

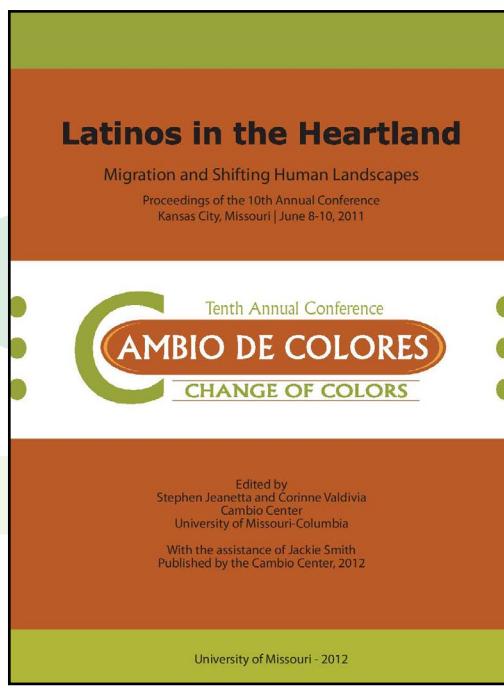


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## Ethnic Differences on the Effect of Mother's Perception of Child's Physical Activity on Child's Weight Status: A Focus on Hispanic Children in the Midwest

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### Abstract

Parents' perceptions of their child's physical abilities can influence the child's actual and future physical activity (PA), sports involvement levels, and the child's weight status. Using a expectancy-value theory, this study examined ethnic differences on the effect of mother's perceptions of their child's PA in kindergarten (MP-K) and on their child's obesity over time (at third grade and fifth grade), in a cohort of Latino and White children living in the Midwest. We utilized four waves of data from the Early Childhood Longitudinal Study Kindergarten Class of 1998-1999. The study sample consisted of children whose biological mothers served as the primary respondents (Whites n=2,838 and Latinos n=286). The primary outcome of interest was childhood obesity (Body Mass Index  $\geq$ 95th percentile). The main predictor was MP-K. Mothers categorized their children as, "less active than", "as active as", or "more active than", their peers in three settings: 1) structured activities (e.g. sport); 2) free time; and 3) aerobic exercise. Using these items to measure perceived activity level by mothers, we created three ordinal categories of MP-K: 1) lower level of MP-K; 2) medium level of MP-K; and 3) higher level of MP-K. Linear regression and logistic regression were used to test the study hypotheses. To test for statistically significant differences between race/ethnic groups, in terms of the regression coefficients of MP-K with child's obesity, we used Wald tests. At kindergarten, a lower percentage of white children spent more than two hours/day watching television, DVDs, or video games compared to Latinos (36% vs. 49%). White children had a lower prevalence of obesity (10% vs. 15%) than Latinos in kindergarten. In general, MP-K had an inverse relationship with children's obesity, after controlling for gender, child's disability, family structure, mother's country of birth, mother's age, and SES. This study's findings suggest that MP-K had a long-term effect on children's weight status. Moreover, the effect seems to be stronger for Latinos than for whites. Latino children in the medium and high categories of MP-K had a lower likelihood of being obese in third grade (medium Adjusted Odd Ratio [AdOR] = 0.17, p <.001; higher AdOR = 0.29, p <.05) and fifth grade (medium AdOR = 0.18, p <.001; higher AdOR = 0.27, p <.01) than those children in the lower category of MP-K. However, for whites, the effect of MP-K on childhood obesity was significant only for third grade (medium AdOR = 0.46, p <.001; higher AdOR = 0.39, p <.01). Additionally, there were statistically significant race/ethnic differences in the magnitude of the effect of MP-K on children's obesity over time, with MP-K having a stronger effect on Latino children's weight status. Given this finding, perhaps mothers' perceptions could serve as a factor to be taken into consideration for future obesity interventions with Latino families. On the research side,

more studies are needed to see if these findings are replicable and to examine possible mechanisms of how mother's perceptions exert influence on Latino children's weight status.

## Introduction

In the United States, Mexican Americans comprise the ethnic group with the highest prevalence of overweight and obese children and adolescents (Ogden, Carroll, & Flegal, 2008; Ogden, Carroll, Curtin, Lamb, & Flegal, 2010). Due to the fact that Latino children and adolescents represented 22% of the nation's population of children in 2008, and the population is expected to increase to 39% by 2050 (U.S. Census, 2009), interventions to prevent inactivity and obesity among Latino children is a public health priority. However, before designing effective interventions targeted at reducing obesity in Latino children, it is necessary to identify the psycho-social factors at the individual, family and community levels that influence Latino children's weight status during early childhood. One of the most important socialization agents during childhood is the mother. Mothers can help prevent childhood obesity and sedentary behaviors by modeling behaviors, supporting involvement in physical activities (e.g., sports), and encouraging active lifestyles and healthy nutritional habits (e.g. verbal feedback) (Bandura, 1977; Bois, Sarrazin, Brustad , Trouilloud, & Cury, 2002; Brustad, 1996; Fredericks & Eccles, 2002; Jacobs & Eccles, 1992; Trost, Sallis, Pate, Freedson, Taylor, & Dowda, 2003). A recent study utilizing the expectancy-value theory of achievement motivation [Eccles (Parsons) et al., 1983; Wigfield & Eccles, 2000] as a framework, suggested that Latina mothers' perceptions of their child's ability, in comparison with child's peers, was associated with the child's level of physical activity and weight status (Santiago, 2010). Similarly, prior studies based on the expectancy-value theory have consistently found that parental perception of a child's ability is associated with a child's perceived physical activity competence, his/her actual physical activity, his/her participation in sports, and his/her weight status (Bois et al., 2002; Bois, Sarrazin, Brustad, Trouilloud & Cury, 2005; Dempsey, Kimiecik, & Horn, 1993; Fredericks & Eccles, 2002; Pfeiffer, Dowda, McIver, & Pate, 2009).

One of the components of the expectancy-value theory suggests that a child's choices, persistence, and performance on a specific domain (such as physical activity), can be explained by his/her beliefs about how well he/she expects to do, and by the extent to which he/she values the activity (Eccles (Parsons) et al., 1983; Wigfield & Eccles, 2000). The applicability of this theory to interventions, aimed at increasing physical activity and preventing obesity in children, relies upon the influence that parents' perceptions of their child's ability can have on their child's expectations of success, on how much the child values the task, and on the choices that the child makes in a specific domain (e.g., sports). A possible mechanism in which parental perception can influence the child's PA is by providing higher instrumental and emotional support to those perceived as having more ability (Loprinzi & Trost, 2010). It is likely that these same mechanisms can explain the association of parents' perceptions of a child's PA with a child's weight status as reported in previous studies (e.g., Santiago, 2010). Mothers who perceive their children as being "as active", or "more active than" their peers, might provide more support, positive feedback, and encouragement for an active lifestyle, thereby indirectly preventing childhood obesity. In contrast, those mothers who perceive their children as "less active than" the child's peers, might support a sedentary lifestyle such as watching television, which is a risk factor for childhood obesity. Latina mothers' perceptions may have a greater influence on their child's behavior than white mothers because of the cultural value of familism, "which stresses the primacy of the family, the value of children, and a preference for traditional roles for women" (Flores, Eyre, & Millstein, 1998), compared to the values of individualism. For example, several lines of evidence suggest that 1) Latino children might spend more time with their families at home compared to their white counterparts (e.g., eating and household work) (Hofferth and Sandberg, 2004); 2) Latina mothers encourage stereotypic gender behaviors (Rafaelli and Ontai, 2004); and 3) Latina mothers have more restrictive discipline, and are more respected by their children as compared to whites (Villanueva Dixon, Gruber & Brooks-Gunn, 2008).

Taking these previous studies' findings into consideration, the aim of this study was to examine ethnic

differences and the effect of mother's perceptions of their child's PA in kindergarten (MP-K) and their child's obesity over time (at third grade and fifth grade,) in a cohort of children living in the Midwest. We expected to find that the more active a child was perceived to be by their mother, the less likely he/she would be to lean toward obesity at the three grade levels. We also expected to find that Latina mothers' MP-K would have greater effect on their child's weight status than that white mothers.

## Method

### *Study Design, Sample, and Measurements:*

To test the research hypotheses, we conducted a secondary data analysis using the Kindergarten-Eighth Grade Full Sample Public-Use Data File of the Early Childhood Longitudinal Study Kindergarten (ECLS-K) Class of 1998–1999 (Tourangeau, Nord, Lê, Sorongon, & Najarian, 2009). We limited the study population to two ethnic groups, whites and Latinos. The sample for this study was comprised of 3,124 (Whites n=2,838, Latinos n=286) cases involving children living with their biological mothers during the fall of 1998 and for whom the mothers were the survey respondents. In this study, the main dependent variable was childhood obesity which was measured using ECLS-K composite variable body mass index (BMI) values. Children were categorized according to BMI percentiles using the Center for Disease Control and Prevention (CDC) classification criteria (Vidmar, Carlin, Hesketh, and Cole, 2004). Based on this classification, children at or above the 95th percentile of the age-sex specific BMI growth chart were classified as "obese" and all other children as "non-obese". The main predictor variable was of mother's perceptions of their child's physical activity in kindergarten (MP-K), that was constructed using a series of questions that assessed mother's perceptions of their child's PA level in comparison to other children in three domains: 1) structured activities (e.g., sports); 2) free time: "Compared to others (boys/girls) (his/her) age, how physically active is {child} during..." more physically active, less physically active, or about the same as others.;" and 3) aerobic exercise: "How much aerobic exercise does (child) get on a consistent basis?: more than, less than, or about the same as others? These three indicators resulted in a Cronbach's alpha of 0.74 in this study sample. Answers from these three different domains were combined as one measure of perceived activity level by mothers (MP-K) with a possible minimum score of zero and a maximum of six. We then proceeded to create three ordinal categories of MP-K: 1) MP-K lower level (0 to 2); 2) MP-K medium level (3 or 4); and 3)MP-K higher level (5 or 6).

### *Control Variables:*

Based on theoretical and empirical evidence, several factors were identified as possible mediators and moderators in the association between MP and childhood obesity. For example, family structure, parents' education, family SES, parents' country of birth, and number of siblings have been identified as suspected determinants of child's weight or BMI (Balistreri & Van Hook, 2009; Bhargava, Jolliffe, & Howard, 2008; Hernández-Valero et al., 2007; Van Hook, Balistreri, & Baker, 2009). The initial statistical models controlled form child's race, gender, child's place of birth, child's disability status, hours of television watched per week, family structure, number of siblings, neighborhood safety, mother's employment status, family socioeconomic index (SES), parents' place of birth, mother's place of birth, mother's age, home rules for hours of television allowed, and place of residence (urbanicity). To obtain a more parsimonious model, we controlled only for suspected determinants that contributed to the model: 1) child's gender; 2) child's disability; 3) family structure; 4) mother's country of birth; 5) mother's age; and 6) SES (description of variables not included in the final model are available upon request). Mother's reported their child's race at the first wave of the study. This study limited the analyses to those categorized as Hispanic (white-Hispanic, or Latino Group) or as white. Child's disability was an ECLS-K composite variable that indicated whether a child had a disability that was diagnosed by a professional. In terms of family structure, the population sample for this study included only biological mothers. Family structure was recoded as follows: 1) two biological parents; 2) biological mother and a partner; 3) or biological mother only. For mother's place of birth, a dichotomous variable was created based on self-reported place of birth, non-U.S.-born (0), and U.S.-born (1). Mother's age was a continuous variable. Family SES was

a composite variable in the ECLS-K data set (please refer to Tourangeau, Nord, Lê, Pollack, & Atkins-Burnett, 2006, p. 7-25).

#### *Statistical Analysis:*

A description of the study sample included the distribution (means, frequencies, percentages) of child and family level variables. Bivariate analysis was conducted to test differences and to assess relationships among variables and between groups (Latinos and whites) using t-tests and Chi-squares as appropriate. Multiple logistic regression analyses were performed to examine the association of potential determinant factors with the main outcome (childhood obesity). The main independent variable (MP-K) and the control variables were simultaneously included in the logistic regressions. We examined the study hypotheses using two models. Model 1 examined the Latino study sample, and Model 2 examined the white study sample. Wald tests were used to test if there were statistically significant differences between ethnic groups in terms of the logistic regression coefficients of MP-K with childhood obesity. The data were weighted to compensate for unequal probabilities of selection at each sampling stage and to adjust for the effects of school, child, teacher, and parent non-response (Tourangeau et al., 2009). The statistical significance level was set at the conventional value of  $p < .05$  for all statistical tests. Data were analyzed using STATA version 11.1.

## **Results**

### *Descriptive Statistics:*

Tables I and II present selected characteristics of the study sample. Latinos represented 9% of the study sample ( $n=286$ ), there was a similar sex distribution between ethnic groups (50% males and 50% females). Among Latinos, both parents were foreign or non-US born for 22% of the children. Bivariate analyses suggest that there were no significant differences by ethnic group in terms of MP-K. However, there were significant differences ( $p < .05$ ) between the two groups (whites and Latinos) in terms of sedentary behavior and weight status. At kindergarten, there was a lower proportion of white children who spent more than two hours/day watching television, DVDs, or video than Latinos (36% vs. 49%); and whites had a lower BMI mean (mean = 16.2 kg/m<sup>2</sup> vs. mean = 16.7 kg/m<sup>2</sup>) and a lower prevalence of obesity (10% vs. 15%) than Latinos. At the family level, a significantly lower proportion of White mothers reported being single than Latina mothers (12% vs. 22%), White families had a significantly higher mean SES index (mean = 0.25 vs. mean = -0.27); and a higher proportion of mothers reported working (72% vs. 61%) as compared to Latino families. Furthermore, a larger percentage of white mothers compared to Latina mothers (85% and 54%, respectively) reported their neighborhood to be very safe for children to play.

### *Hypotheses Testing:*

Table 3 presents the results of the logistic regression analyses. In general, MP-K was inversely related to children's obesity (whites and Latinos), after controlling for gender, child's disability, family's structure, mother's country of birth, mother's age, and SES. The association seems to be stronger for Latinos than for whites. Latino children in the medium and higher categories of MP-K had a lower likelihood of being obese in third grade (medium Adjusted Odd Ratio [AdOR] = 0.17,  $p < .001$ ; higher AdOR = 0.29,  $p < .05$ ) and fifth grade (medium AdOR = 0.18,  $p < .001$ ; higher AdOR = 0.27,  $p < .01$ ) than Latino children in the lower category of MP-K (Model 1). However, for whites the effect of MP-K on childhood obesity was significant only for third grade. White children in the medium and higher categories of MP-K had a lower likelihood of being obese in third grade (medium AdOR = 0.46,  $p < .001$ ; higher AdOR = 0.39,  $p < .01$ ) than white children in the lower category of MP-K (Model 2).

The Wald test confirmed that there were statistically significant ethnic differences in the magnitude of the effect of MP-K on children's obesity over time. For example, children from both ethnic groups in the medium category of MP-K had a lower likelihood of being obese in third grade than those in the lower category. However, the likelihood for the Latino model is significantly lower than for whites (e.g., medium AdOR = 0.17 for Latino vs. medium AdOR = 0.46 for Whites).

*Table 1: Selected child and Family Characteristics at Baseline, Overall and for Whites and Hispanics*

Characteristics	Whites (n=2838 or 91%)	Latinos (n=286 or 9%)
<u>Gender</u>		
Male	49.68	50.35
Female	50.32	49.65
<u>Any Disability at Kindergarten</u>		
No	84.74	87.41
Yes	15.26	12.59
<u>MP-K</u>		
Lower Level	9.51	77.01
Medium Level	68.06	22.99
Higher Level	22.44	
<u>Parent's Place of Birth</u>		
At least 1 U.S. Born	99.13	77.01
Both non-U.S. Born	0.87	22.99
<u>Average Hours of TV/Day</u>		
≤ 2 hours	64.15	51.41
> 2 hours	35.85	48.59
<u>Family Structure</u>		
Single Mother	11.52	22.03
Mother with Father/Partner	88.48	77.97
<u>Mother Employment K*</u>		
Employed	71.65	61.19
Not Employed	28.35	28.81
<u>Mothers Perception of Neighborhood Safety</u>		
Not at all Safe	0.67	7.69
Somewhat Safe	14.69	38.11
Very Safe	84.64	54.20
<u>Home Rules for Hours of TV Watching</u>		
No	53.99	40.21
Yes	46.01	59.79
<u>Urbanity</u>		
Central City	27.66	50.00
Urban Fringe and Large Town	40.42	36.36
Small Town and Rural	31.92	13.64

\*Significant race differences using Chi-Square test,  $p \leq .05$

*Table 2:  
Selected Child and Family Characteristic for Whites and Hispanics*

Variable	Total n=3,124		Whites (n=2838 or 91%)		Latinos (n=286 or 9%)	
	Mean	SD	Mean	SD	Mean	SD
Days/week ≥ 20 min MVPA at K	4.02	2.24	4.04	2.21	3.86	2.53
Body Mass Index Kindergarten* (kg/m <sup>2</sup> )	16.30	2.08	16.25	2.03	16.74	2.56
SES at Kindergarten*	0.19	0.71	0.24	0.70	-0.27	0.63
Mother's perception of neighborhood attributes (0-10) at Kindergarten	9.67	0.92	9.73	0.77	9.11	1.77
Percent of Obese Children in Kindergarten	9.46%		8.91%		15.04%	

*Table 3:  
Association of Mother's Perception of Child's Physical Activity in Compariosn with child's Peers with Child's Obesity  
(BMI ≥ 95th percentil) for a cohort of Midwest Children (ECLS-K data)*

Baseline Characteristics	Latino Children AdOR (95% CI) Kindergarten	AdOR (95% CI) Third Grade	AdOR (95% CI) Fifth Grade	White Children AdOR (95% CI) Kindergarten	AdOR (95% CI) Third Grade	AdOR (95% CI) Fifth Grade
<u>MP Kindergarten</u>						
Lower Level	1.00	1.00	1.00	1.00	1.00	1.00
Medium Level	0.16 (0.04-0.69)*	0.17 (0.08-0.37)*** €	0.18 (0.11-0.33)*** €	0.44 (0.33-0.58)***	0.46 (0.28-0.76)**	0.80 (0.36-1.76)
High Level	0.28 (0.07-1.17)	0.29 (0.010-0.85)*	0.27 (0.16-0.43)*** €	0.26 (0.15-0.44)***	0.39 (0.22-0.69)**	0.82 (0.33-2.07)
<u>Gender</u>						
Male	1.00	1.00	1.00	1.00	1.00	1.00
Female	0.35 (0.16-0.78)*	0.45 (0.25-0.79)**	0.37 (0.07-1.90)	1.06 (0.91-1.23)	0.76 (0.53-1.07)	0.82 (0.66-1.02)
<u>Any Disability</u>						
No	1.00	1.00	1.00	1.00	1.00	1.00
Yes	0.33 (0.03-3.69)	0.69 (0.04-9.82)	0.09 (0.29-4.15)	0.97 (0.66-1.42)	0.86 (0.65-1.13)	1.23 (0.74-2.05)
<u>Family Structure</u>						
2 Parents	1.00	1.00	1.00	1.00	1.00	1.00
Single Mother	0.90 (0.35-2.27)	0.90 (0.35-2.27)	3.45 (1.51-7.88)***	0.92 (0.56-1.51)	1.31 (0.66-2.60)	0.97 (0.49-1.89)
<u>Mother's Birth Country</u>						
Non-U.S. Born	1.0	1.00	1.00	1.00	1.00	1.00
U.S. Born	0.65 (0.34-1.24)	0.29 (0.14-0.60)**	0.42 (0.16-1.12)	0.53 (0.29-0.95)*	1.27 (0.68-2.36)	0.94 (0.40-2.22)
<u>Mother's Age</u>	.98 (0.87-1.10)	0.92 (0.85-0.99)*	0.94 (0.83-1.07)	1.01 (1.0-1.02)*	1.00 (0.98-1.03)	1.04 (1.00-1.09)*
<u>Family SES Index</u>	0.75 (0.30-1.89)	1.69 (0.91-3.14)	1.48 (0.42-5.17)	0.63 (0.39-1.00)	0.68 (0.50-0.92)*	0.49 (0.34-0.70)**

#### *Discussion:*

Consistent with findings of previous studies, the results of this study suggest that mother's perceptions of their child's PA level in comparison to other children is associated with children's weight status (Eckstein et al., 2006; Rose & Bodor, 2006; Santiago, 2010). To our knowledge, this is the first study that specifically examined MP-K influence on children's weight status in a cohort of children in the Midwest. This study's findings suggest that mother's perception at kindergarten has a long-term effect on Midwest-children's weight status. It was negatively associated with child's obesity (at third and fifth grades), even after controlling for individual and family variables at baseline. However, the findings also suggest that Latina mothers' perceptions have a stronger effect on child's obesity than do those of the white mothers. These findings call for future research in this area. Mothers' perceptions of their child's physical activity could potentially serve as an additional tool or mechanism to increase child's PA and to prevent childhood obesity. Mothers need to be aware of, and oriented to, their potential influence on their child's weight. While mothers' perceptions might not be easily changed, how mothers communicate their expectations to their children and how mothers act based on their perceptions are both modifiable. Further research is needed to examine mothers' responses (actions) to their perceptions of child's PA level, and how these actions can affect child's weight status. As suggested by previous studies, mechanisms through which the effects are produced include providing higher instrumental and emotional support to those children perceived as having more physical ability (Loprinzi & Trost, 2010), and by influencing the child's self perception of PA ability (Bois, Sarrazin, Brustad, Trouilloud & Cury, 2005). Parents who perceive their children as more active or possessing greater athletic ability might provide them with more support (financial, instrumental, emotional) than those children who are perceived as less active, possibly affecting their likelihood of obesity and/or a sedentary lifestyle. Instead of limiting them for being less active or having less ability, mothers can provide children with activities (less intense if necessary), inside or outside the home, appropriate for their child's physical ability and weight status.

Although this paper has important implications for public health, there are several limitations that need to be considered. Specifically, PA level was a subjective measure, reported by the mothers in three waves. The measure of PA can influence its association with other factors (Epstein, Paluch, Coleman, Vito, & Anderson, 1996), although the measures used in this study to assess PA level have also been used in other recent studies that show significant associations with obesity and other health indicators (Eisenmann, Bartee, Smith, Welk & Fu, 2008; Liu, Probst, Harun, Bennett & Torres, 2009; Trost, Pate, Ward, Saunders & Riner, 1999). Finally, the findings of this study cannot be generalized to families with stepmothers or adopted mothers.

#### **Conclusions**

Mothers' perceptions of their children's level of physical activities influence their children's weight status. Moreover, this effect is greater among Latinos. With obesity being prevalent among Latinos, it is important that mothers' perceptions be taken into account in interventions addressing childhood obesity, particularly among Latina mothers. Future research is necessary to confirm this study's findings, and to examine possible mechanisms of how MP exerts its influence on children's weight status.

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## Latina's Educational Endeavors Past, Present and Future

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### Abstract

Thirty years ago, MANA de Kansas City was established as a grassroots organization promoting social capital and educational development for Latinas in the Kansas City metropolitan area. This grass roots organization promotes higher education through scholarships, and provides resources that support and enable Latinas to increase their personal and professional leadership skills, advocacy, and educational endeavors. MANA de KC encourages networking, develops leadership skills, advocates about issues affecting Hispanics, and encourages young Latinas to become future leaders. Membership for MANA de KC is open to anyone that wants to support Latinas and MANA's mission. MANA de KC's members are diverse individuals from different walks of life, interests, careers, educational levels, and lifestyles. The common thread is that they all support the mission to empower Latinas through leadership development, community service, and advocacy. MANA de KC is making a difference in the Kansas City Metropolitan area as they continue to promote higher education for Latinas.

### Introduction

In 1981, the MANA de Kansas City chapter was formed as an all volunteer organization from the MANA National, a Latina organization founded in 1974 as the Mexican American National Association in Washington D.C. In January 1994, members voted to become known as MANA, a National Latina Organization to reflect the growing diversity of its members and become more inclusive of Latinas from Mexico, Puerto Rico, Dominican Republic, Cuba, Central America, South America, and Spain. The word MANA is short for hermana, which means sister. As of today, MANA is the largest national Latina organization that is inclusive of Latina networks throughout the United States who value service, advocacy, leadership development and higher education. MANA focuses on creating community leaders through personal and professional development and they influence public policy issues that are relevant to Latinas and their families.

This year (2011), MANA de KC is celebrating 30 years of work in the Kansas City metropolitan area. One year after MANA de KC formed, it awarded their first Latina Community Service Award, honoring two Latinas. In 1993, MANA de KC awarded the first scholarship to assist Latinas in their pursuit of higher education. Examples of other activities in which MANA de KC has been involved include: 1) supporting the Posada Del Sol Christmas celebration for seniors; 2) sponsoring the Hermanitas (little sisters) Program as mentors; and 3) encourage young Latinas to stay in school and become actively engage with community organizations that promote Hispanics in the community.

Ever since its inception, MANA de KC has been "dedicated to developing Latina leaders in Kansas City, promoting equal participation of Latinas in the community and working to create a better quality of life for all." MANA has been described as an organization that provides spaces for dialogue and highly values its member's resources and talents. MANA de KC instills pride in Latina culture and heritage and provides tools and guidance for individuals and community success. MANA de KC's common denominator is placing a high value to the words: service, advocacy, and leadership. For three decades, MANA de KC has organized numerous activities, programs, and projects that promote its mission. Through the establishment of various partnerships, MANA de KC has been able to reach into Kansas City communities integrating its purpose and mission. To promote educational development opportunities for Latinas, MANA de KC has hosted educational workshops, training, seminars, and coordinated programs