliest ages, the praises of our Creator have been accompanied by music, vocal and instrumental. Music, the grand, sublime, heavenly science of music, has always been found to strangely affect our souls. It produces sensations, the most tender, refined, and delicate. Sensations, indescribable and unutterable" (p.11). Similar views were expressed by William James (1902/1978), who argued that music was one of the "doorways" through which religious experience could enter and it provided a, "... sense of deep significance ... (that) ...sweeps over one ... when the mind is tuned aright" (p. 37) Empirical support for the observations of Marcellus (1813) and James (1902/1978) was found decades later by Greeley (1974) in his research on intense religious experiences. The participants in his study reported that listening to religious music was the most common trigger of deep religious experiences, and that it was even more important than praying or reading the Bible. A common thread runs through the work of Marcellus (1813), James (1902/1978), and Greeley (1974). This shared theme has to do with the strong emotions that are evoked by religious music.

Second, a considerable body of research suggests that involvement in religious institutions is associated with better physical and mental health (Koenig, King, & Carson, 2012). Moreover, there is growing evidence that non-religious music may affect health and well-being, as well (Edwards, 2011). In fact, a journal is devoted solely to this issue (*Music and Medicine*). This raises the possibility that religious music may also have beneficial effects on health.

The purpose of the current study is to examine whether emotional reactions to religious music may be associated with health in late life. There do not appear to be any studies in the literature that examine this issue empirically. We address this gap in the knowledge base in three potentially important ways. First, rather than merely showing that religious music is associated with health, we develop and test a conceptual model that aims to uncover key constructs that mediate the relationship between the two. Second, a number of scholars have maintained that religious music plays a more central role in lives of Blacks than Whites (e.g., Maynard-Reid, 2000). However, there has been virtually no empirical research to back up this claim. Consequently, an effort is made in the analyses that follow to assess the influence of race on responses to religious music and other key constructs in our conceptual scheme. Third, greater confidence can be placed in the findings that emerge from this work because it is based on data that have been gathered at more than one point in time.

Religious Music, Social Bonds, and Self-Rated Health

The latent variable model that was developed for this study is presented in Figure 1. Two steps were taken to simplify the presentation of this complex conceptual scheme. First, the elements of the measurement model (i.e., the factor loadings and measurement error terms) are not shown in Figure 1 even though a full measurement model was estimated during the data analytic phase of this study. Second, the relationships among the constructs in this model were evaluated after the effects of age, sex, and education were controlled statistically (i.e., these demographic measures serve as exogenous variables).

Although a number of linkages are specified in the study model, the following relationships capture the core theoretical thrust in this conceptual scheme: (1) people who attend worship services more often are more likely to have a strong emotional reaction to religious music; (2) individuals who are more emotionally involved in religious music will be more likely to feel a close sense of connectedness with other people; (3) those who feel more closely connected with other individuals will be more hopeful about the future; and (4) individuals who feel more hopeful will be more likely to rate their health in a favorable way than people who are less hopeful about the future. The theoretical rationale for each of these linkages is presented below.

Church Attendance and Religious Music

Religious music is an integral part of many (but not all) worship services. As we noted earlier, we focus on the reported strength of emotional reactions to religious music rather than merely assessing whether people listen to religious music at all. The reason for doing so is straightforward. When some people attend religious services, they are exposed to religious music even though they may not care for it or are indifferent to it. If people do not like religious music or if they have a muted reaction to it, then it is difficult to see how they could benefit from listening to religious music. Instead, as the insights of Marcellus (1813), James (1902/1978), and Greeley (1974) reveal, the benefits of listening to religious music are more likely to arise from the emotions it evokes.

This view is consistent with the work of other classic theorists, as well. For example, Schleiermacher (1799/1994) maintained that feeling is the essence of religion. But perhaps

the greatest proponent of the role that emotions play in religion was Emile Durkheim (1915/1965). He argued that as part of formal religious rituals, religious music evokes intense emotions: "... whoever has really practiced a religion knows very well that it is the cult which gives rise to these impressions of joy, of interior peace, of serenity, of enthusiasm which are, for the believer, an experimental proof of his beliefs" (p. 464) (for contemporary discussions of the role emotions play in religion see Dulin, 2011, and Watts, 1996).

If religious music is an integral part of worship services, and if the benefits of religious music are primarily emotional in nature, then it follows that people with greater exposure to religious music (i.e., those who go to church more often) have a greater opportunity to experience the strong emotional reactions it can evoke.

Religious Music and Feelings of Connectedness with Others

According to our conceptual model, religious music tends to promote a strong sense of connectedness with other people. This hypothesis is based on the work of three investigators. The first is Durkheim (1915/1965), who asserted that, "... before all, rites are means by which the social group reaffirms itself Men who feel themselves united by a community of interest and tradition, assemble and become conscious of their moral unity" (p. 432). Second, building on these insights, Marshall (2002) maintained that formal rituals tend to create a sense of emotional contagion that has important implications for the way group members feel about one another: "... the result is not only mood convergence but also a sense of bonding and liking (i.e., belonging) among those entrained" (p. 363). Third, and most important, Wren (2000), a well-known composer of hymns, shows how the effects of religious rituals that are discussed by Durkheim (1915/1965) and Marshall (2002) apply specifically to religious music. More specifically, Wren (2000) argued that, "... when a congregation sings together, its song is an acted parable of community. In the act of singing, the members not only support one another, but proclaim a community of faith reaching beyond the congregation that sings" (p. 93). Viewed in a more general way, the perspectives of these researchers are consistent with notion that sharing emotions enhances perceptions of similarity (Deaux, 1996) which, in turn, foster social bonding (Peters & Kashima, 2007).

Connectedness with Others and Hope

There are two reasons why optimism and hope are especially well-suited for research on religion. First, as Peterson (2000) argued, "Religious thought lends itself particularly well to ... optimism because of its certainty" (p. 51). Second, as Levin (2001) maintained, "... every religion seeks to instill hope in those who subscribe to its teachings" (p. 138). Although there are a number of ways in which involvement in religion may make people feel more hopeful, we suspect that feeling closely connected to other people may be an especially important factor. This hypothesis is based, in part, on the central tenets of identity theory. According to this perspective, "... social identity processes are ... motivated by a need to reduce subjective uncertainty about one's perceptions, attitudes, feelings, behaviors, and ultimately one's self-concept ... Uncertainty reduction ... is a core human motivation" (Hogg, 2003; p. 473). Hogg (2003) went on to argue that feeling closely connected with others tends to reduce uncertainty, thereby helping people feel more secure about the future, more confident about how to behave, and more certain about what to expect in the social world. And when individuals feel more certain and confident about the future, it is not difficult to see why they should also feel more hopeful.

Hope and Self-Rated Health

A substantial number of studies indicate that people who are more hopeful tend to enjoy better health. Research by Peterson, Seligman, and Vailant (1988) provides compelling support for this notion. These investigators found that individuals who were more optimistic

at the baseline interview enjoyed better health over the 35 year follow-up period than people who were less optimistic.

There are at least three reasons why hope and optimism may be associated with better health. First, research indicates that people who are more hopeful tend to cope more effectively with adverse events (Folkman, 2010). Individuals who are more hopeful cope more effectively because they tend to respond to adversity with continued efforts to reach their goals whereas people who are less hopeful are more likely to become discouraged and discontinue efforts to eradicate a problem situation. Second, research further reveals that people who are more optimistic are more likely to engage in a range of beneficial health behaviors (Ruthig et al., 2011). Perhaps people who believe they have much to look forward to take better care of their health so they can more fully enjoy the benefits they believe the future will bring. Third, there is some evidence that people who are more hopeful about the future tend to have a stronger sense of meaning in life (Ryff, 2012). This is important because a number of studies suggest that a stronger sense of meaning in life is associated with better health (Krause, 2004).

As shown in Figure 1, hope and health are measured at two points in time. This makes it possible to address a key issue involving the direction of causality between these two constructs. Although causality cannot be proven conclusively in survey research, a more convincing case for the temporal ordering among study constructs can be made if it can be shown that change in the independent variable is associated with change in the outcome. Cast within the context of the current study, this assertion means that if the level of health depends upon the level of hope, then if a person's sense of hope changes, their health must change, as well. The model in Figure 1 was designed to evaluate this issue. As Menard (1991) points out, this specification is one of four "pure" types of longitudinal models (see p.59).

Assessing the Influence of Race

Writing over a century ago, W. E. B. DuBois (1902/1986) went to great lengths to emphasize the central role that music plays in Black worship services. And there is considerable evidence that little has changed since that time. For example, Lincoln and Mamiya (1990) assert that, "In most black churches music, or more precisely, singing is second only to preaching as the magnet of attraction and the primary vehicle of spiritual transport for the worshipping congregation" (p. 346). Like DuBois (1902/1986), these investigators trace the central role of music back to Africa, where music and religion formed a seamless whole. Based on these insights, we hypothesize that, compared to older Whites, older Blacks will be more likely to say they have strong emotional reactions to religious music.

But race differences may emerge at several other points in our model, as well. For example, Lincoln and Mamiya (1990) maintain that, "...Congregational singing is a well-known device for the ... reaffirmation of a common bond ..." (p. 347). A similar observation is made by Cone (1972), who refers to Black music as "unity music" (p. 5). If religious music promotes a sense of connectedness with others, and Blacks have greater exposure to religious music, then it follows that Blacks should be more likely to report that they feel more closely connected to others than Whites.

Other connections between race, religious music, and hope may be found in the work of DuBois (1902/1986). He referred to religious music in the Black church as "sorrow songs" because they were used to express the burdens imposed by slavery. But in the process, he went on to point out that, "Through all the sorrow of the Sorrow Songs there breathes a hope

...” (p. 544). Consequently, we hypothesize that compared to older Whites, older Blacks will be more hopeful about the future.

Methods

Sample

The data for this study come from the first two waves of interviews in an ongoing nationwide survey of older Whites and older Blacks. We focus on these waves of data collection because questions on religious music were only administered at the baseline survey.

The study population was defined as all household residents who were either Black or white, noninstitutionalized, English-speaking, and at least 66 years of age. Geographically, the study population was restricted to all eligible persons residing in the coterminous United States (i.e., residents of Alaska and Hawaii were excluded). Finally, the study population was restricted to currently practicing Christians, individuals who were Christian in the past but no longer practice any religion, and people who were not affiliated with any faith at any point in their lifetime. This study was designed to explore a range of issues involving religion and health. As a result, individuals who practice a faith other than Christianity were excluded because it would be too difficult to devise a comprehensive battery of religion measures that would be suitable for individuals of all faiths. Because of the way the sample is configured, it is important to emphasize that the analyses presented below focus specifically on Christian religious music.

The sampling frame consisted of all eligible persons contained in the beneficiary list maintained by the Centers for Medicare and Medicaid Services (CMS). A five-step process was used to draw the sample from the CMS Files (see Krause, 2002a, for a detailed discussion of these steps).

The baseline survey took place in 2001. The data collection for all waves of interviews was conducted by Harris Interactive (New York). A total of 1,500 interviews were completed, face-to-face, in the homes of the study participants. Older Blacks were over-sampled so that sufficient statistical power would be available to assess race differences in religion. As a result, the Wave 1 sample consisted of 748 older Whites and 752 older Blacks. The overall response rate for the baseline survey was 62%.

The Wave 2 survey was conducted in 2004. A total of 1,024 study participants were reinterviewed successfully, 75 refused to participate, 112 could not be located, 70 were too ill to participate, 11 had moved to a nursing home, and 208 were deceased. Not counting those who had died or moved to a nursing home, the re-interview rate for the Wave 2 survey was 80%.

The full information maximum likelihood estimation (FIML) procedure was used to impute missing values in the data. Simulation studies suggest that the FIML procedure is preferable to listwise deletion because listwise deletion may produce biased estimates (Enders 2010). Moreover, as Graham, Olchowski, and Gilreath (2007) report, FIML is equivalent to more time consuming procedures for dealing with item nonresponse, such as multiple imputation.

The sample size in the analyses presented below is 918. The difference between this figure and the total number of Wave 2 study participants (1,024) arises from the fact that we focus on emotional responses to religious music. Consequently, some respondents were excluded from this study because they reported they never listen to religious music.

Preliminary analyses reveal that the average age of the participants in this sample was 74.5 years ($SD = 6.1$ years), approximately 36% were older men, 50% self-identified as white, and the average number of years of schooling that were completed by the study participants was 11.5 years ($SD = 3.4$ years).

Measures

Table 1 contains the measures of the core constructs that are evaluated in this study. The procedures that were used to score these indicators are provided in the footnotes of this table.

Church Attendance—The frequency of attendance at formal worship services during the year prior to the baseline survey was assessed with a single widely-used item. A high score on this indicator represents more frequent church attendance. The mean is 6.1 ($SD = 2.5$).

Emotional Reactions to Religious Music—This construct was assessed with four indicators that were developed by Krause (2002b). A high score stands for older study participants who have a stronger emotional reaction to religious music. The mean of this brief composite is 13.7 ($SD = 2.2$).

In the process of responding to the items on religious music, study participants were instructed to think about religious music they listen to inside as well as outside the church. Consequently, it is important to briefly discuss why we focused on listening to music in both social settings. As a number of theologians have argued, building a sound faith is a challenging task that requires diligence and frequent reinforcement (e.g., Tillich, 1987). Cast within the context of the current study, this suggests that people may turn to religious music outside the church (e.g., at home) in order to shore-up the strong feelings it evokes, thereby further reinforcing their faith. Evidence of the important role played by the private practice of religious rituals is found in Marshall's (2002) formal theory of ritual and belief. One of the propositions he devises states that, "The use of private forms of ritual techniques will occur in conjunction with, and as an optional supplement to, more public ritual forms" (Marshall, 2002, p. 375). In order to more accurately gauge the impact of religious music on health, we throw a broader net in the analyses that follow by focusing on listening to religious music inside as well as outside the church.

Connectedness with Others—Feelings of connectedness with others were measured with three indicators that were devised by Krause (2002b). As shown in Table 1, the items measuring this construct ask study participants if they feel there is a common bond among all people, whether they appreciate how much people need each other, and whether they recognize the strength that can come from others. A high score on this construct denotes a stronger sense of connectedness with others. The mean of this composite is 10.6 ($SD = 1.6$).

Hope—Identical measures of hope were administered at the Wave 1 and Wave 2 interviews. The first two indicators in this three-item composite were developed by Scheirer and Carver (1985). The third indicator was devised by Krause (2002b). A high score represents greater hope (Wave 1 $M = 9.5$; $SD = 1.5$; Wave 2 $M = 9.4$; $SD = 1.8$).¹

Self-Rated Health—Two widely-used indicators were included in this study to measure self-rated health (McDowell & Newell, 1996). The first asks study participants to rate their

¹Although some researchers make a distinction between hope and optimism, we believe they largely assess the same underlying construct. This view is consistent with the observations of Peterson and Seligman (2004), who note that the overlap between the two is "considerable" and that despite differences in the way these constructs are measured, their correlates are "strikingly similar" (p. 570).

health at the present time while the second asks them to compare their health to the health of others their age. Both items were administered at the Wave 1 and Wave 2 surveys. These indicators are coded so that a high score stands for better health. The mean at Wave 1 is 5.2 ($SD = 1.2$) and the mean at Wave 2 is 5.0 ($SD = 1.3$). The correlation between the two health indicators at Wave 1 is .480 ($p < .001$) while the correlation between the two measures at Wave 2 is .577 ($p < .001$).

Race—Self-identified race was scored in a binary format (1 = white; 0 = Black).

Demographic Control Variables—Recall that the relationships among the core study constructs were evaluated after the effects of age, sex, and education were controlled statistically. Age and education are scored in a continuous format (i.e., in years) while sex is represented by a binary variable (1 = men; 0 = women). Age, sex, and education are included as control variables because extensive evidence indicates that physical health problems tend to be encountered more often by older people, men, and individuals with lower levels of educational attainment (Federal Interagency Forum on Aging Related Statistics, 2010).

Results

The findings from this study are presented below in three sections. Some technical issues involving the estimation of the study model are discussed in the first section. Then, in section two, reliability estimates for the core study constructs are presented. Section three contains the substantive study findings.

Model Estimation Issues

The model in Figure 1 was evaluated with the maximum likelihood estimator in Version 8.80 of the LISREL statistical software program (du Toit & du Toit, 2001). Use of this estimator is based on the assumption that the observed indicators have a multivariate normal distribution. Preliminary tests (not shown here) revealed that this assumption had been violated. Although there are a number of ways to deal with departures from multivariate normality, the straightforward approach that is discussed by du Toit and du Toit (2001) was implemented in the current study. These investigators report that violations of this assumption can be handled by converting the raw scores of the observed indicators to normal scores prior to estimating a model (du Toit & du Toit 2001, p.143). Based on these insights, the analyses presented below are conducted with observed indicators that have been normalized.

Because hope and self-rated health are measured at two points in time, two important issues involving the measurement of these constructs must be addressed so that the model with the best fit to the data can be identified. The first has to do with assessing whether the elements of the measurement model (i.e., the factor loadings and measurement error terms) are invariant over time (Bollen, 1989). Preliminary tests (not shown here) reveal that neither the factor loadings nor the measurement error terms are invariant over time. This suggests that the way in which study participants think about hope and health may have changed over time. Although the implications of this possibility are not entirely clear, this issue should be kept in mind as the substantive study findings are reviewed.

The second issue involves seeing whether the measurement error terms for identical indicators of hope and self-rated health are correlated over time. Preliminary tests (not shown here) reveal that the measurement error terms are significantly correlated over time.

As discussed earlier, the FIML algorithm was used to handle item non-response. When this procedure is used, the LISREL software program provides only two goodness-of-fit measures. The first is the full information maximum likelihood chi-square statistic (chi-square = 448.727; with 155 degrees of freedom; $p < .001$). However, this statistic tends to substantially underestimate the fit of the model to the data when samples are large, like the one in the present study. Better insight into the fit of the model to the data is provided by the second goodness-of-fit measure, the root mean square error of approximation (RMSEA). The RMSEA estimate for the final model in this study is .044. As Kelloway (1998) points out, estimates below .050 represent a very good fit to the data.

Reliability Estimates for the Multiple-Item Measures

Table 2 contains the factor loadings and measurement error terms that were derived from estimating the study model. These coefficients are important because they provide information about the reliability of the multiple item study measures. Although researchers have yet to agree on a cut point score, most investigators would agree that standardized factor loadings in excess of .600 have reasonably good reliability (Kline, 2005). As the data in Table 2 indicate, the standardized factor loadings range from .577 to .905. Only one factor loading is below .600 and the difference between this estimate (.577) and the target value is minimal.

Although the factor loadings and measurement error terms associated with the observed indicators provide useful information about the reliability of each item, it would be helpful to know something about the reliability for the multiple item scales as a whole. Fortunately, it is possible to compute these reliability estimates with a formula provided by DeShon (1998). This procedure is based on the factor loadings and measurement error terms in Table 2. Applying the procedures described by DeShon to these data yield the following reliability estimates for the multiple item constructs in Figure 1: Emotional reactions to religious music (.942); connectedness with others (.914); hope - Wave 1 (.791); hope - Wave 2 (.849). Taken as a whole, these estimates suggest that the multiple item measures in the current study have an acceptable level of reliability.

Substantive Findings

Table 3 contains the substantive findings that emerged from estimating the study model. Taken as a whole, the results provide support for the core hypotheses. More specifically, the data suggest that older people who go to church more often tend to report having stronger emotional reactions to religious music (Beta = .258; $p < .001$). Moreover, the results indicate that older adults who have strong emotional reactions to religious music are more likely to say they feel closely connected with others (Beta = .543; $p < .001$). It is important to point out that the magnitude of this relationship is quite large by social and behavioral science standards. The data in Table 3 further reveal that older individuals who feel closely connected to others are more likely to say they are hopeful about the future (Beta = .243; $p < .001$). Moreover, older study participants who feel hopeful about the future at Wave 1 are more likely to rate their health in more favorable way at Wave 1 (Beta = .254; $p < .001$). But more importantly, the results suggest that older people who are more hopeful at Wave 2 rate their health in a more favorable way at Wave 2, as well (Beta = .364; $p < .001$). View in a more general way, this finding reveals that change in hope is associated with change in health over time.

One finding that emerged from the analyses was not anticipated. The data in Table 3 indicate that older adults who feel more hopeful about the future at Wave 1 tend to rate their health *less* favorably at Wave 2 (Beta = $-.121$; $p < .05$). Although the reasons for this finding cannot be determined conclusively, a plausible explanation may be found by

viewing this coefficient within the context of the entire study model. The relationship between hope at Wave 1 and health at Wave 2 was derived after the effects of hope at Wave 2 were taken into account. And, as Campbell and Stanley (1963) pointed out some time ago, values of hope at Wave 1 are likely to decline relative to values of hope at Wave 2 due to regression to the mean. This means that people may feel their health is good at Wave 2 even though their scores on the measure of hope have declined over time due to regression to the mean.²

As we anticipated, strong race differences were observed in the data. In order to properly illustrate the pervasive influence of race in this study, it is helpful to view the data in two ways. First, as hypothesized, the findings in Table 3 indicate that older Whites are less likely than older Blacks to have a strong emotional response to religious music ($\text{Beta} = -.204; p < .001$). The second way to present the data on race is more complex because it involves the direct, indirect, and total effects that operate through the study model. An example will help clarify the meaning of these terms. The findings that have been reviewed up to this point suggest that older Blacks have a stronger emotional reaction to religious music, and people with a stronger emotional response to religious music are, in turn, more likely to feel closely connected with others. Put in a more technical way, these results reveal that race exerts an indirect effect on feelings of connectedness with others that operates indirectly through religious music. When this indirect effect is summed with the direct effect reported in Table 3, the resulting total effect provides a better vantage point for viewing the relationship between race and feelings of connectedness with others. Breaking down the relationships in a latent variable model into direct, indirect, and total effects is often referred to in the literature as the decomposition of effects.

Two decompositions of effects that involve race are especially important. First, the findings in Table 3 may initially create the impression that there are no statistically significant race differences in feelings of connectedness with others ($\text{Beta} = -.011; n.s.$). However, a different view emerges when the indirect and total effects that operate through the model are taken into account. More specifically, the data further reveal that in contrast to the data in Table 3, the indirect effect of race on feelings of connectedness with others is statistically significant ($\text{Beta} = -.152; p < .001$; not shown in Table 3). When this indirect effect is added to the direct effect, the resulting total effect suggests that older Blacks are more likely to feel closely connected to others than older Whites (total effect = $-.011 + -.152 = -.162; p < .001$; not shown in Table 3). Viewed in another way, these findings indicate that approximately 94 percent of the effect of race on feelings of connectedness to others operates indirectly through the model ($-.152/-.162 = .938$). Cast in more substantive terms, these results reveal that older Blacks feel more closely connected with others than older Whites primarily because they go to church more often and because they tend to have stronger emotional reactions to religious music.

The second decomposition of effects involving race brings the relationship between race and hope into sharper focus. The results in Table 3 suggest that older Whites tend to be less hopeful at Wave 1 than older Blacks ($\text{Beta} = -.155; p < .001$). However, the magnitude of this relationship is actually much stronger than this. Further analysis (not shown in Table 3)

²We conducted some additional analyses to see if we could find any evidence that regression to the mean had taken place. This was accomplished by creating two binary variables. The highest possible score on the hope index is 12. A total of 167 study participants had a score of 12. The first binary variable contrasts study participants with a score on the hope scale at Wave 1 of 12 (scored 1) with all others (scored 0). Following this, the Wave 1 hope scores were subtracted from the Wave 2 hope scores. The second binary variable contrasts study participants whose scores declined over time (scored 1) with all others (scored 0). Next, a simple cross-tabulation was computed with the two binary variables. The data suggest that 71.3% of study participants with the highest score on the hope scale at Wave 1 experienced a decline in hope scores over time. These preliminary data are consistent with the notion that regression to the mean was taking place in the data.

reveals that the indirect effect of race on hope at Wave 1 is statistically significant ($\text{Beta} = -.092$; $p < .001$). When the indirect and direct effects are summed, the resulting total effect ($\text{Beta} = -.246$; $p < .001$) is about 59 percent larger ($-.092/-.155 = .594$). Viewed in a more substantive way, these data suggest that older Blacks are more hopeful than older Whites because they go to church more often, have a stronger emotional reaction to religious music, and they feel more closely connected with others.

The decomposition of effects procedure provides important insight into another the influence of another variable that has received little attention up to this point. Turning to this relationship now helps to further underscore the important role that religious music plays in congregational life. There is some evidence that people who go to church more often tend to feel more closely connected with others (Krause, 2012). However, the reason why church attendance affects feelings of connectedness with others is not entirely clear. The findings from the current study shed some light on this issue. The data in Table 3 suggest that older people who go to church more often tend to feel more closely connected with others ($\text{Beta} = .210$; $p < .001$). However, further analysis (not shown in Table 3) reveal that the indirect effect of church attendance on feelings of connectedness with others that operates through religious music is also statistically significant ($\text{Beta} = .140$; $p < .001$) and as a result, the total effect is fairly substantial ($\text{Beta} = .350$; $p < .001$). Viewed another way, this decomposition of effects indicates that 40 percent of the effect of church attendance on feelings of connectedness with others operates indirectly through religious music ($.140/.350 = .400$). Developing close relationships with others is one of the central missions of the Christian faith (Krause, 2008). The decomposition of effects that is presented here suggests that religious music plays a significant role in accomplishing this mission.

Discussion

Writing over two centuries ago, Schleiermacher (1799/1994) eloquently captured the key role that music plays in religious life: “In sacred hymns and choruses there are breathed out things that definite speech cannot grasp. The melodies of thought and feeling interchange and give mutual support, till all is satiated and full of the sacred and the infinite. Of such a nature is the influence of religious men upon each other. Thus their natural and eternal union is produced” (p. 152). Two key points emerge from these insights. First, he shows that religious music plays a unique role in promoting the sacred - it conveys insights and feelings that cannot be adequately captured with words. Second, one way in which life is infused with the sacred may be found in the strong social ties that exist among the faithful. Because these insights are centuries old and so fundamental to religious life, it is surprising to find that they have been virtually ignored in empirical research. The goal of the current study was to address this significant gap in the knowledge base by exploring the interface between emotional reactions to religious music, feelings of connectedness with others, and health using data from a longitudinal survey of older people.

Three major findings emerged from our work. First, the data suggest that older people who are more emotionally involved in religious music are more likely to feel they are closely connected with others. Second, older individuals who feel more closely connected with others tend to enjoy better health primarily because this sense of being tightly integrated into the wider social order helps them feel more hopeful about the future. Third, race exerts an important influence on these core variables. More specifically, older Blacks are more likely to feel closely connected with others due in large part to influence of religious music. Moreover, older Blacks tend to be more hopeful about the future than older Whites. And religious music plays a significant role in this relationship, as well.

Clearly, the research that is presented in the current study is little more than an initial foray into a vast uncharted domain of religious life. As a result, researchers need to know much more about the potential effects of religious music. At least eight issues should be addressed by researchers who wish to study this relationship. First, our findings show that religious music can foster a sense of connectedness with others. It is important to know if this relationship is unique to religious music or if other types of “secular” music have the same effect. Second, according to the model in Figure 1, hope mediates the effects of connectedness with others on health. However, other mediators may come into play. For example, perhaps feeling connected to others tends to foster a sense of love and affection that is, in turn, associated with better health. Third, the analyses presented above focus solely on the positive emotions that are associated with religious music. However, religious music may also evoke negative emotions. For example, religious music that has been played at a funeral may bring back feelings of grief. This, as well as other negative emotions should be identified and examined empirically. Fourth, religious music typically contains melodies and lyrics. Moreover, it is often shared with religious others during worship services. This raises the possibility that the strong emotions it evokes may arise from the melodies, the lyrics, or the sheer act of sharing it with fellow church members. We suspect that all three are likely to play a role. But this is an empirical question. If the benefits of religious music can be traced to the lyrics then researchers need to learn more about the specific messages that are embedded in them. Perhaps some lyrics carry greater weight than others. Fifth, the measures that were used in the current study ask about whether study participants listen to religious music at home or at church. Research is needed to see if listening at home has the same potentially beneficial effects as listening to religious music at church. Sixth, some congregations eschew religious music. Is the sense of connectedness in these congregations as strong as those in congregations where music occupies a central place in worship services? Seventh, a person can passively listen to religious during worship services or they can be actively involved in singing along with the entire congregation. This raises the possibility that the level of participation in religious music may determine the extent of the benefits it conveys. Eighth, the analyses presented above focus on the mediating effects of race. But it is also possible that race may serve as a moderating factor, as well. This means, for example, that the effects of religious music on feelings of connectedness with others may be stronger among Blacks than Whites. This, as well as other statistical interaction effects can be assessed with a latent variable subgroup analysis.

In the process of addressing these (and other) issues, researchers make an effort to overcome the shortcomings in the current study. Two limitations deserve further comment. First, even though the data for this study were gathered at more than one point in time, it is not possible to definitively state that religious music “causes” the beneficial effects we observe. This issue can only be resolved conclusively with studies that are based on an experimental design. Second, the measures in the current study combine emotional reactions to music at church with music that is enjoyed at home. However, in retrospect, it may have been better to assess the effects of listening to religious music in each social setting separately.

Many consider Friedrich Muller to be the father of comparative religion. He argued that religious music, “... is the language of the soul, but it defies interpretation. It means something, but that something belongs not to this world of sense and logic, but to another world, quite real, though beyond definition” (Muller, 1905/2007, p. 141). Although there are limitations in our work, we hope the findings and the issues we raise encourage other investigators to study the elusive aspects of religious music that have remained unexamined since Muller’s (1905/2007) day.

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Figure 1.
A Conceptual Model of Religious Music and Self-Rated Health

Table 1**Core Study Measures**

1	Church Attendance ^a - Wave 1
	How often do you attend religious services?
2	Religious Music ^b - Wave 1
	A. Religious music lifts me up emotionally.
	B. Religious music gives me great joy.
	C. Religious music helps strengthen and renew my faith.
	D. Religious music makes me feel closer to God.
3	Connectedness with Others ^b - Wave 1
	A. My faith helps me see the common bond among all people.
	B. My faith helps me appreciate how much we need each other.
	C. My faith helps me recognize the tremendous strength that can come from other people.
4	Hope ^b - Wave 1 and Wave 2
	A. I always look on the bright side of things.
	B. I'm optimistic about my future.
	C. In uncertain times, I usually expect the best.
5	Self-Rated Health - Wave 1 and Wave 2.
	A. How would you rate your overall health at the present time? ^c
	B. Would you say your health is better, about the same, or worse than most people your age? ^d

^aThis item is scored in the following manner (coding in parenthesis): never (1), less than once a year (2), about once or twice a year (3), several times a year (4), about once a month (5), 2–3 times a month (6), nearly every week (7), every week (8), several times a week (9).

^bThese items are scored in the following manner: strongly disagree (1), disagree (2), agree (3), strongly agree (4).

^cThis item is scored in the following manner: poor (1), fair (2), good (3), excellent (4).

^dThis item is scored in the following manner: worse (1), about the same (2), better (3).

Table 2Measurement error parameter estimates for multiple item study measures ($N = 918$)

Construct	Factor Loading ^a	Measurement Error ^b
1. Religious Music (Wave 1)		
A. Music lifts me up ^c	.888	.212
B. Music gives great joy	.900	.190
C. Music renews faith	.890	.208
D. Music makes me closer to God	.905	.181
2. Connectedness with Others (Wave 1)		
A. See the common bond	.900	.189
B. How much we need others	.890	.208
C. Strength from other people	.859	.263
3. Hope (Wave 1)		
A. Look on the bright side	.755	.429
B. Optimistic about future	.765	.415
C. Usually expect the best	.720	.481
4. Hope (Wave 2)		
A. Look on the bright side	.699	.512
B. Optimistic about future	.847	.283
C. Usually expect the best	.870	.242
5. Self-Rated Health (Wave 1)		
A. Health at present time	.808	.347
B. Health compared to others	.577	.667
6. Self-Rated Health (Wave 2)		
A. Health at present time	.776	.397
B. Health compared to others	.710	.495

^aFactor loadings are from the completely standardized solution. The first-listed item for each latent construct was fixed at 1.0 in the unstandardized solution.

^bMeasurement error terms are from the completely standardized solution. All factor loadings and measurement error terms are significant at the .001 level.

^cItem content is paraphrased for the purpose of identification. See Table 1 for the complete text of each indicator.

Table 3

Religious Music, Hope, and Change in Self-Rated Health ($N = 918$)

Dependent Variables		Church Attendance (Wave 1)	Religious Music (Wave 1)	Connectedness with Others (Wave 1)	Hope (Wave 1)	Hope (Wave 2)	Self-Rated Health (Wave 1)	Self-Rated Health (Wave 2)
Independent Variables								
Age		-.047 ^a (-.019) ^b	-.006 (-.001)	.006 (.001)	.049 (.004)	-.025 ^{**} (-.002)	.020 (.002)	-.061 (-.006)
Sex		-.096 ^{**} (-.501)	-.135 ^{***} (-.145)	-.055 [*] (-.061)	.025 (.025)	.043 (.040)	.072 (.101)	-.026 (-.035)
Education		.133 ^{***} (.098)	-.138 ^{***} (-.021)	-.017 (-.003)	.070 (.010)	.054 (.007)	.186 ^{***} (.037)	.076 [*] (.014)
Race		-.119 ^{***} (-.598)	-.204 ^{***} (-.210)	-.011 (-.011)	-.155 ^{***} (-.147)	-.012 (-.011)	.184 ^{***} (.248)	.039 (.051)
Church attendance (Wave 1)			.258 ^{***} (.053)	.210 ^{***} (.044)	.085 [*] (.016)	.125 ^{***} (.023)	.103 [*] (.027)	.012 (.003)
Religious Music (Wave 1)				.543 ^{***} (.558)	.179 ^{***} (.165)	.064 (.057)	-.011 (-.014)	-.036 (-.044)
Connectedness with Others (Wave 1)					.243 ^{***} (.218)	-.042 (-.036)	-.002 (-.002)	.087 (.106)
Hope (Wave 1)						.244 ^{***} (.235)	.254 ^{***} (.361)	-.121 [*] (-.164)
Hope (Wave 2)								.364 ^{***} (.513)
Self-Rated Health (Wave 1)								.508 ^{***} (.484)
Multiple R ²		.034	.179	.424	.218	.099	.159	.441

^a Standardized regression coefficient^b Metric (unstandardized) regression coefficient* = $p < .05$;** = $p < .01$;*** = $p < .001$.