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## Behavioral Contexts, Food-Choice Coping Strategies, and Dietary Quality of a Multiethnic Sample of Employed Parents

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### Abstract

Employed parents' work and family conditions provide behavioral contexts for their food choices. Relationships between employed parents' food-choice coping strategies, behavioral contexts, and dietary quality were evaluated. Data on work and family conditions, sociodemographic characteristics, eating behavior, and dietary intake from two 24-hour dietary recalls were collected in a random sample cross-sectional pilot telephone survey in the fall of 2006. Black, white, and Latino employed mothers (n=25) and fathers (n=25) were recruited from a low/moderate income urban area in upstate New York. Hierarchical cluster analysis (Ward's method) identified three clusters of parents differing in use of food-choice coping strategies (ie, Individualized Eating, Missing Meals, and Home Cooking). Cluster sociodemographic, work, and family characteristics were compared using  $\chi^2$  and Fisher's exact tests. Cluster differences in dietary quality (Healthy Eating Index 2005) were analyzed using analysis of variance. Clusters differed significantly ( $P < 0.05$ ) on food-choice coping strategies, dietary quality, and behavioral contexts (ie, work schedule, marital status, partner's employment, and number of children). Individualized Eating and Missing Meals clusters were characterized by nonstandard work hours, having a working partner, single parenthood and with family meals away from home, grabbing quick food instead of a meal, using convenience entrées at home, and missing meals or individualized eating. The Home Cooking cluster included considerably more married fathers with nonemployed spouses and more home-cooked family meals. Food-choice coping strategies affecting dietary quality reflect parents' work and family conditions. Nutritional guidance and family policy needs to consider these important behavioral contexts for family nutrition and health.

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Employed parents use food-choice coping strategies to integrate the multiple demands of work and family roles as they feed themselves and their families (1,2). Parents' food choices reflect individual agency as well as the behavioral contexts for those choices (3,4). Individual agency represents people's personal choices as they respond to their life circumstances (5,6). Behavioral contexts reflect parents' key personal and social characteristics, such as social class, race/ethnicity, sex, and social roles, such as marriage, parenthood, and employment (7–11). Social class determines exposure to social advantages and disadvantages (12), including food availability, access, and cost (13–15). Race/ethnicity affect food access and availability (15–20), but also reflect food ideals, identities, and roles

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(19,21). Sex is a basic social category affecting access to resources and including expectations for the type and amount of food eaten (22,23). Marriage and parenthood can affect diet quality (24–27), nutrition concerns, and motives (28,29). Employment affects food choices through time demands, exposure to job strain, and workplace food access (30). Parents' individual food choices have implications for family nutrition because they often control what foods get into the home and model choices; parental intake is closely associated with intake of other household members (31–33). Much of the research on relationships between work and family conditions and food-choice behaviors has tended to focus on a single behavior (eg, skipping breakfast) or a small set of behaviors (eg, family meals and takeout food); however, parents use combinations of food-choice strategies throughout the day to integrate demands of work and family (2).

This analysis was based on formative research aimed at understanding how parents' work and family roles affected their food-choice strategies (1). The purpose of the current study was to investigate how the food-choice coping strategies of employed parents were related to their behavioral contexts and dietary intake. Specifically, this study aimed to determine how parents' food-choice coping strategies varied with their work and family roles and how their use of these strategies was related to dietary intake.

## METHODS

### Participants

Employed parents were randomly recruited by the University Survey Research Institute, a full-service survey research facility, for three telephone interviews using random-digit dialing in low- to moderate-income urban zip codes in upstate New York in the fall of 2006. Eligibility criteria included working at least 20 hours/week, one or more children under age 17 years at home, and family income <\$60,000/year. Each participant received a welcome letter and a food amounts estimation booklet (34).

### Data Collection

The 45-minute baseline interview, conducted by University Survey Research Institute personnel, assessed behavioral contexts, including sociodemographics (sex, race/ethnicity, education, income), work (hours, schedule), and family (marital, parental) characteristics using 128 standard items (35–38).

Twenty-two items measured food-choice coping strategies, including food at/away from home, missing meals, individualizing meals, time saving, and planning. These 22 items were developed, cognitively tested (39), and convergent validity was established through formative research (1,2). Eighteen of these items, originally scaled from one to three (never/rarely, sometimes, often/always), were dichotomized by combining the sometimes and often/always responses. For three items (as noted), sometimes and rarely responses were combined for more equal distribution. Four other items originally scaled as frequency per week of home-cooked, take-out, fast-food, or restaurant family meals, were dichotomized using the median (2). In a separate but similar sample, all 22 items met the criterion ( $P < 0.05$ ) for temporal reliability (40) during 3 weeks (Spearman's  $\rho = 0.41$  to  $0.87$ ).

Subsequently, 50 participants completed two more interviews that were 24-hour dietary recalls on days after working days, through the Nutrient Data System for Research (version 2006, Nutrition Coordinating Center, University of Minnesota, Minneapolis; copyright Regents of the University of Minnesota). Earlier studies have demonstrated that reasonable estimates can be obtained from two telephone 24-hour recalls (41–43). Work days were selected in order to focus on employment demands. Two registered dietitians, certified in the use of the Nutrient Data System for Research, conducted these recalls; a third reviewed

recalls for accuracy and reliability. Participants who completed all three interviews received \$50. The Cornell University Institutional Review Board approved the study protocol and consent procedures. All participants provided verbal consent.

## Analyses

Subgroups of participants, based on their food-choice coping strategies, were identified through cluster analysis. Appropriate for small samples, this multivariate procedure identifies relatively homogenous clusters through inter-subject similarity (44,45), with the goal of minimizing within-group variability and maximizing between-group variability (46). The 22 food-choice coping strategies analyzed with Ward's hierarchical cluster method and squared Euclidean distances formed three broad clusters (46). The contingency coefficient (45) was used to test the agreement between this cluster solution and two other clustering methods (between- and within-group linkage). These cluster solutions closely corresponded to results from Ward's method, as indicated by statistically significant contingency coefficients of 0.73 (within-group) and 0.71 (between-group) confirming the stability of the classification. Each of three clusters was named after its distinguishing food-choice coping strategies: (Individualized Eating, Missing Meals, and Home Cooking) (Table 1).

Analyses then examined how clusters were associated with participants' individual characteristics and work and family conditions (Table 2) using  $\chi^2$ , Fisher's exact test, and analysis of variance as appropriate. Next, analysis of variance was used to examine how cluster membership was associated with participants' diet quality using Healthy Eating Index 2005 (HEI), a validated measure (47). For each participant complete dietary data was averaged over two recalls; total and 12 subcategory HEI scores were calculated. Higher scores indicate greater dietary quality. All statistical analyses were conducted using Statistical Package for the Social Sciences (version 14.0, 2006, SPSS, Inc, Chicago, IL).

## RESULTS AND DISCUSSION

Sixty-four of 465 people screened were eligible; 78% were recruited and retained for three interviews. Fifty-six parents (87.5%) completed the baseline interview; 50 of 56 (78%) completed two additional 24-hour dietary recall interviews. Fifty-six parents were included in all analyses, except those assessing associations with dietary intake where the smaller sample (n=50) was used. There were no statistically significant differences between those who completed only the baseline or all three interviews, except that all noncompleters were women. Of the 56 participants (31 mothers and 25 fathers) aged 23 to 56 years, 20 self-identified as black (36%), 18 as white (32%), and 18 as "other" (32%); and 20 self-identified ethnically as Hispanic/Latino (36%). All of the fathers but only 13 of the 31 mothers (42%) lived with a spouse/partner. Seventeen of 56 (30%) had a high school education or less. Nine of 56 (16%) worked part-time, 28 of 56 (50%) worked full-time, and 19 of 56 (34%) worked overtime. Six of 25 fathers and 2 of 31 mothers held more than one job. Twenty of 56 (32%) worked variable schedules. Of those with a spouse or partner, 13 of 25 fathers (52%) and 9 of 31 mothers (69%) had an employed spouse/partner.

### Food-Choice Coping Strategy Clusters

Parents in the Individualized Eating cluster were distinguished by the majority reporting that everyone in the family often fixes something different for a main meal on work days. These parents, along with those in the Missing Meals cluster, were more likely to feed children and adults separately. These parents reported more frequent main meals at sit down/buffet and fast-food restaurants. They often packed a lunch to take to work, kept food at work for snacks and meals, grabbed something quick to eat at work instead of a meal, and grabbed something quick to eat after work at a fast-food restaurant or convenience store. Few

reported having frequent home-cooked main meals or missing family meals because of work (Table 1). These parents had the fewest children and all but one worked standard daytime hours. More than two-thirds were women and almost half were single. Participants in this cluster had significantly lower HEI scores for dark green and orange vegetables than the other two clusters, and tended to score between the others on most other diet measures.

There were more single parents in the Individualized Eating cluster. Single parents may be more responsive to individual food preferences, possibly to keep peace in the family or to treat children (1,48). Different meals may also reflect variation in dietary concerns (26,49) or commensality, eating patterns that reflect interpersonal relationships (50).

Parents in the Missing Meals cluster reported the highest frequency of missing family meals, missing breakfast, missing lunch at work, and overeating after missing a meal. Like the Individualized Eating cluster, they often ate main family meals in fast-food or other restaurants, ordered take-out food, and grabbed something quick instead of a meal at work or after work. Unlike the Individualized Eating cluster, they were unlikely to have everyone in the family fix something different or take a lunch to work. Notably, more parents in this cluster worked nonstandard hours, worked overtime, and had employed partners. Parents in the Missing Meals cluster had significantly lower HEI scores for total grains, whole grains, and milk.

The nonstandard work hours, overtime work, and working partners that characterized the Missing Meals cluster suggests that frequently missed meals and greater consumption of family meals from restaurants may be related to the asynchronicity of parents' daily lives (51). Parents working longer or nonstandard hours to earn more or save on child care (1) may not only miss eating meals with their families but may skip eating or overeat later in the day.

Parents in the Home Cooking cluster reported the highest frequency of home-cooked family meals and the lowest frequency of family meals away from home. Fewer parents in this cluster indicated that they often had individualized meals, used convenience entrées at family meals, missed lunch, missed breakfast, or grabbed something quick after work or instead of a meal. Most of these parents were married; few had spouses who worked more than 20 hours per week, and they had the highest number of children at home. Parents in the Home Cooking cluster had higher HEI scores and substantially higher scores for dark green and orange vegetables, total grains, whole grains, and milk.

These study findings demonstrate relationships between work and family conditions and dietary intake that add to understanding of how behavioral contexts influence health-related behavior (52). The food-choice coping strategies and eating behaviors used by these parents were associated with key conditions such as work schedules, marital status, partner's employment, and number of children, which acted in some cases as barriers to healthy dietary intake. Although there were nonsignificant sociodemographic differences (eg, income), work and family conditions were the main distinguishing cluster characteristics.

Current findings expand on earlier studies of employment characteristics and dietary quality. Night-shift work has been associated with higher fruit and vegetable intake among construction workers. These particular workers were primarily men who brought food from home (53–55). In a separate analysis, a similar relationship was found between bringing food from home and improved diet quality among men but not women (56). In this study, nonstandard work hours were associated with lower dietary quality for parents with employed partners. This suggests that associations between employment and diet require an understanding of work conditions (eg, shift work) in the context of family conditions (eg, marital status) and individual characteristics (eg, sex).

Meals that cater to individual preferences are (56,57) enabled by convenience foods. The increase of food obtained away from home (58) and negative relationships with dietary quality have been described previously (59,60). This study adds to this literature by elaborating on the conditions that contribute to use of convenience foods, including saving time in general, but also because many parents work during meal times or many have skipped meals earlier in the day so they grab convenience foods after work to make up for missed meals. This study adds to the literature the findings that grabbing food instead of a meal, using convenience entrées at family meals, meal skipping, and individualizing meals are strategies associated with lower dietary quality.

Neumark-Sztainer, Hannan, Story, Croll, and Perry (61) reported that when mothers worked full-time, they had fewer family meals. Because family meals have been associated with better diet quality (61–64), these findings have importance for family nutrition. Family meal frequency and diet quality were related here not just to mothers' work hours, but to the employment status and hours of either parent. It is notable that a higher proportion of the parents in the Home Cooking cluster were fathers with voluntarily nonemployed partners, suggesting that they may have developed strategies that allowed them to support their households on one income.

Recent studies of eating behavior among children and adolescents have demonstrated the central role of the influence of parental eating behaviors (65). In a longitudinal analysis, children's preferences at ages 2 through 4 and maternal preferences were strongly predictive of food and beverage preferences at age 8 (66). In most households, parents are the primary food purchasers and preparers and therefore have the greatest influence over what children have access to and consume. Healthy parental eating behaviors are important for the promotion of healthy dietary patterns for their children (67).

Strengths of this study include random selection and high retention of low- and moderate-income urban participants. These findings are limited by the small sample and limits of self-reported data. Although there were statistically significant associations between clusters of food-choice coping strategies, dietary behavior, and some work and family conditions, a larger sample will be needed to examine small differences in HEI scores. Although study participants were randomly recruited, and 78% of those reached and eligible were retained, those who could not be reached could have differed in meaningful ways. Although there are concerns with the accuracy of self-reported dietary data, the pattern of HEI scores in this sample was similar to those from National Health and Nutrition Examination Survey 2001–2002 (68), although sample scores were slightly lower for total and whole fruits and milk and slightly higher for green and orange vegetables and solid fat, alcohol, and added sugar.

## CONCLUSIONS

Although all working parents are busy, the work and family conditions of some make it easier for them to manage the scheduling and preparation of family meals than others. These findings show how food-choice coping strategies can be embedded in behavioral contexts that arise out of work and family roles. Research is needed to consider parents' work and family contexts along with other sociodemographic and psychosocial characteristics. To improve family nutrition, registered dietitians need to target not just individual behavior but understand key behavioral contexts to promote positive, sustainable food-choice coping strategies. On a macro level, understanding key behavioral contexts implies examining the impact of family policies, such as flex time and workplace food access on nutrition. Understanding the contexts in which families make food choices can enhance the ability of dietetics practitioners to foster healthy dietary practices for parents and their children.



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Table 1

Working parents clustered by reported patterns of food-choice coping strategies

| Food-choice coping strategies <sup>ab</sup>  | Individualized<br>(n=16) | Missing meals<br>(n=20) | Home cooking<br>(n=20) |
|--|--------------------------|-------------------------|------------------------|
|  | ←————— % —————→          |                         |                        |
| <b>Food at home and away</b>   |                          |                         |                        |
| In a typical week:   |                          |                         |                        |
| > of your family's main meals are home-cooked ***  | 19                       | 20                      | 90                     |
| 1 of your family's main meals are from a fast-food restaurant ***                              | 88                       | 95                      | 30                     |
| 1 of your family's main meals are take-out foods ***   | 69                       | 80                      | 20                     |
| 0.5 of your family's main meals are at a sit-down or buffet restaurant ***                     | 81                       | 55                      | 10                     |
| On busy days, you eat a meal in the car  | 44                       | 40                      | 45                     |
| After work, you grab something quick to eat at a fast-food restaurant or convenience store *** | 63                       | 50                      | 0                      |
| <b>Missing meals</b>   |                          |                         |                        |
| Because of your job you miss eating meals with your family ***                                 | 25                       | 90                      | 30                     |
| Between work and family you miss eating breakfast †  | 63                       | 85                      | 50                     |
| Because of your job, you miss eating lunch ***   | 50                       | 75                      | 15                     |
| You overeat later after missing a meal †   | 38                       | 70                      | 40                     |
| <b>Individualized meals</b>  |                          |                         |                        |
| On work days:  |                          |                         |                        |
| The children eat first and adults eat later *  | 50                       | 65                      | 25                     |
| Your family watches television during the main meal  | 69                       | 45                      | 35                     |
| Everyone in your family fixes something different for a main meal ***                          | 81                       | 15                      | 10                     |
| You eat your main meal with all or most of your immediate family together (often)              | 81                       | 85                      | 90                     |
| <b>Speeding up</b>   |                          |                         |                        |
| On workdays your family's main meal:   |                          |                         |                        |
| Includes canned or frozen entrées or boxed mixes ***   | 63                       | 85                      | 30                     |
| Is something that is quick to prepare (often)  | 88                       | 80                      | 85                     |
| You eat while you work   | 50                       | 60                      | 65                     |
| At work, you grab something quick to eat instead of a meal †                                   | 81                       | 80                      | 50                     |
| <b>Planning</b>  |                          |                         |                        |
| You pack a lunch to take to work ***   | 88                       | 15                      | 70                     |
| You keep food available at work for snacks and meals   | 81                       | 50                      | 50                     |
| Your family cooks enough to have leftovers (often)   | 81                       | 90                      | 95                     |
| Your family cooks more on days off so there will be good meals ready for work nights           | 69                       | 70                      | 80                     |

<sup>a</sup> Cells are the percent in that cluster who responded sometimes/often/always unless noted as (often) vs sometimes/rarely.

<sup>b</sup> Comparisons used  $\chi^2$  tests, Fisher's exact test when cell sizes <5.

Significance for three-cluster solution:

\*  $P < 0.05$ .

\*\*\*  $P < 0.001$ .

†  $P < 0.10$ .

**Table 2**

Demographic, work, and family characteristics and Healthy Eating Index (HEI) scores of working parents based on their food-choice coping strategies

| <b>Individual, work, and family characteristics<sup>a</sup></b> | <b>Individualized eating (n=16)</b> | <b>Missing meals (n=20)</b> | <b>Home cooking (n=20)</b> |
|---|-------------------------------------|-----------------------------|----------------------------|
| Sex (% female)  | 69                                  | 60                          | 40                         |
| Race/ethnicity (%) <sup>b</sup>                                 |                                     |                             |                            |
| Non-Hispanic white  | 44                                  | 15                          | 35                         |
| Non-Hispanic black  | 25                                  | 45                          | 25                         |
| Hispanic/Latino   | 31                                  | 40                          | 35                         |
| Education (%)   |                                     |                             |                            |
| High school/GED <sup>c</sup> or less                            | 50                                  | 25                          | 20                         |
| 1 to 3 years college  | 30                                  | 60                          | 45                         |
| 4 year degree or more   | 20                                  | 15                          | 35                         |
| Family income <\$30,000 (%)                                     | 40                                  | 70                          | 45                         |
| Marital status (%) <sup>*</sup>                                 |                                     |                             |                            |
| Married, living with spouse                                     | 32                                  | 35                          | 75                         |
| Unmarried, living with partner                                  | 25                                  | 30                          | 5                          |
| Unmarried   | 43                                  | 35                          | 20                         |
| Family conditions   |                                     |                             |                            |
| Spouse/partner works 20 hours/week (%) <sup>**</sup>            | 31                                  | 55                          | 15                         |
| Children in household (n), mean <sup>**</sup>                   | 1.4                                 | 2.0                         | 2.7                        |
| Work conditions (%)   |                                     |                             |                            |
| Works nonstandard hours <sup>*</sup>                            | 6                                   | 35                          | 20                         |
| Works overtime (45 hour/week)                                   | 38                                  | 45                          | 20                         |
| Age (y), mean   | 38.3                                | 36.9                        | 36.8                       |
| <b>HEI-2005 category scores<sup>defg</sup></b>                  | <b>Individualized eating (n=16)</b> | <b>Missing meals (n=15)</b> | <b>Home cooking (n=19)</b> |
| Total fruit   | 1.91 (1.97)                         | 1.70 (1.90)                 | 2.35 (2.01)                |
| Whole fruit   | 1.76 (1.71)                         | .88 (1.75)                  | 2.01 (2.19)                |
| Total vegetable   | 2.31 (1.56)                         | 2.77 (1.56)                 | 3.25 (1.32)                |
| Dark-green and orange vegetables <sup>*</sup>                   | .95 (1.15)                          | 1.90 (2.02)                 | 2.77 (1.95)                |
| Total grains <sup>†</sup>                                       | 4.49 (0.74)                         | 4.16 (1.01)                 | 4.74 (0.49)                |
| Whole grains <sup>†</sup>                                       | 2.14 (2.25)                         | .86 (1.41)                  | 2.30 (1.80)                |
| Milk <sup>**</sup>  | 4.24 (2.33)                         | 3.30 (2.14)                 | 6.34 (2.75)                |
| Meat and bean   | 9.31 (1.28)                         | 9.42 (1.67)                 | 9.34 (1.76)                |
| Saturated fat   | 5.56 (3.20)                         | 5.27 (3.56)                 | 5.74 (3.59)                |
| Sodium  | 2.75 (2.04)                         | 3.00 (2.85)                 | 2.95 (2.32)                |
| Solid fat, alcohol, added sugar                                 | 10.39 (6.39)                        | 9.56 (6.24)                 | 12.35 (6.44)               |
| Oil   | 7.73 (3.02)                         | 8.84 (2.45)                 | 6.54 (4.04)                |
| Total HEI-2005 score (of 100)                                   | 53.50 (13.73)                       | 51.67 (13.78)               | 60.64 (13.81)              |

<sup>a</sup>  $\chi^2$  tests; Fisher's exact test used when cell sizes <5.

<sup>b</sup> One participant self-identified as "other."

<sup>c</sup> GED=general equivalency diploma.

<sup>d</sup> Fifty of 56 participants completed two 24-hour food recalls.

<sup>e</sup> Mean score (standard deviation) in each category.

<sup>f</sup> Analysis of variance.

<sup>g</sup> Maximum HEI category scores: 5 for all fruits, vegetables, and grains; 10 for milk, meat/bean, saturated fat, sodium, oil; 20 for solid fat, alcohol, added sugar.

Significance for three-cluster solution:

\*  $P < 0.05$ .

\*\*  $P < 0.01$ .

<sup>†</sup>  $P < 0.10$ .