Learning Styles of Native American Students in Northeastern Oklahoma

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Abstract

This study administered the Learning Styles Inventory (LSI) to sixth through twelth grade non-reservation Native Americans and their Non-Native American peers in 20 schools located in northeastern Oklahoma. Significant differences between Native and Non-Native students were found in six categories. When scores of Native students were analyzed for differences by blood quantum, five areas of difference emerged. When Native students were examined by gender, 11 areas of difference emerged. When gender was analyzed among Non-Native students, 10 elements emerged as significantly different. When gender was the only factor (regardless of race), 18 learning style variables displayed significance.

Problem

The state of Oklahoma has the largest Native American population in America. (Racial Statistics Branch, 1993). Native Americans represent 13% percent of the Oklahoma school-age population. Forty percent of the Native American school-age population resides in the Northeastern State University (NSU) service area. NSU prepares teachers to service the largest population of Native American students in the United States (State of Oklahoma, 1993). Northeastern State University leads the nation in bachelor's degrees earned by American Indian students. (U. S. Dept. of Education, 1996).

Tests and teacher reports indicate that Native American students function at the average to superior range up to the fourth grade. In general, academic performance after the fourth grade declines so that by the tenth grade, Native American students are doing inferior work when compared to their Anglo American peers (Sanders, 1987). Native American students continue to have the highest drop-out rate of any ethnic group at the high school level regardless of tribal affiliation (Carnegie Council on Adolescent Development, 1996).

One variable thatmay be a contributing factor to low school achievement is the possibility that learning styles that may be common to Native Americans are not generallyaccommodated in public schools that were designed by and for the majority population. This study was conducted to determine if there are, in fact, learning style elements that could be said, in general, to apply to Native American students residing in northeastern Oklahoma.

This project wasbegun to provide a systematic testing of 22 elements of learning style of non-reservation Native American students in northeastern Oklahoma while also controlling for blood quantum. In addition, the data was used to exanine the impact of gender with regard to Native American and Non-Native American learning styles.

Related Research

A review of this literature suggests that differences in learning style occur frequently between the Native American and non-Native American students, but are not found with sufficient consistency to suggest a uniquely Native American learning style. However, these differences occur frequently enough to warrant careful attention (More, 1987).

With regard to the research to date on this topic, several limitations exist. First, the preponderance of research seems to have been done on rural reservation Native Americans (Morris, Sather, & Scull, 1978; Stellern, Collins, Gutierrez, & Peterson, 1986). Only 10-15% of Native American students attend reservation schools (Racial Statistics Branch, 1993). Second, many of the conclusions about learning style are based on observations of Native Americanand Anglo American cultures culminating in assignations of how students will learn based on cultural values (Gilliland & Reyhner, 1988; Rhodes, 1986). Third, in many of the studies only a limited number of elements thatconstitute learning style have been examined (Rhodes, 1988; More, 1989; Morris et al., 1978). Although a small body of work exists which utilizes the 22 variables of the Dunn, Dunn & Price Learning Styles Inventory, it is risky to assume that what may be true of one tribe is true of all of theother 500 federally recognized tribes. (Dunn & Griggs, 1995, Racial Statistics Bransh, 1993). Fourth, no information regarding blood quantum of Native Americans has been provided in any research.

Sample

The American Indian Resource Center (AIRC) in Tahlequah, Oklahoma, sponsors Talent Search (TS), a federally-funded program for students grades 6-12 who are first generation low income students that show promise for school achievement. The AIRC expressed an eagerness to have the 20 schools participating in TS serve as the population base for this study. Eighteen of the schools attempted to test all students grades 6-12 . Because of overwhelming numbers in the two largest school districts (Tahlequah and Wagoner), only the TS students were tested. This procedure yielded a Native American (n=1,568) and a non-Native American (n=1,397) sample (see Table 1) and a variation in blood quantum among Native American students (see Table 2).

Schools in the Study

Kenwood	*Oaks*	*Jay*	*Locust Grove*
Salina	*Peggs*	*Keys*	*Wilson*
Stilwell	*Chouteau*	*Peavine*	*Rocky Mountain*
Maryetta	*Okay*	*Haskell*	*Porter*
Hulbert	*Grand View*	*Sequoyah*	*Tahlequah*

The 20 schools participating in the study are located in six counties (Adair, Cherokee, Delaware, Mayes, Muskogee and Wagoner), This area is predominately rural with Tahlequah (population 11,000) and Muskogee (population 22,000) being the largest communities in the six counties. Adair, Cherokee, Delaware, Mayes and Wagoner counties are a part of the 14 county governmental area of the Cherokee Nation of Oklahoma and are most heavily populated by Cherokee people. In fact, these five counties have the highest population of Native Americans of the 77 counties of Oklahoma. (Holland, 1995). The Cherokee people are, of course, the largest tribe in America. (Racial Statistics Branch, 1993).

Historically, the geographic location of the study - known before statehood as "Indian Territory" - became the new home of the Cherokee and Creek nations following the forced removal of these tribes from their ancestral homelands in the southeastern United States. (Debo, 1990).

The current population of this six county area is 229,867. Of that number, 32.65% of the population over 25 years of age are without a high school

diploma, 86.9% are without a post-secondary degree and only .05% are enrolled in post-secondary education. Of the 1992-1993 high school graduates in these counties, 63.5% are not attending a post-secondary institution. The average median income is $20,825 as compared with a statewide average of $28,554. Oklahoma as a whole reports 28.4% of persons living in poverty while the rate in these six counties is 48.65%. (Holland, 1995).

The 1990-1993 drop out rate in the 20 schools participating in the study is 24.4% as compared with 3.99% reported for the entire state of Oklahoma. The eligibility rate for free lunch programs is 49.5%. (Holland, 1995).

Methodology

In each of the 20 schools a teacher or counselor was recruited and received a stipend for training in administration of the Learning Styles Inventory (Dunn, Dunn & Price, 1975, 1978, 1979, 1981, 1985, 1986). Individual profiles and school summaries were provided to each school after testing.

The LSI uses dichotomous items for self testing and produces an individual profile for each individual participant in addition to a summary profile for each school with regard to 22 different style elements. The LSI reports a consistency key to reveal the accuracy with which each respondent has answered.

The LSI is the most comprehensive of all learning style inventories (Debello, 1990). Because of its frequent use for research at more than 50 universities, it is the most widely documented learning style assessment (Dunn, Beaudry & Klavas, 1989). Curry's (1987) review of 21 different learning/cognitive styles models through psychometric analyses concluded that this instrument had one of the highest reliability and validity ratings. After concluding a two year study of instruments, the Ohio State University National Center for Research in Vocational Education reported that the LSI had "impressive reliability, and face and construct validity" (Kirby, 1979, p. 72). Research conducted using the instrument has won two regional, twelve national and two international awards/citations for the quality of research.

Statistical Procedures

A T-test with significance at the .05 level was performed to establish between-group (Native American vs. Non-Native American) differences. Twenty-two 1x7 analysis of variance, with significance at the .05 level, were utilized to assess the impact of blood quantum.

It was not originally the intent of this study to examine gender as a variable, however, the lure of a large data base proved irresistible. (see Tables 3,4, & 5). An independent T-test was administered on the 22 variables by gender.

Next, a one-way analysis of variance on each of the 22 variables was conducted to examine gender by race (Native American vs. Non-Native Americans) followed by a post-hoc multiple procedure using Tukey's HSD Test.

Results

Native American vs. Non-Native American

Natives and Non-Natives differed significantly on six of the learning style variables. (see Table 6). Natives showed a preference for lower lighting levels, less persistence and less responsibility/conformity than their Non-Native peers. Natives recorded a significantly higher preference for the presence of an authority figure, for visual learning and for late morning learning than their Non-Native counterparts.

Blood Quantum

The degree of Indian blood proved to be of significance with relationship to five of the learning style variables. (see Table 7). Fullbloods preferred formal design significantly more than Indians who recorded less than one-eighth blood quantum. Those students indicating that they were one-half or more but less than three-quarters Native blood preferred formal design more than those of one-quarter or more but less than one-half Indian blood or those that were less than one-eighth blood quantum.

With regard to preference for structure, students that were one-quarter or more but less than one-half in blood quantum showed a significantly greater need for structure than those students recorded as fullbloods.

Fullbloods demonstrated a significantly higher preference for visual learning than did either those that were one-eighth or more but less than one-quarter or those that were less than one-eighth in blood quantum.

Native students that were less than one-eighth in blood quantum had a significantly higher need for intake than those students who were fullblood. Fullbloods also showed significantly less preference for teacher motivation that did those students that were less than one-quarter Indian blood.

Gender

When male and female students (without regard to race) were compared on each of the 22 learning style variables, significant differences were expressed in 18 of the categories. (see Table 8). Only preferences for an authority figure, auditory learning, intake and mobility were not significant.

As shown in Table 9, when gender was combined with Native vs. Non-Native status, 11 areas of significant difference occurred between Native females and Native males and 10 areas of significance emerged between Non-Native females and Non-Native males. (see Table 10). When all four groups were examined, differences tended to appear more often along gender lines than Native vs. Non-Native status. The greatest differences in preferences occurred between Native American males and Non-Native American females.

With regard to Native female and Native male differences, the females recorded preferences for afternoon learning, more light, more warmth, more structure and more teacher and parent motivation. In addition, the females tested as more motivated, more responsible/conforming and expressed a greater desire to work alone with less tactile experience than the Native males.

Non-Native females recorded a desire for more light, more warmth, more structure and more teacher and parent motivation than did their Non-Native males counterparts. The females tested as more motivated and more responsible/conforming with a greater need for variety and visual learning and a desire for less tactile experiences than the male Non-Natives.

Discussion

Native American vs. Non-Native American

Native students do demonstrate significant preferences with regard to six learning style variables. That Native students prefer the visual perceptual style has long been recognized. (Swisher & Deyhle, 1987; More, 1989). Whether this is a biological preference (Restak, 1979) or a cultural preference engendered by the Native tradition to observe, think, understand and feel before acting (Wax, Wax, & Dumont, 1964) or a combination of both, it appears that teachers should understand and accommodate this strong perceptional preference. Teachers should similarly attend to the demonstrated preference of Native students for late morning learning since time of day has proven to be such a critical factor in school achievement. (Dunn & Griggs, 1995).

The Native preference for the presence of an authority figure may be linked to the Native tradition of respect for elders. (Light & Martin, 1985). The Native preference for low light may be attributed to the evidence indicating that there is a Native tendency to prefer global processing. (More, 1989; Rhodes, 1988).

A global preference may also be a partial explanation for a lower persistence level recorded among Native students. Dunn (1996) points out that global learners require frequent breaks while studying and are likely to work on several tasks or projects at a time. It is predictable that global learners will begin a task, stop, work on a different task for awhile and ultimately return to the original task, This can appear to be a lack of persistence when, in fact, it is simply an alternative process for work completion.

It is possible that what appears to be a lack of persistence could be a reflection of the Native student preference for needing time to think about things before starting an assignment. (Swisher & Deyhle, 1989). It is also possible that some Native students do not persist in school assignment completion because the curriculum seems irrelevant to or inconsistent with traditional Native values. (U. S. Dept. of Education, 1991; Dunn & Griggs, 1995; Sanders, 1987). A further complicating factor may be a perception of bleak secondary opportunities. Ogbu (1978) argues that minority school achievement must be examined in the context of post-school opportunities. The data on these subjects suggest limited economic opportunities.

Native students also scored significantly lower than Non-Native students with regard to responsibility for academic learning and conformity. These data beg the question, "responsibility and conformity to what?" Dumont & Wax (1969) documented the existence of the "Cherokee School Society," a closed society within the larger classroom system that operates with its own rules of responsibility and conformity. The foremost norm of this subculture is that Cherokee children hold fast to group standards of achievement that all of the children are capable of meeting. Cherokee children of high ability will subjugate their competence rather than break this norm.

This adherence to cultural norms could be further explained by the marked difference between minority and majority identity development as identified by Atkinson, Morton & Sue (1979) in their Minority Identity Development model. If, in fact, Native students deem school achievement and curriculum as incompatible with Native cultural norms and values, then persistence, responsibility and conformity as demanded by the schools will remain stumbling blocks for Native students. (U. S. Dept. of Education, 1991).

Blood Quantum

There were five learning style variables in which significant differences were noted by blood quantum. Although each of these differences need to be honored, one seems particularly interesting. There is almost a direct negative correlation between the preference for teacher motivation and the amount of Native blood by quantum. The greater the blood quantum, the less the interest in teacher motivation. The only exception being that those that are one-eighth or more but less than one-fourth desire slightly more teacher motivation than those that are less than one-eighth.

There are several possible explanations for this phenomenon. Kirkness (1986) found that 91-95% of Native students felt that Caucasian teachers did not like Native people. Hurlburt, Gade, & McLaughlin (1990) surveyed the attitudes toward teaching among Native education students and found that these future teachers tended to prefer a structured teaching style with strong teacher control and submissive learners. They suggest that these students may have internalized the dominating style of their former Non-Native or Native teachers. This teacher centered classroom preference would be in conflict with traditional Native learning that dictates a Native child should be allowed to explore independently unless there is a real danger. (Davis & Pyatowsky, 1976).

Gender

Dunn & Griggs (1995) report that particularly during the primary years, there are more differences between the learning styles of boys and girls than between the learning styles of people in different cultures. Their data confirm the same conclusions with these secondary students.

Considering the current state of Native youth: the highest dropout rate of any minority group, the highest suicide rate, severe drug and alcohol abuse (Carnegie Council on Adolescent Development, 1996) and the rise of gang activity (United States Department of Justice, 1995), it seems each Native child's learning and cultural strengths need to be utilized and emphasized. The current state of female Native Americans suggests that a particular need exists for ensuring a successful school experience. Among Native females, 27.3% have female only heads of household as compared with 16.5% for the total population. Of these Native female heads of household, 50.4% live below the poverty level as compared with 31.1 percent of female heads of household for the rest of the United States population. The average annual income for the Native females heads of household is $10,742 as compared with $17,414 for other female heads of household. (Racial Statistics Branch, 1993).

Conclusions

If equal educational opportunity is the goal, it seems that the most important conclusion to be drawn from these data is that these students' classrooms should be structured to implement the Indian Nation at Risk Task Force (1991) recommendation that individual learning styles be accommodated. Research clearly indicates that academic achievement and attitudes toward learning should be enhanced by this process. (Dunn & Griggs, 1995). This process should be implemented in a systematic manner with well proven methods (Dunn, 1996) by teachers who truly understand learning styles. (Swisher & Pavel, 1994).

Also of importance is the fact that these data lend support to the conclusion drawn by other multicultural learning style researchers that although clear differences do exist between Native and Non-Native students, there are as many within group differences as between group differences. (Dunn, 1996). Although significant differences were found between Native and Non-Native students in this study on some of the learning style variables, it would be

inappropriate to conclude that a "one size fits all " teaching strategy can be effectively applied when teaching Native students.

Attention should be paid to the large number of significant differences between male and female learners. When the impact of these differences is combined with the uniquely difficult stages of minority identity development, the demands of the "Cherokee School Society," the gender biased practices of many classrooms (Sadker & Sadker, 1994) and the unusual developmental challenges faced by minority females (Taylor, Gilligan, & Sullivan, 1995), Native females may be particularly vulnerable to inadequate and negative school experiences. Serious consideration should be given to gender segregated classes in the core subjects.

References

Atkinson, D. R., Morton, G., & Sue, D. W. (1979). Counseling American minorities: A cross cultural perspective. Dubuque, IA: W. C. Brown.

Carnegie Council on Adolescent Development. (1996). Great transitions: Preparing adolescents for a new century. New York: Carnegie Corp.

Curry L.(1987). Integrating concepts of cognitive style: A review with attention to psychometric standards. Ottawa, Ontrario, Canada: Canadian College of Health Science Executives.

Davis, T.& Pyatowsky, A. (1976). Biocognitive education: A new future for the Indian child. Journal of American Indian Education, 15 (3), 14-20.

DeBello, T.C. (1990, June). Comparison of eleven major learning styles models: Variables, appropriate populations, validity of instrumentation, and the research behind them. Reading, Writing, and Learning Disabilities, 6, 203-222.

Debo, A. (1990). And still the waters run: The betrayal of the five civilized tribes. Princeton, NJ: Princeton University Press.

Dumont, R. and Wax, M. The Cherokee school society and intercultural classroom. Subcommittee on Indian Education. U.S. Congress. Senate. Hearings on Indian Education, part2, Washington: 1969.

Dunn, R., Beaudry, J., & Klavas, A. (1989). Survey of research on learning styles. Educational Leadership, 46(6), 50-58.

Dunn, R. (1996). Everything you need to successfully implement a learning styles program: Materials and methods. New Wilmington, PA: AAIE.

Dunn, Rita & Dunn, K. (1992). Teaching secondary students through their individual learning styles. Needham Heights, MA: Allyn & Bacon.

Dunn, R. & Griggs, S.A. (1995). Multiculturalism & learning styles: Teaching and counseling adolescents. Westport, CT: Greenwood, Inc.

Gilliland, H. & Reyhner, J. (1988). Teaching the Native American. Dubuque, IA: Kendall/Hunt.

Holland, Fount. (1995). Talent search grant application [submitted to U. S. Dept. of Education]. (Available from the American Indian Resource Center, Inc., 3 Plaza South, Tahlequah, OK 74464).

Hurlburt, G., Gade, E., & McLaughlin, J. (1990, May). Teaching attitudes and study attributes of Indian education students. Journal of American Indian Education, 12-18.

Kirby P. (1979). Cognitive styles, learning styles, and transfer skill acquisition (Information Series No. 195, National Center for Research in Vocational Education). Columbus, Ohio: The Ohio State University.

Kirkness, V. J. (1986). Native Indian teachers: A key to progress. Canadian Journal of Native Education, 13 (86), 47-53.

Light, H. & Martin, R. (1985, October). Guidance of American Indian children: Their heritage and some contemporary views. Journal of American Indian Education, 42-46.

More, A. J. (1989, August). Native Indian learning styles: A review for researchers and teachers [Special Issue]. Journal of American Indian Education, 15-27.

Morris, L.; Sather, G., & Schull, S. (1978). Extracting learning styles from social/cultural diversity: Studies of five American minorities. Washington, DC: U. S. Office of Education, Southwest Teacher's Corps Network.

Ogbu, J. U. (1978). Minority education and costs: The American system in cross-cultural perspective. New York: Academic Press.

Restak, R. (1979). The brain: The last frontier. New York: Doubleday.

Rhodes, R. (1988, January). Holistic teaching/learning for Native American students. Journal of American Indian Education, 21-29.

Sadker, M. & Sadker, D. (1994). Failing at fairness: How America's schools cheat girls. New York: Scribners.

Sanders, D. (1987, April). Cultural conflicts: An important factor in the academic failures of American Indian students. Journal of Multicultural Counseling and Development, 81-89.

State of Oklahoma Department of Education. (1993). State of Oklahoma dropout report 1992-1993. Oklahoma City, OK: Author.

Stellern, J., Collins, J., Gutierrez, B., & Peterson, E. (1986, January). Hemispheric dominance of Native American Indian students. Journal of American Indian Education, 8-17.

Swisher, K. & Deyhle, D. (1987). Styles of learning and learning styles: Educational conflicts of American Indian and Alaskan Native Youth. Journal of Multilingual & Multicultural Development, 8 (4), 345-60.

Swisher, K. & Deykle, D. (1989, August). The styles of learning are different, but the teaching is just the same: Suggestions for teachers of American Indian youth [Special Issue]. Journal of American Indian Education, 1-14.

Swisher, K. & Pavel, M. (1994, Spring). American Indian learning styles survey: An assessment of teacher knowledge. Journal of Educational Issues of Language Minority Students, 13, 59-77.

Taylor, J., Gilligan, C., & Sullivan, A. (1995). Between voice and silence; women and girls, race and relationship. Cambridge, MA: Harvard University Press.

Racial Statistics Branch, Bureau of the Census. (1993). We the first Americans. Washington, DC: U. S. Government Printing Office.

U. S. Department of Education. (1996). Black issues in higher education. Washington, DC: U. S. Government Printing Office.

U. S. Department of Education. (1991). Indian nations at risk: An educational strategy for action [Final Report]. Washington, DC: Author.

U. S. Department of Justice. (1995). National Strategy to Coordinate Gang Investigations: A Report to the President and Congress. Washington, DC: Author.

Wax, M., Wax, R., & Dumont, R. (1964). Formal education in the American Indian community. Social Problems, 11 (Suppl), 95-96.

Table 1

Student Self Identification By Race

n=2,965

Race	n	%
African American	65	0.02
Caucasian	1275	43.0
Native American	1568	52.8
Other	57	0.019

Table 2

Native American Student

Self Identification By Blood Quantum

n=1,568

Quantum	n	%
Full Blood	211	13.4
3/4 or more, but less than Full Blood	200	12.7
1/2 or more, but less than 3/4	259	16.5
1/4 or more, but less than 1/2	307	19.5
1/8 or more, but less than 1/4	257	16.3
Less than 1/8	334	21.3

Table 3

Self Identification By Gender

n=2,965

Gender	n	%
Male	1398	47.1
Female	1567	52.8

Table 4

Native American Self Identification By Gender

n=1,568

Gender	n	%
Male	726	46.3
Female	842	53.6

Table 5

Non-Native American Self Identification By Gender

n=1,397

Gender	n	%
Male	672	48.1
Female	725	51.8

Table 6

Native Americans vs. Non-Native Americans

n=2965

Element	Native n=1568	Non-Native n=1397	P	Natives Prefer
Sound	13.515	13.396		
Light*	11.644	12.009	.000	Lower Light
Temperature	16.321	16.394		
Design	9.518	9.351		
Motivation	30.695	30.591		
Persistence*	16.591	16.951	.000	Less Persistent
Responsibility/Conformity*	12.747	13.161	.003	Less R/C
Structure	13.948	13.864		
Alone/Peers	23.338	23.008		
Authority*	12.221	11.977	.027	More Authority Figu
Variety	13.788	13.592		
Auditory	13.957	14.117		
Visual*	8.703	8.273	.000	More Visual
Tactile	16.976	16.898		
Kinesthetic	24.791	24.829		
Intake	17.854	17.948		
Evening/Morning	14.573	14.280		
Late Morning*	11.507	11.202	.004	More Late Morning
Afternoon	16.976	17.143		
Mobility	14.850	14.728		
Parent	16.829	16.956		
Teacher	19.468	19.540		

Table 7
BLOOD QUANTUM

Element	Full n=211	3/4+ n=200	1/2+ n=259	1/4+ n=307	1/8+ n=257	-1/8 n=334	P	Prefers
	n=1568							
Sound	13.773	13.295	13.583	13.775	13.206	13.425		
Light	11.777	11.655	11.525	11.436	11.829	11.656		
Temperature	16.645	15.957	15.869	16.537	16.467	16.284		
Design*	10.028	9.780	10.019	9.241	9.339	9.030	.004 .043 .002	Full ≥ formal than -1/8 1/2 ≥ formal than 1/4 1/2 ≥ formal than -1/8
Motivation	30.090	30.465	30.378	30.831	31.179	30.919		
Persistence	16.118	16.010	16.448	16.759	16.813	16.668		
Responsibility/Conformity	12.924	12.250	12.355	12.814	12.875	13.063		
Structure*	13.374	14.035	13.618	14.280	14.105	14.060	.018	1/4 ≥ structure than Fulls
Alone/Peers	23.744	24.360	22.772	23.254	22.506	23.605		
Authority	12.161	12.600	12.212	12.352	12.047	12.048		
Variety	13.820	14.035	13.598	13.752	13.696	13.868		
Auditory	13.512	13.805	14.012	13.801	14.284	14.228		
Visual*	9.251	8.800	8.954	8.713	8.335	8.335	.006 .003	Full ≥ visual than 1/8+ Full ≥ visual than 1/8-
Tactile	16.370	17.040	17.062	17.199	17.233	16.856		
Kinesthetic	24.223	24.370	24.819	25.088	24.961	24.937		
Intake*	17.232	17.590	17.425	17.951	18.191	18.365	.026	- 1/8 ≥ intake than Fulls
Evening/Morning	14.749	14.235	14.780	14.570	14.755	14.404		
Late Morning	11.502	11.630	11.417	11.479	11.685	11.410		
Afternoon	16.929	16.950	17.081	16.951	16.949	16.949		
Mobility	14.664	15.170	14.718	14.775	14.607	15.042		
Parent	16.474	16.580	16.726	16.906	17.089	16.955		
Teacher*	18.810	19.030	19.220	19.707	19.833	19.778	.033 .013 .013	1/4 ≥ teacher than Full 1/8+ ≥ teacher than Full -1/8 ≥ teacher than Full

Table 8

Female vs. Male

n=2965

Element	Female n=1567	Male n=1392	P	Females Prefer
Sound*	13.239	13.705	.005	Less Noise
Light*	12.042	11.563	.000	More Light
Temperature*	16.969	15.667	.000	More Warmth
Design*	9.230	9.675	.000	Less Formal
Motivation*	31.742	29.418	.000	More Motivated
Persistence*	17.041	16.366	.000	More Persistent
Responsibility/Conformity*	13.073	12.796	.047	More Responsible
Structure*	14.227	13.552	.000	More Structure
Alone/Peers*	22.826	23.582	.003	Alone More
Authority	12.146	12.062		
Variety*	14.071	13.275	.000	More Variety
Auditory	14.016	14.050		
Visual*	8.665	8.316	.001	More Visual
Tactile*	16.484	17.450	.000	Less Tactile
Kinesthetic*	24.645	24.993	.024	Less Kinesthtic
Intake	17.900	17.896		
Evening/Morning*	14.221	14.677	.010	Evening/Morning Less
Late Morning*	11.482	11.230	.016	Late Morning More
Afternoon*	17.291	16.790	.000	Afternoon More
Mobility	14.870	14.706		
Parent*	17.084	16.670	.000	More Parent Motivated
Teacher*	20.001	18.943	.000	More Teacher Motivated