PREDICTORS OF UNHEALTHY FOOD CONSUMPTION IN CHILDREN: CHILD TEMPERAMENT AND INTERPARENTAL CONFLICT

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To the little girl sitting in her pink room and to all children in need of understanding.

DECLARATION OF ORIGINALITY

I hereby declare that I am the sole author of this thesis and that this is the true copy of my thesis, including the final revisions, approved by my thesis committee. All data and information have been obtained, produced, and presented in accordance with the rules of research ethics and principles of academic honesty. As required by these rules, to the best of my knowledge, I have acknowledged ideas, thoughts, and any copyrighted material in accordance with the standard referencing rules. I certify that any part of this thesis has not been submitted for a degree or diploma in another educational institution.

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ABSTRACT

The purpose of the current study was to examine the contributions of children's temperament and interparental conflict to children's unhealthy food consumption. This study also investigated the moderating role of interparental conflict in the relationship between children's temperament and their unhealthy food consumption. Participants were the parents of 199 Turkish children (104 boys) aged between 25-103 months (*M*=59.16, *SD*= 14.4). Parents reported on their children's temperament (negative affectivity, surgency/extraversion, effortful control), the interparental conflict, and their children's unhealthy food consumption. Bivariate correlations and hierarchical multiple regression analysis were conducted to test the hypotheses. Results demonstrated that surgency/extraversion was positively, and effortful control was negatively related to unhealthy food consumption in children. Interparental conflict was positively associated with the child's unhealthy food consumption. In addition, interparental conflict both moderated the relationship between children's temperament (negative affectivity, effortful control) and unhealthy food consumption. This study contributes to the literature by addressing the contributions of both temperamental characteristics and interparental conflict on the unhealthy food consumption of children.

Keywords: Child temperament, interparental conflict, child unhealthy food consumption, negative affectivity, effortful control

ÖZET

Bu çalışmanın amacı çocuk mizacı ve ebeveynler arası çatışmanın çocukların sağlıksız yiyecek tüketimine olan katkılarını araştırmaktır. Bu çalışma aynı zamanda ebeveynler arası çatışmanın çocuk mizacı ve çocuğun sağlıksız yiyecek tüketimi arasındaki ilişki üzerindeki düzenleyici etkilerini incelemiştir. Çalışmaya Türkiye'den 25-103 aylık arası (*Ort.*=59.16, *SS*= 14.4) çocuğu olan (104 erkek çocuk) 199 ebeveyn katılmıştır. Ebeveynler çocuklarının mizaç özelliklerini (olumsuz duygulanım, dışa dönüklük, kendini ketleme), çocuklarının ne sıklıkla ebeveynler arası çatışmaya maruz kaldığını ve çocuklarının sağlıksız yiyecek tüketim sıklığını raporlamıştır. Hipotezleri test etmek için, iki değişkenli korelasyonlar ve hiyerarşik çoklu regresyon analizi uygulanmıştır. Sonuçlar, dışa dönüklüğün pozitif olarak ve kendini ketlemenin negatif olarak çocukların sağlıksız yiyecek tüketimiyle ilişkili olduğunu göstermiştir. Ebeveynler arası çatışma ise çocukların sağlıksız yiyecek tüketimi ile pozitif olarak ilişkili bulunmuştur. Bunlara ek olarak ebeveynler arası çatışma, çocuk mizacı (olumsuz duygulanım, kendini ketleme) ve sağlıksız yiyecek tüketimi arasındaki ilişkide düzenleyici değişken olarak rol almıştır. Bu çalışma hem çocuk mizacı hem de ebeveynler arası çatışmanın sağlıksız yiyecekler üzerindeki etkisini inceleyerek literatüre katkıda bulunmaktadır.

Anahtar Kelimeler: Çocuk mizacı, ebeveynler arası çatışma, çocukların sağlıksız yiyecek tüketimi, olumsuz duygulanım, kendini ketleme

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1. INTRODUCTION

The rapid development and global expansion of the fast-food industry and food safety concerns in less developed countries have heightened the prevalent issue of unhealthy food consumption (Janssen et al, 2018). Türkiye is also one of the countries affected by this rapid development of the fast-food industry (Ağır & Akbay, 2021). Unhealthy food consumption refers to the intake of high-fat, high-sugar, and high-salt food with poor nutritional quality (Al-Jawaldeh & Abbass, 2022; WHO, 2013). This kind of eating habits poses a significant risk factor for non-communicable diseases such as obesity, diabetes, cancer, and cardiovascular diseases (Al-Jawaldeh & Abbass, 2022; WHO, 2013).

Eating habits (e.g., whether healthy or unhealthy food consumption) begin to form in childhood with both the contributions of individual characteristics (Lipsanen et al., 2020) and environmental factors (Jackson & Vaughn, 2019; Peters et al., 2014). Eating habits that are formed in childhood may remain similar later in life (Lipsanen et al., 2020). Thus, it is important to understand the mechanisms contributing to the unhealthy food consumption in early childhood. From this perspective, unhealthy food consumption may emerge as a result of individual characteristics (e.g., temperament) and environmental factors (e.g., interparental conflict) during early childhood (Leung et al., 2014; Peters et al., 2014). Some children may be more inclined to prefer unhealthy foods due to their temperamental traits, such as low regulation and high emotionality (Vollrath et al., 2012; Zhou et al., 2019). When these temperamental predispositions interact with environmental factors (e.g., interparental conflict), children may become more vulnerable to consuming unhealthy food. From this point of view, the aim of this study is to examine

the contribution of child temperament, interparental conflict, and their interacting effect on children's unhealthy food consumption.

1.1 Theoretical Background

One theoretical model that examines the interaction between individuals and their environment is the Diathesis-Stress Model (DSM). The Diathesis-Stress Model propounds that certain individuals, according to their personal characteristics or genes, are more vulnerable to adverse environments, which increases their likelihood of having negative outcomes (Zuckerman, 1999). From a developmental perspective, this individual vulnerability can be the child's temperamental characteristics (Holzman et al., 2018; Loginova & Slobodskaya, 2021).

Based on the DSM, we conceptualized our study as particular temperamental traits such as low effortful control, high negative affectivity, and high extraversion as potential vulnerability factors for children. When these temperamental traits interact with adverse environments like interparental conflict, it may lead to adverse outcomes, such as unhealthy food consumption. For instance, when children with high negative affectivity experience interparental conflict, they may tend to consume unhealthy food to avoid the elevated stress within the family context or to modulate their negative emotionality combined with high interparental conflict. Similarly, if children with low effortful control are exposed to interparental conflict, this interaction may increase unhealthy food consumption. Lastly, when children with high surgency/extraversion encounter interparental conflict, it may result in a higher amount of unhealthy food consumption among these children.

In summary, according to their temperamental dispositions (high negative affectivity, surgency/extraversion, and low effortful control), some children may be more

vulnerable to adverse environments (interparental conflict) to exhibit negative outcomes (e.g., unhealthy food consumption). Considering this premise, we used the Diathesis Stress Model as a theoretical framework for the current study.

2. LITERATURE REVIEW

2.1 Predictors of Unhealthy Food Consumption

The following sections will explain individual (temperament) and environmental (interparental conflict) factors that predict unhealthy food consumption.

2.1.1 Temperament and Unhealthy Food Consumption

Temperament has been defined in various ways by different researchers (Buss & Plomin, 1975; Goldsmith & Campos, 1982; Kagan, 1994; Rothbarth, 1981; Thomas & Chess, 1977). However, this study is framed within Rothbart's definition of temperament, which defined as a relatively stable biological makeup of the individual that starts to emerge early in infancy and is affected by experience, maturation, and heredity over time (Rothbart 1981; Rothbart & Derryberry, 1981; Rothbart, 2007; Rothbart & Posner, 2015). Based on their temperamental characteristics, children display different behaviors. Temperament has two main domains: reactivity and self-regulation (Rothbart & Derryberry, 1981; Rothbart & Posner, 2015). While reactivity is the stimulability of affective, motor, and sensory response systems, regulation modulates reactivity by inhibitory control and attentional focus (Rothbart, 2007; Rothbart et al., 2002). In other words, reactivity is the responsivity and excitability of an individual, while self-regulation is the behavioral and neural processes that restrain the reactivity (Rothbart, 2007; Rothbart et al., 2000; Rothbart & Derryberry, 1981).

The reactivity domain includes negative affectivity (NA) and surgency/extraversion (S/E) (Rothbart, 2007; Rothbarth & Posner, 2015). Negative affectivity in children is particularly characterized by the following traits: low in soothability and high in fear, sadness, discomfort, anger, and frustration. On the other

hand, surgency/extraversion is characterized by high positive approach and emotionality, smiling, laughter, activity level, intensity pleasure (sensation seeking), impulsivity, and low shyness). Besides, the regulation domain includes effortful control (EC), which refers to attention control, inhibitory control, perceptual sensitivity, and low-intensity pleasure (Rothbart, 2007; Rothbarth & Posner, 2015). Attention control stands for the capacity to focus or shift attention when needed, and inhibitory control stands for the capacity to understand and plan future actions and inhibit inappropriate behavior (Rothbart, 2007; Rothbart et al., 2000). Hence, high effortful control implies higher self-regulation and delay of gratification (Rothbart, 2007; Rothbart et al., 2000; Rothbarth & Posner, 2015). In the current study, we will use these dimensions (negative affectivity, surgency/extraversion, effortful control) to understand their contributions to child unhealthy food consumption.

Early temperamental traits are often related to unhealthy food consumption (Lipsanen et al., 2020; Zhou et al., 2019). From the perspective of reactive temperament, studies have shown that negative affectivity is associated with unhealthy food consumption (Lipsanen et al., 2020). Vollrath et al. (2012) found that negative affectivity (e.g., fearful, sad, anxious babies) at 1.5 years old is associated with consuming sweet drinks and sweet foods at three and seven years old. Findings from another study illustrate that three to six-year-old children who are high in negative affectivity consume more sweet food and drinks if it is available in their house as compared to their peers (Pajulahti et al., 2021).

Because children with high negative affectivity feel their negative emotions intensely, they may try to comfort themselves with unhealthy foods (Vollrath et al., 2011) due to the positive effect of sweet and fatty foods on mood (Gibson, 2006). Moreover,

Stifter et al. (2011) have found that parents of 3- to 34-month-old infants and toddlers with high negative affectivity are more prone to use feeding to soothe their children when they cry in different situations. It is possible that the tendency of children with high negative affectivity to eat unhealthy food to comfort themselves may be related to early feeding to soothe (Müren & Yasin, 2021; Stifter et al., 2011). In addition, when the desired food is not given to children with high negative affectivity, they may have difficulty calming down and may be more prone to having temper tantrums or angry reactivity over the desired food (Leung et al., 2014). In order to prevent this kind of situation, parents may give up and allow their children with high negative affectivity to have the unhealthy food they want (Müren & Yasin, 2021; Stifter et al., 2011; Vollrath et al., 2011).

The findings about the relationship between surgency/extraversion and unhealthy food consumption have been mixed. While some research has been linked S/E with increased consumption of high-fat and high-sugar foods (Zhou et al., 2019), others found that S/E linked with consuming more vegetables or eating healthy (Kaukonen et al., 2019). In the research of Vollrath et al. (2012), surgent temperament (sociable and active) at 1.5 years old was not associated with consuming higher levels of sweet foods and drinks, but it was associated with consuming more vegetables and fruit at 3- and 7-years-old.

Surgent/extraverted children may more easily accept novel, sour, or bitter tastes to establish and maintain their social relationships related to their high approach and sociability traits (Kaukonen et al., 2019; Vollrath et al., 2012). However, the same characteristics may also make them more prone to eat unhealthy food when the offered foods are unhealthy (Kaukonen et al., 2019). Besides, surgent/extraverted children may be more motivated to achieve their goals because of their external reward sensitivity

(Acar, 2016; Leung et al., 2014). When the external reward is food, children may be more motivated to eat (Leung et al., 2014). Thus, regardless of what the food is, children's preference for food may be related to their current situation.

From the perspective of temperamental regulation, researchers have reported that low self-regulation is significantly associated with unhealthy food consumption (Lipsanen et al., 2020; Nix et al., 2023). Research findings about effortful control show that higher levels of effortful control have been negatively associated with less unhealthy food consumption (Zhou et al., 2019) and positively associated with consuming more vegetables and more healthy food consumption (Kaukonen et al., 2019).

Children with high regulation are more likely to regulate their behavior and emotions (Rothbart & Derryberry, 1981). Thus, it is possible that they do not need comfort food (e.g., Please write some examples here to show you mean high fat sugary food) to soothe themselves (Müren & Yasin, 2021). That is why parents may be less likely to need feeding to soothe children with high effortful control (Stifter et al., 2011). Since these children are less likely to have temper tantrums over unhealthy food, parents might be more likely to provide healthier food rather than unhealthy food (Kaukonen et al., 2019). Owing to children with high effortful control having high inhibitory control, they may inhibit themselves even the availability of the desired unhealthy food (Riggs et al., 2010).

Some studies have discussed these two temperament domains (reactivity and regulation) in groups. In their longitudinal research, Lipsanen et al. (2020) grouped two-year-old children based on their reactivity and regulation. The groups are named as negative /low regulation, neutral/average regulation, and positive/high regulation. The first word of the group names indicates the direction of the reactivity, while the second word stands for the regulation. When the participants were 20 years old, the negative

/low-regulation group (children with high reactivity and low regulation) consumed the most sugar-sweetened beverages, sugary food, and the least number of vegetables (Lipsanen et al., 2020). Another study found that children whose temperamental characteristics are defiant, aggressive, and impulsive at 1.5 years old are associated with consuming sweet drinks and sweet foods at seven years old (Vollrath et al., 2012).

As previously established, there is a notable relationship between child temperament and unhealthy food consumption. The current research aims to extend this relationship, providing a comprehensive analysis of the contributing role of child temperament to unhealthy food consumption.

2.1.2 Interparental Conflict and Unhealthy Food Consumption

In the previous section, we focused on temperamental characteristics, which are individual factors potentially related to unhealthy food consumption in children. In this section, we will shift our focus to interparental conflict, an external factor that might also be related to children's unhealthy food consumption.

According to family systems theory, all members of a family are interdependent, with reciprocal influences on one another (Cox & Palley, 1997; Kreppner & Lerner, 1989b; Minuchin, 1985; Sameroff, 1994). The family system is hierarchically organized into subsystems, such as marital (parent-parent), parental (parent-child, parent-children), sibling (child-child), and individual subsystems. These subsystems interact dynamically, affecting each other in significant ways.

Previous research has demonstrated that interparental conflict is associated with a range of adverse outcomes for children, including social, emotional, behavioral, and academic challenges (Harold & Sellers, 2018; Jouriles et al., 2000). This highlights the interaction between the marital subsystem (parent-parent) and the individual child

subsystem. However, when considering children's unhealthy food consumption, much of the existing literature has focused on the relationship between parenting behavior or parental feeding practices and children's dietary habits (Chen et al., 2021; Haszard et al., 2015; Lopez et al., 2018; Sleddens et al.,2014). This emphasis highlights the interaction between the parent-child and individual child subsystems.

Despite unhealthy food consumption being widely studied as an adverse outcome within the parent-child subsystem, there is a notable gap in research examining it within the context of the marital subsystem (Sherrard & Tan, 2023). This gap is significant because interparental conflict could serve as a critical environmental factor that indirectly influences children's eating behaviors. For example, high levels of conflict between parents can create a stressful home environment, which might lead to children using food as a coping mechanism. Additionally, the emotional strain on parents might reduce their ability to enforce healthy eating habits or to model positive dietary behaviors, further contributing to unhealthy food consumption in children.

Thus, by considering interparental conflict as an adverse environment, we aim to explore how the dynamics within the marital subsystem may interact with the individual child subsystem, potentially leading to unhealthy food consumption. This approach not only fills a gap in the literature but also offers a more comprehensive understanding of the complex factors influencing children's unhealthy food consumption within the family context.

The interparental conflict that is examined in this research may be interpreted with the two co-parenting dimensions: co-parenting conflict and co-parenting triangulation. The co-parenting conflict can be defined as a conflict that may regarding childcare and includes argument, hostility, disagreement, or undermining between a child's parents that

their child can observe (Ece et al., 2024; Margolin et al., 2001; Teubert & Pinquart, 2010). Co-parenting triangulation can be defined as parents trying to form a coalition with the child against the other parent, which undermines or excludes the other parent; in this way, the child is caught in the middle of interparental conflict (Ece et al., 2024; Margolin et al., 2001; Teubert & Pinquart, 2010).

One research that explores the relationship between co-parenting conflict and unhealthy food consumption found that interparental conflict (e.g., undermining co-parenting) is positively associated with unhealthy dietary intake of preschool-aged children (Sherrard & Tan, 2023). Other research examining the predictors of unhealthy food consumption has demonstrated that higher family conflict (e.g., family members often criticize each other) is associated with higher unhealthy food consumption of 2-to-5 years old children (Martin-Biggers et al., 2017; Quick et al., 2021) while a high sense of family cohesion is associated with healthy food consumption of 3-to-5 years old children (Speirs et al., 2016). Another study found that lower family functioning was associated with higher consumption of fries, takeaway foods, and sweet beverages in 1 to 12-year-old children (Renzaho et al., 2014). Besides, research on interparental conflict and children's eating behaviors showed that exposure to interparental conflict is associated with disordered eating in childhood (Bi et al., 2017) and adolescence (George et al., 2014; Blodgett Salafia et al., 2014).

Previous researchers have offered various explanations for how interparental conflict may increase the risk of children adopting unhealthy eating behaviors (Dimitratos et al., 2022; George et al., 2014; Mason et al., 2019; Renzaho et al., 2014). One possible mechanism is that children with certain temperamental characteristics, such as poor regulation or heightened reactivity, may feel emotionally insecure in the context of

elevated interparental conflict, leading to difficulties in their behavioral and emotional development, including health-related behaviors (Dimitratos et al., 2022; George et al., 2014; Michael et al., 2007). Furthermore, children who lack temperamental regulation may be more prone to unhealthy food consumption due to their underdeveloped internal control, a tendency that could be exacerbated by heightened interparental conflict (Dimitratos et al., 2022; George et al., 2014; Mason et al., 2019; Renzaho et al., 2014).

Additionally, interparental conflict may serve as a distraction, resulting in parents having less control over their child's eating habits. This lack of parental supervision and guidance could further encourage children, particularly those with certain temperamental traits, to engage in unhealthy eating behaviors (Dimitratos et al., 2022). In this context, interparental conflict not only directly influences children's eating habits but also moderates the relationship between their temperament and unhealthy food consumption, thereby creating a more complex dynamic within the family system.

In summary, the existing research findings, which examine the relationship between interparental conflict and unhealthy food consumption in childhood, illustrate a positive association between these variables. While previous research results indicate that this issue is important, the fact that there are few studies that we know of on this subject provides justification for further exploration. Therefore, we examined the extent of this relationship in this research.

2.2 Moderating Role of Interparental Conflict Between Children’s Temperament and Their Unhealthy Food Consumption

The Diathesis-Stress Model suggests that certain individual characteristics could be a person's vulnerability, and when it encounters negative environments, it potentially results in negative outcomes (Zuckerman, 1999). From this point, developmental

researchers consider certain temperamental characteristics as the vulnerability of children to adverse environments, which may result in negative outcomes (e.g., Bakker et al., 2011; Burk et al., 2011; Chen et al., 2014; Gobeil-Bourdeau et al., 2022; Loukas & Roalson, 2006; Obradovic et al., 2010; Rioux et al., 2016; Sentse et al., 2011). However, to our knowledge, no study has examined the relationship between children's temperament, adverse environment (interparental conflict), and unhealthy food consumption (negative outcome) from the perspective of the Diathesis-Stress Model. Even so, family adversity, which includes interparental conflict, parent-child conflict, and parenting behavior, has been frequently used as the adverse environment in the studies that support the Diathesis-Stress Model (Bakker et al., 2011; Burk et al., 2011; Gobeil-Bourdeau et al., 2022; Loukas & Roalson, 2006; Obradovic et al., 2010; Sense et al., 2011). These studies have focused on behavioral problems (e.g., internalizing and externalizing problems; Bakker et al., 2011; Chen et al., 2014; Loukas & Roalson, 2006; Sentse et al., 2011), substance use (e.g., alcohol, drugs; Burk et al., 2011; Rioux et al., 2016) and school readiness (Gobeil-Bourdeau et al., 2022; Obradovic et al., 2010) as negative outcomes rather than children's unhealthy food consumption.

Nonetheless, the previous research discussed in Section 2.1 posits that not only temperamental characteristics such as high negative affectivity, high surgency, and low effortful control but also interparental conflict may predict unhealthy food consumption.

When children with high negative affectivity encounter interparental conflict, their negative emotions may be enhanced even further, and they may be more susceptible to consuming unhealthy foods as a self-soothing mechanism (Leung et al., 2014; Lipsanen et al., 2020; Pajulahti et al., 2021; Stifter et al., 2011; Vollrath et al., 2012). Moreover, if children with high surgency/extraversion face interparental conflict, they may be prone

to consume more unhealthy foods. Because in the context of high interparental conflict, parents may be more stressed and adopt inefficient parenting strategies like providing their children unhealthy but desirable food as a reward (Leung et al., 2014; van den Berg et al., 2011). Since surgent children are more goal-oriented when they perceive unhealthy food as a reward, they may be more likely to win and consume unhealthy food (Leung et al., 2014). Lastly, children with low effortful control may be more vulnerable to parental conflict to consume more unhealthy food. Because of their low self-regulation trait, they may already have more difficulty in resisting the desired unhealthy food (Kaukonen et al., 2019; Lipsanen et al., 2020; Nix et al., 2023; Zhou et al., 2019). When they are faced with interparental conflict, it may be more difficult to control their behavior, resulting in higher levels of unhealthy food consumption.

In light of earlier research, it is important to examine the moderating role of interparental conflict on the relationship between children's temperament and unhealthy food consumption.

2.3 The Current Study

2.3.1 The Significance of the Study

Unhealthy food consumption is one of the most important contributors of the non-communicable diseases such as obesity, diabetes, cancers, and cardiovascular diseases (Al-Jawaldeh & Abbass, 2022; WHO, 2013).

The relationship between children's temperamental characteristics and unhealthy food consumption has been frequently studied–and research results have provided evidence of its significance (Kaukonen et al., 2019; Leung et al., 2014; Lipsanen et al., 2020; Nix et al., 2023; Pajulahti et al., 2021; Stifter et al., 2011; Vollrath et al., 2012; Zhou

et al., 2019). These studies consistently demonstrate that certain temperamental traits, such as impulsivity, emotional reactivity (including high negative emotionality), and low self-regulation, are associated with a higher propensity for consuming unhealthy foods. There is also research from Türkiye that examined the relationship between child temperament and obesity (Yavuz & Selcuk, 2018) however, to our knowledge, there is no research that directly combines temperament and unhealthy food consumption. Besides, previous studies have suggested that interparental conflict can significantly influence a child's emotional and behavioral development, potentially exacerbating or mitigating the effects of their temperament on various outcomes (Bakker et al., 2011; Burk et al., 2011; Gobeil-Bourdeau et al., 2022; Harold & Sellers, 2018; Loukas & Roalson, 2006; Obradovic et al., 2010; Sense et al., 2011). However, to our knowledge, no studies have investigated the contributions of interparental conflict in the relationship between child temperament and unhealthy food consumption.

In the context of Turkish culture, the relationship between co-parenting and unhealthy food consumption in children is shaped by the unique dynamics of family life, where collective decision-making and close family ties are highly valued. Collaborative efforts of parents as coparenting in raising their children, plays a significant role in influencing children's behaviors, including their eating habits (Kaplan et al., 2014). In Turkish family context, family life is rooted in collectivist values, which leads to that coparenting often extends beyond the nuclear family to include the influence of extended family members, such as grandparents (Gürmen, 2019). These extended family members may have a substantial contribution to the child’s diet. When co-parenting is harmonious (e.g., cooperation), with parents—and potentially extended family members—presenting a united front and a consistent approach to feeding practices, children are more likely to

develop healthy eating habits. This consistency helps to establish clear boundaries and expectations around food, which may prevent the development of unhealthy eating patterns. Conversely, if there is an interparental conflict or inconsistency in coparenting, such as disagreements on what constitutes appropriate food for the child or varying levels of control over the child's diet, it can lead to confusion and stress for the child. Still in most Turkish families, mealtime may be considered a social and communal experience, which could contribute to the children's eating habits, including unhealthy food consumption. For example, if one parent is more lenient while the other is strict about food choices, or if there is reliance on grandparents who might indulge the child with unhealthy food as a form of affection, it can create mixed messages regarding healthy food eating habits. This inconsistency may lead children to lean toward less healthy options, especially in a context where food is frequently used as a tool for nurturing or soothing. Overall, in the Turkish cultural context, the effectiveness of co-parenting is closely tied to the family's ability to navigate these complex social and cultural expectations.

The other important issue is that this research examined the moderator role of interparental conflict in early childhood. It is important to examine this mechanism in early childhood because children are more susceptible to adverse environments, such as interparental conflict, in the early years of their lives (Harold & Sellers; Jouriles et al., 2000).

In light of previous research and theory, it is important to examine the moderating role of interparental conflict on the relationship between children's temperament and unhealthy food consumption in children from Türkiye. By investigating this moderating role, we aim to provide a more nuanced understanding of how family dynamics interact

with individual child characteristics to influence unhealthy food consumption in early childhood. This approach will not only contribute to existing literature but also offer practical insights for developing targeted interventions to promote healthier eating habits among children, particularly those experiencing interparental conflict.

2.3.2 The Goal of The Study

This study aimed to explore the role of child temperament (Negative Affectivity, Surgency/Extraversion, Effortful Control) and interparental conflict on the unhealthy food consumption of children. In addition, it investigates the moderating role of interparental conflict in the relationship between child temperament (Negative Affectivity, Surgency/Extraversion, Effortful Control) and unhealthy food consumption.

2.3.3 Research Questions and Hypotheses

RQ1: Is child temperament associated with unhealthy food consumption?

H1a: Negative affectivity would have a positive association with unhealthy food consumption.

H1b: Surgency/extraversion would have a positive association with unhealthy food consumption.

H1c: Effortful control would have a negative association with unhealthy food consumption.

RQ2: Is interparental conflict associated with unhealthy food consumption?

H2: Interparental conflict would have a positive association with unhealthy food consumption.

RQ3: Does interparental conflict moderate the association between child temperament and unhealthy food consumption?

H3a: Interparental conflict moderated the association between negative affectivity and unhealthy food consumption. In detail, when children who are high in negative affectivity or surgency experience interparental conflict, their unhealthy food consumption increases.

H3b: Interparental conflict moderated the association between surgency/extraversion and unhealthy food consumption. In detail, when children who are high in surgency experience interparental conflict, their unhealthy food consumption increases

H3c: Interparental conflict moderated the association between effortful control and unhealthy food consumption. In detail, when children who are low in effortful control experience interparental conflict, their unhealthy food consumption increases.

3. METHOD

3.1 Participants

In the current study we had 199 parents of children aged between 25-103 months (*M*=59.16, *SD*= 14.4). The mothers' ages ranged between 21 and 50 (*M*=37.41, *SD*=5.04). For the mothers' education levels, respondent parents have reported that 0.5% of the mothers never attended to school, 1.5% graduated from primary school, 1.5% graduated from secondary school, 21.3% graduated from high school, 3% graduated from vocational school, 12.2% graduated from a two-year university, 36% graduated from four-year university, 18% completed their master's degree, and 5.6% completed their doctorate. For the fathers' education levels, parents reported that 0.5% of them never go to school, %3.6 graduated from primary school, 5.1 % graduated from middle school, %23.9 graduated from high school, %1.5 graduated from vocational school, %6.1 graduated from a two-year university, % 39.6 graduated from four-year university, %14.7 completed their master's degree and %4.6 completed their doctorate and we had %0.5 missing data for the father's education level. In terms of marital status, %95.4 of the mothers reported they were married, %2 of the mothers were divorced, %1 married again, and %1.5 did not want to indicate their marital status. While we collect this data, Turkey's minimum wage is changed thrice. Therefore, we rearranged the income range according to the minimum wage three times by considering the ranges to be similar. According to the last edited income ranges %1.5 of the families had 8.500 TL and lower monthly income, %2.5 of them reported their monthly income between 8.501-10.000 TL, %9.6 reported 10.001-12.000 TL, %11.7 reported 12.001-15.000 TL, %9.1 reported 15.001-20.000 TL, %14.2 reported 20.001-30.000 TL, %16.8 reported 30.000-40.000 TL, %6.6 reported 40.001-50.000TL, %15.7 reported 50.000TL and higher, and %12.2 did not want to indicate their

monthly family income. Thus, the majority of the participants had a high monthly income. These demographics of the participants can be found in Table 3.1. By averaging standardized scores (z-scores) of the mother and father's educational level and the family's monthly income, we calculated the socioeconomic status (SES) variable for our analysis.

Table 3.1 *Demographic Information*

	n	%	Missing (%)	M	SD	Range
Child characteristics						
Sex	197		1			
Girls	91	46.2				
Boys	104	52.8				
Age (months)	198			59.19	14.30	25-103
Family characteristics						
Mother’s age	198		.5	37.39	5.03	21-50
Mother’s education status	199					
No school	1	.5				
Primary school	3	1.5				
Secondary school	3	1.5				
High school	42	21.1				
Vocational school	6	3.0				
Two-year university	25	12.6				
Four-year university	71	35.7				
Master’s degree	37	18.6				
Doctorate	11	5.5				
Father’s education status	198					
No school	1	.5				
Primary school	7	3.5				
Secondary school	10	5.0				

High school	48	24.1
Vocational school	3	1.5
Two-year university	12	6.0
Four-year university	78	39.2
Master's degree	30	15.1
Doctorate	9	4.5
Mother's marital status	199	
Married	190	95.5
Divorced	4	2
Married again	2	1
Not reported	3	1.5
Family income (Turkish Lira)	199	
8.500 and lower	3	1.5
8.501-10.000	5	2.5
10.001-12.000	19	9.5
12.001-15.000	23	11.6
15.001-20.000	19	9.5
20.001- 30.000	28	14.1
30.001-40.000	34	17.1
40.001-50.000	13	6.5
50.000 and higher	31	15.6
Not reported	24	12.1

Notes. M= mean, SD= Standard deviation.

3.2 Measures

3.2.1 Child Temperament

Parents completed the Child Behavior Questionnaire-Very Short Form (CBQ-VSF) (Putnam & Rothbart, 2006) to report their children's temperament. There are 36 items and three subscales in this scale, namely Negative Affect (NA), Extraversion (E),

and Effortful Control (EF). Each subscale consisted of 12 items and is rated on a 7-point Likert scale ranging from 1 (completely incorrect) to 7 (completely correct). Sarı (2012) translated the Child Behavior Questionnaire- Short Form (CBQ-SF) (Putnam & Rothbart, 2006) to Turkish. The original research conducted by Sarı (2012) reported the Cronbach's alpha coefficient as .78. The scale was also used with children from Türkiye in different research and found to be reliable and valid (Acar, 2016; Acar vd., 2020; Yavuz ve Selcuk, 2018). For the present study, Cronbach's alpha coefficient was found to be .65 for each subscale. We calculated the average scores for each subscale and higher values indicated higher levels for each variable.

3.2.2 Interparental Conflict

The O'Leary Porter Scale (Porter & O'Leary, 1980) was completed by parents to measure interparental conflict. The scale consisted of 10 items and is rated on a 5-point Likert scale ranging from 0 (never) to 5 (always). The purpose of the items is to assess the frequency of children's exposure to arguing (e.g., "*How often does your child hear you and your husband arguing about your role in the family (as a housewife, working wife, etc.)?*"), hostility (e.g., *"All people have difficulty controlling themselves in stressful times. In this case, how often do you and your partner show your anger physically (pushing, hitting)?"*), undermining (e.g., "*How often does your partner criticize you in front of your children?"*), and triangulation (e.g., "*How often does your partner encourage your children to take his side when you have a conflict?*") between their mothers and fathers. This scale was adapted to Turkish by Peksaygılı (2008). In the original study, Cronbach's alpha value was found at 79. In the current study, Cronbach's alpha value was .82. The average scores were calculated for the interparental conflict variable, and higher values indicated higher levels for the variable.

3.2.3 Children's Unhealthy Food Consumption

Food Consumption Frequency Scale completed by the respondent parent to examine the unhealthy food consumption of children. The initial Food Consumption Frequency Scale, developed by Kanıoğulları (2015), consists total of 50 items and comprises six subscales, including consumption of milk and milk products, meat, eggs, legumes, fresh vegetables, and fruits, bread, and cereals, as well as beverages and fatty-high sugar foods. For the purposes of this study, we focused exclusively on sugary beverages and fatty-high-sugar foods, which may be classified as unhealthy foods. In the pilot study, %89 of the parents reported that they never used margarine, so margarine was excluded from this list. The final list was composed of 10 unhealthy foods. To determine the frequency of their children's unhealthy food consumption, parents reported their child's consumption of *"1) Ready-made (store bought) fruit juices, 2) Carbonated sugary beverages, 3) Sugar, 4) Pastry desserts, 5) Candy, Turkish delight, jellybeans, 6) Chips, 7) French fries, 8) Lahmacun/Pide, 9) Ready-made (store bought) hamburger, 10) Ready-made (store bought) pizza"*. They reported the frequency of their child's unhealthy food consumption in a month from 1 to 8 as "1) *never, 2) once a month, 3) once every 15 days, 4) 1-2 times in a week, 5) 3-4 times in a week, 6) 5-6 times in a week, 7) every day,* 8) *every meal".* We calculated the average scores, and higher values indicated higher levels for this variable.

3.3 Data Collection Procedures

We started to collect our data after the 20/02/2019 dated approval of the MEF University Ethic Committee, and the funding for the study was granted by the Scientific and Technological Research Council of Turkey (Project no: TUBITAK1001-119K359).

This cross-sectional study has been conducted by announcing it to preschool administrations and acquaintances of research assistants through online platforms and flyers. Some of the preschool administrations who accepted us to collect data announced our research to their student's parents. The volunteer parents completed surveys either online via the Qualtrics platform or on paper, based on their preferred method. The consent form informs the parents about voluntary participation and their right to withdraw from the study, which was also given at the beginning of the survey, and all participants approved it. Firstly, we did the pilot study with 54 participants, and all the questionnaires worked efficiently.

3.4 Data Analytical Approach

3.4.1 Data Screening

We screened the data using the SPSS 27.0 software program before we started analyzing our data to ensure the accuracy of data entry, missing values, and multivariate analysis assumptions.

First, we examined the missing data, and we found missing data for the 6 variables (Negative affectivity, Surgency/ Extraversion, Effortful Control, Interparental Conflict, Unhealthy Food Consumption, and Child Age). The highest number of missing data was on the Interparental Conflict (9.5%). However, we conducted Little's (1988) MCAR (Missing Completely at Random) test to understand the mechanism of our missing data.

The missing value analysis (MVA) for our focal variables (Negative Affectivity, Surgency/ Extraversion, Effortful Control, Interparental Conflict, Unhealthy Food Consumption, Child Age) was significant (χ^2=27.625, p=.02), which indicated that the missing data were not random. Therefore, we conduct an independent t-test to understand the difference between participants with and without missing data. There was no difference across focal variables depending upon Negative Affectivity, Surgency/Extraversion, Effortful Control, Interparental Conflict and Unhealthy Food Consumption. The tables showing the detailed data of missing value analysis can be found in the Appendix A (Table 3.2) and Appendix B (Table 3.3). Then, we used the Mahalonobis Distance method to check the multivariate outliers (Tabachnick & Fidell, 2006), and there were no outliers above the χ2=18.55 cut-off value for a number of current variables. Therefore, we did not remove any participant from the data.

In order to assess the normality assumptions, we tested the skewness and kurtosis considering the criteria of -2 and +2 (George & Mallery 2019). According to the normality test, all the variables were in the criteria of -2 and +2. The kurtosis and skewness values for all variables can be seen in Table 4.1. Additionally, we checked tolerance and VIF (Variance Inflation Factor) values to better understand the multicollinearity of our variables. The tolerance values ranged between .900 to .985, and the VIF values ranged between 1.005 to 1.089, which were not out of the accepted range for multicollinearity (Tolerance < .10 and VIF> .10; Pallant 2016).

4. RESULTS

4.1 Preliminary Analyses

Descriptive statistics and internal consistency of all the variables can be found in Table 4.1, along with the bivariate correlations.

4.2 Bivariate Associations among Study Variables

We conducted a bivariate correlation (Pearson) among the child temperament (Negative affectivity, Surgency/Extraversion, Effortful Control), interparental conflict, unhealthy food consumption, and demographics (child age, child sex, family SES). The Pearson correlation between all variables can be found in the Table 4.1.

According to the findings, child surgency/extraversion and unhealthy food consumption were positively associated (r (187) =.146 p=.046) as we hypothesized (H1b). In addition, consistent with our hypothesis (H1c), child effortful control and unhealthy food consumption were negatively related to each other (r (187) =-.275 p<.001). In support of the second hypothesis (H2), interparental conflict and unhealthy food consumption were also positively correlated (r (179) =.189 p=.011). Inconsistent with our hypothesis (H1a), negative affectivity was not correlated with unhealthy food consumption (r (187) =.100 p=.171).

In addition, we tested the associations between demographics (child age, child sex, family SES) and our study variables (temperament, interparental conflict, unhealthy food consumption). Correlation results showed that child sex positively correlated with child surgency/extraversion, which indicates that boys scored in higher levels on surgency/extraversion (r (190) =.174 p=.016). Child sex also positively correlated with unhealthy food consumption (r (187) = .176 p=.016), favoring boys. Besides, family SES

was negatively correlated with unhealthy food consumption (r (187) = -.290 p<.001). For complete results of bivariate correlations, see Table 4.1.

Table 4.1 *Bivariate Correlations, Descriptive Statistics, and Cronbach Alpha's of the Study Variables*

Variables	1	2	3	4	5	6	7
Child unhealthy food consumption	-						
1. Child negative affectivity	.10	-					
2. Child surgency/ extraversion	**.15***	-.04	-				
3. Child effortful control	**-.28****	**-.25****	-.12	-			
4. Interparental conflict	**.19***	**.18***	.02	-.11	-		
5. Child age	.12	-.04	-.01	-.07	.00	-	
6. Family SES	**-.29****	-.14	-.06	.08	.04	-.07	-
7.Child sex (girls=1, boys=2)	**.18***	-.13	**.17***	.03	.03	.10	-.08
Mean	2.62	4.56	4.82	5.45	1.72	59.19	
Standard deviation	.78	.72	.74	.63	.48	14.30	
Range	1.10-5.10	2.33-6.75	2.33-6.58	3.08-7.00	1.00-3.50	25-103	
Skewness	.88	-.10	-.42	-.64	1.08	-.25	
Kurtosis	.93	.37	.36	.82	1.22	-.27	
Cronbach alpha	.74	.65	.65	.65	.82	-	-

*Notes. *p<.05, **p<.01. SES: Socioeconomic status. The significant results are marked in bold.*

4.3 Hierarchical Multiple Regression Analysis

In order to examine the moderating role of interparental conflict on the relationship between child temperament and child unhealthy food consumption, we conducted a four-step hierarchical multiple regression analysis. In the first step, we

included only the demographics (child age, child sex, and family SES); in the second step, we added the child temperament (negative affectivity, surgency/extraversion, effortful control), and in the third step, we included the interparental conflict, lastly in the step forth we include the interaction terms (interparental conflict x negative affectivity, interparental conflict x surgency/extraversion, interparental conflict x effortful control) (See Table 4.2).

4.3.1 Child Temperament and Interparental Conflict in Predicting Unhealthy Food Consumption

Firstly, we checked the main effects of temperamental characteristics and interparental conflict in predicting unhealthy food consumption. In block 1, child age, child sex, and family SES accounted for 11% of the variance in children's unhealthy food consumption, F (3, 175) = 7.21, $p < .001$, $R^2 = .11$. Family SES was significantly related to unhealthy food consumption (β= -.27, t=-3.76, $p < .001$). In block 2, negative affectivity, surgency/extraversion, and effortful control were added, and they explained 8% of additional variance in unhealthy food consumption F (3, 172) = 5.88, p =.001, R^2 = .19. In the second block, child effortful control (β=-.26, t=-3.62, p <.001) was significantly related to unhealthy food consumption. We added the interparental conflict in block 3, which explained %2 of the additional variance in unhealthy food consumption F (1,171) = 4.40, p=.038, R^2=.21. Interparental conflict (β=.15, t=2.10, p =.038) was significantly associated with unhealthy food consumption. See Table 4.2 for the detailed results.

4.3.2 The Moderating Role of Interparental Conflict Between Child Temperament and Unhealthy Food Consumption

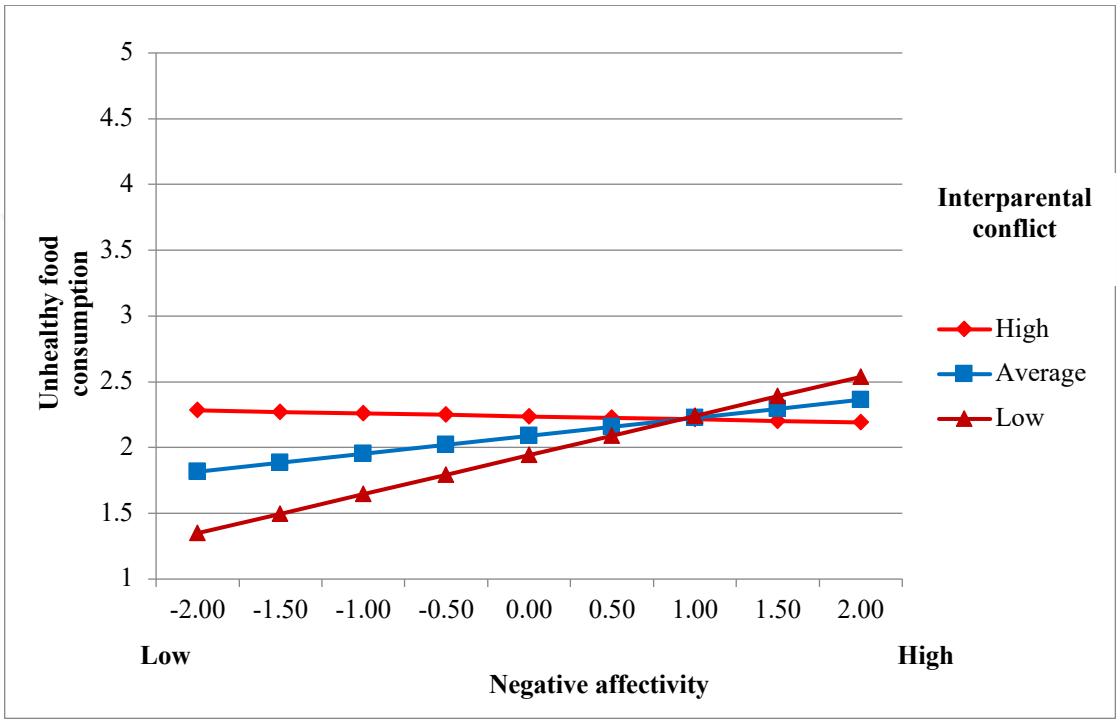
In the final (interaction) block, we added the interactions of each temperamental characteristic and the interparental conflict: Interparental Conflict X Negative Affectivity, Interparental Conflict X Surgency/Extraversion, Interparental Conflict X Effortful Control. The interactions explained the %7 of additional variance in unhealthy food consumption F (3,168) =5.37, p=.001, R^2=.28.

The interaction of interparental conflict and negative affectivity (β=-.16, t=-2.27, p =.024) was significant in predicting unhealthy food consumption. Thus, hypothesis 3a (interparental conflict moderated the association between negative affectivity and unhealthy food consumption) was supported.

We conducted a simple slope analysis to understand the nature of this significant interaction. We plotted the correlations between negative affectivity and unhealthy food consumption at three levels of interparental conflict: high (1 *SD* above the mean), moderate (the mean), and low (1 *SD* below the mean) (Aiken & West, 1991). The first analysis illustrates the slope for children's negative affectivity on their unhealthy food consumption. When the interparental conflict was average (t=.87, p=.387) or high (t=-1.34, p=.181), the slope for children's negative affectivity on their unhealthy food consumption was not significantly different from zero. However, when the interparental conflict was low (t=3.02, p < .01), the slope for child negative affectivity on unhealthy food consumption was significantly different from zero. It indicates that when interparental conflict is high or average, the child's negative affectivity is unrelated to the child's unhealthy food consumption. However, when interparental conflict is low, lower

negative affectivity is associated with a significant decrease in unhealthy food consumption (See Figure 4.1).

Figure 4.1 *Negative Affectivity and Interparental Conflict Predicting Unhealthy Food Consumption*

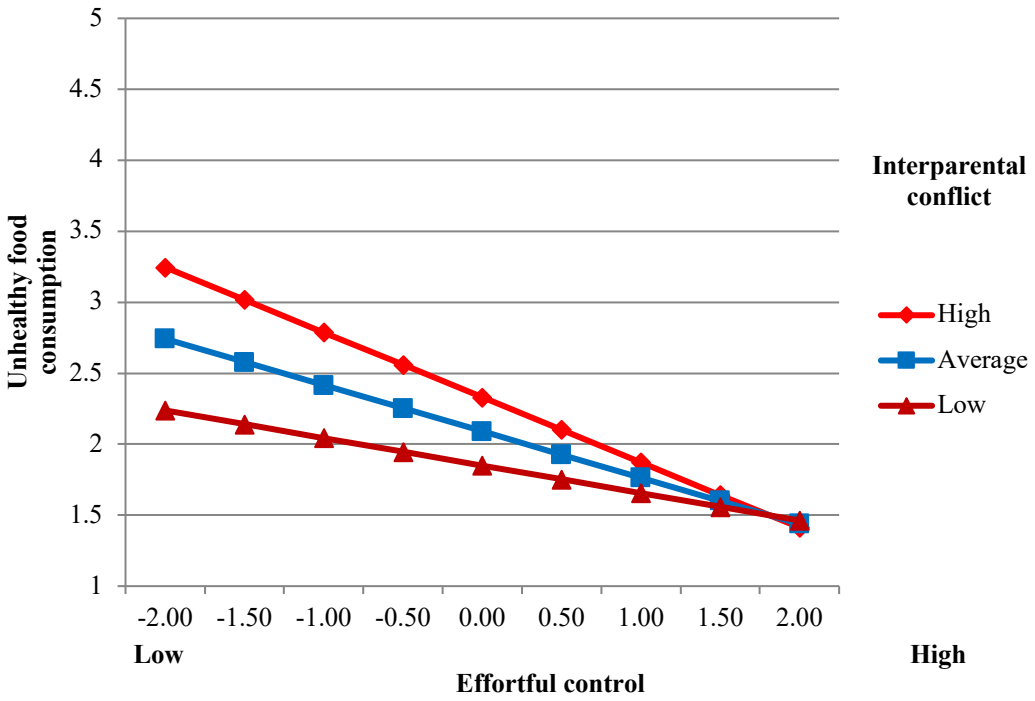


Moreover, the interaction of interparental conflict and effortful control (β=-.18, t=-2.51, p =.013) was significant in predicting unhealthy food consumption. Hence, hypothesis 3c (interparental conflict moderated the association between effortful control and unhealthy food consumption) was supported.

We conducted another simple slope analysis by plotting the correlations between effortful control and unhealthy food consumption at three levels of interparental conflict: high (1 *SD* above the mean), moderate (the mean), and low (1 *SD* below the mean) (Aiken & West, 1991). This second simple slope analysis illustrates the slope for children's effortful control on unhealthy food consumption. When the interparental conflict was low

(t=.19, p=.848), the slope for child effortful control on their unhealthy food consumption was not significantly different from zero. However, when the interparental conflict was average (t=-2.70, p=.008) or high (t=-4.65, p<.001), the slope for child effortful control on their unhealthy food consumption was significantly different from zero. It indicates that when interparental conflict is low, the child's effortful control is unrelated to the child's unhealthy food consumption. However, when interparental conflict is high or average, higher effortful control is associated with a significant decrease in unhealthy food consumption (See Figure 4.2).

Figure 4.2 *Effortful Control and Interparental Conflict Predicting Unhealthy Food Consumption*



The interaction of interparental conflict and surgency/extraversion (β=-.04, t=-.61, p =.54) was not significant in predicting unhealthy food consumption. Therefore,

hypothesis 3b (when high in surgency experience interparental conflict, their UFC increases) was not supported. Detailed results can be found in Table 4.2.

Table 4.2 *Child Temperament and Interparental Conflict as Predictors of Unhealthy Food Consumption*

	Unhealthy food consumption					
	Main Effects Only			*Interactions*		
	B	SE	ß	B	SE	ß
1 Child age	.00	.00	.07	.00	.00	.07
Child sex	.19	.10	.14	.19	.10	.14
Family SES	**-.26**	**.07**	**-.27*** **	**-.26**	**.07**	**-.27*** **
Total R^2			.11			.11
F			**7.21*** **			**7.21*** **
2 Child age	.00	.00	.07	.00	.00	.07
Child sex	.17	.10	.12	.17	.10	.12
Family SES	**-.21**	**.07**	**-.22****	**-.21**	**.07**	**-.22****
Child negative affectivity	.15	.08	.14	.152	.08	.14
Child surgency/ extraversion	.10	.08	.10	.10	.08	.10
Child effortful control	**-.33**	**.09**	**-.26*** **	**-.33**	**.09**	**-.26*** **
Total R^2			.19			.19
R^2 Δ			.08			.08
F			**5.88*** **			**5.88*** **
3 Child age	.00	.00	.07	.00	.00	.07
Child sex	.16	.10	.11	.16	.10	.11
Family SES	**-.22**	**.07**	**-.23****	**-.22**	**.07**	**-.23****
Child negative affectivity	.12	.08	.10	.12	.08	.10
Child surgency/extraversion	.10	.07	.10	.10	.07	.10
Child effortful control	**-.29**	**.09**	**-.23***	**-.29**	**.09**	**-.23***
Interparental conflict	**.24**	**.12**	**.15***	**.24**	**.16**	**.15***

	Total R^2	.21		.21
	R^2 Δ	.02		.02
	F	**4.40*** **		**4.40*** **
4	Child age		.00	.00	.05
	Child sex		.15	.10	.11
	Family SES		-.24	.07	**-.25*** **
	Child negative affectivity		.09	.08	.09
	Child surgency/ extraversion		.11	.07	.10
	Child effortful control		-.22	.09	**-.18***
	Interparental conflict		**.22**	**.11**	**.14***
	IPCxNA		**-.13**	**.06**	**-.16***
	IPCxSur		-.03	.05	-.04
	IPCxEC		**-.13**	**.05**	**-.18***
	Total R^2				.28
	R^2 Δ				.07
	F				**5.37*** **

*Notes. *p< .05, **p<.01, ***p<.001. SES: socioeconomic status, IPC: interparental conflict, NA: Negative affectivity, Sur: Surgency/extraversion, EC: Effortful control. The significant results are marked in bold.*

5. DISCUSSION

The purpose of our study was to examine the contributions of children's temperament and interparental conflict to children's unhealthy food consumption. We also aimed to understand the moderating role of interparental conflict on the relationship between children's temperament and their unhealthy food consumption. Five main findings emerged from the current study. Firstly, the results from the bivariate analysis illustrated that high surgency/extraversion is related to higher unhealthy food consumption in children. Secondly, both bivariate and multivariate analyses showed that low effortful control is related to higher unhealthy food consumption in children. Third, in bivariate and multivariate analysis, high interparental conflict was positively associated with the child's unhealthy food consumption. In addition, interparental conflict moderated the relationship between negative affectivity and unhealthy food consumption in children. Lastly, interparental conflict moderated the relationship between effortful control and unhealthy food consumption in children. These findings will be discussed in the following sections.

5.1 Child Temperament and Unhealthy Food Consumption

The first research question of the study aimed to examine the extent of the relationship between child temperament and child unhealthy food consumption. We hypothesized that child negative affectivity and child surgency would be positively associated with unhealthy food consumption. In contrast, child effortful control would be negatively associated with child unhealthy food consumption.

Consistent with the previous research (Kaukonen et al., 2019; Lipsanen et al., 2020; Nix et al., 2023; Zhou et al., 2019), the bivariate and multivariate findings of our

research showed that children with high effortful control had lower unhealthy food consumption. Effortful control includes the mechanism of attentional focusing, inhibitory control, perceptual sensitivity, and low-intensity pleasure (Rothbart & Derryberry, 1981; Rothbart, 2007). Thus, children with high effortful control can easily shift their attention when needed or foresee the consequences of their behavior and inhibit their inappropriate actions (Rothbart, 2007). These mechanisms may influence the unhealthy food consumption of these children. For instance, in their study, Zhou et al. (2019) placed children in a laboratory with two bowls with candies and grapes. Children were told to stay, and they could eat from the bowls if they wanted. Results show that children with high effortful control are more likely to choose grapes than candies. This may imply that children with high effortful control can easily shift their attention from a desired food and inhibit inappropriate behavior such as eating unhealthy food (Riggs et al., 2010). Thus, parents may not need to provide unhealthy food to their high effortful control children (Kaukonen et al., 2019; Stifter et al., 2011).

The second finding of our research is that children with high surgency/extraversion had higher unhealthy food consumption. Zhou et al. (2019) found that children with high surgency/extraversion are more likely to consume unhealthy food than their peers. Surgent children's high approach and impulsivity traits may make them more prone to approach social interactions and available rewards before thinking (Acar, 2016; Kaukonen et al., 2019; Leung et al., 2014; Vollrath et al., 2012). Thus, when unhealthy food is an instrument for social interaction or serves as a reward, surgent children may be more likely to consume unhealthy food (Kaukonen et al., 2019; Leung et al., 2014; Vollmer & Baietto, 2017). Nevertheless, in the current study, the relationship between surgency and food consumption was only significant in the bivariate analysis

and did not remain significant in the multivariate analysis, and this relationship can be considered negligible due to the small effect size ($r^2 = .03$). Due to the fact that there are also some research demonstrated that surgent children consume higher levels of vegetables and fruits (Vollrath et al., 2012), we need further research to explore surgency to fully understand its influence on unhealthy food consumption.

Interestingly, our bivariate and multivariate analyses found that children's negative affectivity and unhealthy food consumption were unrelated. This result was both incongruent with our hypothesis and the previous research (Lipsanen et al., 2020; Pajulahti et al., 2021; Vollrath et al., 2012). However, Haycraft et al. (2011) found that children with high negative affectivity (e.g., emotionality) are high on emotional eating, but also, they are high on emotional undereating and food fussiness (e.g., not pleased with meals). Moreover, Steinsbekk et al. (2020) stated that because children with negative affectivity are high on both food-approach and food-avoidant behavior, they are more prone to disordered and obesogenic eating behaviors. Thus, they need to be supported by parents' healthy feeding behavior. Previous research shows that parents of children with high negative affectivity are more likely to soothe their children with feeding (Stifter et al., 2011). Those children who learned that they could soothe themselves by eating may eat when they are in emotional distress (Kaplan & Kaplan, 1957; Leung et al., 2014; Vollrath et al., 2011; Vollmer & Baietto, 2017). However, when people are faced with emotional distress, their gut activity decreases biologically, and they do not feel hungry; consequently, they are less likely to eat (Heatherton et al., 1991; Van Strien & Ouwens, 2007). Therefore, children who did not learn to soothe themselves with food may not choose to eat (Steinsbekk et al., 2020). From this point, it is possible that the unhealthy

food consumption of children with high negative affectivity is also similar to their eating behavior; they can approach or avoid it.

5.2 Interparental Conflict and Unhealthy Food Consumption

The second research question of our study aimed to investigate the extent of the relationship between interparental conflict and child unhealthy food consumption. In view of this purpose, we hypothesized that interparental conflict would be positively associated with unhealthy food consumption.

Consistent with the previous research (Dimitratos et al., 2022; George et al., 2014; Martin-Biggers et al., 2017; Renzaho et al., 2014; Sherrard, 2022; Speirs et al., 2016), both bivariate and multivariate analysis demonstrated that when children are exposed to high interparental conflict, they consume higher levels of unhealthy food. Sherrard and Tan (2023) reported that high interparental conflict (e.g., high undermining co-parenting) predicts high food approach behavior (e.g., high consumption of sugary drinks) in children. It is possible that high interparental conflict creates a stressful environment that may influence the parents' feeding behavior (Dimitratos et al., 2022; Mason et al., 2019; Renzaho et al., 2014). Parents decide how much time they will spend preparing food and which food they will provide to the child. Hence, interparental conflict, which create a stressful environment, may influence parents' food choices to provide, and they can provide pre-maid or store-bought meals rather than healthy food preferences (George et al., 2014; Mason et al., 2019; Sherrard, 2023). Besides, experiencing interparental conflict could be a distraction for the parents, which concludes with the less control or monitoring behaviors of parents on their children's eating, which may cause their children's unhealthy food consumption (Dimitratos et al., 2022). The second possible reason could be that children who experience interparental conflict may feel less emotional security,

which makes them more prone to eating unhealthy food to regulate their emotions (George et al., 2014).

5.3 Moderating Role of Interparental Conflict Between Children's Temperament and Their Unhealthy Food Consumption

The last research question of our study is intended to investigate the moderating role of interparental conflict on the relationship between children's temperament and their unhealthy food consumption. We hypothesized that when children who are high in negative affectivity or surgency experience interparental conflict, their unhealthy food consumption increases. Besides, when children who are low in effortful control experience interparental conflict, their unhealthy food consumption increases. According to our results, while the hypothesis on negative affectivity and effortful control is fully supported, the hypothesis on surgency was not supported.

First of all, we found that interparental conflict moderated the association between negative affectivity and unhealthy food consumption. In detail, when children with low negative affectivity experienced low interparental conflict, they had lower unhealthy food consumption. This finding partially supports the Diathesis Stress Model, which points out that some children are vulnerable to adverse environments to display adverse outcomes (Zuckerman, 1999). From a developmental perspective, high negative affectivity might be a vulnerability in the context of interparental conflict (Holzman et al., 2018; Loginova & Slobodskaya, 2021). According to our results, temperamentally low negative affectivity and experiencing low interparental conflict could be protective for unhealthy food consumption. Low negative affectivity children feel negative emotions less intense than their high negative affectivity peers (Rothbart, 2007), which makes them less vulnerable to a negative environment. When this temperamental trait is combined with

low interparental conflict, children might not need unhealthy food consumption as a self-soothing mechanism. In sum, the combination of low negative affectivity and low interparental conflict provides a nurturing environment for children to avoid unhealthy food consumption.

Secondly, our findings showed that interparental conflict moderated the association between effortful control and unhealthy food consumption. Comprehensively, when children with low effortful control experienced high and moderate interparental conflict, they had higher unhealthy food consumption. This finding also reinforces the developmental perspective of the Diathesis Stress Model, which points out that some temperamental characteristics could be a vulnerability, and when this vulnerability is faced with negative environments, it may result in negative outcomes (Holzman et al., 2018; Loginova & Slobodskaya, 2021; Zuckerman, 1999). As we hypothesized, low effortful control had emerged as a vulnerability, and when this temperament faced interparental conflict, it resulted in more unhealthy food consumption. Children with low effortful control might already have more difficulty regulating their behaviors because of their low attentional focusing and inhibitory control traits (Rothbart & Derryberry, 1981; Rothbart, 2007). In the presence of interparental conflict, these children might have even more difficulty regulating themselves. Therefore, they need another stimulus for distraction (Rothbart & Posner, 2015). In contrast, children with high effortful control had better regulatory skills, and when they experience an interparental conflict, they easily shift their attention and do not need any other stimuli to distract them. To sum up, children with low effortful control were more vulnerable to interparental conflict, which could lead them to consume unhealthy food.

Lastly, contrary to our hypothesis, our findings did not show a moderating effect of interparental conflict on the association between surgency and unhealthy food consumption. This unexpected result suggests that the influence of surgency on unhealthy food consumption in children operates independently of the level of conflict between parents. Children with high surgency exhibit high reward sensitivity (Acar, 2016; Leung et al., 2014; van den Berg et al., 2011). We conceptualized our hypothesis that in the presence of interparental conflict, parents would experience increased stress and might resort to inefficient parenting strategies to enforce their rules. In such situations, surgent children, with their heightened sensitivity to rewards, would be more vulnerable to the negative effects of interparental conflict, leading to an increased likelihood of unhealthy food consumption. However, this finding invites further research to explore more nuanced measures of both interparental conflict and surgency to fully understand their interaction and influence on unhealthy food consumption. It also underscores the importance of considering culture and contextual factors in studies examining family dynamics and food consumption in children. It is worth noting that extended family members also have a role in raising children due to the collectivistic characteristics of Turkish culture (Gürmen, 2019). In cases of interparental conflict, the presence of extended members such as grandparents may be protective depending on their positive relationship with the child. For example, a grandparent who is taking care of the child's feeding and provides healthy food to the child may influence the eating habits of children. Future studies should employ more detailed measures of interparental conflict and surgency/extraversion, as well as explore other potential moderators such as parental feeding practices.

Although it is not one of our hypotheses, both bivariate and multivariate analysis illustrated that the family SES, which includes the parent's educational status and monthly

income of the family, was associated with unhealthy food consumption. Previous research findings from both Western countries and Türkiye demonstrated that lower socioeconomic status is associated with higher unhealthy food consumption (Best & Papies, 2019; Janssen et al., 2018; Kristo et al., 2020). Low-educated people may underestimate the harmful effects of unhealthy food consumption on their health or may not have enough information on this subject. In addition, access to healthy food in Turkey is becoming increasingly expensive, which may prevent people with low socioeconomic status from accessing healthy food. However, there are also other research findings that indicate higher socioeconomic status is associated with higher levels of unhealthy food consumption (e.g., fast-food consumption; Ağır & Akbay, 2021). Therefore, further research needs to examine different SES groups from Türkiye to better understand the association between unhealthy food consumption and SES.

5.4 Strengths, Limitations, and Future Directions

The current study has contributed to the limited literature on interparental conflict and unhealthy food consumption of children. Another major strength of the current study is that, to our knowledge, it is the first study that investigated the moderating role of interparental conflict in the relationship between child temperament and child unhealthy food consumption. Besides, this study contributed to the literature by including three dimensions of temperament (negative affectivity, surgency/extraversion, effortful control) and investigating their relationship with interparental conflict on unhealthy food consumption in the context of Türkiye. Lastly, this study provides evidence of the interaction between temperament (negative affectivity, effortful control) and interparental conflict to extend the literature.

On the other hand, the current study has some limitations. First of all, our measurements were based on only one of the parents' reports. However, using one reporter could be biased (Acar et al., 2018). First, the reporter could have a social desirability issue, and their answer may favor the child. Second, the child's temperament and behavior may be evaluated differently from one reporter to another (Acar & Ahmetoğlu, 2020). Thus, it could be better to include different informants like other caregivers, teachers, or observants for further research (Acar et al., 2018). Besides, the internal consistency of the temperament scale was relatively low for each dimension (negative affectivity, surgency, effortful control) (α=.65). It could be beneficial to use a different scale like the longer version of the Child Behavior Questionnaire (CBQ; Putnam & Rothbart, 2006) for increasing the internal consistency and having a more comprehensive picture of child temperament. Additionally, the family SES of the participants was relatively high in the current study; hence, including diverse SES groups may increase the generalizability of the results for future research. Lastly, the current study is a cross-sectional study; thus, we cannot make a causal interpretation of the results. Further research may use a longitudinal design to inspect causal interpretations.

5.5 Implications

The results of the current study illustrated the contributions of child temperament and interparental conflict to the unhealthy food consumption of children. Besides, it examined the moderator role of interparental conflict on the relationship between child temperament (negative affectivity, effortful control) and interparental conflict. Since unhealthy food consumption is the major risk factor behind non-communicable diseases (e.g., diabetes, cardiovascular diseases, and obesity), which are global health concerns growing rapidly (Al-Jawaldeh & Abbass, 2022; WHO, 2013), this research may inspire

health professionals, child development professionals, researchers, and parents who aim to reduce unhealthy food consumption of children. This study also provides an understanding of unhealthy food consumption from the perspective of the Diathesis Stress Model, in which child temperament and interparental conflict interact to contribute to child nutrition.

Nutrition-based intervention programs that aim to reduce children's unhealthy food consumption should focus on reducing interparental conflict and improving children's emotional and behavioral regulation. Nix et al. (2023) implemented their preventive intervention named "Recipe 4 Success" to increase toddlers' self-regulation and healthy eating habits. Home visitors gave brief information to the families about self-regulation and healthy eating, did short physical activities for self-regulation with toddlers, and modeled preparing simple snacks or meals for 10 lessons. The study results show that toddlers who participated in the "Recipe 4 Success" intervention had better self-regulation skills and healthy eating habits (Nix et al., 2023). Therefore, it is important to include self-regulation activities in the nutrition-based intervention programs to promote their healthy food consumption.

Family Foundations is an intervention program focusing on parents' co-parenting skills like conflict management, communication, emotional security of the parents, and joint parenting skills (Feinberg & Kan., 2008; Feinberg et al., 2009). Both parents attended the 8 classes of interventions before and after birth. The results of the intervention show that parents who participated in the Family Foundations had better co-parenting skills (less interparental conflict, more support) (Feinberg & Kan., 2008; Feinberg et al., 2009).

By combining these kinds of intervention programs, it is possible to reduce interparental conflict and improve children's behavioral and emotional regulation. Nutrition-based intervention programs that aim to decrease children's unhealthy food consumption should focus on integrating these types of interventions to enhance the children's dietary quality.

5.6 Conclusion

Overall, this study demonstrated evidence for the contributions of children's temperament and interparental conflict to children's unhealthy food consumption. According to our findings, surgency/extraversion was positively related and effortful control was negatively related to unhealthy food consumption in children. Additionally, interparental conflict was positively associated with the child's unhealthy food consumption. We also explored the moderating role of interparental conflict on the relationship between children's temperament and their unhealthy food consumption. Interparental conflict moderates the relationship between negative affectivity and unhealthy food consumption and effortful control and unhealthy food consumption in children. To conclude, this study contributes to the literature by addressing the contributions of both temperamental characteristics and interparental conflict on the unhealthy food consumption of children.

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APPENDICES

APPENDIX A. ANALYSIS FOR MISSING VALUES ACROSS FOCAL VARIABLES DEPENDING UPON IPC

Table 3.2 *Analysis for Missing Values Across Focal Variables Depending Upon IPC*

	IPC Missingness	*N*	*Mean*	*SD*	*t*
Child unhealthy food consumption	Missing	8	2.55	.88	-.25
	Not missing	179	2.62	.78	
Child negative affectivity	Missing	10	4.50	.77	-.29
	Not missing	180	4.57	.72	
Child surgency/extraversion	Missing	10	4.40	.67	-1.85
	Not missing	180	4.84	.74	
Child effortful control	Missing	10	5.52	.65	.33
	Not missing	180	5.45	.63	
Child age	Missing	18	57.94	11.23	-.39
	Not missing	180	59.31	14.59	
Family SES	Missing	19	.39	.70	.23
	Not missing	180	-.01	.82	
Child sex (girls=1, boys=2)	Missing	19			.57 *(chi-square value)*
	Not missing	180			

Notes. IPC= Interparental Conflict, SES= Socioeconomic status. Child sex tested with chi-square.

APPENDIX B. ANALYSIS FOR MISSING VALUES ACROSS FOCAL VARIABLES DEPENDING UPON UFC

Table 3.3 *Analysis for Missing Values Across Focal Variables Depending Upon UFC*

	UFC Missingness	*N*	*Mean*	*SD*	*t*
Child negative affectivity	Missing	3	4.97	1.47	.99
	Not missing	187	4.56	.71	
Child surgency/extraversion	Missing	3	4.91	.82	.23
	Not missing	187	4.81	.74	
Child effortful control	Missing	3	5.42	1.51	-.10
	Not missing	187	5.45	.61	
Interparental conflict	Missing	1	2.22	-	1.04
	Not missing	179	1.72	.48	
Child age	Missing	11	64.18	6.84	1.19
	Not missing	187	58.89	14.58	
Family SES	Missing	12	.03	.94	.16
	Not missing	187	-.00	.80	
Child sex (girls=1, boys=2)	Missing	12			.90 *(chi-square value)*
	Not missing	187			

Notes. UFC= Unhealthy food consumption, SES= Socioeconomic status. Child sex tested with chi-square.

APPENDIX C. DEMOGRAPHIC INFORMATION

Çalışmaya katılan çocuğunuz ile ilgili bilgiler:

1. Çocuğunuzun doğum tarihi (gün/ay/yıl):
2. Çocuğunuzun cinsiyeti:
    a. Kız
    b. Erkek
    c. Diğer
    d. Belirtmek İstemiyorum

Aile ile ilgili bilgiler:

1. Medeni durumunuz nedir?
    a. Evliyim
    b. Boşandım/Bekarım
    c. Tekrar evlendim
    d. Eşim (çocuğumun babası) hayatta değil
    e. Belirtmek istemiyorum

Kendiniz ve eşiniz için lütfen aşağıdaki bilgileri doldurunuz.

Annenin:

1. Doğum tarihi (gün/ay/yıl):
2. Eğitim Seviyesi:
   (Lütfen kişinin en son bitirdiği (diplomasını aldığı) eğitim seviyesini düşünerek uygun seçeneği işaretleyiniz.)
    a. Okula gitmedi
    b. İlkokul mezunu
    c. Ortaokul mezunu
    d. Lise mezunu
    e. Meslek yüksek okulu mezunu
    f. İki yıllık üniversite mezunu
    g. Dört yıllık üniversite mezunu (veya tıp fakültesi)
    h. Yüksek lisans derecesi var
    i. Doktora derecesi var (veya tıpta uzmanlık)
3. Çalışma Durumu:
    a. Tam zamanlı bir işte çalışıyor
    b. Yarı zamanlı bir işte çalışıyor
    c. Çalışmıyor

Babanın:

1. Doğum tarihi (gün/ay/yıl):
2. Eğitim Seviyesi:
   (Lütfen kişinin en son bitirdiği (diplomasını aldığı) eğitim seviyesini düşünerek uygun seçeneği işaretleyiniz.)
    a. Okula gitmedi
    b. İlkokul mezunu
    c. Ortaokul mezunu
    d. Lise mezunu
    e. Meslek yüksek okulu mezunu
    f. İki yıllık üniversite mezunu
    g. Dört yıllık üniversite mezunu (veya tıp fakültesi)

h. Yüksek lisans derecesi var
i. Doktora derecesi var (veya tıpta uzmanlık)

3. Çalışma Durumu:
   a. Tam zamanlı bir işte çalışıyor
   b. Yarı zamanlı bir işte çalışıyor
   c. Çalışmıyor
4. Lütfen aile halkının toplam gelirine en yakın şıkkı işaretleyiniz (lütfen maaş, kira geliri, aile desteği gibi tüm gelirleri göz önüne alarak ailenizin aylık gelirine en yakın değeri içeren şıkkı işaretleyiniz).
   a. 8.500 TL ve altı
   b. 8.501-10.000 TL arası
   c. 10.001-12.000 TL arası
   d. 12.001-15.000 TL arası
   e. 15.001-20.000 TL arası
   f. 20.001- 30.000 TL arası
   g. 30.001-40.000 TL arası
   h. 40.001-50.000 TL arası
   i. 50.000 TL ve üzeri
   j. Belirtmek istemiyorum

APPENDIX D. CHILD BEHAVIOR QUESTIONNAIRE-VERY SHORT FORM (CBQ-VSF)

(Sample Items)

Son 6 ayı göz önünde bulundurarak, çocuğunuzun aşağıda tarif edilen bazı durumlar karşısında nasıl davrandığını en iyi gösteren sayıyı yuvarlak içine alarak belirtiniz.	(1) Tamamen yanlış	(2) Oldukça yanlış	(3) Biraz yanlış	(4) Ne Yanlış Ne Doğru	(5) Biraz Doğru	(6) Oldukça Doğru	(7) Tamamen Doğru
1. Genellikle bir yere giderken acele hareket eder.	1	2	3	4	5	6	7
2. Yapmak istediği şey engellenince, bayağı hayal kırıklığına uğrar.	1	2	3	4	5	6	7
3. Boyama yaparken veya resim çizerken, o işe iyi odaklanır (konsantre olur).	1	2	3	4	5	6	7

APPENDIX E. THE O'LEARY PORTER SCALE

(Sample Items)

Bu anket eşinizin ve sizin şu anki durumuzla ilgilidir. Lütfen her bir soruyu dikkatlice okuyunuz ve size uygun olan seçeneği işaretleyiniz.	(1) Hiçbir Zaman	(2) Nadiren	(3) Bazen	(4) Sık Sık	(5) Her Zaman
7. Hepimiz stresli zamanlarda sinirlerimizi kontrol etmekte güçlük çekebiliyoruz. Böyle durumlarda, siz ve eşiniz çocuğunuzun önünde kızgınlığınızı ne sıklıkla fiziksel olarak gösterirsiniz (itme, vurma gibi)?	1	2	3	4	5
9. Eşinizle aranızda anlaşmazlık olduğunda eşiniz ne sıklıkla çocuğunuzu kendi tarafını tutması için teşvik eder?	1	2	3	4	5
10. Eşiniz, ne sıklıkla sizi çocuğunuzun önünde eleştirir?	1	2	3	4	5

APPENDIX F. FOOD CONSUMPTION FREQUENCY SCALE

(Sample Items)

Lütfen tabloda yer alan besinleri çocuğunuzun son 1 ayda ne sıklıkla tükettiğini belirtiniz.	(1) Hiç	(2) Ayda 1 kez	(3) 15 günde 1 kez	(4) Haftada 1-2 kez	(5) Haftada 3-4 kez	(6) Haftada 5-6 kez	(7) Her gün	(8) Her öğün
2. Hamur Tatlıları (Baklava, şekerpare vb)	1	2	3	4	5	6	7	8
4. Cips	1	2	3	4	5	6	7	8
8. Hazır Hamburger	1	2	3	4	5	6	7	8