CONCEPTS OF MOTHER-INFANT INTERACTION IN GREECE AND GERMANY

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This study deals with parenting from a cultural perspective. Based on Kagitcibasi's model of the autonomous relational self, the authors analyzed Greek urban middle-class mothers' parenting strategies and compared them with German urban middle-class mothers' parenting styles. Interactional behaviors were assessed during videotaped, free-play home observations. It was assumed that urban middle-class Greek and German mothers do not differ in their display of face-to-face context and object stimulation, both considered as supporting an independent agency, that Greek mothers modulate the face-to-face context more with facial warmth than do German mothers who on the other hand, modulate their face-to-face behavior more with experiences of contingency than do Greek mothers. The data confirm our assumptions with the exception of baby talk as a second indicator of facial warmth. The data are interpreted in terms of foundations of socialization pathways of urban families in independent and interrelated societies without denying intracultural variability.

Keywords: parenting; contingency; warmth; independence; socialization

Parenting is a central feature of culture (Harkness & Super, 1995). It establishes an intergenerational link in the transmission of cultural values and practices. The sociocultural orientations of independence and interdependence have been identified as detailing cultural

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scripts that inform the socialization experiences of children in characteristic ways (Kagitcibasi, 1997; Markus & Kitayama, 1991; Rothbaum, Pott, Azuma, Miyake & Weisz, 2000; Triandis, 1995). The independent orientation values the person as autonomous, self-contained, separated from others, and exerting action control (agency). The interrelated orientation stresses relatedness, acceptance of norms and values, and relational harmony (Kagitcibasi, 1997; Markus & Kitayama, 1991; Triandis, 1995). It has been demonstrated that parenting contexts and strategies that supposedly support the two sociocultural orientations differ already in the developmental phase of infancy (Greenfield & Suzuki, 1998; Keller & Eckensberger, 1998; Shweder et al., 1998). Socialization toward interdependence stresses body contact, body stimulation, closeness, and a special emphasis on contingency toward negative stimulation. Socialization toward independence stresses face-to-face exchange, object stimulation, separateness, and contingency toward positive stimulation (Keller, 2002; Keller, Yovsi, & Voelker, 2002; Rabain-Jamin & Sabeau-Jouannet, 1997). It has to be stressed, however, that always aspects of both parenting styles co-occur yet differ in the priority given to one or the other system in cultural environments (Greenfield, Keller, Fuligni, & Maynard, 2003; Keller & Greenfield, 2000). The sociocultural orientations of independence and interdependence can be related to specific environmental contexts with particular models of family. The typical model of interdependence is prevalent in rural agrarian societies where material and psychological intergenerational interdependence is crucial for survival. Children are supposed to contribute to the family economy from early on and have old-age security value for their parents (Kagitcibasi, 1996). Family relationships are hierarchical. Obedience orientation is dominant in parenting. The typical model of independence is characteristic of the Western middle-class nuclear family where affluence renders the support of the adult offspring as unnecessary (Kagitcibasi, 1996, 2003) and where education allows to pursue individual goals. Parenting emphasizes uniqueness and self-enhancement. Kagitcibasi (1996, 2003) argues, however, that none of these conceptions describes urban educated populations in cultures of relatedness like Turkey. Urban lifestyles with increasing affluence, decreased material interdependence between generations, but psychological or emotional interdependence continued because it is part of the culture of interdependence and not incompatible with the changing lifestyles (Kagitcibasi, 2003). Because Turkey and Greece are similar with respect to the definition of relational closeness within the family (Georgas et al., 2001; Georgas, Bafiti, Mylonas, & Papademou, in press), it can be assumed that emotional interrelatedness is also an estimated cultural value in urban environments in Greece.

The model of psychological interdependence (with the autonomous relational self) is based on the assumption of two independent dimensions underlying self-construals, the dimension of relatedness-separateness (interpersonal distance) and the dimension of autonomy-heteronomy (agency) with a synthesis of agency and relatedness. Parenting thus should emphasize relatedness as well as autonomy. Support of the coexistence of autonomy and relatedness has been presented from several cultural communities (cf. Kagitcibasi, 2003). However, none of these studies has addressed the developmental phase of infancy.

In Germany and Greece, the urban lifestyle is similar in many respects. Women in both societies have 1.3 children on average. Life expectancy is comparable (78 versus 77 years) as are infant mortality (6 versus 5 per 1000 live births) and mortality of children under 5 years (7 versus 5 per 1,000 live births). Both societies have a similar age grading; they both belong to the countries with the highest number of years of formal schooling (15.8 years for Germany and 13.7 years for Greece according to U.N. statistics from 1996). It can be assumed that this urban lifestyle is associated with an orientation to autonomy and agency.

The role of the family and the structure of family relationships, however, differ substantially in the two environments. Although the majority of urban Greeks as well as urban Germans live in nuclear households (89.4% in Athens and 58.2% in Germany, where single households make up another 35.7%), the family size is larger in Greece than in Germany (3.1 versus 2.4 members per family) and relationships with the extended family are more frequent and intensive than in Germany. Kinship in Greece has been described as the most powerful entity of the Greek culture, which is valid still today (Loizos & Papataxiarchis, 1991). A total of 99.4% of Greeks believe that their family is the most important thing in their lives (Georgas et al., in press). Close relatives usually live in the same neighborhood, establishing an urban extended family (Georgas, 1999, 2000; Georgas et al., in press; Mousourou, 1989). Contrary to other European societies, such as the Netherlands, Britain, and Germany, Greek regular family relationships compose both the intergenerational links and the vertical structure of uncles, aunts, and cousins.

In Germany, only 4 out of 10 urban families were in regular touch with grandparents and siblings in an older study (Pfeil, 1965); it can be expected that this trend has been increasing since then. The necessity of job mobility is further contributing to nonresidentiality even in nuclear families (Schneider, 2002).

German urban middle-class families have a high regard for early independence and autonomy, uniqueness and achievement, self-esteem, and assertiveness (Keller et al., 2002). Education is considered as the most important investment parents can allocate to their children. Socialization goals thus stress an independent orientation with respect to agency as well as with respect to relatedness.

Socialization goals in Greek urban middle-class families comprise obedience and respect (Katakis, 1976), but children are simultaneously praised for being unique and remarkable (Katakis, 1978; Vassiliou, 1966). Children's education is also considered very important. Socialization goals thus stress both individual achievement and communal relationships, thereby characterizing emotional interdependence (Kagitcibasi, 2003). It is therefore assumed that urban German and urban Greek mothers emphasize similar conceptions of agency but differ in their expressions of interrelatedness when interacting with their infants.

The aim of this study was therefore to analyze the early parenting patterns in urban environments in Germany and Greece. The study, however, does not aim at generalizing the parenting styles of urban German and Greek mothers to the cultural or the national level. Because parenting is a response to a particular socioecological context, it can be assumed that there are also other parenting styles in Greece and in Germany (Belsky, Steinberg, & Draper, 1991; Bjorklund & Pellegrini, 2001).

Early parenting experiences can be conceptualized with the component model of parenting (Keller, 2000, 2002). The component model of parenting is composed of the following five parenting systems: primary care, body contact, body stimulation, object stimulation, and face-to-face contact, which are supposed to have evolved independently to answer contextual demands during human history. The parenting systems are modulated with the interactional mechanisms of sensitivity toward positive or negative infant signals, exclusive or shared attention, warmth, and contingency, which are also considered as basically independent from each other. The flexible organization of these parenting systems and of the interactional mechanisms allows the composition of parenting styles that are adaptive within particular environments. Infants' predominant experiences within parenting systems and interactional mechanisms are supposed to prime developmental consequences. It can be assumed that the development of independence is especially fostered within the parenting systems of face-to-face contact and object stimulation (Keller, 2002). A prototypical inde-

pendent agency should be further supported by the experience of contingency, that is, prompt responsiveness toward infants' signals within the face-to-face context, which reinforces a sense of causality and effectiveness in infants (Keller & Eckensberger, 1998; Keller, Lohaus, Voelker, Cappenberg, & Chasiotis, 1999). The development of interrelatedness within a face-to-face context can be assumed to be supported by the experience of positive emotionality and warmth (Keller, 2002; McDonald, 1992). This study is aimed at testing the following assumptions:

1. In interactions with their 3-month-old babies, German and Greek urban middle class mothers do not differ with respect to the display of the parenting systems object stimulation and face-to-face contact. Object stimulation is assumed to orient infants to the outside world and stimulate exploration and curiosity. Face-to-face contact is the only parenting system in which both partners can exert control over the ongoing interaction flow. The quasi-dialogic structure of on- and offsets of mutual gaze accords infants communicative competence as individuals (Stern, 1985). Both parenting systems are therefore regarded as supporting agency.
2. In interactions with their 3-month-old babies, German urban middle-class mothers modulate the interaction system of face-to-face contact with more experiences of contingency than do Greek urban middle-class mothers. Prompt responsiveness toward infants' signals promotes the experience of causality and self-efficacy (Tarabulsy, Tessier, & Kappas, 1996; Watson, 1985). This assumption is supported by an earlier study (Keller, Chasiotis, & Runde, 1992) comparing Greek and German middle-class mothers' display of contingency in free-play interactions with 3-month-old infants. Although mothers of both cultural communities used similar strategies of verbal and nonverbal contingencies, the number of prompt verbal reactions of German mothers was significantly higher ($F = 6.03$, $p = .009$) and that of nonverbal prompt reactions showed a tendency in the same direction ($F = 2.62$, $p = .09$).
3. In interactions with their 3-month-old babies, Greek middle-class mothers modulate the interaction system of face-to-face contact with more experiences of warmth than do German middle class mothers. Facial expressions of warmth are smiling and baby talk. Warmth can be considered as promoting feelings of relatedness and acceptance of norms and values (Hetherington & Frankie, 1967; McDonald, 1992).

METHOD

PARTICIPANTS

Participants in this study were middle-class mothers from the metropolis of Athens ($N = 30$) and the university town of Marburg in the north of Hesse in Germany ($N = 33$). Participants of the Athens sample were recruited through birth preparation and baby classes. Parents volunteered to participate in a longitudinal project on developmental effects of early parenting directed by Zaira Papaligoura. Participants of the Marburg sample responded to newspaper advertisements in 1999 and volunteered to participate in a longitudinal research project on the developmental effects of early parenting conducted by Arnold Lohaus and Heidi Keller. The population of Athens is about 3 million (about 30% of Greece's total population), whereas that of Marburg is about 78,000 (about 0.1 % of Germany's total population). Although the population of Athens increased very fast in the past century, Marburg was slowly growing to a town of medium size. We accepted the obvious differences in urbanity between our samples because variations in sociocultural orientations have not been reported to be related to the size of the city but to GNP on a societal level and to education on an individual level (Kagitcibasi, 1996). In both samples, the majority of the involved mothers and their husbands were well educated, with the Greek mothers being even higher

TABLE 1
Sample Characteristics

	Greek	*German*
N	30 (14 males, 16 females)	33 (18 males, 15 females)
Birth order	All firstborns	All firstborns
Age of the mother	22 to 36 years (Mean = 29.53, *SD* = 3.87)	21 to 36 years (Mean = 29.36, *SD* = 4.29)
Education of mother	86.7% attended a lyceum, passed a technological or university education	63.64% attended a lyceum, passed a technological or university education
Age of the father	25 to 42 years (Mean = 33.27, *SD* = 4.18)	23 to 39 years (Mean = 32.12, *SD* = 4.0)
Education of father	86.7% attended a lyceum, passed a technological or university education	63.64% attended a lyceum, passed a technological or university education

educated than the German mothers. Although some studies found a relationship between education and face-to-face exchange, we accepted the higher education of the Greek mothers because its effects would be directed against our hypothesis (no differences in the amount of face-to-face exchange). The assessment took place when the infants were 3 months old. In both samples, the gender distribution was about 50% each of male and female infants. All children were firstborns and physically healthy. Parents were approximately of the same age in both samples: The mean of mothers' age in both samples was about 29 years; the fathers were on average 33 years old (see Table 1).

MATERIALS AND PROCEDURE

The families were visited at home by two researchers at day times when the infants were presumably awake and fed. Family visits were made by Greek and German research assistants, respectively, who were trained in videotaping interactional situations during home visits but not informed about the research questions of this study. During an initial period of familiarization, the demographic characteristics of the family were registered. Then, the mothers were instructed to play with their child and to ignore the presence of the observers as far as possible. This free-play, mother-infant interaction was videotaped for about 15 minutes with a portable camera. The maximum duration of small infant involvement in face-to-face exchange is about that time duration (Keller et al., 1999). Accordingly, most studies on face-to-face behavior examined time spans between 6 and 15 minutes (e.g., Lohaus, Keller, Voelker, Cappenberg, & Chasiotis, 1997; Sagi, Koren-Karie, Gini, Ziv, & Joels, 2002). Because we were interested in the duration of freely chosen, face-to-face encounters, we recorded an episode of free play. We set an upper limit of 15 minutes because during prior observations with 3-month-old infants (Keller et al., 1999), a majority of the infants got upset if their mothers tried to engage them in longer episodes of play. The camera was focused on the heads and upper torsos of mothers and children. The home visits were between 1 and 1.5 hours.

MEASURES AND ASSESSMENT METHOD

The videotaped, free-play interactions were analyzed by means of a computer-based video analysis system. The behavioral categories of mother and infant were coded by

microanalytical event- and time-sampling methods. Time sampling methods were used for coding if the temporal relation between infant and maternal behavior was irrelevant for the definition of the respective variables and/or if the on- and offsets of behavioral categories could not be assessed reliably.

As a first step of coding, the complete registered time of free-play interaction was divided into 10-second intervals. Intervals that did not allow for behavioral assessment due to poor visibility of either mother or child and intervals during which the infants were not in an alert, nondistressed state were identified and coded as not relevant. Thus, measures as well as reliabilities are based on episodes of relevant 10-second intervals during which the infants' states were comparable and behaviors of interest were not obscured in any way. On the average, 18% and 28% of the total 10-second intervals were coded as not relevant in the German and Greek samples, respectively. The differences are due to differences in visibility of the behaviors that need to be coded.

FACE-TO-FACE EXCHANGE

The amount of dialogic face-to-face episodes that happened during the videotaped free-play situations was measured by the proportion of mutual eye contact between mother and infant during relevant intervals. The absolute duration of eye contact was calculated from the event sampling of on- and offsets of infants and mothers looking at each other's faces. The proportion index was calculated by the division of the absolute eye contact duration by the total duration of relevant intervals multiplied with the interval duration (10 seconds). The assessment was done by coders who reached an independent agreement of 80% (number of observed agreements divided by number of observed agreements plus the number of both coders' observed disagreements).

OBJECT STIMULATION

The amount of object stimulation was measured by time sampling. During each relevant 10-second interval, the category object was coded if the mothers supported the infants' exploration of objects by giving or showing objects to them. The indicator was the percentage of relevant intervals for which the category object was coded. The independent coding agreement indicated by Cohen's kappa was .99.

CONTINGENCY

For the analysis of maternal contingency toward infant signals during face-to-face exchange, we defined a priori discrete infant and maternal events that could be assessed reliably. If such a maternal event occurred within the time span of 1 second after an infant event, this maternal event was regarded as a contingent behavior. The latency window of 1 second was set in correspondence with distributional analyses of contingent maternal face-to-face behaviors (Keller et al., 1999). Because we assume that early mother-child interaction is related to sociocultural orientations, we restricted our analysis to nonverbal behaviors because they produced closer longitudinal relations in previous studies than did verbal contingencies (Keller, Voelker, & Wessing, 1996). Nonverbal categories of infant behaviors consisted of the onset and offset of looking into mothers' faces and the onset of smiling. Maternal categories consisted of the onset and offset of looking into infants' faces, the onset of smiling, and the onsets of expressive eyebrow and mouth movements in seconds.

M = Mother, I = Infant

$$\text{Suffic} = \frac{\text{events I followed by events M with latency}}{\text{events I}} - \left[1 - e^{-\frac{\text{events M}}{\text{total time}} * \text{latency window}}\right]$$

Figure 1: Calculation of the Responsiveness Index

Expressive eyebrow and mouth movements were not distinguished according to their emotional quality. All definitions were elaborated during extensive training, with a focus on distinct event-like behavior. Proportion indices of interrater agreements (number of observed agreements divided by number of observed agreements plus the number of both coders' observed disagreements) ranged from .70 to .91, with an average of .83 among the different categories of behavioral events. The proportion of agreements for contingent events was .76.

Observational studies produced a range of contingency definitions to reveal an above-chance association of the exchange between two interactors. Watson (1979, 1985) argued that the contingent relation between maternal and infant behavior is composed of two independent dimensions he called responsiveness and dependency. In this study, the microanalytical assessments of the data were used to calculate Watson's responsiveness index (see Figure 1), which was identified as most meaningful if maternal and not infant contingency is considered (Symons & Moran, 1994). This index describes the conditional probability that nonverbal communicative actions of children (onset of looking into mothers' faces or smiling into their faces) are answered by a nonverbal communicative reaction from the mothers within a reaction-specific time span. Watson introduced a chance correction to reduce the conditional probability of a contingent reaction by the probability that a behavioral event of the mother occurs by chance within the defined time span after an infant signal.

The total time during which the contingency analysis was done was restricted to those relevant 10-second intervals during which the body positions of mothers and infants allowed mutual eye contact even if it did not actually happen. This was done to include onsets of looking into each others' faces as initiatives to face-to-face exchange. Intervals that allowed eye contact were identified with an independent agreement indicated by Cohen's kappa of .85.

WARMTH

Maternal warmth during face-to-face exchange was defined as the expression of positive affection toward infants. The facial as well as voiced expression of positive affection in terms of smiling and baby talk was used to indicate warmth. These variables have been described as carrying positive emotional meaning in the literature (Striano, Brennan, & Vanman, 2002; Tartter, 1980). The relevant 10-second intervals were exactly the same as those for the analysis of maternal contingency. For the assessment of warmth, each of these intervals was coded for the amount of baby talk and maternal smiling that took place during the observed 10 seconds on a scale from 0 to 2, with 0 indicating no baby talk or no smiling and 2 indicating baby talk or smiling for more than half of the observed interval. The averages of the smiling and baby talk values from the relevant intervals were used as facial and vocal measures of

TABLE 2
Results of Univariate Analysis

	Greek (N = 27)		*German (N = 32)*			
	Mean	SD	*Mean*	SD	F*(1, 51)*	p
Variables indicating agency						
Eye contact	22.55	25.34	39.92	34.50	1.17	
Object stimulation	53.71	33.07	41.80	29.21	0.07	
Variables modulating agency toward separateness or closeness						
Contingency	0.20	0.19	0.41	0.19	12.21	*
Baby talk	1.09	0.52	0.94	0.42	0.36	
Smiling	0.68	0.40	0.34	0.19	10.08	*

*$p < .001$.

maternal warmth. The independent interrater agreement indicated by Cohen's kappa was .79 for baby talk and .85 for smiling.

The coder who evaluated the warmth variables (maternal smiling and baby talk) was not involved in the assessment of the other behavioral categories, and this person did not have any other information about the mother-infant dyads.

RESULTS

Three Greek dyads and three German dyads were excluded from the analysis because there were not enough infant behavioral events to calculate a contingency index. We introduced maternal and paternal education, infant gender, and the proportion of all 10-second intervals during which the infants were in a negative state as covariates in a multivariate data analysis. Infant gender was introduced because there are results that infant girls experience more warmth than do infant boys in interactions with their mothers (Moore, Cohn, & Campbell, 1997). The proportion of negative state intervals was introduced because we observed a significantly higher proportion of crying bouts in the German sample (6.44% versus 0.81%, $z = –4.92$, $p = .000$). The results obtained in multivariate analysis reveal a significant difference between the cultural groups, $F(5, 47) = 5.66$, $p = .001$, and no effects of covariates.

The univariate data analysis (see Table 2) revealed significant differences between both samples with respect to warmth and contingency during face-to-face exchange but not with respect to the amount of object stimulation and face-to-face exchange. Particularly, German mothers answered more contingently toward their infants' face-to-face signals, whereas Greek mothers showed more facial warmth by smiling. However, German and Greek mothers did not differ in the amount of vocal warmth they displayed. Thus, the data confirm our assumptions with respect to all variables with the exception of vocal warmth.

DISCUSSION

With this study, we intended to analyze possible developmental initiations of different sociocultural orientations as expressed in early socialization experiences. Particularly, we

wanted to analyze whether we can find evidence for agency as well as relatedness supporting parenting strategies in Greek urban mothers as contrasted with German urban mothers, who are considered predominantly to support independence. The results confirmed the assumptions. The activation of the parenting systems' face-to-face exchange, measured by mutual eye contact as well as object stimulation, was high in both samples, thus emphasizing cognitive development and the development of agency. The amount of eye contact in both samples was higher than the figures of an earlier study on eye contact behavior in a comparable German middle-class sample (33% of mutual gaze; Keller, Gauda, Miranda, & Schoelmerich, 1985). This finding possibly supports an increasing focus on individuality in socialization as, for example, expressed in the individualization hypothesis (Beck & Beck-Gernsheim, 1994; Neubauer & Hurrelmann, 1995). Eye contact in German mother-infant dyads typically occurred in a position where the infants are lying on the floor or on a sofa and the mothers are sitting beside or in front of them. This position is considered to be an optimal play situation, as expressed in parental ethnotheories, because the baby can freely move while face-to-face contact can be maintained (Keller et al., 2002). Also, the Greek mothers sat in front or beside their babies or they laid the babies on a bed and bent themselves over the babies.

Our results further demonstrate that Greek and German mothers of small infants differ with respect to the expression of interactional mechanisms in the context of the face-to-face parenting system: German mothers place more emphasis on the interactional mechanism of contingency than do Greek mothers, which is considered to support the children's experience as autonomous agencies separated from their mothers. Greek mothers put more emphasis on the interactional mechanism of warmth, as expressed in smiling, than did German mothers, which is assumed to enable children to experience themselves as connected with their mothers. Expression of vocal warmth did not differ in both samples, which may stress the importance of child-directed language in both cultural samples. Content and style of child-directed language should be further analyzed in future studies.

Our findings can be linked to the theoretical model as proposed by Kagitcibasi (1996, 2003). They can be interpreted as the precursors of a third developmental pathway. Whereas in both urban middle-class samples, the Greek as well as the German mothers displayed comparable parenting systems that equally focused on cognitive development and the emergence of an independent achievement oriented agency (i.e. face-to-face context and object play; Greenfield, 2002; Keller, 2002), they differed with respect to the specific modulation during their face-to-face interactions. German mothers displayed a greater focus on prompt reactions to infant behavioral cues, thus fostering their contingency experience and the perception of causality, which are supposed to reinforce the emerging agency as separate from others. The Greek mothers displayed a greater focus on warmth, thus fostering the experience of emotional closeness, which is supposed to reinforce the emerging agency as interrelated with others and thus possibly initiating a developmental pathway to an autonomous relational self (Kagitcibasi, 1996). It is, however, important to stress that every individual and every cultural community develops a synthesis of both independence and connectedness. Yet, the phenotypical synthesis prioritizes expressions of one or the other to a greater extent. Future research should specify contextual conditions for different combinations.

Our analysis is based on 15-minute observational periods with the instruction of free play. Short observation periods of 5 to 15 minutes in interactions with small babies are the basis of our knowledge about the early regulatory processes between infants and their caregivers, with only a few exceptions using long-term assessments (Keller & Zach, 2002; Leyendecker, Lamb, & Schoelmerich, 1997). This time span used in the studies considers the attention span of babies who are only a few months old (Knopf, 2002). Furthermore, it is assumed that

most parenting behaviors are displayed on an intuitive basis without intentional and explicit self-instruction. The free-play situation, moreover, represents the only parenting context that allows the display of all parenting systems and interaction mechanisms except primary care. For a fuller understanding of cultural differences in early parenting, it would be necessary, however, to also analyze differences in warmth and contingency within other parenting systems and with respect to negative infant signals. This poses, however, substantial differences in assessment and analysis. Future studies need to develop reliable methods to achieve this goal.

Moreover, intracultural variability should be expected in comparable samples (Keller & Zach, 2002) and thus needs to be analyzed in future studies. The interpretation of our results is speculative in the sense that we did not assess directly the ethnotheories and developmental goals of the Greek and German mothers we observed. We also do not have longitudinal data linking the early experiences to later developmental outcomes. Our data can, however, contribute to the understanding of developmental pathways that are directed to differing developmental goals because the results confirm the theoretically derived predictions. Our data present evidence for the developmental foundation of the autonomous relational self as proposed by Kagitcibasi (1996, 2003). Further research is needed to understand better these processes within and across cultures.

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