

Prosocial Effects of Perspective-Taking Through LEGO Play

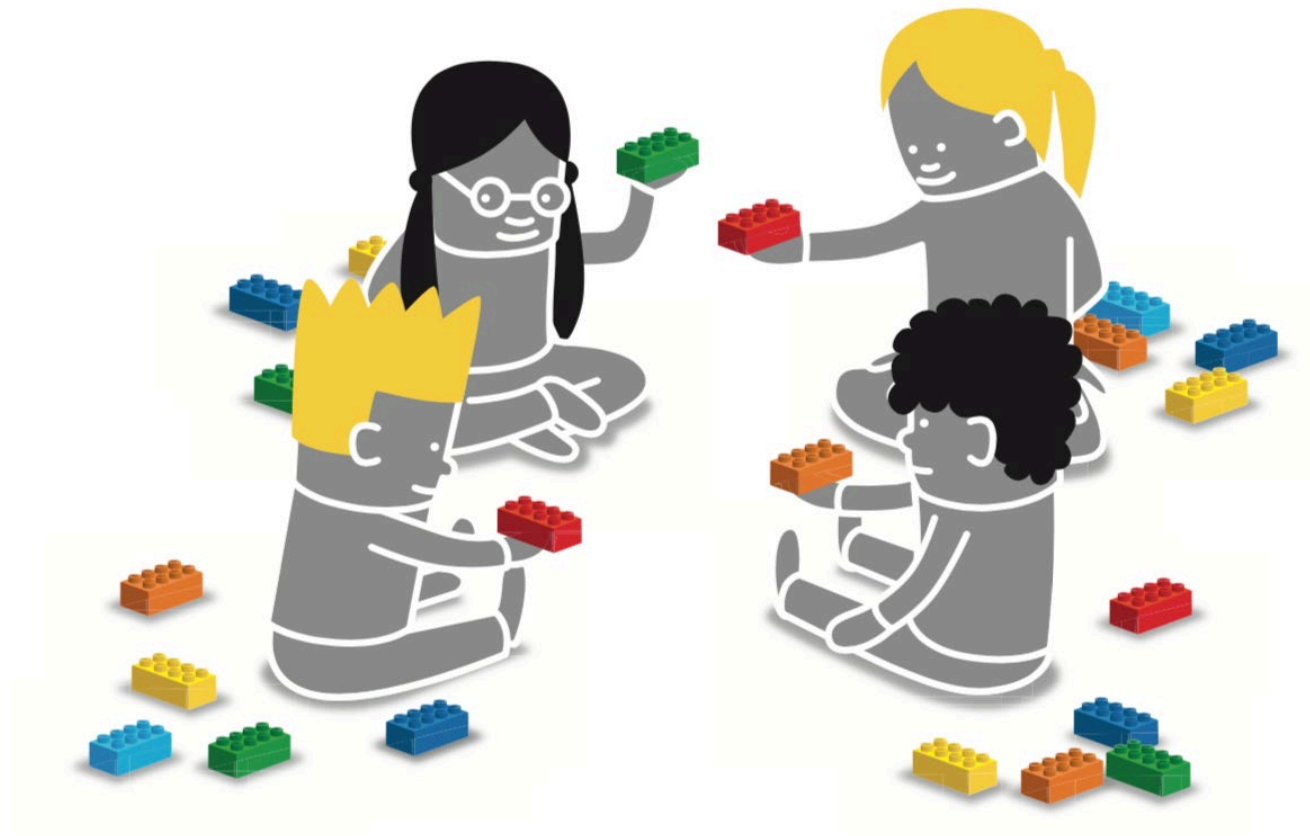
By Carlyle Francis Tagalog

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LEGO?





LEGO Six Bricks Booklet

- Contains activities for children to **develop certain skills:**
 - creativity, organization, descriptive language use, problem-solving, social cooperation, and **perspective-taking** (LEGO Foundation, 2015).
- Recently, these tasks are also being encouraged **for college students** as a tool in the classroom for social cooperation (Golinkoff, 2017).

The LEGO Foundation

Six Bricks Booklet





The Task



10-20



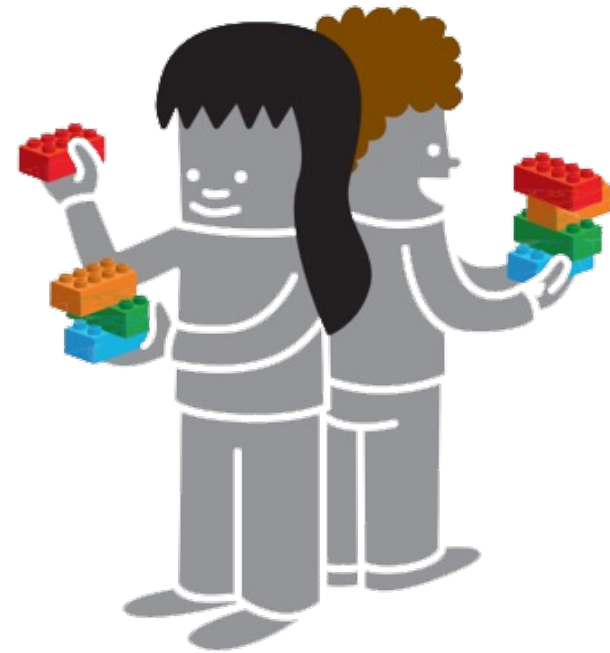
Back to Back

Children learn to:

Use descriptive language

Think from another person's perspective

Speak about own and others' behaviour and consequences





Perspective-Taking

- Defined as a mental capability to **adopt another's perspective** and consider another's thoughts, feelings, and internal mental states (Epley & Caruso, 2009).
- Theory of Mind (ToM) is typically defined as the **insight** into other people's minds and reasoning about how mental states influence behavior (Imuta et al., 2016).
- **Self-other overlapping perspective** that incorporates and induces the self to the other or vice versa (Galinsky, Ku, & Wang, 2005).





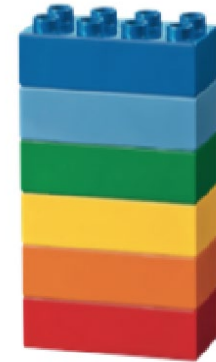
Prosocial Behavior

- Defined as behavior that benefits another and is intended to do so in actions that include (but are not limited to) **sharing, comforting, and helping** (Dunfield, 2014).
- **Higher** scores for **prosocial behavior** were found in children who scored **high on ToM**, the theoretical framework of perspective-taking (Imuta et al., 2016).





LEGO Link?



Three step process:

1. activating ability by ascertaining **existence of another's mind**
2. adjusting **egocentric view** on perspective
3. accessing accurate information about others by **overcoming default assumptions** about other people (Epley & Caruso, 2009).

Three different types:

1. visuospatial
2. cognitive
3. affective perspective-taking (Erle & Topolinski, 2017).

The research indicates that LEGO play is an **effective** medium for **social** skills intervention (LeGoff, 2004).



Kindness Traits

- Influenced by two situational factors: (Dunfield, 2014).
 1. salient or unique events
 2. temporary **external** conditions or transient **internal** states
- Traits and individual differences act as sources of **influences** within **helping behaviors** (Lefevor et al., 2017).
- **Kindness** trait measures had a significant **correlation** to helpful behavior compared to mood and agreeableness.
- Kindness levels are **developed** over an extended period of time.





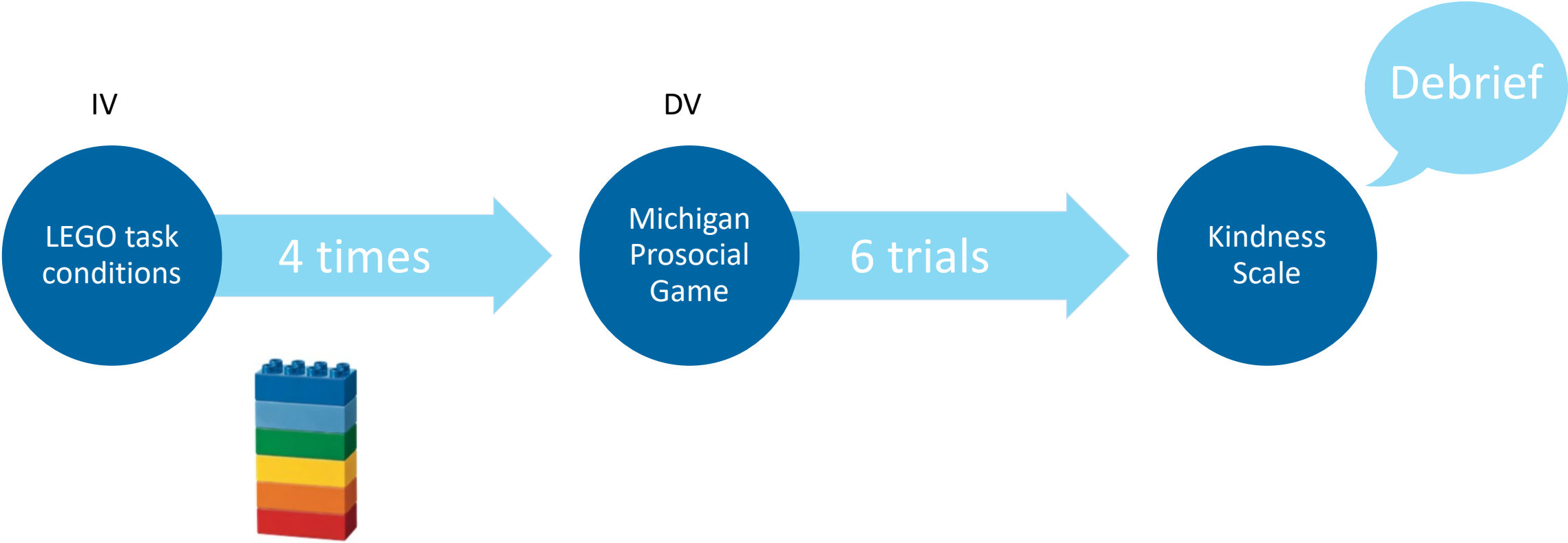
Research Question and Hypothesis

Do the LEGO perspective-taking tasks **prime** prosocial behavior?

Hypothesis: engaging in a LEGO Six Bricks perspective-taking task **increases** prosocial behaviors, regardless of trait kindness.



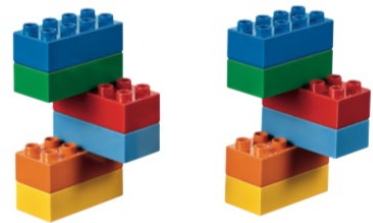
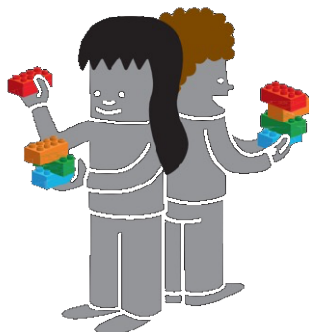
Methods: General Procedure





Methods: LEGO conditions

- **Condition 1 (Back-to-Back):** researcher sat back-to-back with the participant, who verbally explained their model and coordinated with the researcher to match LEGO models.
- **Condition 2 (Face-to-Face):** participant and the researcher sat face-to-face. The subject built any model and the researcher simply copied the model.
- **Condition 3: (Neutral Solo):** participant created any LEGO structure with the bricks and then showed it to the researcher.



Creativity	✓	✓	✓
Social Presence	✓	✓	
Perspective-taking	✓		



Methods: Michigan Prosocial Game (MPG)

- **Goal:** Players collect 8 resources as fast as possible.
- Designed to simulate playing against another person.
- **Option:** players could **help** the other player collect resources
- 6 trials (2 practice, 4 actual)
- Alternating non-helpful/helpful trials





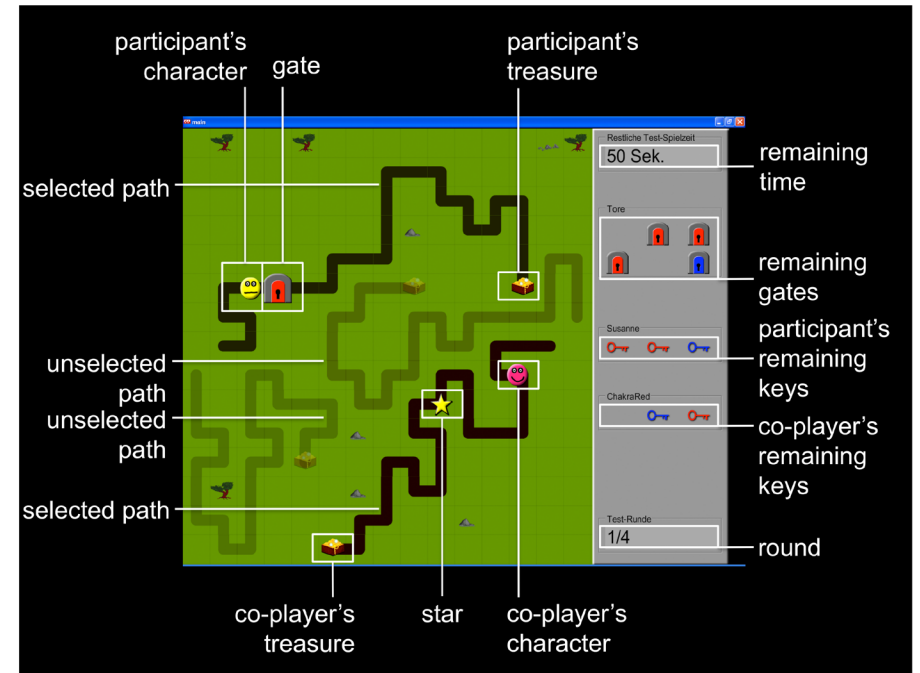
Methods: MPG (contd.)

- Reports:
 - Resources collected
 - Time completed
- Prosocial measure:
 - Helping proportion = helping decisions / opportunities to help



Methods: MPG Background

- The prosocial measure is based on the Zurich Prosocial Game (ZPG) (Leiberg, Klimecki, & Singer, 2011).
- Both MPG and ZPG fall under **“helping,”** which aids another person complete a goal (Dunfield, 2014; Leiberg, Klimecki, & Singer, 2011).
- The ZPG is an obstacle removal game
- Uses a face element for the players
- ZPG issues:
 - Not publically available
 - assumes that participants will notice that they could help
 - gives fewer helping opportunities per trial



Methods: Kindness Traits

- The **Kindness Scale** from the Values in Action Inventory of Strengths ($\alpha = .84$) (McGrath, 2014).
- Examples statements:
 - *“I am never too busy to help a friend”*
 - *“I go out of my way to cheer people up who appear down.”*
- Rated statements using five-point Likert scale (1 = “very much like me” to 5 = “very much unlike me”).





Research Question and Hypothesis (again)

Do the LEGO perspective-taking tasks **prime** prosocial behavior?

Hypothesis: engaging in LEGO Six Bricks perspective-taking tasks **increases** prosocial behaviors, regardless of trait kindness.

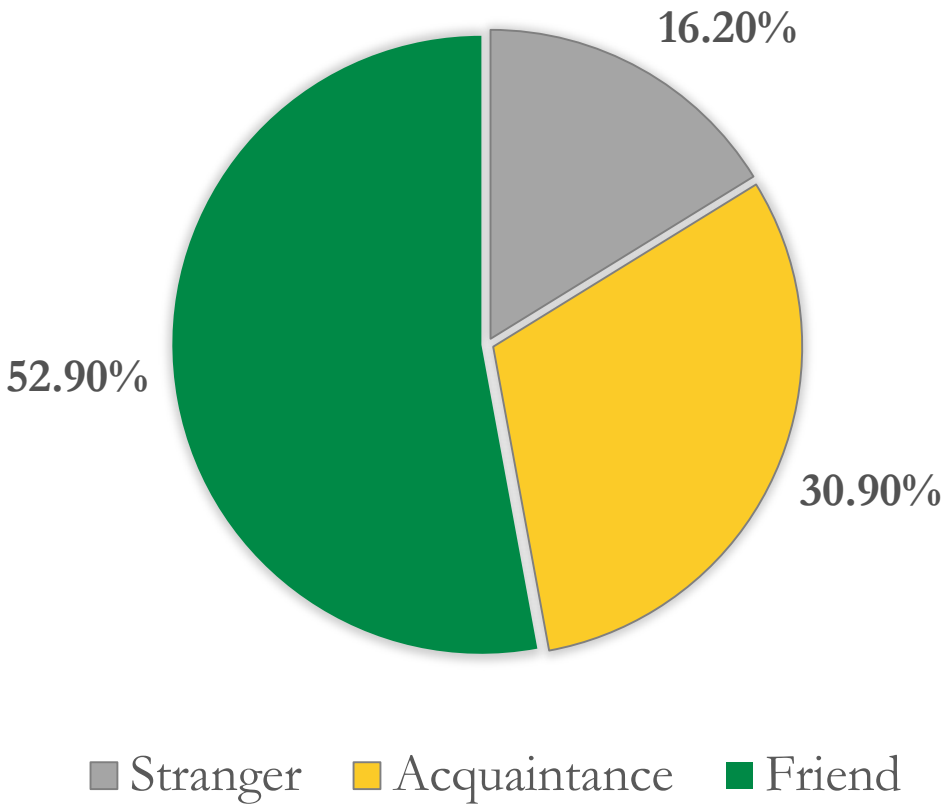




Results: Subjects

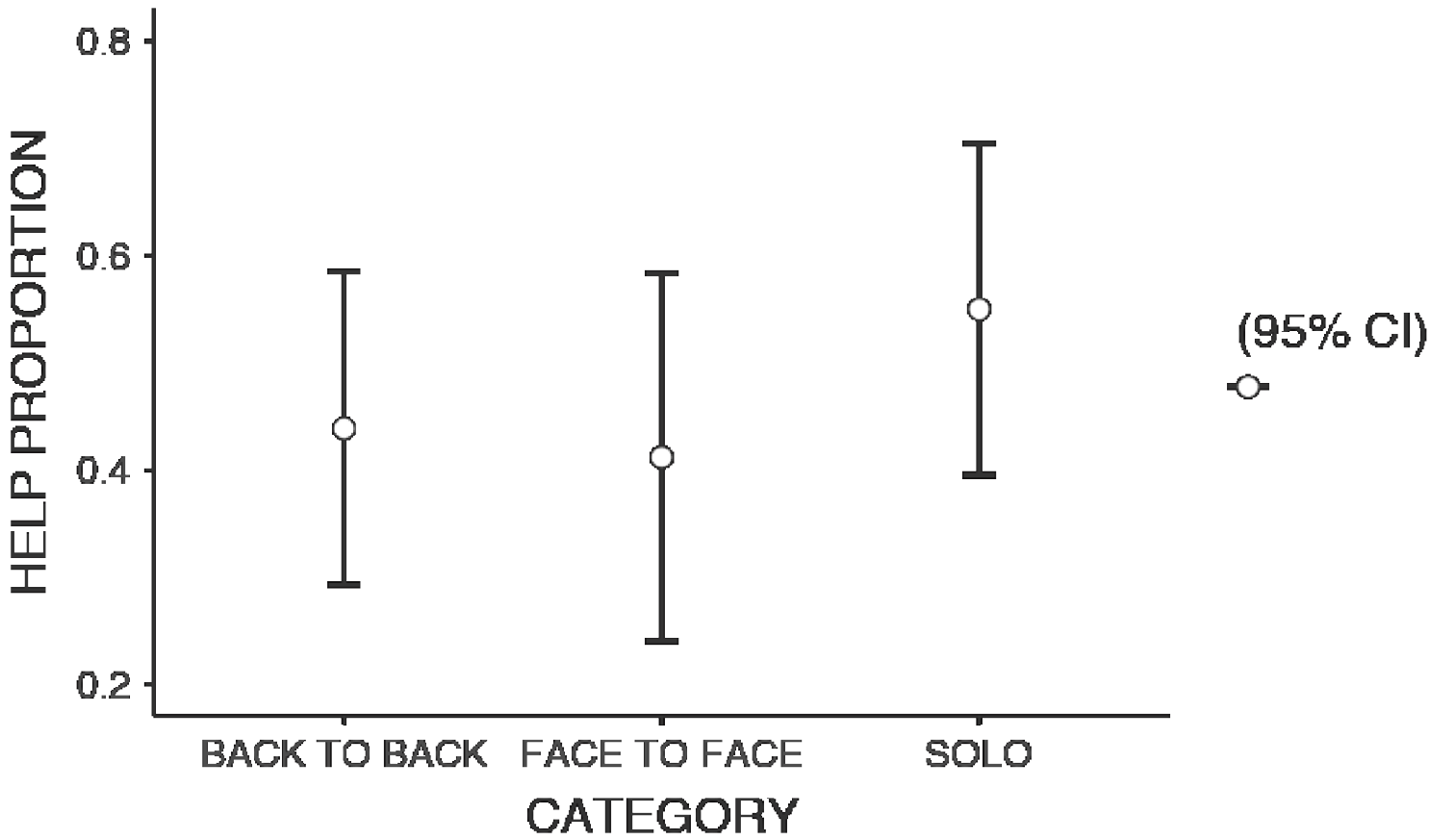
- Behavioral Science Research Pool, social media, and convenience sampling
- Total N = 68
- Age (M = 20)
- Female 41 (60.3%)
- Asian / Pacific Islander (47%)
- Highly SDA (94.1%).

RELATIONSHIP



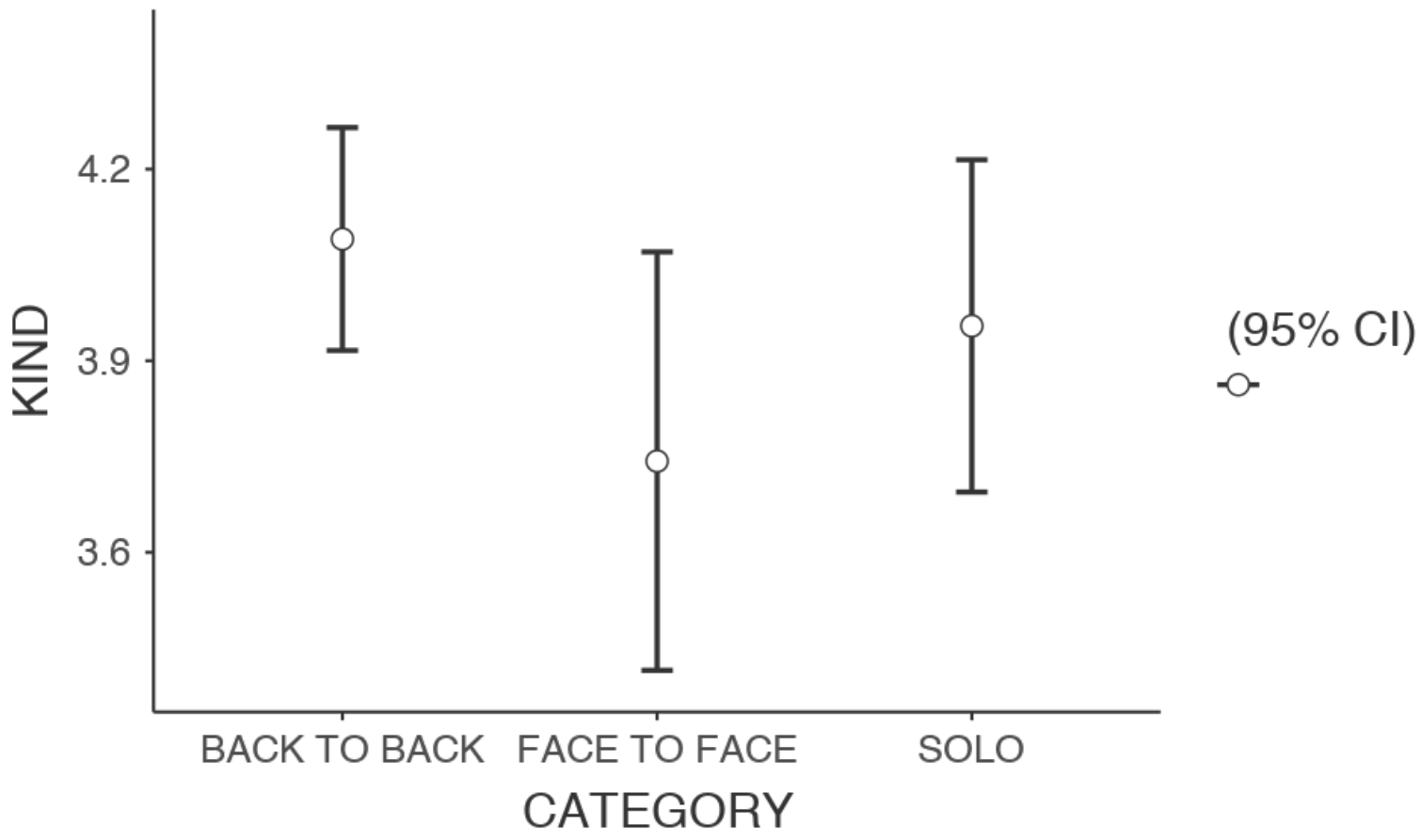


Results: Graphs





Results: Graphs





Results: Correlation

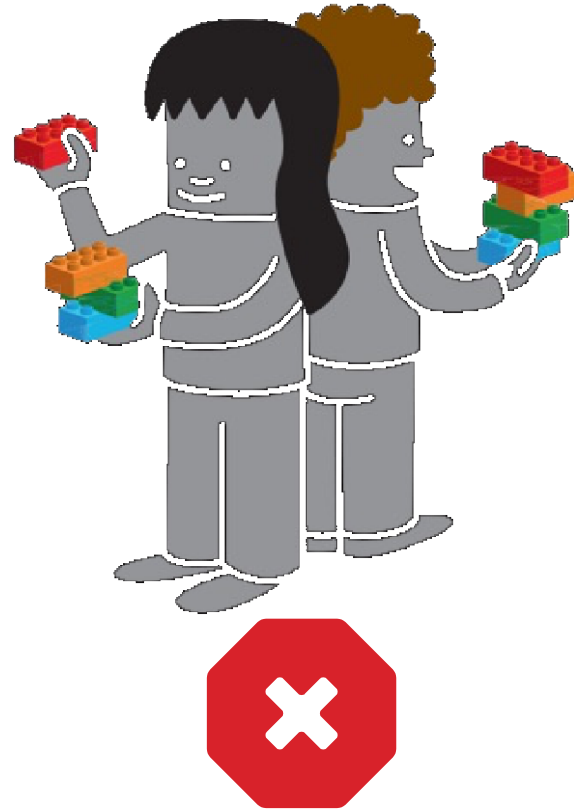
Correlation Matrix

			HELP PROPORTION	KIND	RELATIONSHIP
HELP PROPORTION	Spearman's rho	—	0.080	-0.152	
	p-value	—	0.518	0.215	
KIND	Spearman's rho		—	0.038	
	p-value		—	0.759	
RELATIONSHIP	Spearman's rho			—	
	p-value			—	



Discussion: Implications

- Hypothesis **not supported**
- **No helping effect** for each LEGO tasks
- **Contradiction** of our understanding of perspective-taking in its relation to prosocial behaviors (Epley & Caruso, 2009; Galinsky et al., 2005; Imuta et al., 2016).
- Back-to-Back task may **not be strong influencer** of perspective-taking (LEGO Foundation, 2015).





Discussion: Implications (contd.)

- **No relationship** between kindness and prosocial effects
- **Does not support** the role of kindness as predictor of helping behaviors (Lefevor et al., 2017).
- **Relationships** between the participants and the researcher revealed **no significant influence** on prosocial outcomes.

Kindness

Relationship





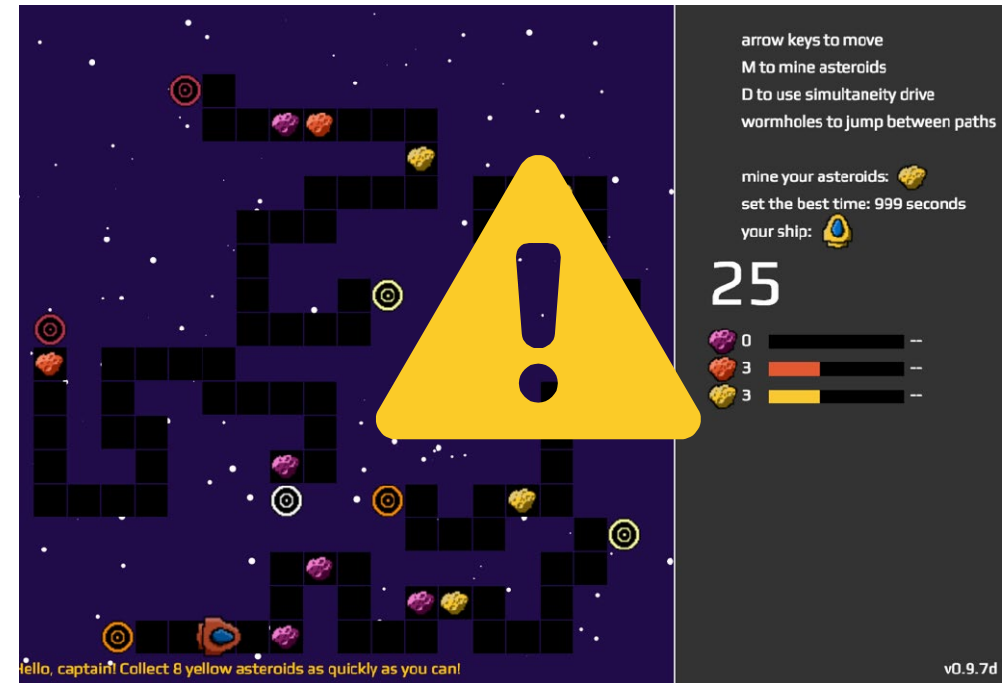
Discussion: Implications (contd.)

Prosocial behaviors were **not significantly influenced** by **neither** the perspective-taking LEGO task nor the levels of kindness.



Discussion: Limitations

- Lack of sensitivity in prosocial measure (MPG)
- Too little calculated trials
- Misunderstanding of game as competition or goal-directing
- No face element compared to the ZPG
- Some notice the AI player
- Participation as helpful behavior





Conclusion: What Now?

- **unclear** whether the LEGO task significantly primes the perspective-taking needed to measure prosocial outcomes.
- Future studies:
 - must continue to **explore** these explicit **outcomes** of Six Bricks Booklet tasks and their implications within social settings.
 - consider creating an experimental **design** that measures the effects of **longer** or more regular exposure to specific LEGO activities.
 - **improve** the sensitivity of the tools and **measurements** of prosocial outcomes.



References

- Dunfield, K. A. (2014). A construct divided: prosocial behavior as helping, sharing, and comforting subtypes. *Frontiers in Psychology, 5*, 1-13. doi: 10.3389/fpsyg.2014.00958
- Epley, N., & Caruso, E. M. (2009). 20 Perspective Taking: Misstepping Into Others' Shoes. *Handbook of imagination and mental simulation*, 295. Retrieved from <http://www.psypig.com/inc/uploads/2017/01/Perspective-Taking.pdf>
- Erle, T. M., & Topolinski, S. (2017). The grounded nature of psychological perspective-taking. *Journal of Personality and Social Psychology, 112*(5), 683-695. doi: <http://dx.doi.org/10.1037/pspa0000081>
- Galinsky, A. D., Ku, G., & Wang, C. S. (2005). Perspective-taking and self-other overlap: Fostering social bonds and facilitating social coordination. *Group Processes & Intergroup Relations, 8*(2), 109-124. doi: <https://doi.org/10.1177/1368430205051060>
- Golinkoff, R. M. (2017). From the classroom to the living room: Developmental science goes live. Paper presented at the 39th National Institute on the Teaching of Psychology, St. Pete Beach, FL.
- Imuta, K., Henry, J. D., Slaughter, V., Selcuk, B., & Ruffman, T. (2016). Theory of mind and prosocial behavior in childhood: A meta-analytic review. *Developmental Psychology, 52*(8), 1192-1205. doi: <http://dx.doi.org/10.1037/dev0000140>
- Lefevor, G. T., Fowers, B. J., Ahn, S., Lang, S., & Cohen, L. (2017). To what degree do situational influences explain spontaneous behavior? A meta-analysis. *European Review of Social Psychology, 1-30*. DOI: 10.1080/10463283.2017.1367529
- LeGoff, D. B. (2004). Use of LEGO© as a therapeutic medium for improving social competence. *Journal of autism and developmental disorders, 34*(5), 557-571. doi: <https://doi.org/10.1007/s10803-004-2550-0>
- Leiberg S, Klimecki O, Singer T. (2011). Short-Term Compassion Training Increases Prosocial Behavior in a Newly Developed Prosocial Game. *PLoS ONE 6*(3): e17798. doi:10.1371/journal.pone.0017798
- McGrath, R. E. (2014). Scale-and item-level factor analyses of the VIA Inventory of Strengths. *Assessment, 21*(1), 4-14. doi: <https://doi.org/10.1177/1073191112450612>
- The LEGO Foundation. (2015). Six Bricks Booklet. Billund, Denmark.
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Questions?

