**Project Personnel** (1-2 p.)

Hannah Merseal, Pennsylvania State University, Am I the PI or Co-PI?

~3 sentence bio

Roger Beaty, Pennsylvania State University, Project Role

~3 sentence bio

Martin Norgaard (?), Georgia State University, Project Role

~3 sentence bio

(Örjan? Yoed?)

~3 sentence bio

**Project Narrative** (2-3 single spaced pgs. with 1-inch margins, 12-pt font)

1. **Title: Insert a cool title here. Such as: The Melodicon 2: Electric Boogaloo**
2. **Project description**
   1. **Rationale**

Semantic memory is frequently represented as networks of words and their defining linguistic features. Within these semantic networks, related words are represented “closer” to each other than unrelated words, which is empirically reflected in higher relatedness judgments and faster reaction times (Kenett et al. 2017). Network science approaches to studying domain-general creative thinking have revealed that highly creative individuals have semantic network structures that are more flexible, connected, and robust than less creative individuals, which allows for the efficient association of distantly related concepts. One domain-specific subset of the creativity literature investigating musical improvisation has characterized the process of improvisation as a synthesis of complex cognitive processes occurring in real time, during which improvisers reference a knowledge base of learned musical patterns, restructure these patterns into phrases, and produce them in performance. While a good deal of research has investigated the cognitive processes that underlie improvisation, the nature of improvisers’ knowledge structure has not yet been characterized.

An initial investigation by our research group examined whether network science methods previously used in language can be used to model the relationships between melodic sequences in improvised music. We hypothesized, that, similar to semantic networks in language, improvisers and music listeners reference “melodic networks” of learned sequences, and that the relationships between melodic sequences can be quantified using relatedness judgements and reaction time. We calculated a network of 5-note melodic sequences from the Weimar Jazz Database (WJD), a large corpus of transcribed jazz improvisations. Within this network, each 5-note sequence was considered a “node” and continuations to other 5-note sequences were considered “edges”. We then calculated melodic distances between node pairs within the network by considering the number of “steps” between each node and created MIDI samples of these pairs using a range of distances from 1 to 20. Online participants were asked to make a binary (yes/no) judgement as to whether the sequences in the pair were related while reaction time was recorded. We found that as distance increased, participants more frequently judged melodic sequences as unrelated. Moreover, similar to the original studies by Kenett et al., the relationship between distance and reaction time was quadratic, with participants slowing in reaction time through distance four, then were quicker. Report music listening?

* 1. **Goals/objectives**

Our initial study provided preliminary evidence for the existence of a melodic network in music listeners that behaves akin to semantic networks in language. In order to connect these findings to creative behavior, particularly in the context of musical improvisation, we would like to conduct two follow-up studies with targeted samples of musicians.

* 1. **Methodology**

Experiment 1. Jazz student X jazz professional comparison

* We have access to them (thanks Martin and Orjan)
* Same task

Experiment 2. Jazz professional X jazz student comparison

* We have access to them (thanks Martin and Orjan)
* Same task

1. **Significance and/or contributions to the field**
   1. **Include ways in which the project supports the mission/vision of Division 10**

The purpose of the Society shall be (a) to promote research and publication in the field of the psychology of aesthetics, creativity, and the arts; (b) to facilitate the exchange of information and experience among its members; (c) to promote the development of new professional opportunities; and (d) to contribute in general to the advancement of the relation between psychology and the arts as a means of promoting human welfare.

* 1. **How the project has potential to advance research**

It is a lot of research

1. **Projected project timeline (funds must be used within 1 academic year)**

As these studies are replications of the original and will be administered online, data collection can proceed immediately once we have obtained funding to pay participants. We plan to collect and analyze data during Summer 2021, then write our findings for publication in Fall 2021.

1. **Future dissemination plan for project findings, and plan for seeking external funding**

**Budget** (1 p.)

**Itemized budget costs in table format**

|  |  |  |  |
| --- | --- | --- | --- |
| **Items** | **Unit cost** | **Quantity** | **Amount** |
| Participant payments, Experiment 1 (Jazz students X professionals) | $10/participant | 60 | $600 |
| Participant payments, Experiment 2 (Classical X jazz) | $10/participant | 60 | $600 |
| Total |  |  | $1200 |

**Budget narrative/justification**

We would like to pay participants a total of $10/hour via an Amazon gift card. The online experimental procedures took participants between 45-55 minutes for participants to complete in our initial study, and we do not expect this timing to change in the follow-up experiments.