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PARENTS' INFORMATION SEEKING BEHAVIOR REGARDING INFANT FEEDING:  
UNDERSTANDING THE IMPORTANCE OF  
DEMOGRAPHIC CHARACTERISTICS AND TRUST

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## ABSTRACT

Increasing parents' engagement with evidence-based information that supports healthy child feeding practices is an important strategy for reducing the prevalence of childhood obesity. The purpose of the current study was to explore how select demographic characteristics and two cognitive heuristics (i.e. processes of evaluation) of trust (self-confirmation and authority) were associated with parents' naturally occurring information seeking behaviors regarding child feeding. Participants were parents whose oldest child was 24 months of age or younger. The research aims were: (1) to describe the context of parents' information seeking behavior regarding child feeding; (2) to describe parents' reported use of self-confirmation and authority when evaluating child feeding information; (3) to explore associations among demographic characteristics, self-confirmation, and authority; and (4) to explore how demographic characteristics, self-confirmation, and authority were associated with the sources parents most recently used to obtain advice or information about child feeding. To address the study aims, descriptive analyses, Pearson correlations, one-way ANOVA's, chi-square tests of independence, and *t*-tests were conducted using the specific variables relevant to each aim. After completing the analyses relevant to the main aims of the study, additional post-hoc analyses were conducted to gain a more holistic understanding of the context of parents' information seeking behavior regarding child feeding. The study results revealed that parents frequently engaged in various information searches regarding child feeding topics using a wide variety of sources. Parents reported high levels of trust and satisfaction in sources. There were no significant associations between demographic characteristics and the use of cognitive heuristics of trust; however, source use was predicted in part by parents' demographic characteristics, self-confirmation, and authority. Potential explanations and limitations of the study findings were considered.

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## **Chapter 1**

### **Introduction**

#### **Health Disparities and Public Health**

Health professionals increasingly conceptualize individual-level health status as part of a holistic system. Over the past 25 years, research has indicated that social determinants have as strong an impact on health as physiological or genetic factors (Braveman & Gottlieb, 2014). Disparities in these social determinants may impede individuals from achieving a certain quality of health. Health disparities go beyond usual health differences because disparities can be attributed to systematic inequalities in social and environmental opportunities (Office of Disease Prevention and Health Promotion [ODPHP], 2016). Unlike health differences that naturally occur with age across all groups, health disparities are unique to groups based on sociological factors, such as education, income, race, ethnicity, and geographic location (ODPHP, 2016).

Public health organizations in the United States are attempting to intervene on health disparities to improve the health status of minority groups as well as the overall American public. For example, the National Institute of Health (NIH) has dedicated a large portion of its resources to actively working towards diminishing the prevalence of the “enormous public health challenge” that is health disparities in the United States (Collins & Ruffin, 2013). The NIH has outlined three steps they plan to take to accomplish this goal: 1) Focusing research efforts on health disparities; 2) Enhancing cultural sensitivity and competence; and 3) Engaging in community outreach and information dissemination (Collins & Ruffin, 2013). Intervening on health disparities will become increasingly important with the expected demographic changes in

the United States, as well as the increasing population already showing evidence of health disparities (Betancourt, Green, Carrillo, & Ananeh-Firempong, 2003).

### **Health Disparities in Childhood Obesity**

Health disparities are evident in a wide range of health outcomes, including childhood overweight status and obesity (Singh, Siahpush, Kogan, 2010). Childhood obesity rates have dramatically increased since the 1980's with highly negative consequences for public health (Ogden et al., 2016). For example, childhood obesity greatly increases the likelihood of health problems throughout the entire lifespan, including cardiovascular disease and Type 2 diabetes (Daniels, Arnett, Eckel, Gidding, Kumanyika, & Williams, 2005).

Disparities in the prevalence of childhood obesity is observed among different socioeconomic, racial, and ethnic groups as early as the first two years of life (Lumeng, Taveras, Birch & Yanovski, 2015). Obesity prevalence in children varies based on race and ethnicity, ranging from approximately 9% in Asian children to over 23% for black, Hispanic, and American Indian children (Singh et al., 2010). Both overall rates of childhood overweight status and obesity and the aforementioned disparities of childhood overweight status and obesity between racial and ethnic groups have increased significantly throughout the past several decades (Singh et al., 2010). Understanding the mechanisms that underlie demographic disparities in childhood obesity rates may allow for more targeted obesity prevention measures.

Previous research suggests that both genetic and behavioral risk factors for childhood obesity vary dramatically by race and ethnicity. For example, Taveras et al. (2013) found several modifiable risk factors that are typically associated with childhood obesity risk, such as modifiable eating behaviors and accelerated weight gain, operate during infancy and early childhood and are highly disparate by race and ethnicity (Taveras, Gillman, Kleinman, Rich-

Edwards & Rifas-Shinman, 2013). During the first 1,000 days of life, there are several factors that are strongly associated with a higher risk for childhood overweight status and obesity, including prenatal tobacco exposure, maternal pre-pregnancy body mass (BMI), excess gestational weight gain, and rapid weight gain (Baidal, Locks, Cheng, Blake-Labm, Perkins & Taveras, 2016). Racial and ethnic disparities in these potentially modifiable risk factors indicate a need for targeted intervention approaches early in life.

Disparities in childhood obesity are also evident with regard to parents' educational attainment. One study on this source of disparity found that rates of obesity were 3.1 times higher for children whose parents had less than 12 years of education than for those children whose parents received a college degree (Singh et al., 2010). While the inverse relationship between household education level and obesity rates is true across all races, the level to which that is true is inconsistent between different racial and ethnic groups. The benefits of household education for childhood obesity are significantly higher in non-Hispanic white and black girls, with other racial/ethnic groups and boys being more strongly affected by lower education levels (Flegal, Carroll, Lamb, & Ogden, 2010). These early differences in risk factors for childhood overweight status and obesity underscore the need for evidence-based interventions that are implemented during infancy and early childhood.

### **Existing Evidence-Based Interventions for Early Childhood Obesity**

Evidence-based interventions (EBIs) are interventions that have been evaluated to meet a certain level of efficacy and meaningful improvements or reductions of negative outcomes (Gottfredson, Cook, Gardner, Gorman-Smith, Howe, Sandler, Zafft, 2015). This is often accomplished through effectiveness trials, which are implemented to allow for the development of new and innovative health interventions while simultaneously assessing generalizability in

real-world conditions (Gottfredson et al., 2015). Devoting the resources necessary toward the development and implementation of evidence-based practices would ultimately improve the consistency and quality of health care in the United States (Gottfredson et al., 2015).

In recent years, several institutional bodies have directed energy toward improving the evidence-base of childhood obesity prevention and intervention efforts. One such organization is the American Dietetic Association (ADA). The ADA has long recognized the epidemic of childhood obesity and has recently introduced their position on increasing rigorous analysis of their intervention programs. The ADA reports that multicomponent school- and family- based programs have high rates of success, and that community-based interventions may have the largest potential for wide spread impact (American Dietetic Association, 2006).

There have also been several recent randomized control trials designed to improve childhood obesity outcomes. For example, a 15-month long obesity prevention program focusing on intervention at the parent level was successful in reducing unhealthy child feeding behaviors in infancy and early childhood (e.g., decreased children's sweet snack consumption; Campbell et al., 2013). Campbell et al. (2013) found that when the knowledge, skills, and social support of first-time parents were improved, health outcomes of the infant also improved. However, a limitation of the study was the lack of a comprehensive follow-up assessment, which limited their ability to evaluate the long-term impact on obesity. Another limitation was an overrepresentation of higher socioeconomic status families, possibly resulting in a lack of generalizability to lower income populations, who generally have a greater need for childhood obesity intervention programming (Campbell et al., 2013). Together, existing reports and research suggest that there is high potential for evidence-based childhood obesity prevention

programs, but more research is needed to ensure that the programs reach their full potential in terms of effectiveness and inclusiveness.

### **More Research is Needed to Inform Childhood Obesity Interventions**

The quality of evidence for childhood obesity prevention and intervention programs is growing. However, important gaps remain regarding the efficacy and effectiveness of various approaches. Many programs and initiatives are currently implemented with the aim of decreasing the prevalence of childhood obesity, but not all are undergoing scientific evaluation to determine whether they are having the intended impact (Wofford, 2008). While many interventions are attempting to stagnate the growing number of obese children, without empirical evaluations of the intervention's success across groups, it is possible the interventions are not impacting those who need help (Backholer et al., 2014). The utilization of evidence-based interventions, as well as long-term evaluations of intervention outcomes, is crucial to ensure that interventions are effective longitudinally (Koplan, Liverman & Kraak, 2005).

### **Challenges Facing Current Evidence-Based Interventions**

One challenge that childhood obesity prevention and intervention programs face is recruiting families to participate. Without a sufficiently large percentage of the population engaging in evidence-based prevention services, the public health impact is likely to be low (Rotheram-Borus, Swendeman, Chorpita, 2012). To reduce health disparities, programs need to be both accessible and relevant to populations that are at the highest risk for childhood obesity (Backholer et al., 2014). Otherwise, disparities are likely to continue to increase.

Obesity prevention programs would benefit from increased cultural sensitivity and responsiveness (Bentley et al., 2014). At present, there are few obesity interventions that successfully integrate a culturally responsive approach, considering context-specific barriers to

the intervention strategy such as social norms, beliefs, and individual characteristics (Bentley et al., 2014). Culturally responsive interventions are essential for ensuring that the observed disparities in childhood obesity by parental race, ethnicity, and education do not increase. One early step towards creating culturally responsive childhood obesity interventions would be to learn more about parent preferences for information related to childhood obesity.

### **Intervening on Parents' Child Feeding Practices to Prevent Childhood Obesity**

Parents' child feeding beliefs and behavior are one important target of childhood obesity (Skouteris, McCabe, Swinburn, Newgreem Sacher & Chadwick, 2011). Since young children and infants are unable to take complete responsibility for their own feeding, parents have to develop child feeding practices in order to provide their children with proper nourishment. Child feeding practices include what, how, when, where, and why parents feed their children (Birch & Doub, 2014). Throughout the child's early development, parents have to make many decisions such as what type of foods to provide their children or which times during the day to provide children with food (Gevers, Kremers, de Vries & van Assema, 2014). During the first two years, parents must navigate challenges related to breast or bottle-feeding, the introduction of solid foods, and children's rapidly evolving food preferences. The feeding strategies parents implement during their child's early development may have a lasting impact on the child's eating habits and their weight. For example, a parent who creates many strict rules about food for their child may cause that child to crave foods that are considered less nutritious, while a parent who sets no rules may result in a child overeating (Gevers et al., 2014).

Although there is substantial research on the relationship between parents' feeding practices and childhood obesity risk, more research is needed on how parents' beliefs and behaviors develop. Parents' active information seeking about child feeding topics is one area

where additional research is needed to both understand contributors to current disparities in childhood obesity rates and to inform future interventions that aim to increase parents' exposure to evidence-based information about child feeding. To develop efficacious childhood obesity prevention programs that are likely to decrease health disparities, more research is needed on individual factors related to seeking and receiving information about infant feeding (McPhie, Skouteris, Daniels & Jansen, 2014; Doub, Small & Birch, 2016). Research that is sensitive to parents' different cultural backgrounds and preferences for information is particularly important to ensure that intervention approaches resonate with the target audience (Bentley et al., 2014).

### **Existing Research on Parents' Child Feeding Information Seeking**

A crucial step towards creating evidence-based interventions for parents' child feeding practices is gaining a better understanding of how parents interact with information sources. Current literature suggests that parents have disparate experiences depending on their age, socioeconomic status, and other demographic factors. For example, young parents (ages 16-23) of middle to upper class economic standing often have easy access to information sources via social media (Greyson, 2017). Despite the ease of accessibility, a lack of information literacy and an inability to build trust in sources may limit parents' ability to obtain or use high quality information about infant feeding (Greyson, 2017). While fewer studies have utilized samples representative of ethnic minorities or lower socioeconomic groups, those studies that have included these lesser-represented groups found that they have a higher level of difficulty accessing online information (Khoo, Bold, Babel, Jury & Goldman, 2008). These studies also suggested that these lesser-represented groups trust in-person health information sources more than online sources, despite the overall increase in online source use (Khoo et al., 2008). While these preliminary studies provide a beneficial insight to the infant feeding information seeking of

parents, the majority of these studies are limited in their generalizability due to small, homogenous samples.

Due to the limited scope of current literature surrounding infant feeding information seeking, it is necessary to look at information seeking behaviors of parents in related contexts. When parents seek more general information regarding parenting and child development, Bernhardt and Felter (2004) found that online sources provided a way for parents to search out novel information, new information, and social support. Bernhardt and Felter (2004) found that when parents searched for specific information regarding the health or well-being of their child, they often searched for information sources they were able to trust, such as those published by pediatricians or those that “converged” or agreed with information provided to them by their own family doctor.

When searching for online sources that provided parenting support, sources written by other parents were highly utilized (Bernhardt & Felter, 2004). The information gathered from this study came from a small focus group that consisted of mothers from higher socioeconomic status and education levels. The sample also lacked racial and ethnic diversity, with the majority of respondents being white mothers living in the Southeast United States. This sample bias may explain the prevalence of knowledge regarding the perceived trustworthy sources. It is important to examine whether the same importance is put on the perceived trustworthiness of information in more diverse groups, such as those with lower incomes or from racially and ethnically diverse communities.

### **Demographic Differences in Health Information Seeking**

Research on demographic differences in health information seeking outside of the parenting context reveals there are important demographic differences that merit exploration in

the context of child feeding. Importantly, there are demographic differences in the overall likelihood of seeking health information. Certain groups, such as those at a lower socioeconomic status, or racial and ethnic minorities, such as Latino groups, are less likely to deliberately search for general health-related information (Rooks, Wiltshire, Elder, BeLue & Gary, 2011; Perez, Kravitz, Bell, Chan & Paterniti, 2016). This may be due to a social perception of increased discriminatory practices in the healthcare industry within these groups (Rooks et al., 2011). When individuals from disadvantaged groups do intentionally seek out health information, there is some evidence to suggest they have difficulty accurately using health information to understand disease prevention and treatment (Rooks, Wiltshire, Elder, BeLue & Gary, 2011; Bjarnadottir, Millery, Fleck & Bakken, 2016). This may be due to differing abilities of interpreting the health information correctly, resulting in the misuse of the treatment plan (e.g., overusing over-the-counter medications in place of prescribed medications; Rooks et al., 2011).

Previous research has also found that the search behavior of individuals also differs by demographic characteristics. Perez and colleagues (2016) found that rather than strategically looking for accurate information, individuals of lower socioeconomic status communities engaged in less organized, erratic searches. These observed differences in search behavior may be due to differences in the strategies individuals use to evaluate information, such as the preference for credible information or their ability to make sense of the information they find. Individuals of lower socioeconomic status tend to have fewer resources to evaluate and comprehend health information (Perez et al., 2016).

There is some evidence of demographic differences in the specific sources that individuals access for information. In contemporary times, digital content has become an increasingly popular source for health information (Moorhead et al., 2013). However, there is

still some concern regarding the “digital divide,” or the gap between those who have easy access to technology and those who do not (Brodie et al., 2000). Even after controlling for income, there is evidence that there may still be differences in access to online health information by race and ethnicity, with lower income Black individuals being less likely to have access than lower income White individuals (Brodie et al., 2000). For benefits from the increased dissemination of health information via internet sources to be equitable, all individuals must be able to access and understand that information. Research on demographic differences in parents’ preferences for information sources and the strategies they use to evaluate information is needed as technology continues to become increasingly integrated into daily life.

### **Previous Theories of Information Seeking Behaviors**

Future research on the association between demographic characteristics and information seeking among parents regarding the child feeding behavior should be informed by theory and previous research findings. One existing theoretical model, the Comprehensive Model of Health Information Seeking, proposes individuals are more or less likely to utilize different sources to acquire new information based on both personal antecedents (e.g., demographic characteristics) and information source characteristics (Johnson & Case, 2012). In the original model, the individual level factors included demographic characteristics, which are the trait-level characteristics of an individual such as race or education level. It also included salience (i.e., the importance of the information topic), direct experience (i.e., individual’s level of experience with a health topic), and belief (i.e., the perceived level of control over a health topic). At the information-level, the existing theory includes the source characteristics (i.e., the tone or intention of the course) and utility or perceived usefulness. These individual- and source-level

characteristics ultimately influence individual-level likelihood of pursuing health information from an information source (Johnson & Case, 2012).

One limitation of the Comprehensive Model of Health Information Seeking is that it does not fully account for individual-level differences in information preferences at the personal antecedent level. One previous research study on parents' information seeking that used the Comprehensive Model of Health Information Seeking found parents of children with life-threatening illnesses had access to and heavily used internet-based resources for health information (Knapp et al., 2010). However, the study found that certain minority groups, primarily Hispanic parents, and parents with lower education levels do not utilize internet sources as frequently as other groups even when controlling for Internet access (Knapp et al., 2010). This indicates there may be other individual-level factors that explain the likelihood to use internet-based sources for health information. One potential explanation for these differences was differences in trust between different groups.

### **Trust and Information Seeking Behaviors**

Trust may be one mechanism driving the association between demographic characteristics and health information seeking behavior (Bernhardt & Felter, 2004). Higher levels of trust in health information sources have been associated with higher levels of engagement and compliance with the health information (Boulware, Cooper & Ratner, 2003). African Americans and other minority groups tend to have lower levels of trust in health-related information sources, which may reflect historical institutional racial discrimination and prior negative healthcare experiences (Boulware et al., 2003). Education also influences the levels of trust people have in Internet-based sources, with individuals with a high school education or higher showing more trust in online resources (Heese et al., 2005). Individuals with more

education may have greater access to high-quality information sources and be more able to discern the quality of health information they encounter. Disparities in information access and processing regarding child feeding may be one mechanism that perpetuates health disparities in childhood obesity.

Determining the trustworthiness of a source is often a difficult task that involves critically evaluating different aspects of a source's credibility (Metzger & Flanagin, 2013). Trust is a dynamic concept that develops as individuals utilize the information source. Initial assessments of source credibility may develop into a trust and then reliance on the source (Shin, Lee & Hwang, 2017). Together, this research suggests that if parents increase their ability and motivation to accurately discern the information credibility, they may be more likely to demand and utilize evidence-based information. First, studies must establish a baseline regarding the importance parents place on credibility and different dimensions of trust when evaluating child feeding information. Research is also needed to determine whether perceived credibility and trust varies by demographic characteristics to inform whether future interventions need to take a tailored approach.

### **Cognitive Heuristics in Evaluating Trust**

Evaluations of trust are influenced by individual-level motivation and ability to determine information credibility (Metzger, 2007). Motivation to evaluate credibility is influenced by the searcher's interest in and perceived severity or urgency of the search topic, which can vary by search context. For example, parents searching for recipe ideas may be less motivated to evaluate information source credibility than parents searching for information about food allergies based on their interest and/or perceived importance of that search (Metzger, 2007).

Various aspects of literacy can impact someone's ability to evaluate information credibility, such as health literacy and e-literacy (Metzger, 2007). Health literacy refers to knowledge of specific health topics and/or ability to understand and apply information related to health behaviors (Berkman, Davis, & McCormack, 2010). E-literacy, often used interchangeably with 'digital literacy,' refers to comfort and skill when using different pieces of technology, especially when attempting to gather, organize, and utilize digital information (Bawden, 2008).

Although both health literacy and digital literacy are distinct constructs, there is some research to suggest they are highly correlated with broader demographic differences such as education and income (Neter & Branin, 2012; van der Heide et al., 2013). Therefore, it is important that future research identifies other potentially modifiable individual-level differences that explain information seeking behavior. Metzger and Flanagin (2013) outline numerous cognitive heuristics that individuals employ to evaluate the trustworthiness of sources. Some of the heuristics that frequently emerged during focus groups conducted in 2010 include the persuasive intent heuristic, which states that if individuals feel a source is biased they will immediately deem it not credible, and the endorsement heuristic, which states that people are likely to find a source credible regardless of other factors if other individuals find it to be credible. Two cognitive heuristics that are particularly relevant to the evaluation of information about child feeding are self-confirmation and authority (Metzger & Flanagin, 2013).

**Self-confirmation.** In describing the self-confirmation heuristic, Metzger and Flanagin (2013) hypothesize that individuals are more likely to trust sources when the information they obtain is consistent with their preexisting knowledge, beliefs or ideas (Metzger & Flanagin, 2013). This heuristic suggests individuals are also more likely to avoid or stop reading sources they find do not align with their existing attitudes about a topic, regardless of the accuracy of the

information provided (Metzger & Flanagin, 2013). There is robust theoretical and empirical support of this phenomenon when it is referred to as homophily (Rogers & Bhowmik, 1970; Wang et al., 2008). Consistent with the self-confirmation heuristics, recent empirical research found that individuals were more likely to trust information sources and use information that satisfied the expectations they had when they initially began searching for information (Shin, Lee & Hwang, 2017). It is crucial for future research to observe how the self-confirmation heuristic impacts interaction with both digital and in-person sources of infant feeding information.

**Authority.** According to Metzger & Flanagin (2013), the authority heuristic involves an assessment of the credibility and reputability of the source, particularly the author or entity that published the information. Sources may be evaluated as having authority if individuals recognize the author or perceive it as a primary or credible source (Metzger & Flanagin, 2013; Hilligoss & Rieh, 2008). Evaluations of authority can be difficult, particularly for online sources of information. With little regulation over what is published online, there are some inaccurate and outdated information sources that insidiously simulate reliable sources through mimicking website design and layout (Eastin, 2001; Metzger & Flanagin, 2013). Additionally, in both online and offline contexts, the original source of the exact information can be ambiguous or even unavailable, even if the channel through the information is received is known (Cromwell, 2002). For example, if an individual obtains information from a website, they may know the title of the website but may not know the exact author of the article(s) they read on that website. More research is needed to understand the roles of self-confirmation and authority when parents evaluate information about child feeding.

## **Cognitive Heuristics of Trust and the Comprehensive Model of Information Seeking**

### **Behavior**

Connecting the cognitive heuristics of trust and the Comprehensive Model of Information Seeking Behavior (Johnson & Meischke, 1993) may help to explain where, when, and how parents obtain information about child feeding. The self-confirmation and authority heuristics are individual-level antecedents that could help to explain the differences in information seeking behaviors between demographic groups, such as where individuals obtain information. Although parents can employ multiple heuristics when evaluating information, it is largely unknown what the relative importance of self-confirmation and authority are when evaluating child feeding information. Better understanding how pertinent these heuristics are to parents' child feeding information seeking behaviors may allow for interventions focused on developing better information seeking practices.

### **Current Study**

The purpose of the current study was to explore how individual-level characteristics were associated with parents' information seeking behavior related to child feeding topics. Because this was among the first studies to extend beyond demographic predictors of information seeking behavior in the context of child feeding, the following aims were all exploratory:

Aim 1: The first aim was to describe parents' information seeking context, meaning what topics they searched for, the frequency and timing of their search behavior, what sources they used during their most recent search, and their overall levels of trust and satisfaction in their most recent search.

Aim 2: The second aim was to explore parents' reported use of select cognitive heuristics of trust (self-confirmation and authority) when evaluating child feeding information in general.

Aim 3: The third aim was to explore associations between select demographic characteristics (race and ethnicity and education) and select cognitive heuristics of trust (self-confirmation and authority).

Aim 4: The fourth aim was to explore how select demographic characteristics (race and ethnicity and education) and select cognitive heuristics of trust (self-confirmation and authority) were associated with the sources parents used to obtain advice or information about child feeding during their most recent search.

## **Chapter 2**

### **Methods**

#### **Study Design**

This study used survey research methods to obtain self-reported measures of parents' individual-level characteristics and information seeking behaviors related to child feeding. First-time parents of children 24 months of age or younger were the focus of this research study because of the importance of this time period for the development of children's eating behaviors and childhood obesity prevention (Lumeng et al., 2015). Eligible participants completed a single online survey that contained fixed-choice and open-ended questions about their demographic characteristics and their information seeking behaviors related to child feeding. Survey measures were developed specifically for this research study based on existing literature on information seeking and child feeding behavior, as well as preliminary qualitative research completed by the research team.

Participants provided consent in the first question of the survey and could complete the survey at the time of their choosing on a smartphone, tablet, or laptop/desktop computer. The survey took approximately 25 minutes to complete and was administered in English. Participants who successfully completed the full survey received an incentive based on the agreed upon structure they had with the survey RN/SSI (e.g., a small cash award, points toward a larger incentive). This study was reviewed by the Pennsylvania State University Institutional Review Board and determined to be exempt (STUDY00008530).

**Participant recruitment.** Participants were recruited between February 6, 2018 and February 17, 2018 by an external sampling company, Research Now Survey Sampling International, LLC (RN/SSI). An external sampling company was selected to facilitate timely and cost-effective data collection among a diverse sample of parents across the United States. Other survey research studies conducted using RN/SSI on health-related information behavior have been published in peer-reviewed journals such as the *Journal of Medical Internet Research* (Witteman, Zikmund-Fisher, Waters, Gavaruzzi, & Fagerlin, 2011; Zikmund-Fisher, Dickson, & Witteman, 2011; Zikmund-Fisher et al., 2012), *Journal of Obesity* (Segar, Updegraff, Zikmund-Fisher, & Richardson, 2012), and *Appetite* (Doub, Small, Levin, LeVangie, & Brick, 2016).

**Eligibility criteria.** There were two primary eligibility criteria for this study. First, participants were required to be a parent whose oldest (or only) child was 24 months of age or younger. Secondly, parents had to clearly remember trying to obtain advice or information about child feeding topics at least once in the past 30 days from any source, including both in-person and digital sources. Preliminary qualitative work for this study found that most first time parents of children 24 months of age and younger could remember at least one information seeking occasion within the past 30 days, with most remembering multiple occasions. Inherent to the delivery of the survey, participants also had to have access to an Internet-enabled technological device to complete the survey and be able to read and write in English.

Both women and men were eligible to participate in this study. RN/SSI now targeted recruitment emails to promote a 75% to 25% split for women to men participants, an equal distribution of participants across children's age ranges relevant to their developmental stage (newborn to 5 months; 6 to 11 months; 12 to 17 months; and 18 to 24 months), and United States 2016 Census income quintiles (Less than \$25,000; \$25,000 to \$44,999; \$45,000 to \$74,999;

\$75,000 to \$119,000; Over \$125,000). RN/SSI recruited 247 total participants who met the eligibility criteria (224 women, 23 men). Full participant characteristics are described in the results section (see Table 1).

## **Measures**

**Demographic characteristics.** Participants reported their gender (woman or man), their current age in years, marital status, employment status, household income (Less than \$25,000; \$25,000 to \$44,999; \$45,000 to \$74,999; \$75,000 to \$119,000; Over \$125,000), household size, number of children, oldest child's age in months (newborn to 5 months; 6 to 11 months; 12 to 17 months; and 18 to 24 months) and birthdate (to calculate exact age in weeks), their relationship to their oldest child (biological or non-biological), whether there was a co-parent involved in their oldest child's care, and whether they participated in the Women, Infants, and Children Program (WIC) or Supplemental Nutrition Assistance Program (SNAP). Select demographic variables of key importance to the study are described in detail below.

**Race and ethnicity.** To assess race and ethnicity, participants answered the question, "What is your race/ethnicity?" (1 = American Indian, 2 = Asian, 3 = Black or African American, 4 = Hispanic, Latino, or Spanish, 5 = Middle Eastern or North African, 6 = Native Hawaiian or other Pacific Islander, 7 = White, 8 = Other, No response). This measure was based on the best practices proposed in the U.S. Census Bureau's (2017) analysis of race and ethnicity reporting (United States Census Bureau, 2017).

**Education.** To assess education, participants answered the question, "What is the highest level of education you have completed" (1 = Some High School/High School Diploma/GED, 2 = Some College, 3 = Associate's/Bachelor's Degree, 4 = Master's/Doctorate/Professional Degree).

**Health characteristics.** To assess parents' perceptions of their own current weight, participants answered the question, "How would you describe your weight at present?" (1 = Very underweight, 2 = Underweight, 3 = Normal weight, 4 = Overweight, 5 = Very overweight). To assess parents' perceptions of their child's current weight status, participants answered the question, "How do you feel about [First child's name]'s current weight?" (1 = Much too low, 2 = Low, 3 = Just right, 4 = High, 5 = Much too high). To assess parental concern about their child becoming overweight, participants answered the question, "How concerned are you about [First child's name] becoming overweight?" (1 = Not at all concerned, 7 = Very concerned). To assess parental dietary concerns regarding their child, participants answered the question, "Do you have any dietary feeding concerns about [First child's name], like food allergies or food sensitivities?" (1 = Yes, 2 = No).

**Information seeking context.** To assess how frequently parents sought advice of information about child feeding, participants answered the question "When did you most recently seek advice or information about (infant feeding topic) from any source" (1 = Today, 2 = Yesterday, 3 = Earlier this week, 4 = One week ago, 5 = Two weeks ago, 6 = Three weeks ago, and 7 = Four weeks ago). The broad motivation to seek information was also assessed through the question "Why were you trying to get advice or information about [topic of most recent infant feeding information search inserted from previous response]" (1 = I was curious, 2 = I had a concern, 3 = Other, please specify).

**Source utilization.** To assess how respondents were accessing sources, they were asked about their specific source utilization. First, respondents were asked what technology they utilized (1 = None, 2 = Phone, 3 = Tablet, 4 = Laptop or desktop computer). They were then provided with a checklist of different in-person and technology-based sources and were asked to

check any source they use. Source options provided were based off prior answers (i.e., if respondent reported participating in Women, Infants, and Children (WIC) program, WIC was provided as an option).

**Trust and satisfaction.** To assess trust, participants responded to the question “How much did you trust the advice or information you got about [search topic] from [source type]?” Trust was reported on a 7-point scale with 1 = Not at all and 7 = Completely. Participants completed this measure for up to 2 of the sources they utilized during their most recent search for child feeding information. If more than 2 sources were utilized, the 2 sources were randomly selected.

To assess overall satisfaction with the advice or information obtained during their most recent search regarding child feeding, participants responded to the question, “Overall, how satisfied were you with the advice or information you got about [search topic] [time of most recent search] considering all of the sources you tried? Satisfaction was rated on a 7-point scale with 1 = Not at all to 7 = Completely satisfied.

**Cognitive heuristics of trust: Self-confirmation and Authority.** Study specific measures of self-confirmation and authority were inspired by the review of research regarding information seeking behaviors and biases (Metzger & Flanagin, 2013; Shin et al., 2017) and preliminary qualitative pilot research for the study.

**Self-confirmation.** To measure parents’ general use of the self-confirmation cognitive heuristic of trust when seeking advice or information about child feeding topics, participants responded to the prompt: “In general, when you are trying to get advice or information about feeding [First born child’s name] how often do you...1) Actively seek out information that is supportive of your beliefs (knowledge and values as a parent; 2) Actively avoid information that

is not supportive of your beliefs; 3) Stop reading or listening to information that is not supportive of your beliefs.” All items were measured on a 7-point scale (1 = Never, 7 = Always).

The Cronbach’s alpha measure of internal consistency for the above three items combined was below an acceptable value ( $\alpha = .61$ ). When item 1 was removed (actively seek), item 2 (avoid) and item 3 (disengage) combined had acceptable reliability ( $\alpha = .71$ ). Thus, item 1 was included in the analyses as a single-item measure to assess parents’ active information seeking behavior for information that supports their beliefs: Self-confirmation (actively seek). Items 2 and 3 were averaged to create a scale that measured parents’ tendency to avoid and disengage with information that does not support their beliefs: Self-confirmation (avoid/disengage). Higher scores on self-confirmation (actively seek) and self-confirmation (avoid/disengage) measures indicated greater endorsement of the self-confirmation heuristic.

Self-confirmation was also measured through a rank-order assessment. Participants responded to the prompt: “In general, how important are the following to you when getting advice or information about feeding [First born child’s name]? Rank each by dragging and dropping: 1 indicates the MOST important; 5 indicates the LEAST important.” Five qualities of information were randomly presented to all participants and included A) Supportive of my beliefs (knowledge and values as a parent) B) Trusted by other parents; C) Supported by someone’s personal parenting experience D) Supported by someone’s professional expertise of education; and E) Supported by scientific research. The value participants assigned to the item “Supportive of my beliefs (knowledge and values as a parent)” was used to determine the measure: Self-confirmation (top rank).

***Authority.*** To measure parents’ general use of the authority cognitive heuristic of trust when seeking advice or information about child feeding topics, participants responded to the

prompt: “In general, when you are trying to get advice or information about feeding [First born child’s name] how often do you...1) Actively seek out information that is supported by research; 2) Actively avoid information that is not supported by research; 3) Stop reading or listening to information if it is not supported by scientific research.” All items were measured on a 7-point scale (1 = Never, 7 = Always).

The Cronbach’s alpha measure of internal consistency for all three items combined was below an acceptable value ( $\alpha = .57$ ). When item 1 was removed (actively seek), item 2 (avoid) and item 3 (disengage) combined had acceptable reliability ( $\alpha = .72$ ). Thus, item 1 was included in the analyses as a single-item measure to assess parents’ active information seeking behavior for information that is supported by scientific research: Authority (actively seek). Items 2 and 3 were averaged to create a scale that measured parents’ tendency to avoid and disengage with information that is not supported by scientific research: Authority (avoid/disengage). Higher scores on authority (actively seek) and authority (avoid/disengage) measures indicated greater endorsement of the authority heuristic.

Authority was also measured through a rank-ordered assessment (prompt described above). The value participants assigned to the items “Supported by scientific research” and “Supported by someone’s professional expertise or education” were used to determine the measures: Science (top rank) and Professional expertise (top rank) respectively.

**Post-hoc exploratory personal antecedents.** After running the main analyses for the study, additional exploratory analyses were conducted regarding the search context. Specifically, parents’ interest in, urgency, and prior knowledge of the search topic were assessed using single item measures rated on 7-point Likert scales, with higher scores indicating greater endorsement of the construct. To assess interest, participants responded to the question, “How personally

interested were you in the topic before getting advice or information? (1 = Not at all interested, 7 = Very interested).” To assess urgency, participants responded to the question, “How urgent was your need for advice or information? (1 = Not urgent, 7 = Very urgent).” To assess prior knowledge of the search topic, participants responded to the question, “How much did you know about the topic before getting advice or information? (1 = Nothing, 7 = Everything).”

### **Data Analytic Strategy**

**Descriptive analyses (Participant characteristics; Aim 1).** First, descriptive statistics (i.e. frequency, range, mean, standard deviation, skewness and/or kurtosis) were calculated for all study variables to assess the distributions. Descriptive statistics were used to report participant demographic and health characteristics. Descriptive statistics provided the information needed to address Aim 1 - Describe parents’ information seeking context, meaning what topics they searched for, the frequency and timing of their search behavior, what sources they used during their most recent search, and overall levels of trust and satisfaction in their most recent search.

Based on existing literature on demographic characteristics and trust in health information, the two primary demographic variables of interest in the current study were parents’ 1) race and ethnicity and 2) education. One-way analyses of variance (ANOVA)’s, independent samples *t*-tests, and chi-square tests of independence were conducted. To explore associations between race and ethnicity and education and select demographic and health characteristics that are commonly examined in research on parents’ information seeking behavior and child nutrition: Parent age; household income; household size; number of children; child gender; child age; WIC and SNAP participation; parent current weight; child current weight; and parent dietary concern for their child.

To determine whether women and men could be combined in the inferential analyses, an independent samples *t*-test was conducted to test for gender differences in the primary study variables: source utilization, trust, satisfaction, self-confirmation (all measures), and authority (all measures).

**Aim 2.** To address Aim 2 - Explore parents' reported use of select cognitive heuristics of trust (self-confirmation and authority) when evaluating child feeding information in general – descriptive analyses (described above), Pearson correlations, and one-way ANOVA's were conducted as appropriate to assess associations between all measures of self-confirmation and authority, trust, and satisfaction.

**Aim 3.** To address Aim 3 - Explore associations between select demographic characteristics (race and ethnicity and education) and select cognitive heuristics of trust (self-confirmation and authority) - one-way ANOVA's were used to test for differences in all self-confirmation and authority measures by race and ethnicity and education.

**Aim 4.** The objective of Aim 4 was to explore how select demographic characteristics (race and ethnicity and education) and select cognitive heuristics of trust (self-confirmation and authority) were associated with the sources parents used to obtain advice or information about child feeding during their most recent search. To address Aim 4, chi-square tests of independence were conducted to explore associations between race and ethnicity, education, and the number and types of sources participants used to obtain advice or information during their most recent search. Correlations, chi-square analyses, and *t*-tests were also conducted as appropriate to explore differences in self-confirmation and authority (all measures) and the number and types of sources participants used to obtain advice or information during their most recent search.

**Post-hoc exploratory analyses.** After completing the main study analyses for Aims 1 through 4, additional post-hoc exploratory analyses were conducted. Specifically, Pearson correlations and one-way ANOVA's were conducted as appropriate to explore differences in trust, satisfaction, self-confirmation, and authority (all measures) by participants' perceived urgency, interest in, and prior knowledge of their most recent search topic.

**Statistical significance.** For all inferential statistics, results with  $p$ -values  $< .05$  were considered significant. Main results with  $p$ -values  $< .10$  were noted as trends that may merit additional exploration in future research. All analyses were conducted using IBM SPSS (Version 24).

## Chapter 3

### Results

#### Participant Characteristics

Table 1 contains descriptive statistics on participant demographic and health characteristics. Of the 247 total participants, the majority were women (91%) and identified their race and ethnicity as white (73%). Parents were an average age of 28.2 years ( $SD = 5.62$ ), and their oldest child was an average age of 55.4 weeks (approximately 13 months;  $SD = 30.21$ ). Child gender was 52% male. Most participants (73%) reported an annual household income between \$25,000 and \$119,999. 21% of the respondents reported completing some high school, high school or a GED program, 25% completed some college, 40% completed either an Associate's or Bachelor's degree, and 14% completed a post-graduate degree. The majority of the respondents were biological parents to the child ( $n = 240$ , 97%) and had a co-parent who shares parenting responsibilities ( $n = 224$ , 91%). The majority of parents (83%) did not have specific dietary concerns about their child. Those that did have concerns reported dietary concerns such as food allergies or sensitivities (e.g., lactose, soy, nuts), caloric needs, or vegan diets.

**Table 1.** Descriptive statistics of variables in analytic sample

	<i>M (SD)</i>	<i>n (%)</i>	Range of values
Parent gender			
Male		23 (9%)	
Female		224 (91%)	
Parental age (years)	28.2 (5.62)	247	18-43
Race and ethnicity			

White alone	180 (73%)	
Black or African American alone	23 (9%)	
Hispanic, Latino or Spanish	17 (7%)	
Asian	15 (6%)	
Other	12 (5%)	
<hr/>		
Marital status		
Married	157 (64%)	
Single, living with partner	63 (26%)	
Single, divorced/separated	4 (< 1%)	
Prefer not to answer	23 (9%)	
<hr/>		
Highest level of education		
Less than high school/High school diploma/GED	52 (21%)	
Some college	62 (25%)	
Associate's/Bachelor's degree	99 (40%)	
Graduate Degree	34 (14%)	
<hr/>		
Current employment status		
Employed, full-time	95 (39%)	
Employed, part-time	29 (12%)	
Stay at home parent	102 (41%)	
Student	7 (4%)	
Unemployed, looking for work	12 (5%)	
Other	2 (1%)	
<hr/>		
Household Income		
Under \$24,999	45 (18%)	
\$25,000-\$44,999	70 (28%)	
\$45,000-\$74,999	58 (24%)	
\$75,000-\$119,999	53 (22%)	
Over \$120,000	21 (9%)	
<hr/>		
Number of children		1-2
One Child	229 (93%)	
Two Children	18 (7%)	
<hr/>		
Household size	3.26 (0.88)	1-7
<hr/>		
Child age (weeks)	55.4 (30.21)	0-117 (weeks)
Newborn to 5 months	56 (23%)	
6 to 11 months	52 (21%)	
12 to 17 months	70 (23%)	
18 to 24 months	69 (28%)	
<hr/>		

Biological parent (Yes/No)	
Yes, biological parent	240 (97%)
No, not a biological parent	7 (3%)
Is there a co-parent who shares parenting responsibilities	
Yes, co-parent present	224 (91%)
No, co-parent not present	23 (9.3%)
Child gender	
Boy	129 (52%)
Girl	118 (48%)
Have an EBT card through SNAP	
Yes	41 (17%)
Maybe	206 (83%)
Currently participating in WIC	
Yes	61 (25%)
No	186 (75%)

### Associations Among Select Demographic and Health Characteristics

Results of the one-way ANOVA testing for demographic and health characteristic differences by parents' race and ethnicity revealed significant between group differences for household size [ $(F(4,242) = 5.35, p < .001)$ ]. A post-hoc Bonferroni test revealed that participants who identified as Black or African American had significantly smaller household sizes ( $M = 2.83, SD = 0.72$ ) compared to participants who identified as Asian ( $M = 3.67, SD = 1.18, p = .03$ ) or Hispanic ( $M = 3.94, SD = 1.68, p = .001$ ). Participants who identified as Hispanic had significantly larger household sizes compared to households where participants identified as White ( $M = 3.24, SD = 0.74, p = .01$ ) or other race and ethnicity ( $M = 3.26, SD = 0.88, p = .04$ ). There were no significant associations between race and ethnicity and parent education, parent gender, parent age, household income, number of children, child gender, child age, WIC participation, SNAP participation, parent current weight, child current weight, or dietary concern.

Results of the one-way ANOVA testing for demographic and health characteristic differences by parents' education revealed significant between group differences for parent age [ $F(3,243) = 13.39, p = .001$ ], household income [ $F(3,243) = 34.75, p = .001$ ], household size [ $F(3,243) = 8.06, p = .001$ ], WIC participation [ $F(3,243) = 5.29, p = .002$ ], and SNAP participation [ $F(3,243) = 3.86, p = .01$ ]. Broadly, post-hoc Bonferroni tests revealed that participants who had less than a high school diploma, a high school diploma, or GED ( $M = 24.81, SD = 6.48$ ) or completed some college ( $M = 27.15, SD = 5.40$ ) were younger than participants who had earned an Associates or Bachelor's degree ( $M = 29.71, SD = 4.66$ ) or graduate degree ( $M = 30.68, SD = 4.33; p < .05$  for all post-hoc comparisons). Each additional level of educational attainment was associated with higher income ( $p < .05$  for all between group comparisons).

Compared to participants who had earned an Associates degree or higher ( $p < .05$  for select between group comparisons, participants who had completed some college or less had larger household sizes and were more likely to participate in WIC or SNAP; full results available upon request). There were no significant associations between education and parent race and ethnicity, parent gender, number of children, parent current weight, child current weight, or dietary concern. There were no significant differences by gender with any of the primary study variables. Therefore, women and men were combined into a single group ("parents") for the inferential analyses.

### **Search Context: Child Feeding Topics, Timing, and Reason for Search**

Preliminary analyses showed that in the past 30 days, many parents sought advice or information about child feeding topics multiple times per week ( $n = 95, 39\%$ ), with only 10% of parents reporting they sought advice of information once in the past 30 days ( $n = 25$ ). 15% of

parents reported seeking advice or information as frequently as multiple times each day in the past 30 days ( $n = 37$ ). Parents searched for a wide range of topics over the past 30 days. The five most common were recipe or food preparation ideas ( $n = 125$ , 51%), child nutritional needs ( $n = 103$ , 42%), weight or growth ( $n = 98$ , 40%), breastfeeding ( $n = 86$ , 35%), and child behavior at meals ( $n = 84$ , 34%).

The majority of parents reported that their most recent search for advice or information about child feeding occurred less than one week ago ( $n = 152$ , 62%). 16% of the parents conducted their most recent search one week ago ( $n = 40$ ), 12% of the parents conducted their search two weeks ago ( $n = 29$ ), and 11% of the parents conducted their search more than two weeks ago ( $n = 26$ ).

The primary reason most parents reported for engaging in the search was curiosity ( $n = 151$ , 61%), followed by having a specific concern ( $n = 83$ , 34%).

**Table 2.** All reported recent search topics in order of commonality

	<i>n (%)</i>
Recipe or food preparation ideas	125 (51%)
Child nutritional needs	103 (42%)
Weight or growth	98 (40%)
Breastfeeding	86 (35%)
Child behavior at meals	85 (34%)
Picky eating	75 (30%)
Introducing solid foods	70 (28%)
Pumping breast milk	67(27%)
Food or beverage products	65 (26%)
Formula feeding	64 (26%)
Bottle feeding	63 (26%)
Family meals	62 (25%)

Food allergies of sensitivities	59 (24%)
Weaning from milk	48 (19%)
Adding cereal to the bottle	39 (16%)
Baby-led weaning	33 (13%)
Special occasion food or drink ideas	22 (9%)
Other (i.e., time of feeding, constipation, etc.)	11 (5%)

### Search Context: Source Utilization, Trust, and Satisfaction

The majority of parents used technology when conducting their most recent search for advice or information about child feeding ( $n = 228$ , 92%). Phones were the most common technology ( $n = 195$ , 79%). Some parents also used laptop or desktop computers ( $n = 71$ , 29%) and/or tablets (e.g., iPad;  $n = 29$ , 12%).

Parents used an average of 3.72 types of sources during their most recent search ( $SD = 2.15$ ). The median number of source types was 3 and the mode was 1 source type. For the following analyses, parents who used 6 or more source types were combined ( $n = 43$ , 17%).

Commonly used sources during parents' most recent search only included co-parents ( $n = 61$ , 24.7%), family relatives ( $n = 108$ , 44%), friends ( $n = 74$ , 30%), pediatricians ( $n = 99$ , 40%), search engines (i.e., Google, Siri, Alexa) ( $N = 120$ , 49%), websites (i.e., Baby Center, WebMD) ( $n = 124$ , 50%), blogs (i.e., parenting or food blogs) ( $n = 61$ , 25%), and social media ( $n = 61$ , 25%). Google was the most common search engine ( $n = 119$ , 48%), followed by Bing ( $n = 6$ , 2%) and Yahoo ( $n = 7$ , 3%).

Among parents who reported using search engines, 30% only looked at the featured result displayed on the results page ( $n = 36$ ) whereas 70% followed multiple links to the websites listed on the results page ( $n = 84$ ). The most commonly used social media platforms included Facebook

( $n = 44$ , 18%), Pinterest, ( $n = 30$ , 12%), and Instagram ( $n = 8$ , 3%). For future analyses, only sources utilized by more than 20% of the sample were of the sample were included.

**Table 3.** All reported search sources during parents' most recent search

	<i>N (%)</i>
Websites (i.e., WebMD, Baby Center)	124 (50%)
Search engines (i.e., Google, Siri)	120 (49%)
Family relative	108 (44%)
Pediatrician	99 (40%)
Friend	74 (30%)
Co-parent	61 (25%)
Social media	61 (25%)
Blogs	61 (25%)
Books	31 (13%)
Women, infants, and children (WIC)	24 (10%)
Hospital/Other health care professional	20 (8%)
Online forum	20 (8%)
Apps	14 (6%)
Childcare provider	11 (5%)
Co-worker	10 (4%)
Handout from health care setting	6 (2%)
Other source	1 (< 1%)

On average, parents reported high levels of trust in up to two of the sources they utilized during their most recent search ( $M = 5.85$ ,  $SD = 1.0$ ) and high levels of overall satisfaction with the advice or information they obtained considering all sources they utilized during that most recent search ( $M = 5.94$ ,  $SD = 1.0$ )

### **Cognitive Heuristics of Trust: Self-Confirmation and Authority**

Descriptive statistics for all measures of self-confirmation and authority are reported in Table 4. Parents reported a high frequency of seeking advice or information that is supportive of their beliefs ( $M = 5.43$ ,  $SD = 1.32$ ) and supported by scientific research ( $M = 5.72$ ,  $SD = 1.28$ ).

They reported a lower frequency of avoiding or disengaging with information that was not supportive of their beliefs ( $M = 8.36$ ,  $SD = 1.51$ ), or supported by scientific research ( $M = 3.94$ ,  $SD = 1.53$ ).

When parents were asked to rank the qualities of information that were most important to them when seeking advice or information about child feeding, supported by scientific research was ranked as most important by 30% of parents ( $n = 73$ ) and least important by 16% of parents ( $n = 39$ ). Self-confirmation was ranked as most important by 23% of parents ( $n = 57$ ) and least important by 22% of parents ( $n = 55$ ). Supported by someone's professional expertise or education was ranked most important by 23% of parents ( $n = 56$ ) and least important by 11% of parents ( $n = 27$ ). In later analyses, the rank-ordered assessment was dichotomized such that a score of 1 was assigned if participants endorsed self-confirmation, science, or professional expertise as most important; a score of 0 was assigned if self-confirmation, science, or professional expertise were not ranked as most important: self-confirmation (top rank), science (top rank), or professional expertise (top rank).

**Table 4.** Descriptive statistics for self-confirmation and authority measures

	<i>M (SD)</i>	<i>N or n(%)</i>	Range of values
Self-confirmation (actively seek)	5.43 (1.32)	247	1-7
Self-confirmation (avoid/disengage)	3.86 (1.51)	247	1-7
Self-confirmation (rank order)	2.97 (1.47)	247	1-5
Self-confirmation (top rank)	-	57 (23%)	0-1
Authority (actively seek)	5.72 (1.28)	247	1-7
Authority (avoid/disengage)	3.94 (1.53)	247	1-7
Science (rank order)	2.66 (1.45)	247	1-5
Science (top rank)	-	73 (30%)	0-1
Professional expertise (rank order)	2.66 (1.30)	247	1-5
Professional expertise (top rank)	-	56 (23%)	0-1

Results of the Pearson correlations among all measures of self-confirmation and authority are shown in Table 5. There were small, positive associations among items within the same construct (i.e., between actively seek out information supportive of beliefs, avoid or stop reading information not supportive of beliefs, and self-confirmation (top rank). The self-confirmation and authority items were negatively correlated. Due to the modest associations among the actively seek, avoid/disengage, and ranking measures for both self-confirmation and authority, each of these three types of measurement were tested separately in later analyses.

**Table 5.** Correlations between measures of self-confirmation and authority

	1	2	3	4	5	6
1. Actively seek out information supportive of your beliefs	1					
2. Avoid or stop reading info that does not support beliefs	<b>.198**</b>	1				
3. Self-confirmation (top rank)	.119	<b>.200**</b>	1			
4. Actively seek out information supported by scientific research	<b>.426**</b>	-.034	<b>-.176**</b>	1		
5. Avoid or stop reading info that is not evidence based	<b>.200**</b>	<b>.469**</b>	-.010	<b>.166**</b>	1	
6. Professional expertise or education (top rank)	-.031	-.105	<b>-.297**</b>	-.004	-.093	1
7. Science-based (top rank)	.023	- <b>.153**</b>	<b>-.355**</b>	<b>.314**</b>	.096	<b>-.351**</b>

Note. \*  $p < .05$ , \*\*  $p < .01$

### **Self-Confirmation, Authority, Trust, and Satisfaction**

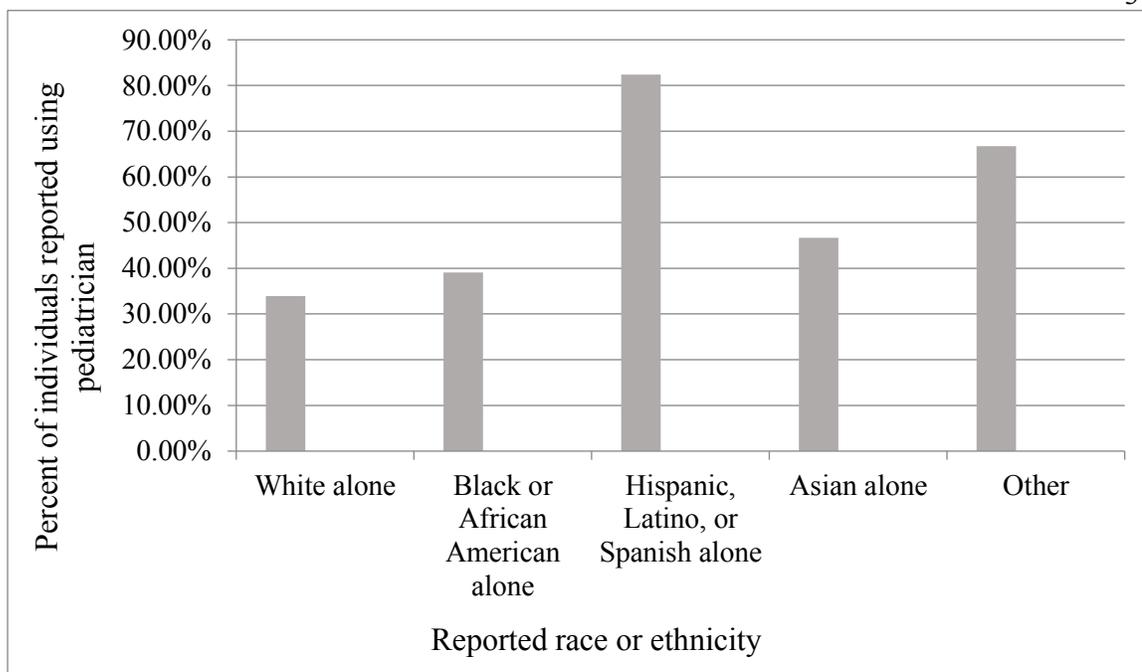
Trust was positively correlated with self-confirmation (actively seek;  $r = .19, p = .003$ ) and authority (actively seek;  $r = .15, p = .02$ ), but not with the avoid/disengage or top rank measures of self-confirmation or authority. Satisfaction was also positively correlated with self-confirmation (actively seek;  $r = .20, p = .001$ ) and authority (actively seek;  $r = .19, p = .003$ ), but not with the avoid/disengage or top rank measures of self-confirmation or authority

### **Race and Ethnicity, Education, Self-Confirmation, and Authority**

There were no significant associations between parents' race and ethnicity and any of the measures of self-confirmation or authority. Similarly, there were no significant associations between parents' level of education and any of the measures of self-confirmation or authority.

### **Race and Ethnicity, Source Utilization, Trust, and Satisfaction**

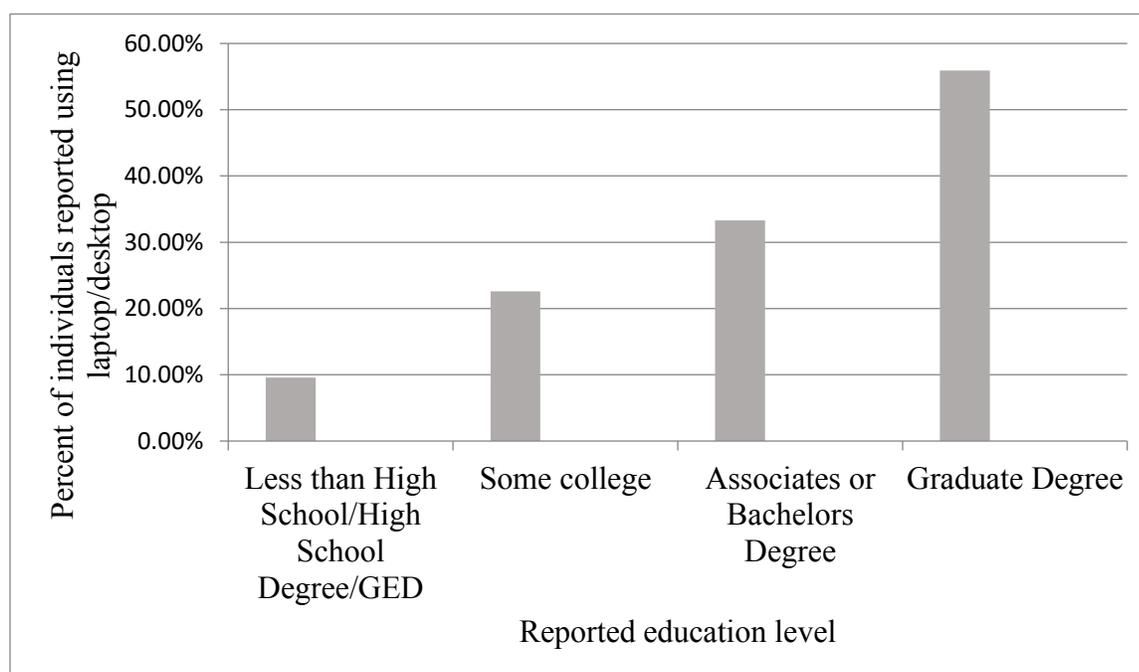
Chi-square analyses revealed a significant association between race and ethnicity for use of pediatricians as an information source,  $\chi^2, (4, N = 247) = 19.33, p = .001$ . As shown in Figure 1, parents who identified as Hispanic, Latino, or Spanish alone were more likely to obtain advice or information from pediatricians ( $n = 14, 83\%$ ) compared to parents who identified with other races and ethnicities. There were no significant associations between race and ethnicity and trust or overall satisfaction.



**Figure 1.** Relationship between race and ethnicity and pediatrician source use

### **Education, Source Utilization, Trust, and Satisfaction**

Chi-square analyses revealed a significant association between education and the use of a computer (laptop or desktop) during parents' most recent information seeking occasion,  $\chi^2(3, N = 247) = 23.68, p < .001$ . As shown in Figure 2, parents' use of a computer during their most recent search was more likely as education increased.



**Figure 2.** Relationship between parent education and laptop or desktop use

There was a trend toward significance with education and social media use, such that parents who had completed some college or who had earned an Associates or Bachelor's degree were more likely to use social media during their search than parents who had a high school diploma / GED or less or a graduate degree,  $X^2, (3, N = 247) = 6.84, p = .08$ . There were no significant associations between education and trust or overall satisfaction.

### **Self-Confirmation and Source Utilization**

The number of sources parents used during their most recent search was positively correlated with both self-confirmation (actively seek;  $r = .17, p = .007$ ) and authority (actively seek;  $r = .21, p = .001$ ). Results of a chi-square analyses showed a significant association between self-confirmation (top rank) and the use of any technology during the most recent search occasion,  $X^2, (1, N = 247) = 4.20, p = .04$ . Parents who ranked that the advice or information they obtain about child feeding is supportive of their beliefs as most important were less likely to use

technology during their most recent search ( $n = 49, 86\%$ ) compared to parents who did not rank supportive of their beliefs as most important ( $n = 179, 94\%$ ).

There was a significant association between the self-confirmation (actively seek) measure and obtaining advice or information from a co-parent or search engine during the most recent search; Parents who obtained advice or information from a co-parent during their most recent search had significant higher reports of self-confirmation (actively-seek;  $M = 5.87, SD = 0.92$ ) compared to parents who did not use their co-parent ( $M = 5.29, SD = 1.40, t(245) = -3.03, p = .003$ ). T-test results revealed that parents who utilized search engines during their most recent search had higher reports of self-confirmation (actively seek;  $M = 5.67, SD = 1.22$ ) compared to parents who did not use a search engine ( $M = 5.21, SD = 1.37, t(245) = -2.75, p = .01$ ).

There were no significant associations between source use and the self-confirmation (avoid/stop scale) measure.

### **Authority and Source Utilization**

There was a significant association between professional expertise (top rank) and the use of a pediatrician during the most recent search occasion,  $X^2, (1, 247) = 8.78, p = .003$ . Parents who reported it was most important to them that information about feeding is supported by someone's professional expertise or education were more likely to use a pediatrician during their most recent search ( $n = 32, 57\%$ ) compared to parents that did not rank professional expertise as most important ( $n = 76, 35\%$ ).

There was a trend toward significance between science (top rank) and the use of family members as a source of information,  $X^2, (1, 247) = 2.78, p = .09$ . Parents who reported that it was most important to them that advice or information about child feeding was supported by

scientific research were less likely to use family members as a source ( $n = 26, 36\%$ ) compared to parents who did not rank scientific research as most important ( $n = 82, 47\%$ ).

There was a significant association between authority (actively seek) and using technology during the most recent search; Parents who used any technology during their most recent search had higher reports of authority (actively seek) measure ( $M = 5.78, SD = 1.27$ ) compared to parents that did not use technology ( $M = 5.11, SD = 1.24; t(245) = 2.22, p = .03$ ). Parents who used laptop computers, specifically, had higher reports on the authority (actively seek) measure ( $M = 5.99, SD = 1.05$ ) compared to parents that did not use laptop computers ( $M = 5.62, SD = 1.35; t(245) = -2.06, p = .04$ ).

Parents who used pediatricians during their most recent search had higher reports on the authority (actively seek) measure ( $M = 5.97, SD = 1.12$ ) compared to parents who did not use a pediatrician ( $M = 5.56, SD = 1.35; t(245) = -2.49, p = .01$ ).

### **Post-Hoc Exploratory Analyses**

Results of the previous analyses revealed that parents' trust in up to two information sources they used during their most recent search and their overall search satisfaction were not significantly associated with race and ethnicity or education. We also failed to find support for significant associations between race and ethnicity or education and the cognitive trust heuristics: self-confirmation and authority. However, source utilization was differentially predicted by race and ethnicity, education, cognitive trust heuristics: self-confirmation and authority. To further explore personal antecedents that may motivate information seeking behavior, we conducted post-hoc analyses to explore associations among race and ethnicity, education, self-confirmation, authority, urgency, interest, and prior knowledge of the search topic.

Results suggested that parents who felt their most recent search was more urgent had higher reports of self-confirmation (actively seek;  $r = .14, p = .03$ ), authority (actively seek;  $r = .18, p = .01$ ), and authority (avoid disengage;  $r = .18, p = .00$ ). Parents who were personally interested in the search topic prior to conducting their most recent search tended to use more sources ( $r = .28, p = .00$ ) and had higher reports of overall satisfaction with the information obtained in their most recent search ( $r = .26, p = .00$ ). Parents who had higher levels of prior knowledge about the search topic were more likely to utilize two or more sources ( $r = .18, p = .00$ ), actively seek out information that is supportive of their beliefs ( $r = .14, p = .03$ ), avoid/stop reading sources that do not support beliefs ( $r = .13, p = .04$ ), and less likely to rank science-based as most important ( $r = -.13, p = .04$ ). Lastly, there was a difference in search urgency by race and ethnicity, with Asians reporting higher levels of urgency [ $F(4,242) = 2.93, p = .021$ ].

## **Chapter 4**

### **Discussion**

This study aimed to provide insight into interactions between different demographic characteristics, select cognitive heuristics of trust, the general information seeking context and the sources utilized to better understand the information seeking behavior of parents regarding child feeding. The first aim of the study was to describe parents' information seeking context, including what they searched for, the frequency and timing of the search, what sources they utilized during the most recent search, and the overall level of satisfaction in their most recent search. The second aim of the study was to explore parents' use of the two select heuristics of trust, self-confirmation and authority, when evaluating child feeding information in general. The third aim was to explore associations between select demographic characteristics, self-confirmation and authority, when evaluating child feeding information in general. The fourth aim of the study was to explore how these select demographic characteristics and the select cognitive heuristics of trust were associated with the sources parents used to obtain advice or information about child feeding in their most recent search.

#### **Aim 1: Parent's Information Seeking Context**

While it was found that parents searched for a wide variety of topics predominantly out of curiosity, the majority of the parents surveyed engaged in information searches multiple times per week. The finding that parents are engaging in frequent information searches is supported by prior research that shows how increased amounts of technology available increases access to information (Cline & Haynes, 2001). It was also found that the majority of parents surveyed utilized technology, especially phones, which corroborates prior research (Brodie et al., 2000).

However, it was also found that parents utilize a variety of non-technology based sources, such as family relatives or co-parents.

Surprisingly, a large number of parents also reported using a pediatrician as a source for information, but did not report using other health care professionals. This differs from what was found in prior research regarding people's use of health professional sources (Ottolini et al., 2001). Although this study was in the general health information seeking context rather than child feeding, Bernhardt and Felter (2004) found that when individuals use a physician as a source, they are likely to use other sources published from professionals or general physicians (Bernhardt & Felter, 2004). It may be explained by parents in the current study accessing information from other health professionals through digital or physical sources (e.g., websites, blogs); Parents may have more easily recalled the channel rather than the primary source during their initial report of what sources they used. Future research should examine data that reveals the primary source of information when parents reported using a channel of information rather than the primary source in the initial question.

Overall, parents reported high levels of satisfaction with the advice or information they obtained from all sources. This aligns with existing literature surrounding general information searches. Parents also reported high levels of trust. With the increasing amount of information that parents can access through technology, they are able to continue information seeking behaviors until they find what satisfies their own criteria for trust and overall satisfaction (Manning, Raghavan & Shutze, 2008; Eysenback & Kohler, 2002).

## **Aim 2: Parents' Use of Self-Confirmation and Authority**

Parents were more willing to report higher levels of seeking advice or information that is supportive of their beliefs or supported by scientific evidence than they were to report avoiding

or disengaging with information not supportive of their beliefs or supported by scientific evidence. This may be due to the social desirability bias; individuals may not want to admit that they would stop engaging with a possibly helpful information source, as it seems less socially acceptable than actively seeking out certain sources (Grimm, 2010).

Overall, there were several positive correlations between items measuring the same cognitive heuristic of trust (i.e., authority item with authority item or self-confirmation item with self-confirmation item) while there were several negative correlations between the two different cognitive heuristics (i.e., authority item with self-confirmation item). This was particularly true when participants were forced to rank their preferences for information. It may be that individuals who utilize one heuristic when assessing information are not more likely to utilize a second heuristic (Metzger, 2007). The preference for one heuristic over another is also supported by the rank data that shows how many individuals who rank one heuristic as most important rank the second heuristic as one of the less important values. Future studies should explore the relative importance of other cognitive heuristics of trust (e.g., persuasive intent of information source; Metzger & Flanagin, 2013) in the infant feeding information search context.

### **Aim 3: Associations Between Demographic Characteristics (Race/Ethnicity and Education) with Select Cognitive Heuristics of Trust (Self-confirmation and Authority)**

In this study, race and ethnicity and education were not associated with the select cognitive heuristics. Although the current study was exploratory in nature, prior research on information seeking behavior outside of the child feeding context had found that there were demographic differences between how individuals engage with sources (Khoo et al., 2008). Especially when observing different racial or ethnic groups, one of the demographic characteristics included in this study, it was found that certain racial groups were less likely to

seek out health information and when they did they were less able to utilize strategies to find and use accurate, helpful information (Rooks et al., 2011; Perez et al., 2016).

There are several potential reasons that these select demographic characteristics were not found to be associated with the cognitive heuristics of trust. One may be that education does not necessarily capture the level of information literacy that may be needed to utilize the heuristics of trust to obtain accurate information about child feeding (Greyson, 2017). Another may be that the two selected demographic characteristics may not have as significant an influence as others, such as income (Brodie et al., 2000).

#### **Aim 4: Association Between Demographic Characteristics and Cognitive Heuristics of Trust with Sources Used in Most Recent Search**

Hispanic, Latino, or Spanish parents were more likely to utilize pediatricians as a source than those of other race or ethnicities. This confirms prior research that found Hispanic, Latino, or Spanish individuals were more likely to utilize doctors than other racial or ethnic groups when searching for general health information (Knapp et al., 2010). One explanation for this finding is the limited availability of online information that is available to parents in Spanish, since the majority of online health information is provided in English only (West & Miller, 2006). While there are still language barrier problems for in-person sources (i.e., pediatricians), there are a growing number of interventions for decreasing the impact of language barriers for health providers (Mendelsohn et al., 2001). These interventions have not yet become as common for online information sources.

No difference between race and ethnicity was observed with trust or overall satisfaction. The lack of differentiation for trust and overall satisfaction may again be because parents continue their information searches until they have found information they trust and are satisfied

with (Manning et al., 2008). This aligns with prior research on online information seeking that suggests individuals often report high levels of trust and satisfaction in their search regardless of the actual information found (Eysenback & Kohler, 2002).

Individuals that received higher levels of education were more likely to utilize laptop or computers than those with lower levels of education. These findings may suggest that the digital divide is still present with regard to the type of technology that is available for parents to use by education level. This finding also highlights the importance of mobile-friendly design for websites that aim to convey evidence-based information about child feeding and/or connect parents to resources that could support healthy child feeding behavior (e.g., WIC and SNAP eligibility and application information, schedules of parenting classes at health organizations).

There was also a U-shaped curve when observing education and social media use, with those with the lowest level of education and highest level of education being less likely to use social media as a source in their most recent information search. The results for education and social media use were surprising as prior research shows that general social media use is often equally distributed across education groups (Duggan & Brenner, 2013).

Parents who used more sources during their most recent search were more likely to utilize both of the trust heuristics than those who use fewer sources. This may be explained by the fact that seeking out a higher number of sources indicates a higher level of motivation to obtain accurate or useful information. Parents seeking this type of information may be willing to use different strategies to assure higher quality information, such as self-confirmation and authority heuristics (Metzger, 2007). This is further supported by our results that show that parents who were personally interested or parents who felt their search was urgent were more likely to utilize multiple sources.

Parents who used a co-parent as a source were more likely to utilize the self-confirmation heuristic. It may be that co-parents and couples often have shared beliefs (Hohmann-Mariott, 2006). Therefore, by using the co-parent as a source they are more likely to obtain information that is supportive of their beliefs (Hohmann-Mariott, 2006). Parents who reported using search engines were also more likely to utilize the self-confirmation heuristic. At first, these results were surprising as search engines provide individuals with information representing a wide variety of backgrounds and beliefs. However, when further observed, it was found that most parents who utilize search engines follow multiple links rather than only the featured results. One possible explanation may be that the parents are actively seeking results that confirm their beliefs rather than the single suggested search result (Eysenback & Kohler, 2002). Parents may also be using search engines as a starting point to narrow and/or direct their search given the vast number of resources available on the Internet.

Parents who are more likely to use the authority heuristic (i.e., placed a higher importance on professional expertise) are also more likely to use a pediatrician as a source, which is logical as pediatricians have high levels of experience with infant feeding and nutritional needs (Bernhardt & Felter, 2004). Parents who placed a higher importance on scientific evidence were less likely to utilize family members as a source, which may be explained by the fact that family members, similar to co-parents, often share beliefs but do not have a science background (Lau, Quadrel & Hartman, 1990).

### **Limitations and Directions for Future Research**

It is important to note several limitations of this study for the benefit of future research. First, the information received from this study was collected in a self-reported questionnaire. Therefore, the results may be biased due to under- or over- reported behaviors by the parents.

Second, there was a lack of representation of male parents as well as non-White parents. By increasing representation of these groups, the results will be more generalizable.

Another limitation may be the lack of data collected about alternate personal antecedents that may influence a parent's information search for feeding information. For example, language spoken is a personal-level factor that may impact an individual's ability to properly find, understand, and utilize health information (Werts & Hutton-Rogers, 2013). The number of non-English speaking individuals utilizing online sources is growing, but still only 34% of state health departments published online resources in languages other than English (West & Miller, 2006). This may explain the larger number of Hispanic, Latino, or Spanish parents who utilize pediatricians as an information source if they are unable to find information in Spanish online. The survey in this study was only provided to parents in English and parents were not asked if English was their primary spoken language. Future studies should collect information regarding the parents preferred language spoken and if they have difficulty finding resources in their language.

A second personal antecedent that was not asked in the survey was the presence of postpartum depression (PPD), which is a mood disorder that can severely affect a mother's ability to care for herself and her child. According to the American Psychological Association, 1 in 7 women experience PDD making it a common disorder that likely influences the ability for a mother to engage with information sources (APA, 2010). Nearly 10% of fathers also experience severe depression 3-6 months after their child's birth, which is rarely considered in studies about new parent's behaviors (Paulson & Bazemore, 2010). PPD may impact the parents' ability to find interest or urgency in their information search, which was found to impact the parent's

overall information seeking behavior. By capturing a greater number of personal antecedents, future studies can generalize findings to a greater population of parents.

## **Chapter 5**

### **Conclusion**

This study was among the first to explore how cognitive heuristics of trust influence parents' naturally occurring information seeking behavior regarding child feeding. Therefore, the study aims were exploratory and do not purport to be conclusive. That said, the findings suggest that while most parents frequently engaged with information regarding child feeding, there were differences in how parents evaluated child feeding information and what sources of information they accessed during their most recent search. Parents reported high levels of satisfaction and trust in the information sources they used, but previous health information seeking research has demonstrated that many individuals obtain information from unregulated, inaccurate sources (Eastin, 2001).

The methods and results of this study have broad relevance to the field of human development and family studies, particularly as it relates to the development of parents' information seeking and parenting behaviors during the transition to parenthood. By better understanding how parents differ in their search behaviors for child feeding information, health professionals can design culturally responsive interventions to inform parents about how to engage in better search behaviors. This can yield healthier outcomes for children, as evidence-based sources are more likely to promote the development of healthy parenting practices and child feeding behaviors. This study highlights the need for additional research in this emerging field to gather more definitive results to inform future childhood obesity prevention and intervention.

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