



Cognitive Interviews for Validating the Family Nutrition Physical Activity Instrument for Korean-American Families With Young Children



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ABSTRACT

Purpose: Childhood obesity is a growing health concern for Korean-Americans (KA). The purpose of this study was to develop a culturally appropriate Korean-language version of the Family Nutrition Physical Activity (FNPA) instrument and evaluate its comprehensibility and cultural appropriateness of the FNPA for KAs.

Design and Methods: The FNPA was translated into Korean and cognitive interviews were conducted with 19 KA mothers in the Chicago metropolitan area.

Results: Overall, participants reported that the FNPA is easy to understand and said they had no difficulty answering items using a 4-point Likert scale. Six out of 20 items had minor revisions due to: items that were not specific enough, had confusing wording, or led to incorrect interpretations.

Conclusions: Cognitive interviews confirmed the cultural appropriateness of the translated FNPA in the KA context. It is crucial that child's age and cultural aspects of a child's household routines should be taken into consideration when the original FNPA is being used with culturally diverse populations.

Practice Implications: Health care professionals may use the FNPA when assessing family environment in their efforts to prevent and control childhood obesity among KAs.

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One-third of youth (31.8%) aged 2 to 19 years are overweight or obese in the United States (U.S.) (Ogden, Carroll, Kit, & Flegal, 2014). A nationally representative study estimated that 26% of Asian-American children were overweight or obese (Jain et al., 2012). Asian-Americans have a lower prevalence of obesity compared to other ethnic groups, but they may develop chronic diseases at a lower body mass index (BMI) than non-Hispanic Whites due to greater tendency toward abdominal obesity (Cho & Juon, 2006).

Childhood obesity is significantly associated with a high risk of developing chronic diseases, including diabetes, cardiovascular disease, and cancer (CDC, 2016). Children have a higher risk of developing overweight and obesity if they are physically inactive, take in excessive calories, have increased screen time, and lack sleep (Jones, Fiese, & the STRONG Kids Team, 2014; McDonald et al., 2015). These contributing factors are not simply individual choice: they are often part of household routines. Recently researchers have emphasized the importance of protective household routines in preventing and decreasing childhood overweight and obesity (Jones, Fiese, & the STRONG Kids Team, 2014). Anderson and Whitaker (2010) reported that preschoolers with protective household routines, including family dinner, adequate

nighttime sleep, and limited screen viewing time, exhibit lower obesity rates. A home-based randomized trial demonstrated that improving household routines is effective in decreasing children's BMI (Haines et al., 2013).

Household routines are shaped within a family environment and can be changed by means of parental modeling and modification of lifestyles by family members. The family is the proximal environment for children, so the influence of the family is crucial to healthy child development, including healthy eating, sufficient exercise, and weight management (Sousa, 2009). The familial approach to obesity prevention and control emphasizes the importance of providing healthy home environments and family behaviors (Golan & Weizman, 2001). In addition, interventions within a family obesogenic environment yield higher success rates in childhood obesity control and prevention than interventions focused on environmental changes outside the home (Haines et al., 2013; Penney, Almiron-Roig, Shearer, McIsaac, & Kirk, 2014). Therefore, identification of obesity risk factors within a shared family environment is necessary in order to provide successful intervention for obese preschool-age children (Kitzman-Ulrich et al., 2010).

The Family Nutrition Physical Activity (FNPA) instrument is a screening tool used to assess family environmental and behavioral factors that may increase the risk of childhood obesity (Ihmels, Welk, Eisenmann, & Nusser, 2009). This instrument is easy to use and includes only 20 questions; its reliability and validity have been confirmed in

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previous studies. (Ihmels, Welk, Eisenmann, & Nusser, 2009; Ihmels, Welk, Eisenmann, Nusser, & Myers, 2009). The original version of the FNPA can be found at www.myfnpa.org.

Several studies used the FNPA in identifying family obesogenic environments and suggested that FNPA can be utilized to predict child's obesity risk (Christison et al., 2014; James, Matsangas, & Connelly, 2014). Yee, Eisenmann, Carlson, and Pfeiffer (2011) reported that the FNPA can be used as an important screening tool because it is significantly related to risk of cardiovascular disease factors among children. However, most studies were conducted for non-Hispanic White school-aged children. Thus, further study is needed to validate the utility of the FNPA with other racial/ethnic groups, such as Korean-Americans.

Immigrants' health and lifestyles differ from those of people who live within their country of origin as well as their current country of residence, and these differences may influence the health of preschool-age children (Lee, Sobal, & Frongillo, 2000). Similarly, research has shown that a family's culture and traditions has an impact on family household routines and aspects of the home environment that may affect childhood obesity (Johnson, Welk, Saint-Maurice, & Ihmels, 2012). Kumanyika (2008) has reported that parents' inclination to provide healthful foods for children is influenced by cultural attitudes. In addition, family eating habits gradually change as part of the adjustment to U.S. culture, and this change can have an impact on children's health (Lu, Diep, & McKyer, 2015; Perreira & Ornelas, 2011).

Regardless of years lived in the U.S., KAs tend to maintain their traditional cultural values, customs, and language: eating Korean food, using Korean language media, and participating in Korean community and business organizations (Kim & Wolpin, 2008; Lee, 1995). KAs stress family cohesion, and a strong sense of family obligation continues to be reinforced for the children as they grow older (McAdoo, Martinez, & Hughes, 2005). KA families also typically have a stable family structure: more than half (67%) of KA families have children and most families (80%) include a married couple (Min & Kim, 2012). Studies have examined KAs' health-related behaviors. A study by Hofstetter, Irvin, Schmitz, et al. (2008) reported that Koreans living in California walk less for exercise than the national average. In addition, acculturated Korean-Americans eat snacks and eat out more frequently than less acculturated KAs (Lee, 2008). These KA family behaviors may influence the household routines and home environments that increase the rates of overweight and obesity among KA children. Studies report that approximately one fifth of KA children (18–20%) are overweight or obese (Asian and Pacific Islander American Health Forum, 2016; Jain et al., 2012). However, little is known about the KA family obesogenic environment. There is no validated structured instrument that can easily measure KA family's household routines and home environment related to childhood obesity. Cultural issues related to the adaptation of instruments that measure family obesogenic environments for KAs need to be addressed (Pai, Lee, & Chang, 2011). The purpose of this study was to develop a Korean version of the FNPA instrument, to evaluate its comprehensibility and cultural appropriateness, and to assess the content validity of the FNPA for KAs.

Methods

Design

This qualitative study used cognitive interviews to obtain the responses from parents regarding survey questionnaire items to establish the content validity necessary in developing and revising a new instrument (Polit & Beck, 2006). The cognitive interview, which is based on cognitive theory, is a way of assessing respondents' understanding of questionnaire items to improve a questionnaire's reliability and content validity prior to its distribution to research subjects (Collins, 2003; Knafel et al., 2007). In addition, cognitive interviews have been used when developing culturally appropriate health surveys for target populations. Problems that may be identified include the suitability of questions

and the meaning of translated items for respondents from different ethnic groups (Drennan, 2003). There are two types of cognitive interviews: *think aloud* and *verbal probing*. *Think aloud* is useful in asking respondents to verbalize their thoughts while answering questionnaire items, whereas *verbal probing* is used to identify confusingly worded or ambiguous questions (Knafel et al., 2007). To determine comprehensibility and appropriateness of the FNPA, the *Think aloud* method was used for cognitive interviews in this study, followed by *verbal probing* if confusing items were identified.

Setting and Sample

The cognitive interview participants were 19 KA mothers recruited from three KA churches and one preschool in the Chicago metropolitan area. The inclusion criteria for all participants were as follows: (1) self-identify as KA (first-generation KAs who were born in Korea and immigrated to the U.S.), (2) lived in the U.S. at least 5 years, and (3) mothers who live with their 2- to 5-year-old child.

Participants of cognitive interviews were relatively homogeneous: all 19 participants were born in Korea and were married. The mean age of the mothers was 38 years old (range 31–44 years), and the average number of years in the U.S. was 15 (range 6–34 years). The mean age of the children was 51 months (range 24–59 months). Over half of the interviewees (55.8%) were currently working outside the home, 29.8% had earned a master's degree or higher, and 43.5% had a family household income of more than \$75,000 per year.

Measures

In developing the FNPA, Ihmels, Welk, Eisenmann, Nusser, and Myers (2009) identified 10 main family environment factors associated with overweight and obesity: (1) family meal patterns, (2) family eating habits, (3) food choices, (4) beverage choices, (5) restriction/reward, (6) screen time behavior and monitoring, (7) healthy environment, (8) family activity involvement, (9) child activity involvement, and (10) family routine. Two items were asked for each of the 10 factors.

The original FNPA contains 20 items and uses a 4-point Likert scale (1 = almost never, 2 = sometimes, 3 = usually, and 4 = almost always; possible total score ranges from 20 to 80.). There are six negatively stated items (3, 4, 5, 7, 10, and 13) for which the scores need to be reverse coded. A higher score on the FNPA implies a less obesogenic environment. The reliability of the FNPA was established in previous studies; the Cronbach's alpha ranged from 0.72 to 0.81 (Ihmels, Welk, Eisenmann & Nusser, 2009; James et al., 2014). In addition, the FNPA's construct validity and predictive validity were supported in a longitudinal study (Ihmels, Welk, Eisenmann, Nusser, & Myers, 2009).

Procedures

Guided by Classical Test Theory (Devellis, 2006), the study was conducted in several steps. First, the FNPA was translated from English to Korean. Next, cognitive interviews with KA mothers were conducted to assess the items for comprehensibility and cultural appropriateness. Items were revised as needed, based on analysis of the qualitative data generated by the cognitive interviews.

We obtained study approval from the Institutional Review Board of the University prior to participant recruitment and data collection. The first author explained the study purpose, procedures, benefits, and risks of the study to the participants at the beginning of the cognitive interviews. Participants were told that their participation was voluntary and the information would be kept confidential. Their signed informed consent was obtained, and each participant was given a gift card (\$10) as compensation for their time and effort. The first author and a trained RA conducted each cognitive interview.

A parallel blind technique was used to translate the FNPA into Korean. This approach encourages open discussion among the translators

and facilitates translation that accurately reflects the conceptual meaning of the instrument. Moreover, the parallel blind technique is faster than conventional translation/back-translation because the translators work together rather than in sequence (Behling & Law, 2000). Three translation committee members, who all have master's or doctoral degrees and whose primary language is Korean, independently translated the original English version of the FNPA into Korean. The three translators compared their FNPA translation version and modified any inconsistent items to develop the final Korean version of the FNPA.

Then 19 individual cognitive interviews were conducted to examine the content validity of the FNPA. Prior to each cognitive interview, the interviewer explained that the purpose of the interview was to ensure that the Korean version of the FNPA was clear and ready for use as a survey. In addition, the interviewer explained that the information from the interview would be used to reword or remove any inappropriate questions. The interviewer read aloud all questionnaire items. After the participant gave her response, she was asked to explain her thought process as she interpreted and decided how to answer the item. If a question was misinterpreted or confusing, the participant was asked for suggestions to improve the phrasing. All the answers and comments were recorded in notes by the first author and RA. Questions asked in cognitive interviews are presented in Table 1.

Cognitive interviews were conducted in Korean and lasted 40 to 60 min. Immediately after each cognitive interview, all the participants completed a background questionnaire that included age, level of highest education, and household income.

Data Analysis

Content validity was confirmed by analyzing the notes from cognitive interviews. The interviews transcribed into Korean and the first author translated it to English for analysis. The translators met again to review participants' feedback and modified the FNPA questionnaire items to improve cultural acceptability and clarity of the FNPA.

Results

FNPA Modification

Overall, cognitive interview participants reported that the FNPA was easy to understand. And that they did not have difficulty understanding the 4-point Likert scale to answer the questions. Based on the feedback and suggestions received during the cognitive interviews, the Korean version of the FNPA questionnaire was modified to improve comprehensibility of the questions. Only minor modifications were needed. Of the 20 items in the FNPA, 14 items were retained in their original form, 6 items were revised, and no items were deleted at this stage (Table 2).

Examples were added to four items on the FNPA to clarify the meaning of the question.

Item #7: My child drinks soda pop or sugar drinks. Mothers (n = 5) wondered whether sugar drinks included 100% juice. If sugar drinks do not include 100% juice, they recommended adding examples of sugar drinks to decrease confusion.

Item #8: My child drinks low fat milk at meals or snacks. Mothers (n = 7) were not sure what "low fat milk" referred to; they asked whether 2% milk is considered to be low fat milk. Mothers suggested including the type of low fat milk in the questionnaire for clarification. For

Table 1

Questions for think aloud cognitive interview.

When you answered this question, what kinds of things were you thinking about?
Was it easy or difficult to choose one of the responses on the 4-point scale?
What do you think we mean by "eats while watching TV"?
What do words "soda pop or sugar drinks" mean to you?
What might be a better way to say this?

Table 2

Comparison of original and revised items of the Family Nutrition Physical Activity (FNPA) instrument.

Original questions	Participant comments	Revised questions
7. My child drinks soda pop or sugar drinks	Do sugar drinks include juice?	My child drinks soda pop or sugar drinks (drink with sugar added: does NOT include 100% juice)
8. My child drinks low fat milk at meals or snacks	Not sure what "low fat milk" includes	My child drinks low fat milk at meals or snacks (including 1% or skim dairy, flavored, soy, etc.)
12. Our family limits the amount of TV our child watches	Need to ask not only about TV but also about computers and other electronic devices	Our family limits the amount of TV/games/computer our child watches
13. Our family allows our child to watch TV in their bedroom	Need to ask not only about TV but also about computers and other electronic devices	Our family allows our child to watch TV/games/computer in their bedroom
15. Our family encourages our child to be active every day	Confused about whether "be active" refers to indoor or outdoor activities	Our family encourages our child to be physically active every day
20. My child gets 9 h of sleep a night	Not sure how to answer this if the child got more than 9 h of sleep	My child gets at least 9 h of sleep a night

Bold indicates the changes in revised questions.

example, "Low fat milk includes any milk labeled low fat, 1%, skim, or fat free milk."

Item #12: Our family limits the amount of TV our child watches. Mothers (n = 3) suggested that not only TV but also other electronic devices be included. Children use computers and other devices to watch TV programs or play games, so that limiting TV is not the same as controlling screen time. One mother commented, "You should change the term from 'TV' to 'electronic devices, including TVs, computers, and cell phones'; computers substitute for TV nowadays."

Item #13: Our family allows our child to watch TV in their bedroom. Mothers (n = 15) mentioned that almost all KA parents do not permit a TV in their child's room. Some KAs do not even have a TV in their home. Mothers said that "if 'other electronic devices usage' is added to item 13, it will be OK, but only asking about TV in a child's bedroom is not appropriate for KA families."

For two items, a descriptor was added to clarify their meaning.

Item #15: Our family encourages our child to be active every day. When they were asked to answer this question, some mothers (n = 3) talked about a wide range of different activities, including piano lessons or drawing pictures. They said that the expression "to be active" confused them: they were not sure whether it referred to indoor or outdoor activities. They interpreted the term to mean "keep busy" rather than engaging in physical activity. Interviewees asked, "Is the intent of the question to assess physical activity?" Some mothers recommended adding an explanatory adverb, for example, "Our family encourages our child to be *physically* active every day."

Item #20: My child gets 9 hours of sleep a night. Some of the mothers (n = 2) were not sure how to answer this if their child got more than 9 hours of sleep. They suggested changing the question to, "My child gets *at least* 9 h of sleep a night."

Suggestions for Improvement of the FNPA

KA mothers provided some suggestions for future studies to improve appropriateness and understanding of the FNPA for KAs.

Item #7: My child drinks soda pop or sugar drinks. Some mothers (n = 5) recommended dividing item #7 into two questions that ask about soda pop and sugar drinks separately. Mothers (n = 8) pointed out that they allow their child to drink sugar drinks, while they restrict their child's soda consumption.

Item #10: Our family uses candy as a reward for good behavior. Most mothers ($n = 16$) said that item 10 is not applicable to a KA family. KA parents usually do not allow their children to eat candy and monitor them carefully. Mothers worry about calories and tooth decay. Some mothers said that “eating candy is only allowed on Halloween or Christmas.” “When children bring candy home, we hide it and throw it away after that.” “I give a hug or compliment, or even money for good behavior rather than candy. As far as I know, there are no KA parents who give candy as a reward.” These respondents suggested deleting item #10 or adding another example, such as a snack, as a reward for good behavior.

Item #11: My child spends less than 2 hours on TV/games/computer per day. Some mothers ($n = 6$) recommended separate questions for weekdays and weekends, because their family routines regarding screen time were different on weekends. Mothers said that they usually did not allow their children to play games and watch TV on weekdays, but allowed them to do it on weekends. Therefore, mothers said it might be easier to estimate average screen time for their children if the question was asked separately for weekdays and weekends.

Item #14: Our family provides opportunities for physical activity./Item #15: Our family encourages our child to be active every day. Some mothers ($n = 2$) said they felt that items #14 and #15 were asking the same question. They suggested combining the two questions into one.

Item #18: My child is enrolled in sports or activities with a coach or leader. Some mothers ($n = 4$) pointed out that item #18 was not relevant to preschool-age children. They said that their child was too young to enroll in sports with a coach or leader.

Discussion

Understanding and identifying the obesogenic environment among families is a key to preventing and reducing childhood obesity among preschool-age children. The FNPA was developed to screen family obesogenic environments, but has not been used and validated for KAs. When applying an existing instrument to a new group, cross-cultural validation of an instrument should be performed (Politt & Beck, 2006). To the best of our knowledge, this is the first study to develop a translated Korean-language version of the FNPA and to evaluate the appropriateness of the FNPA for KAs.

Cognitive interviews increased the cultural acceptability and clarity of the FNPA for use among KAs. As a result of the cognitive interviews, six items of the FNPA were revised. KA mothers suggested that KAs' cultural backgrounds and their child's age should be considered when the FNPA will be used for KAs.

Some items of the original FNPA were identified as possibly problematic in the cognitive interviews, where KA mothers suggested revising or deleting those items. KA mothers identified several items that were culturally inappropriate for KA families, such as using candy as a reward or allowing a TV in a child's bedroom. All KA mothers in the study were born in Korea: they may want to maintain many aspects of their traditional daily lifestyles, including dietary habits. This is similar to prior studies with KA. In one study (Kim & Wolpin, 2008), KA parents showed that they eat high frequencies of Korean traditional food. Additionally, Lee (2008) reported that higher levels of acculturation of KAs were associated with higher frequency of snacking and eating-out.

Because the original FNPA was developed for school-aged children (first-graders), KA mothers also felt that some items were not suitable for preschool-age children (e.g., drinking low fat milk or registering in sports or activities with a coach). The same issue was found in a previous study. Arab mothers indicated on the FNPA questionnaire that their children (aged 6–12 years) drink whole milk rather than low-fat milk (Tami, Reed, Trejos, Boylan, & Wang, 2015). Items of the FNPA reflect behaviors that are significantly related to childhood obesity and have implications for practice (Yee et al., 2015).

Shaping healthy dietary habits plays a pivotal role, not only in a child's development but also in the maintenance of a child's healthy weight. One of the strengths of the FNPA is that it includes items related to both healthy and unhealthy dietary habits. Eating breakfast and having family meals have been proposed as factors contributing to lower rates of childhood obesity (Anderson & Whitaker, 2010; Berge et al., 2014). However, although increased consumption of fruits and vegetables is recommended for children, the relationship between fruit and vegetable intake and childhood obesity shows mixed results (Ledoux, Hingle, & Baranowski, 2011). KA mothers were aware of the importance of their child's healthy dietary habits when they answered those questions. Therefore, maintaining their child's healthy dietary habits should be encouraged when the KA parents visit well-child clinics.

Questions about the consumption of fast food and ready-to-eat foods, which increase the risk of obesity, were asked to assess unhealthy dietary habits of family members. During the cognitive interviews, mothers responded that although they know providing fast food and ready-to-eat foods increases the risk of developing obesity, they sometimes feed these foods to their children due to lack of time and convenience of preparation. Counseling for KA parents dealing with a structural issue wanting to provide homemade food but being stressed by time constraints needs to be considered in both well-child visits and future studies.

Ek, Sorjonen, Nyman, Marcus, and Nowicka (2015) reported that monitoring is one of the important parenting practices that shape a healthy lifestyle for children. However, no structured instrument is currently available for measuring parental monitoring of a child's household routines. The FNPA may guide KA parents on appropriate parental monitoring for their child's healthy routines. In the FNPA, monitoring of snacking and screen time was assessed. KA mothers suggested that use of electronic devices, including computer, video games, and cell phones, should be addressed to fully monitor their children's screen time. However, they did not go into details about cell phone use. This may reflect the fact that KA mothers feel they can monitor and control their children's cell phone use, because preschool-aged children do not typically have their own cell phones. Health care professionals who use the FNPA to assess older KA children, who may have their own cell phones, should consider parental monitoring of children's cell phone use specifically.

Physical activity promotes a child's growth and development and reduces the risk of obesity (National Academy of Press, 2013). Especially for young children, parental support is needed to promote their physical activity (Zecevic, Tremblay, Lovsin, & Michel, 2010). In the FNPA, physical activity was assessed by asking how the family supported, modeled, and encouraged their child's physical activity. KA parents should be advised on how to encourage their child to be physically active, once their child's physical activity has been assessed through the FNPA.

Recent studies have emphasized the influence of sleep on childhood obesity. For example, children who have more hours of sleep are less likely to be overweight or obese (Bonuck, Chervin, & Howe, 2015; Gozal & Kheirandish-Gozal, 2012). We found that KA mothers recognized that children should have plenty of sleep for their best development and growth, but some mothers were not sure of the appropriate length of time; they were also confused about what 9 h of sleep meant in the questionnaire. Consequently, we revised the item to clarify that at least 9 h of sleep is recommended for children. KA parents may also tend to pay less attention to their child's sleep compared to other routines, such as physical activity and dietary habits. Therefore, FNPA can be used to assess KA children's sleep in clinics.

In the cognitive interviews, some KA mothers pointed out that a child's routine is different during weekdays than on weekends. For example, parents are more permissive about their child's screen time on weekends than on weekdays. The response categories for the FNPA questions did not allow for parents to account for these or report on these differences in their child's routine when they answered. This issue was also raised in a previous study that assessed children's

household routines associated with obesity among preschoolers (Anderson & Whitaker, 2010). Health care professionals who assess children's routines related to obesity should reflect these differences.

Implications

Utilization of the FNPA in clinics is important to prevent and decrease childhood obesity. The FNPA can be used not only to identify a child's family obesogenic environment, but also to guide the parents with respect to healthy household routines for their child. Health care professionals should consider KA family behaviors when they use the FNPA for KAs. From cognitive interviews, we found that some KA parents may not be fully aware of healthy routines for a child (e.g., recommended hours of sleep) or cannot implement them due to some challenges (e.g., providing unhealthy foods for their greater convenience). Based on the scores of the FNPA, barriers and challenges to shaping healthy household routines should be assessed. Interventions such as intensive counseling and parental education should be developed and provided. Furthermore, available resources, including social support, should be identified and utilized to improve the health of the KAs, who may not know about these resources or how to access them.

Culturally tailored interventions are necessary, to increase the effectiveness of efforts to prevent childhood obesity for KAs. For example, since KAs are involved in less physical activity than other racial/ethnic groups, more attention should be paid to promoting physical activity among KA families.

Future studies should include additional racial/ethnic groups and additional ages of children to adapt the use of the FNPA. In addition, psychometric analysis is needed to confirm the construct validity and reliability of the Korean version of the FNPA.

Limitations

The families in this study had homogeneous backgrounds, so that it was hard to distinguish unique children's routines in each family. For example, most participants were in a middle- to upper-level socioeconomic status. The child's routine in low-income families might be different from those in this convenience sample; this possibility should be given more attention. Therefore, the findings may not be generalizable to all KA family households. Further studies should be conducted with families with greater diversity in family background. In addition, all participants were first-generation KAs who were born in Korea. Family routines among second- and third-generation KAs might be different. Therefore, future studies should include these second- and third-generation KA families. Since child's routines were assessed by parent's report, the participants may have provided biased answers because of social desirability issues.

Conclusion

This study supports that a Korean-language version of the FNPA is appropriate to measure those household routines that may increase the risk of obesity among KA children. Health care professionals may use the FNPA as a guideline to provide information regarding healthy household routines for KA children. It is crucial that child's age and cultural aspects of a child's household routines should be reflected when the original FNPA is being used with culturally diverse populations.

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