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Action Preferences of College Students in Dance, Other Majors, and College Athletics: Toward Understanding Students' Use of Their Kinesthetic Intelligence

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Abstract

This study explores the action preferences of dance-major students, college athletes, and non-dance, non-athlete controls using the "Action Checklist," a tool of 295 verbs categorized by preference. Participants included 71 dancers, 83 athletes, and 29 predominantly female controls from Southern California colleges. Analysis focused on the frequency of verbs liked and their classification using two systems: Laban/Bartenieff Movement Analysis (body, effort, shape, space) and literal categories such as play, work, everyday actions, imagination, physicality, and arts. Four scales indicated creative potential. Results revealed significant differences between groups, highlighting traits of high creativity (e.g., energy or broad interests). The Action Checklist was used to assess action preferences and creativity across various populations.

Keywords: action checklist, action preference; dance; kinesthetic intelligence; Laban/Bartenieff Movement Analysis (LBMA); pedagogy

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This study examines people whose interests and activities appreciably tap their kinesthetic intelligence. When Howard Gardner identified kinesthetic intelligence as one of the seven (now eight and one half) intelligences in *Frames of Mind: Theory of Multiple Intelligence*,[1] he argued what many people in the field of dance have intuitively understood about dancers' movement abilities, that their kinesthetic skills use specific intelligences. People use their intelligences in varying combinations. Dancers continuously draw creativity from their kinesthetic, musical, and visual intelligence with verbal, logical, interpersonal and intrapersonal intelligence, especially when choreographing, directing, and teaching dances. Assuming that athletes and dancers are both creative, but differently creative, this study focuses on how the action preferences of dance-major students with professional goals are similar to and different from college athletes who play on university teams—the identified high actives in this study—and a control group of non-dance and non-athlete college students. The shorthand "high actives" identifies students whose activities require high levels of kinesthetic intelligence. This study also introduces an instrument designed to distinguish and discriminate language use and types of creativity among groups of physically active and less active people. The standardized and widely used *Gough-Heilbrun Adjective Checklist*[2] serves as the model for the format and scale development of the current instrument we devised for Judith B. Alter's fourth attempt to study dance students' action preferences.[3,4,5,6,7,8]

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1. Howard Gardner, *Frames of Mind: Theory of Multiple Intelligences*. (Basic Books, New York, 1983).

2. Harrison G. Gough and Alfred B. Heilbrun, *The Adjective Checklist Manual*. (Palo Alto, CA: Consulting Psychologists Press, 1965).

3. Judith B. Alter, "Dancers Talk about Themselves and Dance Education," in *Artists in the Making*, ed. by Barron, F., (New York: Seminar Press, 1972).

4. Judith B. Alter, "The Personality Characteristics and Creative Potential of Dance Students in University and Conservatory Settings." *Journal of Personality Assessment*, 48, no. 2 (1984): 153-158.

5. Judith B. Alter, "A Factor Analysis of New and Standardized Instruments to Measure the Creative Potential and High-energy Action Preference of Performing Arts Students: A Preliminary Investigation." *Personality and Individual Differences*. 5, no. 6 (1984): 693-699.

6. Judith B. Alter, "The Personality Characteristics and Creative Potential of Drama Students in University and Conservatory Settings." *Creative Child and Adult Quarterly*, 12, no. 3 (1987): 178-189.

7. Judith B. Alter, "An Analysis of Variance Among Dance, Music and Drama Students in University and Conservatory Settings," in *Dance: Current Selected Research*. Vol 2. ed. by Lynnette Y. Overby and Billie Lepczyk (New York: National Dance Association and AMS Press, 1990), 69-104.

8. Judith B. Alter, "Why Students Pursue Dance: Studies of Dance Students from 1953-1993." *Dance Research Journal*, 29, no. 2 (1997): 70-89. This study included 83 dance students but not all of them completed the entire "Action Checklist." Hence this study has only 71 dance students.

Literature and Theoretical Base

The prior literature for this research project encompasses several related topics: comparisons of dancers and athletes, students' applications of their kinesthetic intelli-gence, and dancers' personalities about their creative potential. Sources on these topics include unpublished theses and dissertations, journal articles, single-authored books, anthologies, and conference presentations. The theoretical bases for the research in these areas range from demonstrating or challenging established theories to forging new explanations of these topics.

In the late 1960s, 1970s, and 1980s, some graduate students in dance and physical education studied the similarities and differences among students in dance and sports; none of these master's or doctoral studies have been published. Researchers used motor learning tasks or psychological instruments and found no discernible differences, perhaps because the tasks and instruments did not adequately reveal the differences in action preference that instructors acknowledged seeing and addressing in their teaching.[9,10,11,12] In her dissertation *Implicit Knowledge of Movement,*[13] Jane Taylor studied the "movement intelligence" of library users, physical education majors, novice dancers, and expert jazz dancers. The questions Taylor asked relate to those in this study. She examined the nature and role of these students' implicit knowledge of skilled movement behavior by asking them to describe their movement ability and that of skilled movers, athletes, and dancers. Antoinette M. Gentile, in her stages of learning, distinguished between implicit and explicit learning, with implicit learning being based on automaticity and learned skills inherent to the task and explicit learning focusing on "getting the gestalt" of the movement.[14] These groups of students, Taylor found that these groups of students had similar perceptions of skilled movers and that the three groups of movers differed in distinct ways. She based her research

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9. Mary Alice Brennan, *A Comparative Study of Skilled Gymnasts and Dancers on 13 Selected Characteristics*. (Master's thesis, University of Wisconsin, 1967).

10. Barbara Enders, *A Need Achievement, Locus of Control, and Self-Perception of Highly Competitive Dancers, Gymnasts, Choir and Orchestra Members*. (Master's thesis, Pennsylvania State University, 1977).

11. Joy Griffin, *Hemisphericity in Athletes and Dancers*. (Doctoral dissertation, Brigham Young University, 1983).

12. Carolyn Thomas E., *A Comparison of Verbal Creativity of Highly and Average Skilled College Women Dancers and Highly and Average Skilled Women College Athletes*. (Master's thesis, University of Washington, 1967).

13. Margaret Jane Taylor, *Implicit Knowledge of Movement*. (Doctoral dissertation, University of Alberta, 1989).

14. Antoinette M. Gentile, "Skill Acquisition: Action, Movement, and Neuromotor Processes," in *Movement Science: Foundations for Physical Therapy,* ed. J. H. Carr and R. D. Shepherd, 2nd ed., (Rockville, MD: Aspen, 2000) 111-187.

on Gardner's understanding of kinesthetic intelligence[15] and Robert Sternberg's methodological concept of implicit knowledge research.[16]

In reviewing the published literature on athletes and dancers' use of kinesthetic intelligence, scholars appear not to have addressed the questions of action preference and what specific preferences might reveal. Action preference identifies students who engage in high energy activities with their entire body. No one appears to have devised an instrument such as Alter's Action Checklist, although psychologist Michael C. Jackson continues to find that energy level is what he calls an independent personality characteristic in his Jackson Personality Inventory.[17]

Studies related to "kinesthetic" intelligence include research focusing on learning styles in which students prefer touching and handling objects that they are studying, rather than only listening to words about the objects or seeing pictures of the objects.[18,19,20,21] A study of "physical activity" focuses on physiological data comparing students with sedentary habits to those who engaged in vigorous physical activity but does not analyze specific activities.[22] A discussion of theoretical issues tangentially related to questions addressed in this study appears in the final section of *Attention and Performance XIV: Synergies in Experimental Psychology, Artificial Intelligence, and Cognitive Neuroscience* edited by David E. Meyer and Sylvan Kornblum.[23] Over the past 25 years, researchers in motor learning, motor control, and the psychology of motor behavior have held symposia on these broad areas. Experts in experimental psychology, biomechanics, physical

15. Howard Gardner, *Frames of Mind*.

16. Robert J. Sternberg, "Implicit Theories of Intelligence, Creativity, and Wisdom." *Journal of Personality and Social Psychology*, 49, no. 3 (1985): 607-627.

17. Michael C. Ashton, et al., "Joint Factor Analysis of the Personality Research Form and the Jackson Personality Inventory: Comparisons with the Big Five." *Journal of Research in Personality*, 32 no. 2 (1998): 243-250.

18. Iwona Chelminski, F. Richard Ferraro, Thomas Petros, and Joseph J. Plaud, "Horne and Ostberg Questionnaire: A Score Distribution in a Large Sample of Young Adults." *Personality and Individual Differences*. 23, no. 4 (1997): 647-652.

19. Daniel P. Keating, and Lawrence V. Clark, "Development of Physical and Social Reasoning in Adolescence." *Developmental Psychology*, 16, no. 1 (1980), 23-30.

20. Richard D. Roberts, et al., "Charting Cognitive Sphere: Tactile-kinesthetic Abilities and Intelligence." *Intelligence*, 25, no. 27 (1997), 111-148.

21. Rebecca Finley Snyder, "The Relationship Between Learning Styles/Multiple Intelligences and Academic Achievement of High School Students." *The High School Journal*, 83, no. 2 (2000). 11-20.

22. Karen J. Calfas, James F. Sallis, and Philip R. Nader, "The Development of Scales to Measure Knowledge and Preference for Diet and Physical Activity Behavior in 4- to 8-year-old Children." *Developmental and Behavioral Pediatrics*. 12, no. 3 (1991): 185-190.

23. David E. Meyer and Sylvan Kornblum, *Attention and Performance XIV: Synergies in Experimental Psychology, Artificial Intelligence and Cognitive Neuroscience*. (Cambridge, MA: The MIT Press, 1993).

education, kinesiology, neurophysiology, and robotics study the mental and physical processes that influence human movement. The research on which they report is primarily experimental and focuses on behavior addressing questions such as speed-accuracy trade-offs[24] in voluntary rapid aimed movements, perceptual-motor integration,[25] and skill acquisition.[26]Though these researchers study people moving to understand movement, their basic research approach contrasts with the applied psychological focus of my study.

Researchers who focus on dancers' personalities about their creative potential or activities frame their inquiries in the personality theories of Eysenck,[27,28] Guilford,[29,30] and Barron.[31] In addition to paper and pencil measures, only Brennan asked dance students to carry out creative movement problems, which she and another dance educator assessed. Brennan found no relationship in her study between the 61 dance students' creative movement problems and the results of their responses on the written instruments measuring creativity. Bakker studied temperamental and motivational traits of ballet and non-ballet students and, three years later, examined the ballet students who continued their dance studies and those who did not. Reciniello studied actors' and dancers' attitudes towards their profession and place in society.[32] These researchers examined personality and attitudinal commonalities among dancers; they did not study their movement preferences.

Monographs on creativity contain essays and research referencing a dance language called Motif Notation. This writing system includes symbolic representations of physical body part use, qualities of movement, types of energy employed while moving, shaping of the body, spatial configurations, relationships between tangible and intangible components of movement, and changes in shape, among others. Teresa Heiland researched the pedagogy of Motif Notation concepts used by dancers of many ages, genres, styles, and purposes, with the primary goal

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24. Paul M. Fitts, "The Information Capacity of the Human Motor System in Controlling the Amplitude of Movement," *Journal of Experimental Psychology,* 121, no. 3 (1992), 262-269.

25. James J. Gibson, *The Ecological Approach to Visual Perception*. (Boston: Houghton Mifflin Harcourt (HMH), 1979).

26. Antoinette M. Gentile, "Skill Acquisition." 111-187.

27. Frank C. Bakker, "Personality Differences Between Young Dancers and Non-dancers." *Personality and Individual Differences*, 9, no. 1 (1988): 121-131.

28. Frank C. Bakker, "Development of Personality in Dancers: A Longitudinal Study." *Personality and Individual Differences*, 12, no. 7 (1991): 671-681.

29. Mary Alice Brennan, "Relationship Between Creative Ability in Dance and Selected Creative Attributes." *Perceptual and Motor Skills*, 55 (1982): 47-56.

30. Mary Alice Brennan, "Dance Creativity Tests and the Structure-of-intellect Model." *Journal of Creative Behavior*, 19, no. 3 (1985): 185-190.

31. Shelley Reciniello, "Toward an Understanding of the Performing Artist," in *Psychology and Performing Arts*, ed. Glenn D. Wilson (Amsterdam: Swets & Zeitlinger, 1990), 95-122.

32. Shelley Reciniello, "Toward an Understanding of the Performing Artist." 95-122.

of inciting creative practice in dance-making by using rich vocabulary in one's native tongue and with Motif Notation symbols.[33] In "Physical Performers: Actors, Dancers, and Athletes," Jane Pirto concentrates on personal anecdotal descriptions by actors and dancers regarding their experiences performing (recreating rather than creating).[34] She discusses only one study by Alter.[35] Using 20th Century personality theories by Eysenck, Russ and Busse, and Mansfield, Feist examines the similarities and differences in studies about the creativity of artists and scientists.[36] Bakker's studies[37,38] and Alter's 1972 study,[39] are among the few studies of dancers that Feist analyzes. In all the aforementioned studies, researchers focus on creativity but not dancers' action preferences. Action preference scales can reveal creative potential by identifying patterns in how individuals engage with different types of actions, particularly in areas that require flexibility, imagination, and problem-solving**.** Howard Gardner defines bodily-kinesthetic intelligence as "the ability to use one's body in highly differentiated and skilled ways for expressive and goal-directed purposes. Characteristic is the capacity to work skillfully with objects, both those that exploit fine motor movements of one's fingers and hands and those that exploit gross motor movements of the body."[40] Dancers and athletes certainly develop their bodily intelligence to a high level. In addition to including the framework of Gardner's theory of Multiple Intelligences, this study also applies descriptions of personalities of highly creative people as organized by Frank Barron and Michael Harrington, including independence of judgment, broad interests, high energy, self-confidence, attraction to complexity, aesthetic orientation, and risk-taking.[41] Alter's Action Checklist and scales evolved from five of the Barron and Harrington scales and align with their characteristics.

In 21st-century literature, scholars in dance and sport employ similar scientific disciplines as in earlier studies. The anthology, *The Neurocognition of Dance: Mind, Movement and Motor Skills*, edited by Bettina Blasing, Martin Puttke, and Thomas Schack, reveals representative studies at a European

33. Teresa Heiland, *Leaping into Dance Literacy through the Language of Dance®*. (Bristol, U.K.: Intellect, 2024).

34. Jane Piirto, *Understanding Those Who Create*. (Dayton, OH: Gifted Psychology Press, 1978).

35. Jane Piirto, *Understanding Those Who Create*.

36. Gregory J. Feist, "The Influence of Personality on Artistic and Scientific Creativity," in *Handbook of Creativity*, ed. Robert J. Sternberg, 273–296. Cambridge: Cambridge University Press, 1999.

37. Frank C. Bakker, "Personality Differences Between Young Dancers and Non-dancers." *Personality and Individual Differences*, 121-131.

38. Frank C. Bakker, "Development of Personality in Dancers: 671-681.

39. Judith B. Alter, "Dancers Talk about Themselves and Dance Education."

40. Judith B. Alter, "Dancers Talk about Themselves and Dance Education."

41. Frank Barron, and Michael D. Harrington, "Creativity, Intelligence, and Personality." *Annual Review of Psychology*, 32 (1981): 439-476.

conference[42]. These authors examine how minds are grounded in the physical environment and use research methods from physiology, neurophysiology, and biomechanics in their studies. In Galeet Benzion's study,[43] she discusses Howard Gardner's Multiple Intelligences in her pedagogy and how her method of using creative dance to teach spelling aids children to overcome dyslexia. Although scholars reference sports in their studies of dance movement, none discuss action preferences. Gregor Zollig and Jonathan Harrow's "Searching for that 'other land of dance': The Phases of Developing a Choreography" reveals their success in improvisation for dancers to develop group choreography and emphasizes the lively creative results.[44]

Kinesthetic learning, or "embodied learning," interests many researchers as a way to enhance the study of traditional school subjects and, more broadly, focus on how all human intelligences work together for people to sense reality and human experience. In her article, "Art and Transformation: Embodied Action in a First Grade Art Class," Lisa Hartjen describes how much physical activity stimulates creative outcomes when using three-dimensional construction materials. She also amplifies how integrating physical activity into traditional teaching methods enhances students' learning with varying "learning styles."[45] In a study of 272 dancers, Teresa Heiland uses the Kolb Learning Styles Inventory as a tool to identify dominant learning cycles, styles, and flexibility among dancers. The study highlights the educational benefits of Motif Notation, which enhances learning flexibility by encouraging students to switch between their learning styles when needed. These insights suggest that incorporating motif notation can promote adaptability for lifelong learning.[46]

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42. Bettina Blasing, Martin Puttke, Thomas Schack, editors., *The Neurocognition of Dance Mind, Movement and Motor Skills.* (Hove and New York: Psychology Press, 2010).

43. Galeet Benzion, Overcoming the Dyslexia Barrier," *The Neurocognition of Dance Mind, Movement and Motor Skills*, ed. Bettina Blasing, Martin Puttke, and Thomas Schack. (New York: Routledge, 2012), 35-54.

44. Gregor Zöllig and Jonathan Harrow, "Searching for That 'Other Land of Dance': The Phases in Developing a Choreography,'" in *The Neurocognition of Dance: Mind, Movement and Motor Skills,* ed. Bettina Blasing, Martin Puttke, Thomas Schack (London: Routledge, 2018), 76-87.

45. Lisa F. Hartjen, "Art and Transformation: Embodied Action in a First-Grade Art Class." *Art Education* 65, no.6 (2012): 12-17.

46. Teresa Heiland, "Kolb Learning Styles of Dancers Who Do and Don't Use Dance Notation Compared to Other Fields," *Research in Dance Education*, 20, no. 2 (2019): 148.

Many education researchers use quantitative methods to determine how learning modes or Multiple Intelligences influence learning.[47,48,49,50,51,52,53] A few researchers focus on creativity,[54,55] and a few others integrate physical education with multiple intelligences.[56,57] Not surprisingly, these studies demonstrate how the kinesthetic intelligence plays a vital part in learning and teaching. Action preference scales can reveal creative potential by identifying patterns in how individuals engage with different types of actions, particularly in areas that require flexibility, imagination, and problem-solving. Individuals who show a broad range of liked actions, especially in Action Preference categories such as Metaphoric, Play, and Arts, may have a higher capacity for creative thinking. Their willingness to engage in varied activities suggests an openness to new experiences, a key trait of creativity. Scales that measure the ability to switch between different types of actions (e.g., shifting between structured and improvisational tasks) can indicate adaptability, which is essential for creative problem-solving. If someone prefers actions that involve exploration, abstraction, or expressive movement, it may suggest a natural inclination toward creative processes. For example, dancers who score high on Metaphoric and Arts scales might be more likely to think abstractly and generate novel movement ideas.

Dance scholars used quantitative analyses to study kinesthetic intelligence about the creative process for college dance composition, contact improvisation,

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47. Gulap Shahzada, et al., "Self-estimated multiple intelligences of urban and rural students." *Journal of Research & Reflections in Education.* 8, no. (2014): 116-124.

48. Yuen Mantak and Adrian Furnham, "Sex differences in self-estimation of multiple intelligences among Hong Kong Chinese adolescents." *High Ability Studies* 16, no.2, (2005): 187-199.

49. Holly Matto, et al., "Teaching Notes: An Exploratory Study on Multiple Intelligences and Social Work Education." *Journal of Social Work Education*. 42, no. 2 (2006): 405-416.

50. Emily J.S. Kang, "The Neuron Game." *Science Scope. Washington, DC: NSTA Press* 36, no. 5 (2013), 42-47.

51. Egemen Ermis and Imanoglu Osman., "The Effect of Doing Sports on the Multiple Intelligences of University Students." *International Journal of Academic Research*, 5, no. 5 (2013): 174-179.

52. Ted Richards, "Using Kinesthetic Activities to Teach Ptolemaic and Copernican Retrograde Motion." *Science & Education*. 21, no. 6 (2012). 899-910.

53. Cathy Collins Block, Sheri R. Parris, and Cinnamon Whiteley, "A Kinesthetic Comprehension Strategy." *Reading Teacher*. 6 (2008): 460-470.

54. Tom Bruno-Magdich, "Integral Innovation and Creativity." *Integral Leadership Review*. 12 (2012): 1-9.

55. Karen Lee Carrol, "In Their Own Voices: Helping Artistically Gifted and Talented Students Succeed Academically." *Gifted Child Today*. 4 (2008): 36-43.

56. Charlotte A. Humphries, Sara Bidner, and Cheryl Edwards, "Integrated Learning with Physical Education and Music." *Clearing House: A Journal of Educational Strategies, Issues and Ideas* 84, no. 5 (2011): 174-179.

57. Sivirkaya A. Haktan, "Determination of Multiple Intelligences Areas of the Teachers of Physical Education and Sports and Evaluation of These Areas in Terms of Different Variables." 5 (2013): 105-110.

and music and dance with children. Dinny Devi Triana derived a "smart kinesthetic measurement model" with college dance majors and found that kinesthetic intelligence includes arranging a dance, perceiving movement ability, and conveying movement.[58] Triana recommends using improvisation to develop students' kinesthetic intelligence. Based on the "reflexive research methodology" involving improvisational dance and music paired with a reflexive software system, Addesi, Mafiolli, and Annelli developed a research paradigm exploratory study allowing children to interconnect their improvised movement to recorded music and mirroring that movement with improvised sound in student pairs.[59] Laban/Bartenieff Movement Analysis guided their analysis of both movement and sound. They observed an increase in creative responses using improvisation.[60] Carlota Torrents, Angel Ric, and Robert Hristovski enhanced the creativity in college students by offering stimulating guidelines in experienced contact improvisation college students. The authors recommend using improvisation in various sports activities, especially when spontaneous responses enhance results.[61] Authors of these three varied articles emphasize the value of improvisation.

In their articles, two scholars touched on features of Alter's action preference study by examining students' words regarding their value of improvisation. Shantel Ehrenberg analyzes the words her students use to describe the felt-sense of their bodies after performing dance phrases from varying forms of dance.[62] Karen Schupp discusses how students express the value of studying diverse dance forms when improvising.[63]

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58. Dinny Devi Triana, "Smart Kinesthetic Measurement Model in Dance Composision." *HARMONIA: Journal of Arts Research and Education* 17, no. 1 (2017): 58-67.

59. Anna Rita Addessi, Marina Mafiolli, and Filomina Annelli, "The MIROR Platform for Young Children's Music and Dance Creativity: Reflexive Interaction meets Body-gesture, Embodied Cognition, and Laban Educational Dance." *Perspectives: Journal of the Early Childhood Music & Movement Association*. 10, no. 1 (2015): 9-17.

60. Laban/Bartenieff Movement Analysis allows movement analysts and notators to describe the "how" of movement with symbols. LBMA can accompany the notations of movements or sequences of movements, such as a dance, in Labanotation or Motif Notation.

61. Carlota Torrents, Angel Ric, and Robert Hristovski, "Creativity and Emergence of Specific Dance Movements Using Instructional Constraints," *Psychology of Aesthetics Creativity and the Arts*. 9, no. 1 (2015):65-74.

62. Shantel Ehrenberg, "A Kinesthetic Mode of Attention in Contemporary Dance Practice." *Congress on Research in Dance*. 47, no. 2 (2015): 43.

63. Karen Schupp, "Merging Movements: Diverse Dance Practices in Postsecondary Education." *Arts Education Policy Review*. 118, no. 2 (2017): 104-115.

Hypotheses

Hypothesis 1: Dancers' use certain languages more often than athletes and the word categories will differentiate how dancers and athletes differ creatively by using specific language in their respective practices.

Hypothesis 2: If dancers with improvisation experience choose words that reveal creative potential, then dancers who have less improvisation experience can be understood to benefit from future improvisation experiences.

Method

Development of Alter's Action Checklist

Alter developed her Action Checklist, a tool containing 295 verbs. The categorization process involved eighteen graduate students from her 1998 Research and Bibliography class at UCLA, who identified six categories: play, work, everyday actions, metaphoric or imaginative actions, purely physical actions, and arts-related actions**.** These categories were inspired by observations of non-dancers, who tended to interpret verbs literally. Next, five experienced dancer/dance teachers independently assigned each verb to one or more categories they deemed appropriate. To ensure consistency, the dance teachers were instructed to categorize verbs from the perspective of a non-dancer or beginner dance student. For the Literal Meaning scales, verbs were placed into a category only if at least four out of five judges agreed on their classification. For the final three scales, verbs were categorized when at least three judges agreed (see appendix C for details). In appendix D, miscellaneous information is provided regarding which verbs were not used and which groups liked and disliked various verbs the most.

Participants

A convenience sample of college dance majors, student-athletes, and control subjects was recruited from university classes in Southern California to gain a broad array of participants. Participants were invited from professors across the campus with whom Alter had established relationships**.** Participation in the study was voluntary. Female athletes were recruited through their coaches, as their team activities were extracurricular. Male athletes who attended the same university classes were included in the control group. The Institutional Review Board (IRB) at UCLA approved the study, and all participants provided informed consent. Participants completed an information sheet and then responded to Alter's Action Checklist as part of a broader study on dance students in intact classroom settings.

Procedures

Directions for completing Alter's Action Checklist. Participants were instructed to consider each verb on Alter's Action Checklist and "Circle the verbs they like to do. Cross out the verbs they do not like to do. Leave unmarked the verbs they only like sometimes" (see appendix A).

Approaches to data analysis. In Alter's previous studies, inductively analyzing the data to identify patterns was difficult due to the large number of verbs without predefined thematic categories. To address this challenge, we developed three approaches for analyzing the data:

1. *Quantitative Scoring of Verbs*. We compared the number of liked and disliked verbs across participant groups. Verbs were assigned scores: 3 for "like," 2 for "sometimes," and 1 for "dislike." The total scores were averaged across all verbs for each group.
2. *Categorization Using Laban/Bartenieff Movement Analysis (LBMA).* We collaborated with Laban/Bartenieff Movement Analyst Peter Madden, who categorized the verbs based on four main LBMA categories: body, effort, shape, and space. Madden conducted the categorization twice, with a one-week interval between analyses, to ensure reliability. These categorizations formed the LBMA scales (see appendix B).
3. *Comparison with Gough and Heilbrun's Adjective Checklist Model.* We adapted a method based on Gough and Heilbrun's Adjective Checklist to create an additional set of analytical scales.[64] This approach allowed us to examine action preferences using a structured psychological framework.

Statistical Analysis

Overall pairwise comparison of score means of Dancer, Athlete, and Control groups was carried out using pooled t-methods, with variance estimates pooled across all three groups. Graphical assessments indicated no evidence of serious departures from the assumptions of normality and equal variance. Further comparisons of various groupings within the dance students and student athletes used the same method but employed a Scheffe adjustment for multiple tests. A p-value less than 0.05 was considered statistically significant, with smaller p-values providing stronger evidence of a group difference.

64. Harrison G. Gough and Alfred B. Heilbrun, *The Adjective Checklist Manual*.

Findings

Participants' Data Gathering

Over five years, 189 subjects completed Alter's Action Checklist: 74 dance students in dance classes (5 males) from 11 colleges and universities (gathered in 1993), 87 athletes, all members of college teams (5 males) from 4 colleges and universities (gathered in 1994 and 1999), and 29 college students in two humanities classes (9 males) from one private university who served as controls (gathered in 1994). From the information sheet they completed, we identified 47 dancers who were majoring in dance.[65]

Groups Compared

The summaries of the participants' choices on word scores for each group are shown in table 1. The average of the scores for word scores for Dancers was statistically higher than the average for Athletes ($p = 0.004$) and the average for Controls ($p = 0.002$).

Table 1. Word Scores

Group	**n**	**Means**	**SD**	***p* value**
Dancers	74	2.08	.23	0.004 (Athletes) 0.002 (Controls)
Athletes	87	1.96	.27	0.325 (Controls)
Controls	29	1.91	.25	

Literal Meaning Scales

Dancers had higher scores than Controls on Everyday ($p = 0.006$), Metaphoric ($p = 0.001$), Physical ($p < 0.001$) and Arts (0.014). Dancers also had higher scores than Athletes on Metaphoric ($p < 0.001$), Physical ($p = 0.003$) and Arts ($p < 0.001$) (see table 2).

LBMA Scales

On the LBMA scales, the *score* averages show the Dancers scored higher than both the athletes and controls on Body ($p < .0001$) and Shape ($p = .003$ compared to Athletes; $p = 0.026$ compared to Controls), and higher than the Controls on the Effort scale ($p = 0.02$) (see table 3).

65. Data was gathered during Judith B. Alter's tenure at UCLA and analyzed posthumously by her research colleagues.

Table 2. Scores on Literal Meaning Scales

Scale	Group	n	Means	SD	*p* value
Play	Dancers	74	2.18	.25	0.522(Athletes); 0.231 (Controls)
	Athletes	87	2.13	.31	0.660 (Controls)
	Controls	29	2.07	.31	
Work	Dancers	74	2.02	.24	0.990 (Athletes); 0.109 (Controls)
	Athletes	87	2.02	.29	0.122 (Controls)
	Controls	29	1.90	.29	
Everyday	Dancers	74	2.22	.25	0.155 (Athletes); 0.006 (Controls)
	Athletes	87	2.14	.26	0.177 (Controls)
	Controls	29	2.04	.23	
Metaphoric	Dancers	74	2.01	.31	< 0.001 (Athletes); 0.001 (Controls)
	Athletes	87	1.80	.31	0.899 (Controls)
	Controls	29	1.77	.24	
Physical	Dancers	74	2.14	.28	0.003 (Athletes); < 0.001 (Controls)
	Athletes	87	1.97	.33	0.254 (Controls)
	Controls	29	1.86	.32	
Arts	Dancers	74	2.39	.27	< 0.001 (Athletes); 0.014 (Controls)
	Athletes	87	2.17	.35	0.976 (Controls)
	Controls	29	2.19	.36	

Table 3. Scores on LBMA Scales

Scale	Group	n	Means	SD	*p* value
Body	Dancers	74	2.2	.24	<0.0001 (Athletes and Controls)
	Athletes	87	1.9	.29	
	Controls	29	1.9	.28	
Shape	Dancers	74	2.1	.26	0.003 (Athletes); 0.026 (Controls)
	Athletes	87	2.0	.29	
	Controls	29	2.0	.26	
Effort	Dancers	74	2.0	.27	0.02 (Controls)
	Athletes	87	1.9	.30	
	Controls	29	1.8	.25	
Space	Dancers	74	2.1	.25	
	Athletes	87	2.1	.29	
	Controls	29	2.0	.27	

Dancers' Background in Improvisation

We divided the total group of 74 dancers by those whose pre-college dance background included improvisation and those whose did not. When looking at the differences on the scores, evidence of difference appears on Shape ($p = 0.033$) and Space (0.002) on the LBMA scales and on Play ($p = 0.027$), Work (0.045), and Arts (0.004) scales of the Literal Meaning scales (see tables 4 and 5).

Table 4. Scores of Liked Verbs on LBMA Scales of Dance Students with and without Improvisation

Scale	**Genre**	**n**	**Means**	**SD**	***p* value**
Body	improv	43	2.20	0.25	0.10
	no improv	31	2.11	0.22	
Shape	improv	43	2.18	0.25	0.033
	no improv	31	2.06	0.25	
Effort	improv	43	1.99	0.25	0.29
	no improv	31	1.92	0.28	
Space	improv	43	2.19	0.24	0.002
	no improv	31	2.01	0.23	

Table 5. Frequency of Liked Verbs on the Literal Meaning Scales of Dance Students with and without Improvisation

Scale	**Group**	**n**	**Means**	**SD**	***p* value**
Play	improv	43	2.23	0.24	0.027
	no improv	31	2.10	0.24	
Work	improv	43	1.96	0.23	0.045
	no improv	31	2.07	0.24	
Everyday	improv	43	2.19	0.21	0.423
	no improv	31	2.24	0.28	
Metaphoric	improv	43	2.07	0.32	0.064
	no improv	31	1.94	0.28	
Physical	improv	43	2.17	0.28	0.186
	no improv	31	2.09	0.27	
Arts	improv	43	2.47	0.26	0.004*
	no improv	31	2.29	0.26	

Discussion

Hypothesis 1: Dancers and athletes will differ creatively by using specific language in their respective practices.

The hypothesis was not entirely supported. Dancers tended to respond differently to Alter's Action Checklist from the non-dance and non-athlete students (statistical significance occurred in 14 of 22 comparator categories between dancers and non-dancers, which is 63.6% of the comparisons). In the Literal Meaning Scales, dancers showed a statistical difference from controls in four of six categories (Everyday, Metaphoric, Physical, and Arts) and a difference from athletes in three of six categories (Metaphoric, Physical, and Arts). On the LBMA scales, dancers scored higher than athletes and controls in two categories (Body and Shape) and higher than controls in one additional category (Effort). This suggests that dancers relate to language differently than athletes and non-dancers do. These outcomes suggest that dancers' physical activities are engaged by and processed using words related to various intelligences in conjunction with their kinesthetic intelligence and are different from athletes and non-dancers; however, when the words are divided into categories, twelve of the twenty-two categories show a difference when comparing the dancers, athletes, and non-dancers. Is it possible that dancers, athletes, and non-dancers experience those ten categories more similarly, and the twelve categories different for dancers reveal something unique among dancers' language use and creative practice?

Hypothesis 2: Dancers who have less improvisation experience can be understood to benefit from future improvisation experiences.

The hypothesis was supported by five of the ten categories examined. When comparing dancers with and without pre-college improvisation experience, those with improvisation backgrounds showed a statistical difference in two of the LBMA categories (Shape and Space—but not Body and Effort) and in three Literal Meaning Scales categories (Play, Work, and Arts—but not Everyday, Metaphoric, or Physical). These findings suggest that dancers with pre-college improvisation experiences relate to the LBMA-specific Shape and Space words as more comfortable than those who have not had pre-college improvisation experience. The outcomes also suggest that dancers generally use words prior to college that are indicative of Body and Effort (also known as energy qualities).

Dance educators assert that dance training differs from sports training because performing, composing movement, and choreographing dances requires creativity but they have not yet been able to verify this assertion systematically. This study and this instrument demonstrate some differences between dancers and athletes. This finding aligns with Taylor's understanding that athletic and dance "movement intelligence" differ though they share some characteristics. When comparing the results in our data analysis, the dancers' results show evidence for

being different than the athletes and control, though not in every category, as demonstrated in tables 1 to 3.

Among these differences for the dancers and dance majors with varied dance backgrounds, indications of their creative potential related to action preferences among word choices shown in results of the Metaphoric, Physical, Arts, Body, Effort, and Shape scales. They especially relate to the creative personality characteristics of broad interests and high energy (high overall scores and frequency of sorted liked-verbs and Physical, Body, Shape, Effort, and Space scales), attraction to complexity, and aesthetic orientation (Metaphoric and Arts scales).

Having broad interests remains a central personality characteristic of creative people; they would have broad movement interests applied to kinesthetically creative people. Is liking to do a wide variety of actions an advantage in reaching high levels of achievement in sports and dance? Both dance and sports activities require precision in movement skills. Both require students to use their skills with flexibility and adaptability, characteristics of creative action, though some genres of dance and different sports require more and some less. The questions we ask with Alter's Action Checklist come from Alter's previous studies of performing arts students in university and conservatory settings and demonstrate that dancing, acting, and playing musical instruments to perform works written or composed by others require re-creative skills similar to one needed to create original works of art. Coaches encourage creative behaviors when they engage athletes in complex maneuvers necessary to play well. Thus, we think enlarging the movement range of highly active students might improve their ability to perform. Teachers and coaches might, for example, use the "Action Checklist" as a diagnostic measure to see if high levels of liked-verbs correlate with increasing engagement in their students' dance and sports performance.

Conclusions

In quantitative research methods, it is unusual for an instrument to detect differences within a high-achieving group. Alter's Action Checklist shows distinct promise to be able to effectively reveal these differences: in Alter's Action Checklist, kinesthetically active students respond to verbs: physical-action-movement terms, which previous studies of non-verbal kinetic experience did not include. More research with more groups would verify the validity and reliability of Alter's Action Checklist, and to verify if these results give a picture of reality, the individual scores should correlate with actual behavior. That is also a question for further research. Another application of Alter's Action Checklist might be administering it to students labeled as "attention deficit disordered" to see if they merely require kinesthetically stimulating and physically active ways to learn.

This instrument show promise in providing valuable and helpful

information about students: “high actives” and the less active. Alter’s Action Checklist invites continued action.

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Appendix A: Action Checklist

Directions: Indicate the degree of your preference for the following actions by circling the ones you like to do, drawing a line through the ones you do not like to do, and leaving unmarked the ones you only like to do sometimes (ignore the numbers in parentheses).

Act (1)	Crumble (38)	Fly (76)	Limp (113)
Alight (2)	Crumple (30)	Fold (77)	Loosen (114)
Arch (3)	Crunch (40)	Freeze (78)	Lunge (115)
Balance (4)	Crush (41)	Gallop (79)	March (116)
Bat (5)	Curl (42)	Gather (80)	Mash (117)
Bend (6)	Curve (43)	Glide (81)	Meander (118)
Bicycle (7)	Cut (44)	Glue (82)	Meet (119)
Blow (8)	Dab (45)	Grind (83)	Melt (120)
Bob (9)	Dangle (46)	Grip (84)	Mime (121)
Bounce (10)	Dart (47)	Grow (85)	Mold (122)
Box (11)	Dash (48)	Hammer (86)	Move (123)
Brush (12)	Dig (49)	Handle (87)	Nod (124)
Bubble (13)	Dip (50)	Hang (88)	Ooze (125)
Build (14)	Dive (51)	Hesitate (89)	Pack (126)
Bump (15)	Dodge (52)	Hide (90)	Paddle (127)
Burst (16)	Drag (53)	Hike (91)	Paint (128)
Carry (17)	Draw (54)	Hit (92)	Pass (129)
Carve (18)	Drip (55)	Hold (93)	Pat (130)
Catch (19)	Drive (56)	Hop (94)	Patrol (131)
Chop (20)	Droop (58)	Huddle (95)	Pedal (132)
Circle (21)	Drop (59)	Hug (96)	Peel (133)
Clap (22)	Duck (60)	Hurry (97)	Plow (134)
Clean (23)	Empty (61)	Improvise (98)	Plunge (135)
Click (24)	Explode (62)	Inflate (99)	Plunk (136)
Climb (25)	Explore (63)	Jab (100)	Point (137)
Cling (26)	Fall (64)	Jerk (101)	Poke (138)
Clip (27)	Fight (65)	Jiggle (102)	Polish (139)
Coil (28)	Fill (66)	Jog (103)	Pop (140)
Collapse (29)	Fish (67)	Join (104)	Pounce (141)
Collect (30)	Flap (68)	Jump (105)	Pound (142)
Compose (31)	Flatten (69)	Kick (106)	Prance (143)
Confront (32)	Flick (70)	Kneel (107)	Press (144)
Control (33)	Fling (71)	Knock (108)	Prowl (145)
Crack (34)	Flip (72)	Lean (109)	Pull (146)
Crawl (35)	Float (73)	Leap (110)	Pump (147)

Continued next page.

Appendix A: Action Checklist (continued)

Creep (36)	Flop (74)	Lie (111)	Punch (148)
Crouch (37)	Flutter (75)	Lift (112)	Push (149)
Quiver (150)	Shove (187)	Step (224)	Trip (261)
Race (151)	Shrink (188)	Stick (225)	Trudge (262)
Rake (152)	Shrivel (189)	Stiffen (226)	Tug (263)
Ram (153)	Shudder (190)	Stir (227)	Tumble (264)
Perform (154)	Shuffle (191)	Stomp (228)	Turn (265)
Pile (155)	Sing (192)	Stoop (229)	Twirl (266)
Pinch (156)	Sink (193)	Stop (230)	Twist (267)
Pivot (157)	Sit (194)	Straighten (231)	Uncurl (268)
Plant (158)	Sizzle (195)	Strengthen (232)	Undulate (269)
Play (159)	Skate (196)	Stretch (233)	Unload (270)
Plod (160)	Sketch (197)	Stroke (234)	Untangle (271)
Rap (161)	Ski (198)	Stroll (235)	Untie (272)
Reach (162)	Skid (199)	Swat (236)	Unwrap (273)
Relax (163)	Skip (200)	Sway (237)	Waddle (274)
Repair (164)	Slap (201)	Sweep (238)	Walk (275)
Rescue (165)	Slash (202)	Swim (239)	Wander (276)
Rest (166)	Slice (203)	Swing (240)	Wash (277)
Revolve (167)	Slide (204)	Swirl (241)	Watch (278)
Ripple (168)	Slink (205)	Swish (242)	Wave (279)
Rise (169)	Slip (206)	Swivel (243)	Weave (280)
Rock (170)	Slither (207)	Swoop (244)	Whip (281)
Roll (171)	Slow (208)	Take off (245)	Whirl (282)
Row (172)	Slump (209)	Tap (246)	Wiggle (283)
Rub (173)	Snatch (210)	Teach (247)	Wilt (284)
Run (174)	Soar (211)	Throw (248)	Wind (285)
Sag (175)	Spin (212)	Tickle (249)	Wipe (296)
Sail (176)	Spiral (213)	Tie (250)	Wither (297)
Saunter (177)	Splash (214)	Tighten (251)	Wobble (288)
Scamper (178)	Spray (215)	Tilt (252)	Wrap (289)
Scatter (179)	Spread (216)	Tip (253)	Wrestle (290)
Scrape (180)	Sprinkle (217)	Tiptoe (254)	Wriggle (291)
Scratch (181)	Spurt (218)	Topple (255)	Wring (292)
Scrub (182)	Squash (219)	Toss (256)	Wrinkle (293)
Scurry (183)	Squeeze (220)	Touch (257)	Write (294)
Sew (184)	Stack (221)	Trace (258)	Yank (295)
Shake (185)	Stalk (222)	Tramp (259)	
Shiver (186)	Stand (223)	Tremble (260)	

Appendix B: LBMA Scales

BODY	SHAPE	EFFORT	SPACE
1. act a	3. arch ph,a	2. alight ph	12. brush
4. balance p,e,ph,a	6. bend ph	5. bat p,a	21. circle m,a
7. bicycle p	8. blow	22. clap	51. dive
15. bump	13. bubble	24. click	54. draw a
17. carry w,e	18. carve w	27. clip	56. drive e
29. collapse ph	26. cling m	32. confront e	63. explore
35. crawl ph	28. coil m	33. control	67. fish
36. creep	31. compose a	34. crack	115. lunge ph
50. dip ph	37. crouch	40. crunch	118. meander m
58. drop	42. curl	41. crush	126. pack w
64. fall ph	52. dodge	45. dab	128. paint a
88. hang	57. droop	46. dangle	129. pass e
113. limp	61. empty m	47. dart p	131. patrol w
123. move e,ph	66. fill m	48. dash	134. plow
124. nod e	69. flatten	70. flick ph	145. prowl m,ph
132. pedal p	77. fold	71. fling	151. race p
135. plunge p	80. gather	73. float ph	155. pile w
157. pivot p	84. grip e	75. flutter	162. reach e, ph
160. plod m	85. grow	78. freeze	167. revolve ph
171. roll ph	87. handle	81. glide p	174. run p,ph
175. sag m	93. hold e	82. glue	196. skate p,a
191. shuffle p	95. huddle p	83. grind w	197. sketch a
200. skip...p,ph	96. hug e	86. hammer w	198. ski p
209. slump	99. inflate w	89. hesitate e	206. slip
212. spin ph	120. melt	97. hurry e	210. snatch
223. stand e	122. mold	100. jab ph	213. spiral ph
224. step ph	133. peel w	101. jerk ph	217. sprinkle
237. sway	137. point e	102. jiggle	221. stack
255. topple	138. poke	108. knock	222. stalk
261. trip e	152. rake w	117. mash	235. stroll
265. turn	169. rise e	130. pat	244. swoop m
266. twirl	179. scatter	142. pound w,ph	256. toss p
275. walk	184. sew w	144. press w	258. trace
282. whirl	188. shrink	146. pull w, ph	276. wander
	192. sing a	148. punch	
	193. sink ph	149. push ph	
	216. spread w,m	150. quiver m	
	220. squeeze ph	153. ram	
	225. stick	161. rap a	
	229. stoop	176. saunter	

Continued next page.

Appendix B: LBMA Scales (continued)

BODY	SHAPE	EFFORT	SPACE
	231. straighten	178. scamper	
	233. stretch ph	183. scurry	
	234. stroke	186. shiver ph	
	238. sweep w	190. shudder m	
	239. swim p	195. sizzle	
	250. tie w	199. skid	
	267. twist ph	201. slap ph	
	268. uncurl ph	202. slash ph	
	269. undulate ph	204. slide p, ph	
	271. untangle	208. slow	
	272. untie	218. spurt	
	273. unwrap	219. squash	
	277. wash w	226. stiffen	
	279. wave	228. stomp ph	
	280. weave w	232. strengthen	
	285. wind	236. swat	
	289. wrap	242. swish ph	
	290. wrestle p	246. tap a	
	294. write w,e	249. tickle p	
		251. tighten	
		259. tramp	
		260. tremble	
		278. watch	
		281. whip	
		283. wiggle	
		287. wither	
		288. wobble ph	
		292. wring	

Total Verbs = 195
66% of the verbs in the Literal Meaning Scale are in the LBMA Scales

Key and Percentage of overlapping verbs

p = PLAY 53% of Literal Meaning Scales on LBMA Scales
w = WORK 50% of Literal Meaning Scales on LBMA Scales
e = EVERYDAY 66% of Literal Meaning Scales on LBMA Scales
m = METAPHORIC 48% of Literal Meaning Scales on LBMA Scales
ph = PHYSICAL 62% of Literal Meaning Scales on LBMA Scales
a = ART 75% of Literal Meaning Scales on LBMA Scales

Appendix C: Literal Meaning Scales

Play	Work	Everyday	Metaphor	Physical	Art
4. balance B	14. build	4. balance B	13. bubble S	4. balance	3. arch S
5. bat E	17. carry B	17. carry B	125. ooze	6. bend S	4. balance B
7. bicycle B	18. carve S	32. confront E	21. circle	29. collapse B	5. bat E
10. bounce	20. chop	56. drive SP	26. cling	70. flick E	1. act B
19. catch	23. clean	84. grip S	28. coil S	101. jerk E	21. circle
21. circle SP	30. collect	89. hesitate	61. empty S	110. leap	31. compose S
25. climb	44. cut	93. hold S	62. explode	123. move B	54. draw SP
47. dart E	49. dig	96. hug S	65. fight	162. reach SP	98.improvise
51. dive SP	53. drag	97. hurry E	66. fill S	167. revolve SP	121. mime
52. dodge S	83. grind E	109. lean	76. fly	171. roll B	128. paint SP
60. duck	86. hammer E	111. lie	98. improvise	174. run SP	154. perform
67. fish SP	99. inflate S	114. loosen	104. join	185. shake	161. rap E
73. float E	112. lift	123. move B	118. meander SP	200. skip B	192. sing S
79. gallop	126. pack SP	124. nod B	145. prowl SP	201. slap E	196. skate SP
81. glide E	131. patrol SP	129. pass	150. quiver E	202. slash E	197. sketch SP
88. hang B	133. peel S	137. point S	160. plod B	212. spin B	246. tap E
90. hide	139. polish	162. reach SP	175. sag	228. stomp E	
91. hike	142. pound E	163. relax	189. shrivel 2	52. tilt	
94. hop	144. press E	169. rise S	190. shudder E	267. twist S	
95. huddle S	146. pull E	181. scratch	211. soar	269. undulate S	
103. jog	147. pump	194. sit	216. spread	2. alight E	
105. jump	152. rake S	208. slow E	244. swoop SP	3. arch S	
106. kick	155. pile SP	223. stand B	274. waddle	9. bob	
110. leap	158. plant	257. touch	284. wilt	10. bounce	
116. march	164. repair	261. trip B	285. wind S	25. climb	
127. paddle	165. rescue	279. wave S	35. crawl B		
132. pedal B	173. rub	294. write S	43. curve		
135. plunge	B182. scrub		45. dab E		
143. prance	184. sew S		50. dip B		
151. race SP	203. slice		64. fall B		
172. row	216. spread S		68. flap		
174. run SP	227. stir		72. flip		
191. shuffle	B230. stop		74. flop		
196. skate SP	238. sweep S		79. gallop		
198. ski SP	247. teach		92. hit		
200. skip B	250. tie S		94. hop		
204. slide E	270. unload		100. jab E		
214. splash	277. wash S		103. jog		
239. swim S	280. weave S		105. jump		
240. swing	294. write S		106. kick		
248. throw			115. lunge SP		
249. tickle E			141. pounce		
256. toss SP			142. pound E		
257. touch			145. prowl SP		
263. tug			146. pull E		

Continued next page.

Appendix C: Literal Meaning Scales (continued)

Play	Work	Everyday	Metaphor	Physical	Art
264. tumble			149. push E		
290. wrestle S			156. pinch		
157. pivot B					
168. ripple					
170. rock					
186. shiver E					
187. shove					
193. sink S					
204. slide S					
207. slither					
213. spiral SP					
220. squeeze S					
224. step B					
233. stretch S					
241. swirl					
242. swish E					
254. tiptoe					
259. tramp E					
268. uncurl S					
274. waddle					
288. wobble E					

KEY:
B = Body
S = Shape
E = Effort
SP = Space

Appendix D: Misc: Verbs Not on Any Scale and Liked and Most-Liked Verbs

11. box	136. plunk	243. swivel
16. burst	140. pop	253. tip
38. crumble	159. play	262. trudge
39. crumple	166.rest	286. wipe
55. drip	177. saunter	293. wrinkle
78. freeze	180. scrape	295. yank
107. kneel	205. slink	
119. meet	215. spray	

All Three Groups

Ten Most-Liked Verbs		Ten Most-Disliked Verbs	
163. relax	86%	189. shrivel	62%
159. play*	80% (* on no scale)	113. limp	60%
96. hug	79%	260. tremble	59%
63. explore	77%	186. shiver	58%
154. perform	73%	175. sag	58%
239. swim	73%	65. fight	56%
166. rest*	72% (* on no scale)	188. shrink	55%
76. fly	69%	226. stiffen	55%
233. stretch	69%	287. wither	55%
7. bicycle	68%	209. slump	55%

Just Dancers

Liked Verbs		Disliked Verbs	
96. hug	166. rest	189. shrivel	153. ram
163. relax	233. stretch	175. sag	100. jab
63. explore	76. fly	156. pinch	65. fight
159. play	4. balance	11. box	293. wrinkle
154. perform	232. strengthen	187. shove	113. limp

Controls and Athletes

Liked Verbs		Disliked Verbs	
4. balance	159. play	11. box	100. jab
154. perform	76. fly	175. sag	295. yank
63. explore	233. stretch	20. chop	287. watch
163. relax	166. rest	131. patrol	156. pinch
96. hug	123. move	153. ram	57. droop

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