

Good Things Come to Those Who Wait: Delaying Gratification Likely Does Matter for Later Achievement (A Commentary on Watts, Duncan, & Quan, 2018)

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Sabine Doebel¹, Laura E. Michaelson², and Yuko Munakata^{3,4}

¹Department of Psychology, George Mason University; ²American Institutes for Research, Washington, D.C.;

³Department of Psychology, University of California, Davis; and ⁴Center for Mind and Brain, University of California, Davis

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Does childhood delay of gratification predict important life outcomes? In one of the most widely known results in psychology, children who delayed gratification by resisting the temptation to eat a marshmallow in hopes of receiving a second one were more likely to thrive later in life, academically and behaviorally (Shoda, Mischel, & Peake, 1990). However, a recent article has cast doubt on this finding, as well as on the usefulness of interventions designed to train delay of gratification to improve life outcomes. Using a much larger data set, more representative sample, and modified marshmallow test, Watts, Duncan, and Quan (2018) found that the predictive power of the test for later academic achievement was diminished or disappeared when a range of covariates that they considered confounds were included.¹ They thus concluded that future interventions should not focus on boosting delay of gratification.

It is not straightforward to differentiate between confounds and aspects of a construct, and which variables get chosen as covariates depends on the researcher's goal. Watts et al. state that they aimed to conceptually replicate the original findings of Shoda et al. (1990); in light of this, we argue that many of the variables in their models should not have been included as confounds because they likely captured factors that measure fundamental processes supporting delay of gratification. Thus, the weakened link between early delay of gratification and later outcomes is not surprising.

Watts et al. included two sets of covariates in two sets of models: child-background and home-environment characteristics in one model and general cognitive and behavioral skills in the other. Their justification for including these variables was that child-background

and home-environment covariates are unlikely to be targeted by early childhood interventions, and cognitive and behavioral skills are unlikely to be the focus of interventions that target the “narrow set of skills involved with gratification delay (e.g., a program that merely provided children with strategies to help them delay longer; see Mischel, 2014, p. 40).” Both sets of variables, however, measure fundamental processes supporting delay of gratification that are indeed reasonable and likely targets of interventions to boost delaying gratification. For example, in their models that included covariates measuring general cognitive and behavioral skills, Watts et al. controlled for executive functions (Diamond & Lee, 2011), which have been theorized to support delay of gratification, helping children maintain goals (e.g., waiting for two marshmallows) and inhibit impulses (e.g., not tasting the marshmallow in front of them; e.g., Diamond, 2013; Miyake & Friedman, 2012). Theoretical and empirical models suggest that executive function limitations underlie externalizing behavior (e.g., Sulik et al., 2015), which Watts et al. also controlled for in these models. They also controlled for verbal ability, which has been theorized to support executive function (e.g., Kuhn, Willoughby, Vernon-Feagans, Blair, & The Family Life Project Key Investigators, 2016) and shows moderate to high correlations with it (e.g., Carlson & Moses, 2001; Zelazo et al., 2013). Executive functions also appear to play a key supporting

Corresponding Author:

Sabine Doebel, Department of Psychology, George Mason University,
4400 University Drive, Fairfax, VA 22030
E-mail: sdoebel@gmu.edu

role in early math and reading skills (Blair & Razza, 2007), variables that were also statistically adjusted in their models.

Similarly, factors captured by the child-background and family-environment covariates also play key roles in supporting delay of gratification across developmental time and in the moment. These include social norms, values, and trust, which may influence children's tendency to exercise delay of gratification both developmentally and when they are confronted with temptation (Carlson & Zelazo, 2011; Doebel, Michaelson, & Munakata, 2017; Lamm et al., 2018). There is evidence that children wait longer for two marshmallows and value delaying more if they believe that their in-group waited and their out-group did not, and they wait less if the person providing the reward is untrustworthy (Doebel & Munakata, 2018; Kidd, Palmeri, & Aslin, 2013; Michaelson & Munakata, 2016). Theory and empirical findings also suggest that parenting and language may scaffold self-regulatory skills that children use when they need to delay gratification (e.g., Bernier, Carlson, Deschênes, & Matte-Gagné, 2012; Hammond, Müller, Carpendale, Bibok, & Liebermann-Finestone, 2012; Sulik et al., 2015; Vernon-Feagans, Willoughby, & Garrett-Peters, 2016; Vygotsky, 1934/2012), and early childhood interventions have indeed targeted some of these processes (e.g., Diamond, Barnett, Thomas, & Munro, 2007).

Thus, we argue that many of the covariates in both sets of models capture factors that support delay of gratification. Controlling for these factors, therefore, may have accounted for all of the variance in delay of gratification measured by the marshmallow test and, thus, the variance in the outcomes available to be explained by the marshmallow test. Moreover, causal effects of delaying gratification on later outcomes would not necessarily yield significant relationships between delaying gratification and those outcomes when analyses control for covariates, as Watts et al. seem to assume. The statistical power to detect causal effects of delaying gratification is diminished when analyses control for covariates that are highly collinear with delaying gratification (Spencer, Zanna, & Fong, 2005). It would therefore be erroneous to conclude from these models that delay of gratification does not matter for later outcomes.

Watts et al. may acknowledge that their covariates likely reduced variance in the outcomes attributable to delaying gratification and may argue that this is appropriate given their stated goal of controlling for factors not likely to be influenced by interventions to boost delay. However, this is inconsistent with their other stated goal of conceptually replicating the original work (Shoda et al., 1990), in which one would expect the inclusion of only covariates that do not

play roles in supporting delay of gratification. Moreover, we believe that the covariates capture factors that are reasonable targets of interventions to improve delaying.

We applaud Watts et al. for their important contributions, which include showing that in a much larger, complementary sample, childhood delay of gratification predicts later academic outcomes. Given that processes captured by many of the covariates likely support delay of gratification, we conclude that their findings are actually best construed as a successful (and much needed) partial replication of the original marshmallow-test findings.

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Author Contributions

S. Doebel drafted the manuscript. L. E. Michaelson and Y. Munakata provided critical revisions, and all three authors approved the final manuscript for submission.

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Declaration of Conflicting Interests

The author(s) declared that there were no conflicts of interest with respect to the authorship or the publication of this article.

Note

1. Watts et al. found no significant associations between delay of gratification and behavioral problems, so we focus our arguments about covariates on Watts et al.'s academic-achievement findings.

References

- Bernier, A., Carlson, S. M., Deschênes, M., & Matte-Gagné, C. (2012). Social factors in the development of early executive functioning: A closer look at the caregiving environment. *Developmental Science, 15*, 12–24.
- Blair, C., & Razza, R. P. (2007). Relating effortful control, executive function, and false belief understanding to emerging math and literacy ability in kindergarten. *Child Development, 78*, 647–663.
- Carlson, S. M., & Moses, L. J. (2001). Individual differences in inhibitory control and children's theory of mind. *Child Development, 72*, 1032–1053.
- Carlson, S. M., & Zelazo, P. D. (2011). The value of control and the influence of values. *Proceedings of the National Academy of Sciences, USA, 108*, 16861–16862.
- Diamond, A. (2013). Executive functions. *Annual Review of Psychology, 64*, 135–168.

- Diamond, A., Barnett, W. S., Thomas, J., & Munro, S. (2007). Preschool program improves cognitive control. *Science*, *318*, 1387–1388.
- Diamond, A., & Lee, K. (2011). Interventions shown to aid executive function development in children 4 to 12 years old. *Science*, *333*, 959–964.
- Doebel, S., Michaelson, L. E., & Munakata, Y. (2017). Beyond personal control: The role of developing self-control abilities in the behavioral constellation of deprivation. *Behavioral & Brain Sciences*, *40*, Article e324. doi:10.1017/S0140525X17000942
- Doebel, S., & Munakata, Y. (2018). Group influences on engaging self-control: Children delay gratification and value it more when their in-group delays and their out-group doesn't. *Psychological Science*, *29*, 738–748.
- Hammond, S. I., Müller, U., Carpendale, J. I., Bibok, M. B., & Liebermann-Finestone, D. P. (2012). The effects of parental scaffolding on preschoolers' executive function. *Developmental Psychology*, *48*, 271–281.
- Kidd, C., Palmeri, H., & Aslin, R. N. (2013). Rational snacking: Young children's decision-making on the marshmallow task is moderated by beliefs about environmental reliability. *Cognition*, *126*, 109–114.
- Kuhn, L. J., Willoughby, M. T., Vernon-Feagans, L., Blair, C. B., & The Family Life Project Key Investigators. (2016). The contribution of children's time-specific and longitudinal expressive language skills on developmental trajectories of executive function. *Journal of Experimental Child Psychology*, *148*, 20–34.
- Lamm, B., Keller, H., Teiser, J., Gudi, H., Yovsi, R. D., Freitag, C., . . . Lohaus, A. (2018). Waiting for the second treat: Developing culture-specific modes of self-regulation. *Child Development*, *89*, e261–e277.
- Michaelson, L. E., & Munakata, Y. (2016). Trust matters: Seeing how an adult treats another person influences preschoolers' willingness to delay gratification. *Developmental Science*, *19*, 1011–1019.
- Mischel, W. (2014). *The marshmallow test: Why self-control is the engine of success*. New York, NY: Little, Brown.
- Miyake, A., & Friedman, N. P. (2012). The nature and organization of individual differences in executive functions: Four general conclusions. *Current Directions in Psychological Science*, *21*, 8–14.
- Shoda, Y., Mischel, W., & Peake, P. K. (1990). Predicting adolescent cognitive and self-regulatory competencies from preschool delay of gratification: Identifying diagnostic conditions. *Developmental Psychology*, *26*, 978–986.
- Spencer, S. J., Zanna, M. P., & Fong, G. T. (2005). Establishing a causal chain: Why experiments are often more effective than mediational analyses in examining psychological processes. *Journal of Personality and Social Psychology*, *89*, 845–851.
- Sulik, M. J., Blair, C., Mills-Koonce, R., Berry, D., Greenberg, M., Family Life Project Investigators, . . . Frank, J. L. (2015). Early parenting and the development of externalizing behavior problems: Longitudinal mediation through children's executive function. *Child Development*, *86*, 1588–1603.
- Vernon-Feagans, L., Willoughby, M., & Garrett-Peters, P. (2016). Predictors of behavioral regulation in kindergarten: Household chaos, parenting, and early executive functions. *Developmental Psychology*, *52*, 430–431.
- Vygotsky, L. (2012). *Thought and language*. Cambridge, MA: MIT Press. (Original work published 1934)
- Watts, T. W., Duncan, G. J., & Quan, H. (2018). Revisiting the marshmallow test: A conceptual replication investigating links between early delay of gratification and later outcomes. *Psychological Science*, *29*, 1159–1177. doi:10.1177/0956797618761661
- Zelazo, P. D., Anderson, J. E., Richler, J., Wallner-Allen, K., Beaumont, J. L., & Weintraub, S. (2013). II. NIH Toolbox Cognition Battery (CB): Measuring executive function and attention. *Monographs of the Society for Research in Child Development*, *78*, 16–33.