**~Responses~**

A logistic regression analysis with five predictors (*distance, musician status, distance\*musician status, hours a week spent listening to music, hours a week spent listening to jazz*) tested whether participants judged pairs of melodic sequences as related. Overall, the model provided a significantly better fit than an intercept-only model, χ2 (5, *N* = 18601) = 679.61, *p* < .001, PRD = .026. Approximately 58.6% of trials were accurately classified.

Controlling for the other variables in the model, a 1-unit increase in distance decreased the odds a participant would judge a pair as related by a factor of .89, *z* = -14.86, *p* < .001, 95% CI [.88, .91]. Holding other variables constant, each additional self-reported hour spent listening to music decreased the odds a participant would judge a pair as related by a factor of .99, *z* = -5.62, *p* < .001, 95% CI [.992, .996]. Holding other variables constant, each additional self-reported hour spent listening specifically to jazz increased the odds a participant would judge a pair as related by a factor of 1.04, *z* = -5.764, *p* < .001, 95% CI [1.03, 1.07]. Controlling for other variables in the model, whether or not the participant was a musician was not reliably associated with the relatedness judgement, OR = 1.08, *z* = 1.35, *p* = .18, 95% CI [.97, 1.19]. Together, these results suggest that perceived relatedness decreases with increases in distance and music listening but increases the more one listens to jazz.

There was a significant interaction between distance and musician status, *z* = -2.05, *p* = .04. For musicians, there was a simple effect of distance such that a 1-unit increase in distance decreased the odds a participant would judge a pair as related by a factor of .87, *z* = -19.72, *p* < .001, 95% CI [.86, .89]. For non-musicians, there was a simple effect of distance such that a 1-unit increase in distance decreased the odds a participant would judge a pair as related by a factor of .89, *z* = -14.86, *p* < .001, 95% CI [.88, .91].

For musicians, data on music traits (*primary instrument proficiency, proficiency at improvising, hours currently spent playing music per week, hours spent playing jazz per week, percentage of playing time spent improvising*) were collected. A logistic regression with these predictors, controlling for distance, tested how the musician group made relatedness judgements. This model provided a significantly better fit than one that just included distance, χ2 (5, *N* = 10506) = 150.23, *p* < .001, PRD = .011. Holding other variables constant, each one-unit increase in self-rated proficiency on their primary instrument decreased the odds a participant would judge a pair as related by a factor of .92, *z* = -4.075, *p* < .001, 95% CI [.89, .96]. Holding other variables constant, each one-unit increase in self-rated proficiency in improvisation decreased the odds a participant would judge a pair as related by a factor of .95, *z* = -2.81, *p* < .01, 95% CI [.91, .98]. Holding other variables constant, each one-hour increase in hours spent playing music per week increased the odds a participant would judge a pair as related by a factor of 1.01, *z* = 2.11, *p* < .05, 95% CI [1, 1.01]. Holding other variables constant, each one-hour increase in hours spent improvising per week decreased the odds a participant would judge a pair as related by a factor of .92, *z* = -6.25, *p* < .001, 95% CI [.90, .94]. Holding other variables constant, each one-percent increase in improvising during total playing time increased the odds a participant would judge a pair as related by a factor of 1.006, *z* = 4.75, *p* < .001, 95% CI [1.003, 1.008].

*Plot:*

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**~RT~**

Prior to examining the reaction time data, trials were excluded from analysis if they were “incorrect” and did not align with whether the stimuli pair actually shared notes (so for distances 1-4, “no” trials were excluded, for distances 6 and 10, “yes” trials were excluded).

A regression analysis was conducted to predict reaction time from distance, musician status, the interaction between distance and musician status, hours per week spent listening to music, and hours per week spent listening to jazz. A model that included these predictors fit the data significantly better than an intercept-only model, *F*(5, 10808) = 4.28, *p* = .001, PRE = .002.

Analysis of individual predictors revealed a significant effect of distance such that each 1-unit increase in distance increased reaction time by .03 s, *t*(10808) = 3.87, *p* < .001, PRE = .001, 95% CI [.02, .05]. Musician status also significantly predicted reaction time such that musicians took .13 s longer to answer than non-musicians, *t*(10808) = 2.36, *p* = .018, PRE = .001, 95% CI [.02, .24]. Weekly time spent listening to music did not significantly predict reaction time, *t*(10808) = 0.77, *p* = .44; listening to jazz also did not significantly predict reaction time, *t*(10808) = 1.56, *p* = .12.

There was a significant interaction between distance and musician status, *t*(10808) = -3.13, *p* = .002, PRE = .001. For musicians, there was no significant simple effect of distance when predicting reaction time, *t*(6155) = -0.61, *p* = .55. For non-musicians, there was a significant simple effect of distance such that higher distances had longer response times. Each 1-unit increase in distance increased response time by .03 s, *t*(4655) = 2.73, *p* = .006, PRE = .002, 95% CI [.009, .052]. Taken together, these results indicate that while increases in distance do not seem to matter for musicians’ reaction times on the relatedness judgement task, higher distances lead to increased reaction times for non-musicians.

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**~Histograms for musical predictors~**

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