Development of the Parenting In a Pandemic Scale (PIPS)

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Abstract

Parenting is critical to creating and maintaining healthy child development. Importantly, there are multiple determinants of effective parenting, including the psychological resources of the parent, contextual sources of stress and support, and characteristics of the child. The COVID-19 pandemic has resulted in colossal disruptions to family life, and has fundamentally altered the landscape of parenting. In the face of escalating infection and mortality rates, rising unemployment, financial insecurity, school closures, and shelter-in-place orders, parents have had to create new environments in which their children can flourish while, in many cases, continuing to juggle ongoing work, health, and emotional stressors of their own. Several recent reviews have offered a variety of recommendations for parents to promote child well-being during the COVID-19 outbreak. However, no measures have been developed to assess how parents have adapted their parenting behaviors in response to the pandemic. To better understand the lasting impact of the pandemic on children's socioemotional health and well-being, we urgently need to characterize the impact of the pandemic on parenting practices. Accordingly, the current study developed the 24-item Parenting In a Pandemic Scale (PIPS) to assess behaviors enacted by parents to mitigate infection risk, manage children's social and emotional needs, structure children's activities, help with schoolwork or education, and promote physical activity. The scale is available in English and Spanish and is freely accessible for research, educational, or scientific purposes. We anticipate the PIPS being employed in studies alongside other, validated measures of parenting practices, parenting stress, or parental burnout, as well as in relation to measures of child mental health and resilience in the face of the pandemic.

Keywords: assessment; children; COVID-19; family; parenting.

Parenting practices are fundamental to child development, including by shaping social competence, emotional adjustment, and educational attainment (Baumrind, 1991; Bornstein & Bornstein, 2007; Bornstein, 2012; Maccoby, 2000; Patterson & Fisher, 2002). Effective parenting practices include positive reinforcement, praise, reward, emotional sensitivity, and consistent involvement and monitoring (Gardner, Shaw, Dishion, Burton, & Supplee, 2007; Henderlong & Lepper, 2002; Leijten et al., 2019; Sitnick et al., 2015). Parenting also lays the foundation for effective relationship formation and social cooperation and bonding across the lifespan (Feldman, 2016; Koehn & Kerns, 2018; Main, Kaplan, & Cassidy, 1985). The rigor of prior parenting research is reflected in many worldwide policy directives that encourage the implementation of parenting interventions at scale to promote positive child adjustment and lifelong mental health and well-being (World Health Organization, 2016; Scott, 2017).

However, parenting practices are subject to many individual and contextual factors that influence parents' ability to effectively manage child behavior and respond to children's needs. The different factors that can impact parenting behavior have been described in various theoretical frameworks, including Belsky's process model of the "determinants of parenting" (Belsky, 1984), Abidin's model of parenting stress (Abidin, 1992), the "Balances Between Risks and Resources" model (Mikolajczak & Roskam, 2018), and models that conceptualize parenting in context (Holden, 2020; Taraban & Shaw, 2018). In each case, individual differences in parental psychological resources and stress, the social, cultural, or neighborhood context, and a child's inherited characteristics are hypothesized to impact children's psychological well-being and development via their impact on parenting practices (Belsky, 1984; Bornstein, Hahn, & Haynes, 2011; Bradley & Corwyn, 2002; Easterbrooks, Chaudhuri, Bartlett, & Copeman, 2011; Shaw, Criss, Schonberg, & Beck, 2004).

Since January 2020, the COVID-19 pandemic has manifested as an overwhelming new "determinant of parenting" with colossal social, economic, and health consequences felt worldwide. In the United States, the impact of the virus on physical health and mortality has

been staggering (Weinberger et al., 2020), with over 3.4 million confirmed cases of COVID-19 and more than 138,000 deaths attributed to the virus as of July 14th 2020. The pandemic has resulted in record rates of unemployment (Bell & Blanchflower, 2020; Galea & Abdalla, 2020) with more than half of Americans reporting being financially impacted by the pandemic, including losing their job, being laid off, or experiencing reduced income (Pew Research Center, 2020a). The pandemic has also precipitated an escalating mental health crisis, with increases in reported symptoms of anxiety and depression (Huang & Zhao, 2020; Sønderskov, Dinesen, Santini, & Østergaard, 2020) particularly among women (Barzilay et al., 2020), who are already more susceptible to these conditions (Altemus, Sarvaiya, & Epperson, 2014; Rubinow & Schmidt, 2019), and who may be more likely to take on child care responsibilities (Kantamneni, 2020; Bureau of Labor Statistics, 2019).

Parents have thus shouldered a particularly heavy burden throughout the pandemic with many still working full-time (either from home or as essential workers) while also managing their children's care or education in the context of unprecedented school and day care closures that have extended over many months (Kalenkoski & Pabilonia, 2020; Van Lancker & Parolin, 2020; Viner et al., 2020). More than a third of parents in the US have reported that they are struggling to balance work and childcare responsibilities (Pew Research Center, 2020b). Indeed, the very nature of the pandemic has meant that parents are isolated from their usual social support networks (Crnic, Greenberg, Robinson, & Ragozin, 1984; Parkes, Sweeting, & Wight, 2015), have fewer or no opportunity for leisure or self-care activities (Coyne et al., 2020; Lindström, Åman, & Norberg, 2011), and have been forced into limited contact with family members (e.g., grandparents) who might have otherwise have been able to offer child care support (Aronson, 2020; Griffith, 2020). Thus, parents have had to overcome major personal physical and mental health consequences arising from the pandemic, while simultaneously trying to create a new, supportive, and enriched reality for their children.

Despite parents' best efforts, there are likely to be negative psychological and social consequences of the pandemic on children. The detrimental effects of pandemics on children are not well-documented (Kousky, 2016), although one study reported that nearly a third of children quarantined and isolated because of the H1N1 pandemic in the US and Mexico met criteria for post-traumatic stress disorder (PTSD) based on parent reports of symptoms (Sprang & Silman, 2013). A handful of other studies have documented higher rates of aggression, depression, and symptoms of post-traumatic stress among children following exposure to devastating natural disasters, including hurricanes (Osofsky, Osofsky, Kronenberg, Brennan, & Hansel, 2009; Vernberg, La Greca, Silverman, & Prinstein, 1996), earthquakes (Galante & Foa, 1986), and flooding (Stanke, Murray, Amlôt, Nurse, & Williams, 2012). These studies suggest that pervasive and endemic changes to children's environments inevitably have adverse consequences for their well-being.

The COVID-19 pandemic has worsened children's environments by requiring home confinement, limiting social interactions with other children, stifling opportunities for physical activity through reduced access to playgrounds or team sports, disrupting education and learning, and posing a constant, looming threat of illness and death (Bartlett, Griffin, & Thomson, 2020; Cluver et al., 2020; Griffith, 2020). There are justified concerns that some vulnerable children face an increased risk of being exposed to family violence and child abuse (Humphreys, Myint, & Zeanah, 2020) and no longer have access to schools or community services that might previously have provided vital emotional, social, or nutritional support (Fontanesi et al., 2020; Horesh & Brown, 2020). These challenges are thought to be exacerbated in low-income, urban, and crowded households, where infection rates and mortality arising from COVID-19 appear to be higher (Cluver, et al., 2020). Moreover, in the US, racial and ethnic minority communities have been disproportionally affected by the pandemic (Tai, Shah, Doubeni, Sia, & Wieland, 2020), including higher mortality rates (Gross et al., 2020) and

more consequential financial burdens, such as greater likelihood of income or job loss (Galea & Abdalla, 2020).

Throughout these ongoing difficulties, parenting practices are and will remain paramount for overcoming and mitigating the long-term burden of the pandemic on children. A number of recent commentaries and reviews have highlighted various strategies that parents can adopt, including providing structured daily routines for children (World Health Organization, 2020; Szabo, Richling, Embry, Biglan, & Wilson, 2020), modeling psychological flexibility and self-care (Coyne, et al., 2020), encouraging outdoor physical activity (Dunton, Do, & Wang, 2020; Guan et al., 2020), facilitating positive social interactions, even if limited to online or virtual settings (Bartlett, et al., 2020; Ettekal & Agans, 2020; Szabo, et al., 2020), engaging in age-appropriate communication about the pandemic (Dalton, Rapa, & Stein, 2020; Jiao et al., 2020; Li et al., 2020), generating opportunities for children to express their emotions (Bartlett, et al., 2020; Dalton, et al., 2020), and increasing positive reinforcement (Szabo, et al., 2020). However, no measures exist to operationalize how parents have adapted their parenting behaviors to meet the unique challenges arising from the pandemic across these different domains. To better understand the lasting impact of the pandemic on children's socioemotional health and well-being, we urgently need to characterize how parents are responding to the pandemic and the long-term impact of those efforts. Moreover, by identifying which parenting practices have been most effective in buffering the potentially negative effects of the pandemic on parent and child well-being, we can help to inform ongoing intervention efforts, inevitably delivered online, to mitigate lasting negative consequences even as the pandemic continues beyond the summer and into 2021.

The current study therefore developed a new scale to assess parents' reflections of how their parenting has changed to support children's mental and physical health during the pandemic. Drawing on the recommendations detailed in recent review papers and prominent commentaries (Brown, Doom, Watamura, Lechuga-Pena, & Koppels, 2020; Cluver, et al., 2020;

Ettekal & Agans, 2020; Fegert, Vitiello, Plener, & Clemens, 2020; Fontanesi, et al., 2020), the Parenting In a Pandemic Scale (PIPS) assesses various aspects of how parents have adapted their parenting strategies because of the pandemic, including behaviors enacted by parents to mitigate infection risk, manage children's social and emotional needs, structure children's activities, help with schoolwork or education, and promote physical activity. The scale can be completed in < 5 minutes and has been developed for children aged 3+. It is anticipated that the PIPS will be used in ongoing and future studies alongside other, well-validated measures of parenting practices, parenting stress, or parental burnout, as well as in relation to measures of child mental health and resilience in the face of the pandemic. We append both English (**Appendix 1**) and Spanish (**Appendix 2**) parent-reported versions of the PIPS, which are available freely for research, educational, or scientific purposes. We provide and will update an evolving list of studies that have used or are using the PIPS, summary statistics and psychometric information for the items and scale scores, as well as other relevant findings, references, and resources as these become available (see **Appendix 3** and **Appendix 4**).

References

Abidin, R. R. (1992). The determinants of parenting behavior. *Journal of clinical child psychology, 21*(4), 407-412.

Altemus, M., Sarvaiya, N., & Epperson, C. N. (2014). Sex differences in anxiety and depression clinical perspectives. *Frontiers in neuroendocrinology, 35*(3), 320-330.

Aronson, L. (2020). Age, Complexity, and Crisis — A Prescription for Progress in Pandemic. *New England Journal of Medicine, 383*(1), 4-6. doi: 10.1056/NEJMp2006115

Bartlett, J. D., Griffin, J. L., & Thomson, D. R. (2020). *Resources for Supporting Children's Emotional Well-being during the COVID-19 Pandemic*.

Barzilay, R., Moore, T., Greenberg, D., DiDomenico, G., Brown, L., White, L., . . . Gur, R. (2020). Resilience, COVID-19-related stress, anxiety and depression during the pandemic in a large population enriched for healthcare providers. *Translational Psychiatry*.

Baumrind, D. (1991). The influence of parenting style on adolescent competence and substance use. *The journal of early adolescence, 11*(1), 56-95.

Bell, D. N., & Blanchflower, D. G. (2020). US and UK labour markets before and during the Covid-19 crash. *National Institute Economic Review, 252*, R52-R69.

Belsky, J. (1984). The determinants of parenting: A process model. *Child development*, 83-96.

Bornstein, L., & Bornstein, M. (2007). Parenting styles and child social development. *Encyclopedia on early childhood development. Montreal: Centre of Excellence for Early Childhood Development and Strategic Knowledge Cluster on Early Child Development*.

Bornstein, M. H. (2012). Cultural approaches to parenting. *Parenting, 12*(2-3), 212-221.

Bornstein, M. H., Hahn, C.-S., & Haynes, O. M. (2011). Maternal personality, parenting cognitions, and parenting practices. *Developmental psychology, 47*(3), 658.

Bradley, R. H., & Corwyn, R. F. (2002). Socioeconomic status and child development. *Annual review of psychology, 53*(1), 371-399.

Brown, S. M., Doom, J., Watamura, S. E., Lechuga-Pena, S., & Koppels, T. (2020). Stress and Parenting during the Global COVID-19 Pandemic.

Center, P. R. (2020a). About Half of Lower Income Americans Report Household Wage or Job Loss Due to COVID-19.

Center, P. R. (2020b). Most Americans Say Coronavirus Outbreak Has Impacted Their Lives, from https://www.pewsocialtrends.org/wp-content/uploads/sites/3/2020/03/PSDT_03.30.20_W64-COVID-19.Personal-impact-FULL-REPORT.pdf

Cluver, L., Lachman, J. M., Sherr, L., Wessels, I., Krug, E., Rakotomalala, S., . . . Green, O. (2020). Parenting in a time of COVID-19.

Coyne, L. W., Gould, E. R., Grimaldi, M., Wilson, K. G., Baffuto, G., & Biglan, A. (2020). First things first: Parent psychological flexibility and self-compassion during COVID-19. *Behavior Analysis in Practice*, 1.

Crnic, K. A., Greenberg, M. T., Robinson, N. M., & Ragozin, A. S. (1984). Maternal stress and social support: Effects on the mother-infant relationship from birth to eighteen months. *American Journal of Orthopsychiatry, 54*(2), 224-235.

Dalton, L., Rapa, E., & Stein, A. (2020). Protecting the psychological health of children through effective communication about COVID-19. *The Lancet Child & Adolescent Health, 4*(5), 346-347.

Dunton, G., Do, B., & Wang, S. (2020). Early Effects of the COVID-19 Pandemic on Physical Activity and Sedentary Behavior in US Children.

Easterbrooks, M. A., Chaudhuri, J. H., Bartlett, J. D., & Copeman, A. (2011). Resilience in parenting among young mothers: Family and ecological risks and opportunities. *Children and Youth Services Review, 33*(1), 42-50. doi: https://doi.org/10.1016/j.childyouth.2010.08.010

Ettekal, A. V., & Agans, J. P. (2020). Positive Youth Development Through Leisure: Confronting the COVID-19 Pandemic. *Journal of Youth Development, 15*(2), 1-20.

Fegert, J. M., Vitiello, B., Plener, P. L., & Clemens, V. (2020). Challenges and burden of the Coronavirus 2019 (COVID-19) pandemic for child and adolescent mental health: a narrative review to highlight clinical and research needs in the acute phase and the long return to normality. *Child and adolescent psychiatry and mental health, 14*, 1-11.

Feldman, R. (2016). The neurobiology of mammalian parenting and the biosocial context of human caregiving. *Hormones and Behavior, 77*, 3-17. doi: https://doi.org/10.1016/j.yhbeh.2015.10.001

Fontanesi, L., Marchetti, D., Mazza, C., Di Giandomenico, S., Roma, P., & Verrocchio, M. C. (2020). The effect of the COVID-19 lockdown on parents: A call to adopt urgent measures. *Psychological Trauma: Theory, Research, Practice, and Policy*.

Galante, R., & Foa, D. (1986). An Epidemiological Study of Psychic Trauma and Treatment Effectiveness for Children after a Natural Disaster. *Journal of the American Academy of Child Psychiatry, 25*(3), 357-363. doi: https://doi.org/10.1016/S0002-7138(09)60257-0

Galea, S., & Abdalla, S. M. (2020). COVID-19 Pandemic, Unemployment, and Civil Unrest: Underlying Deep Racial and Socioeconomic Divides. *JAMA*.

Gardner, F., Shaw, D. S., Dishion, T. J., Burton, J., & Supplee, L. (2007). Randomized prevention trial for early conduct problems: Effects on proactive parenting and links to toddler disruptive behavior. *Journal of Family Psychology, 21*(3), 398-406. doi: 10.1037/0893-3200.21.3.398

Griffith, A. K. (2020). Parental Burnout and Child Maltreatment During the COVID-19 Pandemic. *Journal of Family Violence*, 1-7.

Gross, C. P., Essien, U. R., Pasha, S., Gross, J. R., Wang, S.-y., & Nunez-Smith, M. (2020). Racial and Ethnic Disparities in Population Level Covid-19 Mortality. *MedRxiv*.

Guan, H., Okely, A. D., Aguilar-Farias, N., del Pozo Cruz, B., Draper, C. E., El Hamdouchi, A., . . . Kontsevaya, A. (2020). Promoting healthy movement behaviours among children during the COVID-19 pandemic. *The Lancet Child & Adolescent Health, 4*(6), 416-418.

Henderlong, J., & Lepper, M. R. (2002). The effects of praise on children's intrinsic motivation: A review and synthesis. *Psychological Bulletin, 128*(5), 774-795. doi: 10.1037/0033-2909.128.5.774

Holden, G. W. (2020). Why do parents hit their children? From cultural to unconscious determinants. *The Psychoanalytic Study of the Child, 73*(1), 10-29.

Horesh, D., & Brown, A. D. (2020). Traumatic stress in the age of COVID-19: A call to close critical gaps and adapt to new realities. *Psychological Trauma: Theory, Research, Practice, and Policy, 12*(4), 331-335. doi: 10.1037/tra0000592

Huang, Y., & Zhao, N. (2020). Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: a web-based cross-sectional survey. *Psychiatry research*, 112954.

Humphreys, K. L., Myint, M. T., & Zeanah, C. H. (2020). Increased risk for family violence during the COVID-19 pandemic. *Pediatrics, 145*(4), e20200982.

Jiao, W. Y., Wang, L. N., Liu, J., Fang, S. F., Jiao, F. Y., Pettoello-Mantovani, M., & Somekh, E. (2020). Behavioral and emotional disorders in children during the COVID-19 epidemic. *The journal of Pediatrics, 221*, 264.

Kalenkoski, C. M., & Pabilonia, S. W. (2020). Initial Impact of the COVID-19 Pandemic on the Employment and Hours of Self-Employed Coupled and Single Workers by Gender and Parental Status: Institute of Labor Economics (IZA).

Kantamneni, N. (2020). The impact of the COVID-19 pandemic on marginalized populations in the United States: A research agenda. *Journal of Vocational Behavior, 119*, 103439.

Koehn, A. J., & Kerns, K. A. (2018). Parent–child attachment: meta-analysis of associations with parenting behaviors in middle childhood and adolescence. *Attachment & Human Development, 20*(4), 378-405. doi: 10.1080/14616734.2017.1408131

Kousky, C. (2016). Impacts of natural disasters on children. *The Future of children, 26*, 73-92.

Leijten, P., Gardner, F., Melendez-Torres, G., van Aar, J., Hutchings, J., Schulz, S., . . . Overbeek, G. (2019). Meta-analyses: Key parenting program components for disruptive child behavior. *Journal of the American Academy of Child & Adolescent Psychiatry, 58*(2), 180-190.

Li, W., Liao, J., Li, Q., Baskota, M., Wang, X., Tang, Y., . . . Ma, Y. (2020). Public health education for parents during the outbreak of COVID-19: a rapid review. *Annals of translational medicine, 8*(10).

Lindström, C., Åman, J., & Norberg, A. L. (2011). Parental burnout in relation to sociodemographic, psychosocial and personality factors as well as disease duration and glycaemic control in children with Type 1 diabetes mellitus. *Acta Paediatrica, 100*(7), 1011-1017.

Maccoby, E. E. (2000). Parenting and its effects on children: On reading and misreading behavior genetics. *Annual review of psychology, 51*(1), 1-27.

Main, M., Kaplan, N., & Cassidy, J. (1985). Security in Infancy, Childhood, and Adulthood: A Move to the Level of Representation. *Monographs of the Society for Research in Child Development, 50*(1/2), 66-104. doi: 10.2307/3333827

Mikolajczak, M., & Roskam, I. (2018). A theoretical and clinical framework for parental burnout: the balance between risks and resources (BR2). *Frontiers in psychology, 9*, 886.

Organization, W. H. (2016). *INSPIRE: seven strategies for ending violence against children*: World Health Organization.

Organization, W. H. (2020). Mental health and psychosocial considerations during the COVID-19 outbreak, 18 March 2020: World Health Organization.

Osofsky, H. J., Osofsky, J. D., Kronenberg, M., Brennan, A., & Hansel, T. C. (2009). Posttraumatic Stress Symptoms in Children After Hurricane Katrina: Predicting the Need for Mental Health Services. *American Journal of Orthopsychiatry, 79*(2), 212-220. doi: 10.1037/a0016179

Parkes, A., Sweeting, H., & Wight, D. (2015). Parenting stress and parent support among mothers with high and low education. *Journal of Family Psychology, 29*(6), 907.

Patterson, G. R., & Fisher, P. A. (2002). Recent developments in our understanding of parenting: Bidirectional effects, causal models, and the search for parsimony. *Handbook of parenting, 5*, 59-88.

Rubinow, D. R., & Schmidt, P. J. (2019). Sex differences and the neurobiology of affective disorders. *Neuropsychopharmacology, 44*(1), 111-128.

Scott, S. (2017). A National Approach to Improving Child and Adolescent Mental Health Care. *Evidence-based psychotherapies for children and adolescents*, 415.

Shaw, D. S., Criss, M. M., Schonberg, M. A., & Beck, J. E. (2004). The development of family hierarchies and their relation to children's conduct problems. *Development and Psychopathology, 16*(3), 483-500.

Sitnick, S. L., Shaw, D. S., Gill, A., Dishion, T., Winter, C., Waller, R., . . . Wilson, M. (2015). Parenting and the Family Check-Up: Changes in observed parent-child interaction following early childhood intervention. *Journal of Clinical Child & Adolescent Psychology, 44*(6), 970-984.

Sønderskov, K. M., Dinesen, P. T., Santini, Z. I., & Østergaard, S. D. (2020). The depressive state of Denmark during the COVID-19 pandemic. *Acta neuropsychiatrica*, 1-3.

Sprang, G., & Silman, M. (2013). Posttraumatic Stress Disorder in Parents and Youth After Health-Related Disasters. *Disaster medicine and public health preparedness, 7*, 105-110.

Stanke, C., Murray, V., Amlôt, R., Nurse, J., & Williams, R. (2012). The effects of flooding on mental health: Outcomes and recommendations from a review of the literature. *PLoS currents, 4*, e4f9f1fa9c3cae-e4f9f1fa9c3cae. doi: 10.1371/4f9f1fa9c3cae

Statistics, B. o. L. (2019). Labor Force Characteristics by Race and Ethnicity, from https://www.bls.gov/opub/reports/race-and-ethnicity/2018/home.htm

Szabo, T. G., Richling, S., Embry, D. D., Biglan, A., & Wilson, K. G. (2020). From helpless to hero: Promoting values-based behavior and positive family interaction in the midst of Covid-19. *Behavior Analysis in Practice*, 1-9.

Tai, D. B. G., Shah, A., Doubeni, C. A., Sia, I. G., & Wieland, M. L. (2020). The Disproportionate Impact of COVID-19 on Racial and Ethnic Minorities in the United States. *Clinical Infectious Diseases*.

Taraban, L., & Shaw, D. S. (2018). Parenting in context: Revisiting Belsky's classic process of parenting model in early childhood. *Developmental Review, 48*, 55-81.

Van Lancker, W., & Parolin, Z. (2020). COVID-19, school closures, and child poverty: a social crisis in the making. *The Lancet Public Health, 5*(5), e243-e244.

Vernberg, E. M., La Greca, A. M., Silverman, W. K., & Prinstein, M. J. (1996). Prediction of posttraumatic stress symptoms in children after Hurricane Andrew. *Journal of Abnormal Psychology, 105*(2), 237-248. doi: 10.1037/0021-843X.105.2.237

Viner, R. M., Russell, S. J., Croker, H., Packer, J., Ward, J., Stansfield, C., . . . Booy, R. (2020). School closure and management practices during coronavirus outbreaks including COVID-19: a rapid systematic review. *The Lancet Child & Adolescent Health*.

Weinberger, D. M., Cohen, T., Crawford, F. W., Mostashari, F., Olson, D., Pitzer, V. E., . . . Watkins, A. (2020). Estimating the early death toll of COVID-19 in the United States. *bioRxiv*.

Appendix 1

English version of the Parenting In a Pandemic Scale (PIPS)

We want to understand how much your parenting has changed because of the COVID-19 pandemic. Choose the response that best describes how much you have done each of the following parenting behaviors since the pandemic began compared to how much you did each one before the pandemic:

0 = a lot less than before the pandemic

1 = somewhat less than before the pandemic

2 = the same amount as before the pandemic

3 = somewhat more than before the pandemic

4 = a lot more than before the pandemic

1. Allowed my child to play in-person with other children
2. Took my child to a public playground
3. Encouraged my child to talk to me about their emotions
4. Had my child engage in free play without screens while at home (e.g., toys, games, Legos)
5. Minimized my child's exposure to news coverage on the TV, radio, or social media
6. Allowed my child unsupervised screen time (e.g., video games, TV, internet)
7. Organized or facilitated online play dates for my child to play with their friends (e.g., via Zoom, Skype, FaceTime)
8. Displayed warmth and affection towards my child (e.g., hugging, kissing, saying "I love you")
9. Helped my child with homework or school-related work (e.g., math, writing, assignments)
10. Stopped my child getting physically near to strangers outside the home
11. Took my child to stores, markets, or other businesses
12. Encouraged my child to have educational screen time (e.g., apps, TV shows, or e-books)
13. Read books with my child
14. Ensured that my child washed their hands many times in a day

15. Organized or facilitated online visits with family who do not live with us
16. Actively structured activities to do with my child at home (e.g., arts and crafts, cooking, games)
17. Had my child wear a face mask outside the home
18. Encouraged my child to do outdoor physical activity (e.g., soccer, bike, scooter, run)
19. Told my child not to touch their face or mouth
20. Expressed anger or frustration towards my child
21. Had my child use hand sanitizer (e.g., Purell)
22. Thought about why my child is feeling or behaving a certain way before responding to them
23. Ensured that my child has good quality sleep (e.g., regular sleep and wake times, no screens in bed)
24. Shielded my child from conflicts or arguments between me and/or other adults in the home
25. Talked to my child about good health and hygiene practices (e.g., how people get sick, vaccines, germs)

Appendix 2

Spanish version of the Parenting In a Pandemic Scale (PIPS)

Queremos entender cuánto ha cambiado la crianza de sus hijos a causa de la pandemia del COVID-19. Elija la respuesta que mejor describa cuánto ha hecho cada uno de los siguientes comportamientos durante la pandemia en comparación con cuánto hizo cada uno antes de la pandemia:

0 = mucho menos que antes de la pandemia

1 = un poco menos que antes de la pandemia

2 = la misma cantidad que antes de la pandemia

3 = un poco más que antes de la pandemia

4 = mucho más que antes de la pandemia

1. Permití que mi hijo/a juegue en persona con otros niños
2. Llevé a mi hijo/a a un parque público
3. Animé a mi hijo/a a hablar conmigo sobre sus emociones
4. He dejado que mi hijo/a participe en juego libre sin pantallas mientras está en casa (p.ej., jugar con juguetes, juegos, Legos)
5. Minimicé la exposición de mi hijo/a a cobertura de noticias en la televisión, la radio o las redes sociales
6. Permití que mi hijo/a tenga tiempo de pantalla sin mi supervisión (p.ej., jugar videojuegos, ver televisión, y usar el internet)
7. Organicé o facilité citas en línea (p.ej., vía Zoom, Skype, o FaceTime) para que mi hijo/a juegue con sus amigos
8. Mostré cariño y afecto hacia mi hijo/a (por ejemplo, dando un abrazo, dando un beso diciendo “Te amo”)
9. Ayudé a mi hijo/a con su tarea o trabajo relacionado con la escuela (p.ej., matemáticas, escritura, asignaciones)

10. Detuve a mi hijo/a de acercarse físicamente a desconocidos fuera de casa
11. Llevé a mi hijo/a a tiendas, mercados, e otros negocios
12. Animé a mi hijo/a a tener tiempo de pantalla educativa (p.ej., ver contenido educativo en aplicaciones, programas de televisión, o leer libros electrónicos)
13. Leí libros con mi hijo/a
14. Aseguré que mi hijo/a se lave las manos varias veces al día
15. Organicé o facilité visitas en línea con familiares que viven fuera de nuestra casa
16. Activamente organicé actividades estructuradas para hacer con mi hijo/a en la casa (p.ej., artes y manualidades, cocinar, juegos)
17. He hecho que mi hijo/a use una máscara facial fuera de casa
18. Animé a mi hijo/a a hacer actividad física al aire libre (p.ej., jugar soccer, montar bicicleta, correr)
19. Le dije a mi hijo/a que no se tocara la cara o la boca
20. Expresé ira o frustración hacia mi hijo/a
21. He hecho que mi hijo/a use desinfectante para las manos (p.ej., Purell)
22. Pensé en por qué mi hijo/a se siente o se comporta de cierta manera antes de responderle
23. Asegure que mi hijo/a mantenga buena calidad de sueño (p.ej., mantener horarios regulares para dormir y despertar, no dejarlo ver pantallas antes de dormir)
24. Protegí a mi hijo/a de conflictos o discusiones entre otros adultos en la casa y yo
25. Hablé con mi hijo/a sobre las buenas prácticas de salud e higiene (p.ej., cómo las personas se enferman, obtienen vacunas, y están expuestos a gérmenes)

Investigadores pueden descargar y utilizar el PIPS de forma gratuita. El único requisito es que no se cambian las instrucciones, la redacción de los puntos y el formato de respuesta, y que se envíen las copias de las publicaciones y la información de la escala/puntos/psicométrica relevante de los estudios que han utilizado el PIPS a rwaller@sas.upenn.edu para ser agregado a una lista de referencia.

Appendix 3

Scoring Instructions for the PIPS

Note. Data is currently being collected to formally assess the psychometric properties and item and scale information for the PIPS, including testing whether items form the hypothesized scales as detailed below.

4 PIPS scale scores can be computed as follows:

(1) Total Score (0, 1, 2, 3, or 4) for all 25 items
The following items must be reverse-coded prior to creating total sum score: 1, 2, 6, 11, and 20

(2) Infection Prevention Subscale (0, 1, 2, 3, or 4) for the following 9 items: 1, 2, 10, 11, 14, 17, 19, 21, 25
The following items must be reverse-coded prior to creating subscale score: 1, 2, and 11

(3) Social and Emotional Support Subscale (0, 1, 2, 3, or 4) for the following 8 items: 3, 5, 7, 8, 15, 20, 22, 24
The following item must be reverse-coded prior to creating subscale score: 20

(4) Structured Activity Subscale (0, 1 2, 3, or 4) for the following 8 items: 4, 6, 9, 12, 13, 16, 18, 23,
The following item must be reverse-coded prior to creating subscale score: 6

Appendix 4

List of studies that have used or are using the PIPS, summary statistics and psychometric information for the items and scale scores, as well as other relevant findings, references, and resources.

Name of Study (Principal Investigators/lead authors)	Sample used	Item, scale, psychometric information	Other relevant findings
(1) Electronic Family And Child Emotion Socialization (**e-FACES**) study (Waller & Wagner)	Ongoing, longitudinal study of 250+ children aged 3-10 years old recruited online and via community fliers between April 2020-July 2020 in Philadelphia and Boston. Longitudinal follow-up planned between August 2020-November 2020.		
(2)			