



Grant Recipient Final Report

Name of Primary Researcher: Matthew Henley

Name of Primary Researcher's Agency: TWU Department of Dance

Title of Funded Research Grant: Cognitive Abilities Associated with Proprioceptive Aptitude

Funding Period (Start and End Dates): 9/1/16-8/31/17

Grant Amount Awarded: \$10,000

Grant Funds Spent:

Note any differences in the Grant Amount Awarded and Grant Funds Spent:

Synopsis of major research findings:

In this study, cognitive abilities were described in relation to the execution of dance movements based on an analysis of video taken across a series of college level dance classes. A subset of participants in the dance classes also completed the WJIV COG. During qualitative data collection and analysis, it became clear that, though specific instances of intelligence could be read in an individual's behaviors, there was no existing theoretical model to explain when and how cognitive abilities manifest during class. This was particularly true when considering not just how dancers learn movement, but how dancers learn concepts, or abstract relationships between movement qualities. Therefore, a grounded theory approach was adopted and a theoretical model for concept learning in dance was developed based on the participant data (attached). The proposed model emerging from this research expands on a basic model for information-processing from the field of motor learning. The components of the motor learning model are: input, stimulus identification, response selection, response programming, and output. Extending this model, three primary tracks for information-processing leading to concept development in the dance classroom emerged. These were described with evidence from the video analysis and then interpreted using the broad CHC abilities. The data were

collected from a single teacher's class, limiting the comparability of the results. Data collection also did not reach saturation, a criterion suggested by scholars of grounded theory, limiting the credibility of the results. Future studies are planned to address these limitations.

In the quantitative portion of the study, in which the participants completed the WJIV COG, the low sample size ($N=19$) limited the statistical analyses that could be run on the data. However, interesting trends were revealed by creating group means from the Standard Score (SS) for each of the broad abilities. With an established mean of 100, the participants, as a group, scored below average on Comprehension Knowledge (93.42), Long-term Retrieval (97.1), and Working Memory (97.6). The participants scored at or near the average on Auditory Discrimination (99.55), Cognitive Efficiency (101.55), Gf-Gc Composite (100.42) and General Intellectual Ability (100.95). The participants scored above average on Visual Discrimination (105.05) and Fluid Reasoning (106.11). These results are unsurprising as a good deal of time in the dance class is spent interpreting complex visual information and transforming that information into a motor response program. Dancers, therefore might either improve these abilities through dance practice or they might have a successful dance practice because they possess these abilities ahead of time. However statistical analysis is needed before any conclusions can be drawn. Further examination of students' performance on individual tests, intra-cognitive variations, or Gf-Gc composites could also reveal systematic differences that are not apparent in the raw data. Those analyses are in the process of being conducted. The quantitative data also suggest additional lines of inquiry, particularly when looking at individual students with unusual profiles. Mixed-methods research could be completed connecting the strengths and weaknesses of a student's cognitive profile, from the WJIV COG, to qualitative descriptions of the student's strengths and weaknesses in the dance classroom.

Distribution plan for completed research (e.g., journal publication, conference presentation, etc.).

July 2017 – Peer-reviewed presentation of conceptual framework and emerging data at *Movement and Cognition* Conference in Oxford, UK

November 2017 – Peer-reviewed presentation of grounded theory model at the *National Dance Education Organization's Annual National Conference* in San Antonio, TX

December 2017 – Submission of manuscript providing evidence for the grounded theory model to *Journal of Dance Education*

February 2018 – Submission of manuscript integrating broad CHC abilities with grounded theory model to *Research in Dance Education*

Note: Grant recipients may be invited to present their research findings at a semi-annual conference sponsored by the Woodcock Institute.

