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A cross-cultural comparison of mothers' beliefs about their parenting very young children

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ABSTRACT

Parental beliefs are relevant to child development because they shape parenting behaviors and help to determine and regulate child cognitive and socioemotional growth. Here we investigated cross-cultural variation in Italian and U.S. mothers' parental beliefs about their social and didactic interactions with their young children. To compare parental beliefs, the Parental Style Questionnaire (PSQ) was administered to samples of 273 Italian mothers and 279 U.S. mothers of 20-month-olds (55% male). To conduct substantive cross-cultural comparisons of beliefs, the measurement invariance of the PSQ was first established by hierarchical multi-group confirmatory factor analyses. The PSQ was essentially invariant across cultures. Italian mothers reported that they engaged in both social and didactic behaviors with their young children less frequently than U.S. mothers. Results of our study confirm that mothers in different cultures differentially value parental stimulation and its relevance for early child development.

1. Introduction

Parenting plays an influential role in early child development because it regulates the majority of child–environment interactions and helps to shape children's adaptation to the world (Bornstein, 2006). Research has converged on a broad taxonomy of universal parenting activities, and substantial consistency exists in how contemporary developmentalists characterize core dimensions of growth-facilitating parenting of infants, children, and adolescents. Three dimensions of parenting are common to this organization (e.g., Skinner, Johnson, & Snyder, 2005); they include (a) warmth versus rejection, (b) autonomy support versus coercion, and (c) behavioral control versus chaos.

The first two dimensions, warmth and autonomy support are appropriate to infancy and early childhood (Bornstein, 2002), the age we studied here, and they map onto two main types of parenting interactions we investigated: social and didactic. Social interactions include different behaviors that parents use to engage children in visual, verbal, affective, and physical interpersonal exchanges. Didactic interactions consist of parental efforts aimed at stimulating children to engage and understand the environment outside the dyad by providing opportunities for children to observe properties, objects, or events in the external environment, to imitate, and to learn. Many studies show short- and long-term influences of these

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parental practices on child development. For example, mothers' social interactions reportedly exert positive influences on children's social competencies (Chen, Liu, & Li, 2000), and mothers' didactic interactions foster children's verbal and mental development (e.g., Belsky, Goode, & Most, 1980; Bornstein, 1985, 1989; Tamis-LeMonda & Bornstein, 1989).

A consensual understanding in the parenting literature is that parenting beliefs have both theoretical and practical importance for motivating, explaining, predicting, and changing parenting behaviors and child development. Beliefs are key aspects of parenting because they generate and organize parental behaviors and mediate the effectiveness of parenting (Bornstein & Lansford, 2010; Goodnow & Collins, 1990; Miller, 1988; Sigel & McGillicuddy-De Lisi, 2002). Childrearing beliefs are multiply determined (Bornstein, 2006; Palacios, 1990). Some beliefs may be culturally universal; for example, parents in all societies believe their young need nurturance and protection (Bornstein, 2002, 2006). Other beliefs vary across cultural groups and reflect the particular culture in which they are expressed; for example, parents in some societies believe that it is senseless to talk to children before they are capable of speech, whereas parents in other societies consider babies as interactive partners capable of understanding and learning about their environments and commonly speak and interact with them (Ochs, 1988; Richman, Miller, & LeVine, 1992).

The focus of this study is on cross-cultural comparison of Italian and U.S. mothers' beliefs about their social and didactic interactions with their very young children. We considered social and didactic interactions because they are common and active parenting strategies that have been suggested to vary between Italian and U.S. cultures. Evidence from past research has pointed to differences in how these two populations conceive of parenting and how they are meant to parent. Italian parents tend to appreciate sociability, liveliness, and activity in their babies, and say that they interact with their children more in the social domain than in the didactic one (Bornstein et al., 1998; Bornstein, Cote, & Venuti, 2001; Venuti & Senese, 2007). Italian mothers especially value their children's socioemotional expressiveness, which they encourage by promoting children's interactions with people inside and outside of the family (New, 1988, 1989; Richman et al., 1988). By contrast, U.S. American mothers tend to appreciate individualism in their children as actively thinking persons (Bornstein et al., 1998). American mothers recognize the importance of parenting in optimizing child development and tend to interact with their children more in didactics than in emphasizing sociability (Harkness et al., 2007). Even if closeness to the child and physical and socioemotional goals are mentioned less frequently by U.S. mothers, Harkness et al. (2007) observed that U.S. mothers still consider social interaction of importance to the young child's sense of well-being.

The role of culture in parental beliefs has engendered a large number of cross-cultural studies of parenting. Beliefs, being private and intrapsychic, are commonly and necessarily accessed via self-report interviews or questionnaires. Within the parenting literature, self-report measures typically originate and are validated for a specific population. In rare cases have appropriate psychometric cautions been exercised in comparing beliefs, however. Few studies have tested for measurement invariance across populations or groups, for example (see Adamsons & Buehler, 2007, for an assessment of equivalence between mothers and fathers, and Whiteside-Mansell, Bradley, Owen, Randolph, & Cauce, 2003, between ethnic groups). Measurement invariance between groups is a logical and psychometric prerequisite to conducting substantive group comparisons (Hui & Triandis, 1985; Knight & Zerr, 2010). Vandenberg and Lance (2000) noted that "if not tested, violations of measurement equivalence assumptions are as threatening to substantive interpretation as is an inability to demonstrate reliability and validity" (p. 6). In essence, in the absence of measurement invariance, it is not certain that the same construct is being assessed across groups and whether comparative results are ascribable to group difference or to measurement artifact (Chan, 2000). In their review of the measurement invariance literature, Vandenberg and Lance (2000) recommended moving beyond tests of the reliability and validity of multi-item scales by using classical test theory (CTT) to evaluate the measurement invariance of the scale and by applying confirmatory factor analysis (CFA). Vandenberg and Lance (2000) suggested a series of hierarchically structured multi-group tests to establish the specific invariances that hold for the measure so as to define group or population comparisons that can be substantively meaningful.

The main aim of the present study was to compare reported social and didactic parenting interaction beliefs between mothers of young children in Italy and the United States. To evaluate parental beliefs, we administered the Parental Style Questionnaire (PSQ; Bornstein, 1989; Bornstein et al., 1996). To conduct a substantive between-group comparison, we evaluated configural, metric, scalar, and unique variance equivalences of the PSQ (Vandenberg & Lance, 2000). In accord with the extant literature on parental beliefs, we hypothesized measurement noninvariance of the PSQ, that Italian mothers would report that they engage in social behaviors with their young children more frequently than U.S. mothers, and U.S. mothers would report that they engage in didactic behaviors with their young children more frequently than Italian mothers.

2. Method

2.1. Participants

Participants were 552 mothers recruited in the north of Italy ($n = 273$) and the central Atlantic region of the United States ($n = 279$). Mothers were selected to be homogeneous for the following criteria: primiparous, at least 20 years of age, Caucasian, living with their husband in the same house, and from comparable urban and semi-urban modern settings. The average age of mothers in the Italian sample was $M = 31.2$ years ($SD = 4.7$); in the U.S. sample $M = 31.0$ years ($SD = 6.4$). The average age of the fathers in the Italian sample was $M = 34.1$ years ($SD = 5.0$); in the U.S. sample $M = 33.7$ years ($SD = 6.9$). The educational levels of mothers in the two samples varied from the 7th grade to college, but Italian mothers had a lower educational level than U.S. mothers, $\chi^2(6, N = 552) = 201.78$, $p < .001$. However, the mean correlation (r) of education with

Table 1
Item stems and descriptive statistics of the Italian and U.S. Parental Style Questionnaire.

Scale	Item	Form			
		Italian		U.S.	
		Stem	*M* (*SD*)	Stem	*M* (*SD*)
Social					
	S1	Rispondo in maniera pronta e adeguata quando mio figlio esprime disagio o turbamento	4.3 (.8)	I promptly and appropriately respond to my child's expressed distress or discomfort	4.6 (.5)
	S2	Trascorro del tempo parlando o conversando con mio figlio	4.2 (.7)	I spend time talking to or conversing with my child	4.5 (.6)
	S3	Fornisco a mio figlio una veloce e positiva risposta alle sue richieste di attenzione	4.2 (.7)	I provide my child with quick and positive feedback to his/her bids for attention	4.3 (.6)
	S4	Do a mio figlio dimostrazioni di affetto attente e calorose	4.7 (.6)	I provide my child with positive affectionate displays of warmth and attention	4.7 (.4)
	S5	Sono consapevole di quello che mio figlio desidera o sta provando	4.0 (.7)	I am aware of what my child wants and/or is feeling	4.2 (.5)
Didactic					
	D1	Trascorro del tempo a giocare con mio figlio	3.9 (.7)	I spend time playing with my child	4.1 (.6)
	D2	Lascio a mio figlio del tempo in cui possa esplorare ed imparare da se stesso in maniera indipendente	4.1 (.8)	I provide my child with independent time to explore and learn on his/her own	4.0 (.6)
	D3	Fornisco a mio figlio diverse esperienze sociali e di interazione (ad esempio, attraverso gruppi di gioco organizzati e incontri con i suoi coetanei, ecc.)	3.6 (1.1)	I provide my child with diverse social and interactive experiences with same-age peers through play groups or informal get-together	3.5 (1.0)
	D4	Fornisco a mio figlio un ambiente strutturato, organizzato e prevedibile	3.9 (.9)	I provide my child with a structured, organized, and predictable environment	3.9 (.9)
	D5	Fornisco a mio figlio opportunità di apprendimento del linguaggio (ad esempio, denominando e descrivendo le proprietà degli oggetti, degli eventi, delle attività, o leggendo fiabe, libri, ecc.)	4.1 (.9)	I provide language learning opportunities for my child by labeling and describing qualities of objects, events or activities, reading books and so forth	4.4 (.8)
	D6	Fornisco a mio figlio una varietà di giocattoli o oggetti per giocare ed esplorare	4.3 (.8)	I provide my child with a variety of toys and objects for play and exploration	4.6 (.5)
	D7	Sono paziente quando mio figlio non si comporta in maniera corretta	3.6 (.8)	I am patient with my child's misbehavior	3.8 (.7)
	D8	Sono flessibile rispetto ai tipi di comportamento che mio figlio può mettere in atto	3.9 (.8)	I am flexible about the sorts of behaviors I expect from my child	3.9 (.8)

both PSQ scales in the two countries was .054 (range = –.045–.188), and, on average, education shared less than .3% of its variance with the PSQ scales. On this account, we eliminated educational difference as a possible explanation of cultural group differences. Children were 55% male and 45% female in both samples and approximately 20 months old at the time of the study, $M = 20.4$ months ($SD = 3.6$) and $M = 20.1$ months ($SD = .2$), respectively, for the Italian and U.S. samples.

2.2. Procedure and measures

All mothers completed a sociodemographic questionnaire and the Parental Style Questionnaire in their native language in their homes.

The Parental Style Questionnaire (PSQ; Bornstein, 1989; Bornstein et al., 1996) is a 16-item self-report scale designed to evaluate the frequency of mothers' ways of interacting with infants or young children. PSQ items cluster into three parental style domains. This report focuses on 13 items which constitute the Social interaction scale (5 items) and Didactic interaction scale (8 items). Each item describes a typical interaction between parent and child (e.g., "I promptly and appropriately respond to my child's expressed distress or discomfort." and "I provide language learning opportunities for my child by labeling and describing qualities of objects, events or activities, reading books and so forth.", respectively, for the Social and Didactic domains). Mothers rated each item on a 5-point semantically anchored Likert-type scale ranging from 1 (*hardly at all*) to 5 (*all the time*). Items are scored so that high scores indicate more frequent Social or Didactic interactions. An Italian version of the PSQ was developed using standard forward and back-translation procedures (Maxwell, 1996; Venuti & Senese, 2007; see Table 1).

The PSQ subscales have demonstrated good internal consistency and construct validity (Bornstein et al., 1996, 2001; Venuti & Senese, 2007). In the present study, the internal consistency of the Social and the Didactic scales (Cronbach α) were acceptable for both samples (Streiner, 2003) and invariant (Feldt, 1969; $ps > .31$), $\alpha_{social} = .66$, $\alpha_{didactic} = .60$, and $\alpha_{social} = .61$, $\alpha_{didactic} = .60$, respectively, for the Italian and U.S. samples.

2.3. Analytic plan

The analytic plan followed two main paths: first, we tested configural, metric, scalar, invariant uniqueness, and invariant factor variance in each scale, and, then, we tested mean differences between cultures in each scale. Multi-group confirmatory factor analyses were performed with Lisrel 8.71 software (Jöreskog & Sörbom, 2004). Preliminary univariate and multivariate distributions of observed scores were examined for normality. For both samples and for both scales multivariate normality did not hold. Italian Social Scale: skewness = 5.85, $z = 12.18$, $p < .001$, kurtosis = 41.31, $z = 4.77$, $p < .001$, and U.S. Social Scale: skewness = 6.57, $z = 13.37$, $p < .001$, kurtosis = 44.87, $z = 6.51$, $p < .001$; Italian Didactic Scale: skewness = 8.17, $z = 10.48$, $p < .001$, kurtosis = 91.61, $z = 5.78$, $p < .001$, and U.S. Didactic Scale: skewness = 8.94, $z = 11.93$, $p < .001$, kurtosis = 96.81, $z = 7.53$, $p < .001$. Because we wished to test the metric invariance of each measure, separate hierarchical multi-group confirmatory factor analysis (CFA) models were fit for each. To test measurement invariance, the analysis was based on means and covariance matrices (MACS; Byrne & Stewart, 2006). Given the multivariate normality problems of the observed variables, to test CFA models asymptotic covariance matrices and robust maximum likelihood estimation methods (RML) were used. As fit indices, we used Satorra-Bentler (SBχ^2) and Maximum Likelihood (MLχ^2) goodness-of-fit test statistics in conjunction with other practical tests of fit that are less dependent on N (Cheung & Rensvold, 2002): (a) the root mean square error of approximation index (RMSEA; Steiger, 1990); (b) the comparative fit index (CFI; Bentler, 1990); and (c) the nonnormed fit index (NNFI; Tucker & Lewis, 1973). For both SBχ^2 and MLχ^2, test values associated with $p > .05$ were considered good fitting models; for the RMSEA index, values up to .06 or lower were considered good fitting models (Hu & Bentler, 1998); for CFI (Bentler, 1990) and NNFI indices, values >.90 were considered as indicating good fit of the model to the data. The difference in MLχ^2 statistics (MLχ^2_{diff}), CFI values (Cheung & Rensvold, 1999, 2002), and the corrected SBχ^2 difference (SBχ^2_{diff}; Satorra & Bentler, 2010) were used to compare the relative fits of nested models. For both the SBχ^2_{diff} and MLχ^2_{diff} tests, we used the χ^2 central distribution. If the difference between the reference model and the more constrained model (i.e., the model that imposed more equality constraints) was significant with $p < .05$, or if it had a ΔCFI > .01 (Cheung & Rensvold, 2002), it was interpreted as a reduction of fit, and the constrained model was rejected; otherwise, it was accepted and considered the new reference model. If the constrained model was rejected, a less restrictive model of partial invariance was evaluated in which, in accordance with modification indices and analysis of parameter estimates, equality constraints on one or more items were relaxed. If the model of partial invariance was accepted using these criteria, it was considered as the new reference model; otherwise, fitting more constrained models was suspended, and the previous reference model was interpreted as the final model expressing the highest hierarchical level of measurement invariance of each scale in the two countries.

3. Results

3.1. Social Scale measurement invariance and cultural means tests

3.1.1. Configural invariance test

A simultaneous one-factor multi-group CFA model of mean and covariance structure was tested in the Italian and U.S. samples on the 5-item Social Scale. This model (Model A) imposes no equality constraints on parameter estimates across groups, except that item S5 was used as the latent scale reference item in both groups. Results indicated a good fit for the tested model, RMSEA = .034, CFI = .99, NNFI = .98, MLχ^2 (10, $N = 552$) = 20.03, $p < .05$, SBχ^2 (10) = 13.14, *ns* (see Table 2).

3.1.2. Metric invariance test

The same one-factor model was tested simultaneously in both the Italian and U.S. groups but constraining the corresponding item slopes (λ_is) to be equal across groups (Model B). Results indicated that the model fit the data well, RMSEA = .03, CFI = .99, NNFI = .99, MLχ^2 (14, $N = 552$) = 24.66, $p < .05$, SBχ^2 (14) = 17.46, and that constraints did not cause a significant reduction in fit, MLχ^2_{diff} (4) = 4.63, *ns*, SBχ^2_{diff} (4) = 4.09, *ns*, ΔCFI = 0.

3.1.3. Scalar invariance test

The same one-factor model was tested simultaneously in both the Italian and the U.S. groups but constraining both the corresponding slopes (λ_is) and all the intercepts of the observed items to be equal across groups (Model C). Results relative to the fit indices indicated that the model fit the data quite well, RMSEA = .068, CFI = .94, NNFI = .93, MLχ^2 (18, $N = 552$) = 51.73, $p < .001$, SBχ^2 (18) = 39.96, $p < .01$, even though it caused a significant reduction of fit compared to Model B, MLχ^2_{diff} (4) = 27.07, $p < .001$, SBχ^2_{diff} (4) = 30.69, $p < .001$, ΔCFI = .06. The modification indices and the parameter estimate analysis suggested freely estimating the intercept of item S3. The new partial scalar invariance model (Model C2) showed a good fit to the data, RMSEA = .054, CFI = .96, NNFI = .96, MLχ^2 (17, $N = 552$) = 39.85, $p < .01$, SBχ^2 (17) = 30.12, $p < .05$, but a significant loss of fit compared to Model B, MLχ^2_{diff} (3) = 15.19, $p < .01$, SBχ^2_{diff} (3) = 16.76, $p < .001$, ΔCFI = .03. The modification

Table 2
Invariance analysis of the Social Scale: multi-group hierarchical confirmative factor analyses goodness-of-fit indices (Italian mothers $n = 273$, and U.S. mothers $n = 279$).

Model	RMSEA	ECVI	CFI	NNFI	MLχ^2	SBχ^2	*df*	MLχ^2_{diff}	SBχ^2_{diff}	df_{diff}	ΔCFI
Model A	.034	.14	.99	.98	20.03*	13.14	10	–	–		–
Model B	.030	.13	.99	.99	24.66*	17.46	14	4.63	4.09	4[a]	0
Model C	.068	.16	.94	.93	51.73***	39.96**	18	27.07***	30.69***	4[b]	.06
Model C2	.054	.14	.96	.96	39.85**	30.12*	17	15.19**	16.76***	3[b]	.03
Model C3	.038	.13	.98	.98	30.08*	22.25	16	5.42	5.83	2[b]	.01
Model D	.097	.21	.85	.86	104.78***	73.52***	21	74.7***	45.01***	5[c]	.13
Model D2	.062	.15	.94	.94	55.51***	40.88**	20	25.43***	18.40***	4[c]	.04
Model D3	.054	.14	.96	.96	44.59***	33.84*	19	14.51**	12.78**	3[c]	.02
Model D4	.040	.13	.98	.98	34.77*	25.65	18	4.69	3.39	2[c]	0
Model E	.090	.19	.88	.88	79.42***	60.16***	19	44.65***	65.39***	1[d]	.10
Model F	.055	.14	.96	.95	46.46***	34.62*	19	11.69***	10.65**	1[d]	.02

Note. Model A: one-factor configural invariance (CI). Model B: one-factor CI and metric invariance (MI). Model B2 and Model B3: one-factor CI and partial metric invariance (MI). Model C: one-factor CI, partial MI, and scalar invariance (SI). Model C2: one-factor CI, partial MI, and partial SI. Model D: one-factor CI, partial MI, partial SI, and invariant uniquenesses (IU). Model D2 and Model D3: one-factor CI, partial MI, partial SI, and partial IU. Model E: one-factor CI, partial MI, partial SI, partial IU, and equal factor means (EFM). Model F: one-factor CI, partial MI, partial SI, partial IU, and equal factor variance (EFV).

[a] The reference model is the Model A.
[b] The reference model is the Model B.
[c] The reference model is the Model C3.
[d] The reference model is the Model D4.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

indices and the parameter estimate analysis suggested freely estimating the intercept of item S4. The new partial scalar invariance model (Model C3) now showed a non-significant loss of fit compared to Model B, MLχ^2_{diff} (2) = 5.42, *ns*, SBχ^2_{diff} (2) = 5.83, *ns*, ΔCFI = .01.

3.1.4. Invariant uniquenesses test

A model adding cross-group equality constraints on all like items' residual variance was analyzed (Model D). Results relative to fit indices indicated that the model did not fit the data, RMSEA = .097, CFI = .85, NNFI = .86, MLχ^2 (21, $N = 552$) = 104.78, $p < .001$, SBχ^2 (21) = 73.52, $p < .001$, and caused a significant loss of fit compared to Model C3, MLχ^2_{diff} (5) = 74.7, $p < .001$, SBχ^2_{diff} (5) = 45.01, $p < .001$, ΔCFI = .13. The modification indices and the parameter estimate analysis suggested freely estimating item S1 residual variance. The new partial uniquenesses invariance model (Model D2) showed a good fit to the data, RMSEA = .062, CFI = .94, NNFI = .94, MLχ^2 (20, $N = 552$) = 55.51, $p < .001$, SBχ^2 (20) = 40.88, $p < 01$, but still a significant loss of fit compared to Model C3, MLχ^2_{diff} (4) = 25.43, $p < .001$, SBχ^2_{diff} (4) = 18.40, $p < .001$, ΔCFI = .04. The modification indices and the parameter estimate analysis suggested freely estimating the residual variance of item S4. The new partial uniquenesses invariance model (Model D3) again showed a good fit to the data, RMSEA = .054, CFI = .96, NNFI = .96, MLχ^2 (19, $N = 552$) = 44.59, $p < .001$, SBχ^2 (19) = 33.84, $p < .05$, but still a significant loss of fit compared to Model C3, MLχ^2_{diff} (3) = 14.51, $p < .01$, SBχ^2_{diff} (3) = 12.78, $p < .01$, ΔCFI = .02. The modification indices and the parameter estimate analysis suggested freely estimating the residual variance of item S5. The new partial uniquenesses invariance model (Model D4) showed both a good fit to the data, RMSEA = .040, CFI = .98, NNFI = .98, MLχ^2 (18, $N = 552$) = 34.77, $p < .05$, SBχ^2 (18) = 25.65, *ns*, and a non-significant loss of fit compared to Model C3, MLχ^2_{diff} (2) = 4.69, *ns*, SBχ^2_{diff} (2) = 3.39, *ns*, ΔCFI = 0.

3.1.5. Invariant factor variance test

The partial uniquenesses invariance model (Model D4) was next used as the reference model, and we performed two CFAs. In the first model (Model E), we added an equal constraint for the model mean across the Italian and U.S. groups; in the second model, we constrained the factor variances to be equal (Model F). Results showed a significant loss of fit for both the equal mean model, MLχ^2_{diff} (1) = 44.65, $p < .001$, SBχ^2_{diff} (1) = 65.39, $p < .001$, ΔCFI = .10, and the equal factor variance model, MLχ^2_{diff} (1) = 11.69, $p < .001$, SBχ^2_{diff} (1) = 10.65, $p < .01$, ΔCFI = .02. The final parameter estimates are reported in Table 3.

According to Chan's (2000) terminology, no items reflected a non-uniform differential item functioning (DIF), but two items reflected a uniform DIF: item S3 "I provide my child with quick and positive feedback to his/her bids for attention" and item S4 "I provide my child with positive affectionate displays of warmth and attention." For item S3 the intercept values were $\tau_{S3} = -.63$ ($SD = .57$) in the Italian sample and $\tau_{S3} = -.92$ ($SD = .60$) in the U.S. sample. For item S4 the intercept values were $\tau_{S4} = 1.65$ ($SD = .39$) in the Italian sample and $\tau_{S4} = 1.49$ ($SD = .42$) in the U.S. sample. Thus, the two items evoked a lower average response level in Italian mothers than U.S. mothers with the same level on the latent trait scale.

3.1.6. Cross-cultural means test

The analysis of latent mean parameters showed that Italian mothers self-evaluated themselves as interacting less frequently in the social domain than U.S. mothers, $\kappa^{I} = 4.16$ and $\kappa^{US} = 4.48$, respectively. The analysis of latent factor variance

Table 3
Model D4 parameter estimates (*SD*) for the Social Scale.

Item parameter	Sample	
	Italian	U.S.
λ_{S1}	.98 (.12)	–
λ_{S2}	1[a]	–
λ_{S3}	1.16 (.13)	–
λ_{S4}	.73 (.09)	–
λ_{S5}	.77 (.10)	–
θ_{S1}	.49 (.07)	.18 (.02)
θ_{S2}	.34 (.03)	–
θ_{S3}	.28 (.03)	–
θ_{S4}	.25 (.04)	.15 (.01)
θ_{S5}	.40 (.03)	.26 (.02)
τ_{S1}	.22 (.53)	–
τ_{S2}	0[a]	–
τ_{S3}	−.63 (.57)	−.92 (.60)
τ_{S4}	1.65 (.39)	1.49 (.42)
τ_{S5}	.79 (.43)	–
ϕ[b]	.16 (.03)	.08 (.02)
κ[c]	4.16 (.04)	4.48 (.03)

Note. Dash indicates an invariant parameter across samples.
[a] To identify the model item slope was fixed to 1 and item intercept was fixed to 0.
[b] Latent factor variance.
[c] Latent factor mean.

parameters revealed that variability of the latent score was higher for Italian mothers than for U.S. mothers, $\phi^{I} = .16$ and $\phi^{US} = .08$, respectively.

3.2. Didactic Scale measurement invariance and cultural means test

3.2.1. Configural invariance test

A simultaneous one-factor multi-group CFA model of mean and covariance structure was tested in both the Italian and the U.S. samples on the 8-item Didactic Scale. This model (Model A) imposed no equality constraints on parameter estimates across groups, except for item D8 that was used as the latent scale reference item in both groups. Results indicated a good fit for the tested model, RMSEA = .015, CFI = 1, NNFI = .99, MLχ^2 (36, $N = 552$) = 43.11, *ns*, SBχ^2 (36) = 38.09, *ns* (see Table 4).

Table 4
Invariance analysis of the Didactic Scale: multi-group hierarchical confirmative factor analyses goodness-of-fit indices (Italian mothers $n = 273$, and U.S. mothers $n = 279$).

Model	RMSEA	ECVI	CFI	NNFI	MLχ^2	SBχ^2	*df*	MLχ^2_{diff}	SBχ^2_{diff}	df_{diff}	ΔCFI
Model A	.015	.27	1	.99	43.11	38.09	36	–	–		–
Model B	.014	.25	.99	.99	50.62	45.30	43	7.51	7.19	7[a]	.01
Model C	.048	.29	.93	.92	88.23***	81.39**	50	37.61***	42.79***	7[a]	.06
Model C2	.039	.27	.95	.95	75.50**	69.00*	49	24.88***	26.82***	6[b]	.04
Model C3	.033	.26	.97	.96	67.66*	61.60	48	17.04**	18.24**	5[b]	.02
Model C4	.026	.26	.98	.98	61.04	55.32	47	10.42*	10.94*	4[b]	.01
Model D	.071	.37	.82	.82	153.59***	129.84***	55	92.55***	56.09***	8[c]	.16
Model D2	.057	.32	.89	.88	118.10***	101.65***	54	57.06***	36.71***	7[c]	.09
Model D3	.045	.28	.93	.93	93.55***	81.32**	53	32.51***	21.41**	6[c]	.05
Model D4	.036	.27	.96	.95	79.31**	70.22*	52	18.27**	13.29*	5[c]	.02
Model D5	.026	.25	.98	.98	68.12	60.53	51	7.08	5.12	4[c]	0
Model E	.044	.28	.94	.93	88.74**	79.38**	52	20.62***	27.99***	1[d]	.04
Model F	.030	.26	.97	.97	72.95*	64.90	52	4.83*	4.58*	1[d]	.01

Note. Model A: one-factor configural invariance (CI). Model B: one-factor CI and metric invariance (MI). Model B2 and Model B3: one-factor CI and partial metric invariance (MI). Model C: one-factor CI, partial MI, and scalar invariance (SI). Model C2: one-factor CI, partial MI, and partial SI. Model D: one-factor CI, partial MI, partial SI and invariant uniquenesses (IU). Model D2 and Model D3: one-factor CI, partial MI, partial SI, and partial IU. Model E: one-factor CI, partial MI, partial SI, partial IU, and equal factor means (EFM). Model F: one-factor CI, partial MI, partial SI, partial IU, and equal factor variance (EFV). Preliminary analyses conducted on both samples separately indicate the need to freely estimate in the covariance parameter between the error variance of the items 12 and 13 and of the item 14 and 16.
[a] The reference model is the Model A.
[b] The reference model is the Model B.
[c] The reference model is the Model C3.
[d] The reference model is the Model D4.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

3.2.2. Metric invariance test

The same one-factor model was tested simultaneously in both the Italian and the U.S. groups but constraining the corresponding factor loadings (λ_is) to be equal across groups (Model B). Results indicated that the model fit the data, RMSEA = .014, CFI = .99, NNFI = .99, MLχ^2 (43, N = 552) = 50.62, *ns*, SBχ^2 (43) = 45.30, and that constraints did not cause a significant loss of fit, MLχ^2_{diff} (7) = 7.51, *ns*, SBχ^2_{diff} (7) = 7.19, *ns*, ΔCFI = .01.

3.2.3. Scalar invariance test

The same one-factor model was tested simultaneously in both the Italian and U.S. groups but constraining both the corresponding factor loadings (λ_is) and all the intercepts (τ_i) of the observed items to be equal across groups (Model C). Results relative to the fit indices indicated that the model did not fit the data quite well, RMSEA = .048, CFI = .93, NNFI = .92, MLχ^2 (50, N = 552) = 88.23, p < .001, SBχ^2 (50) = 81.39, p < .01, but caused a significant loss of fit compared to Model B, MLχ^2_{diff} (7) = 37.61, p < .001, SBχ^2_{diff} (7) = 42.79, p < .001, ΔCFI = .06. The modification indices and the parameter estimate analysis suggested freely estimating the intercept of item D2. The new partial scalar invariance model (Model C2) showed a good fit to the data, RMSEA = .039, CFI = .95, NNFI = .95, MLχ^2 (49, N = 552) = 75.5, p < .01, SBχ^2 (49) = 69.0, p < .05, but still a significant loss of fit compared to Model B, MLχ^2_{diff} (6) = 24.88, p < .001, SBχ^2_{diff} (6) = 26.82, p < .001, ΔCFI = .04. The modification indices and the parameter estimate analysis suggested freely estimating the item D4 intercept. The new partial scalar invariance model (Model C3) again showed a good fit to the data, RMSEA = .033, CFI = .97, NNFI = .96, MLχ^2 (48, N = 552) = 67.66, p < .05, SBχ^2 (48) = 61.6, *ns*, and a significant loss of fit compared to Model B, MLχ^2_{diff} (5) = 17.04, p < .01, SBχ^2_{diff} (5) = 18.24, p < .01, ΔCFI = .02. The modification indices and the parameter estimate analysis suggested freely estimating the item D3 intercept. The new partial scalar invariance model (Model C4) showed a non-significant loss of fit compared to Model B, MLχ^2_{diff} (4) = 10.42, p < .05, SBχ^2_{diff} (4) = 10.94, p < .05, ΔCFI = .01.

3.2.4. Invariant uniquenesses test

A model adding cross-group equality constraints on all like items' residual variance (δ_i) was analyzed (Model D). Results relative to the fit indices indicated that this model did not fit the data, RMSEA = .071, CFI = .82, NNFI = .82, MLχ^2 (55, N = 552) = 153.59, p < .001, SBχ^2 (55) = 129.84, p < .001, and caused a significant loss of fit compared to Model C4, MLχ^2_{diff} (8) = 92.55, p < .001, SBχ^2_{diff} (8) = 56.09, p < .001, ΔCFI = .16. The modification indices and the parameter estimate analysis suggested freely estimating item D6 residual variance. The new partial uniquenesses invariance model (Model D2) did not fit the data, RMSEA = .057, CFI = .89, NNFI = .88, MLχ^2 (54, N = 552) = 118.1, p < .001, SBχ^2 (54) = 101.65, p < 001, and showed a significant loss of fit compared to Model C4, MLχ^2_{diff} (7) = 57.06, p < .001, SBχ^2_{diff} (7) = 36.71, p < .001, ΔCFI = .09. The modification indices and the parameter estimate analysis suggested freely estimating the residual variance of item D2. The new partial uniquenesses invariance model (Model D3) showed a good fit to the data, RMSEA = .045, CFI = .93, NNFI = .93, MLχ^2 (53, N = 552) = 93.55, p < .001, SBχ^2 (53) = 81.32, p < .01, but still a significant loss of fit compared to Model C4, MLχ^2_{diff} (6) = 32.51, p < .001, SBχ^2_{diff} (6) = 21.41, p < .01, ΔCFI = .05. The modification indices and the parameter estimate analysis suggested freely estimating the residual variance of item D5. The new partial uniquenesses invariance model (Model D4) again showed a significant loss of fit compared to Model C4, MLχ^2_{diff} (5) = 18.27, p < .01, SBχ^2_{diff} (5) = 13.29, p < .05, ΔCFI = .02. Finally, a model that freely estimated the residual variance of item D7 was tested (Model D5). This partial uniquenesses invariance model (Model D5) showed a non-significant loss of fit compared to Model C4, MLχ^2_{diff} (4) = 7.08, *ns*, SBχ^2_{diff} (4) = 5.12, *ns*, ΔCFI = 0.

3.2.5. Invariant factor variance test

The partial uniquenesses invariance model (Model D5) was next used as the reference model, and we performed two CFAs. In the first model (Model E), we added an equal constraint for the model mean across the Italian and U.S. samples; in the second model, we constrained the factor variance to be equal (Model F). Results showed a significant loss of fit for the equal mean model, MLχ^2_{diff} (1) = 20.62, p < .001, SBχ^2_{diff} (1) = 27.99, p < .001, ΔCFI = .04, but not for the equal factor variance model, MLχ^2_{diff} (1) = 4.83, p < .05, SBχ^2_{diff} (1) = 4.58, p < .05, ΔCFI = .01. The final parameter estimates are reported in Table 5.

In accord with Chan's (2000) terminology, for the Didactic scale three items reflected uniform DIF: item D2 "I provide my child with independent time to explore and learn on his/her own.", item D3 "I provide my child with diverse social and interactive experiences with same-age peers through play groups or informal get-together.", and item D4 "I provide my child with a structured, organized, and predictable environment." In all three items, the intercept value in the Italian sample was larger than the U.S. value. Specifically, the intercept value of item D2 was τ_{D2} = .27 (SD = .92) in the Italian sample and τ_{D2} = .01 (SD = .94) in the U.S. sample; for item D3, τ_{D3} = −1.28 (SD = 1.34) in the Italian sample, and τ_{D3} = −1.52 (SD = 1.38) in the U.S. sample; and for item D4, τ_{D4} = −2.69 (SD = 1.54) in the Italian sample, and τ_{D4} = −2.99 (SD = 1.56) in the U.S. sample. This result indicates that all three items evoked a lower average response level in Italian mothers than U.S. mothers with the same level on the latent trait scale.

3.2.6. Cross-cultural means test

The analysis of latent mean parameters showed that Italian mothers self-evaluated themselves as interacting less frequently in the didactic domain than U.S. mothers, κ^{I} = 3.78 and κ^{US} = 3.94, respectively. The analysis of latent factor variance parameters revealed that variability of the latent score was equal across the two samples, ϕ = .05.

Table 5
Model F parameter estimates (*SD*) for the Didactic Scale.

Item parameter	Sample	
	Italy	U.S.
λ_{D1}	1.11 (.26)	–
λ_{D2}	1.0 (.24)	–
λ_{D3}	1.28 (.35)	–
λ_{D4}	1.75 (.40)	–
λ_{D5}	1.36 (.30)	–
λ_{D6}	1.19 (.27)	–
λ_{D7}	1.52 (.28)	–
λ_{D8}	1[a]	–
θ_{D1}	.37 (.03)	–
θ_{D2}	.55 (.06)	.29 (.03)
θ_{D3}	1.01 (.07)	–
θ_{D4}	.65 (.05)	–
θ_{D5}	.81 (.10)	.49 (.07)
θ_{D6}	.55 (.07)	.23 (.02)
θ_{D7}	.53 (.06)	.32 (.03)
θ_{D8}	.59 (.04)	–
τ_{D1}	−.29 (.99)	–
τ_{D2}	.27 (.92)	.01 (.94)
τ_{D3}	−1.28 (1.34)	−1.52 (1.38)
τ_{D4}	−2.69 (1.54)	−2.99 (1.56)
τ_{D5}	−1.0 (1.16)	–
τ_{D6}	−.11 (1.06)	–
τ_{D7}	−2.21 (1.08)	–
τ_{D8}	0[a]	–
ϕ[b]	.05 (.02)	–
κ[c]	3.78 (.04)	3.94 (.04)

Note. Dash indicates an invariant parameter across samples.
[a] To identify the model item slope was fixed to 1 and item intercept was fixed to 0.
[b] Latent factor variance.
[c] Latent factor mean.

4. Discussion

The main aim of this study was to assess cross-cultural variation in Italian and U.S. mothers' beliefs about their social and didactic interactions with their very young children. We investigated mothers' self-reports about these two parenting activity domains because they define an important climate of child growth, play a direct role in child development, contribute to the transmission of relevant aspects of culture concerned with parenting, and were expected to vary between these two cultures. To compare parental beliefs, we administered the Parental Style Questionnaire. Because the PSQ was validated separately for each population (Bornstein, 1989; Bornstein et al., 1996; Venuti & Senese, 2007), and it was not tested for measurement invariance, to conduct substantive cross-group comparisons (Hui & Triandis, 1985; Knight & Zerr, 2010; Vandenberg & Lance, 2000), we ensured the measurement invariance of the PSQ and thereby ruled out ascribing cultural differences to response style variation or measurement artifact (Chan, 2000).

We compared Italian and U.S. mothers' parenting beliefs because, even if these mothers come from similar industrialized Western cultures, they hold contrasting views of mother–child relationships and interactions. Although Italy and the U.S. share comparable levels of individualist versus collectivist orientations (Hofstede, 1991), in contrast with European American U.S. culture, Italian culture is believed to place a high value on interdependent interpersonal relationships but at the same time to retain significant independent qualities (Bornstein et al., 1998), and such cultural values are believed to contribute to variation in mother–child interaction (e.g., Bornstein, Haynes, Pascual, Painter, & Galperín, 1999).

Both Italian and U.S. mothers report that they interact with their young children in social as well as didactic ways. In fact, the main observed differences were quantitative more than qualitative. U.S. mothers reported that they engaged in social and didactic behaviors with their young children more frequently than Italian mothers did. The latter result is in line with the literature that indicates that U.S. mothers recognize the special importance of proactive parenting in child development and tend to interact more frequently with their children (Bornstein et al., 1998, 2008; Harkness et al., 2007). U.S. American mothers are competitive, report high investment in childrearing, and consider social and didactic interactions of importance to the growth of children's sense of well-being and educational attainment (Bornstein et al., 1998; Cote & Bornstein, 2000; Harkness et al., 2007). By contrast, Italian mothers think that child development is naturally unfolding and consider adult intervention less requisite (Bornstein et al., 1998; New, 1989).

To reach these substantive cross-cultural findings, we conducted multiple analyses to ensure measurement invariance of the PSQ across Italian and U.S. samples and to investigate possible threads of noninvariance. The Italian and U.S. versions of the PSQ performed similarly in terms of reliability, and the measures were essentially invariant across groups. More specifically, for the Social Scale, no items reflected non-uniform differential item functioning, but two items reflected uniform DIF (Chan,

2000). Follow-up analysis of these two items and their parameters indicated that both items refer to the provision of attention to the baby and evoked lower average response levels in Italian mothers than U.S. mothers with the same level on the latent trait scale. For the Didactic Scale, no items reflected a non-uniform differential item functioning, but three items showed uniform DIF. Follow-up analysis of these three items and their parameters indicated that all items refer to the provision of a controlled, structured, and organized environment for the child and evoked a lower average response level in Italian mothers than U.S. mothers with the same level on the latent trait scale.

5. Conclusions

Cross-cultural comparisons of parenting beliefs can help to explain variation in parenting cognitions and practices and child development, but substantive cross-cultural comparison depends on the measurement invariance of the instruments used. In this study, we took invariance into account and found that Italian mothers reported that they engage also in social as well as didactic behaviors less frequently than U.S. mothers. Additional research will clarify the reasons for this cultural discrepancy and connect it to actual parenting practices in the two cultural groups.

The present study confirms the importance of measurement invariance tests (Byrne & Stewart, 2006; Chan, 2000; Vandenberg & Lance, 2000) to investigate possible threats of noninvariance and to interpret qualitative and quantitative differences in cross-cultural comparisons properly. To be able to make reasonable comparisons between groups, the measurement equivalence of the DVs should be tested. If measurement invariance is not ensured, then it behooves developmentalists to provide additional empirical and/or conceptual justification that the measures used have the same meaning in different cultural groups.

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