

## BACKGROUND

- Social interaction and infection risk:** Patterns of social interaction can increase susceptibility to COVID-19 and contribute to population-level transmission. However, less is known about how individuals adjust their social behaviours after recovery, which can affect future risk for pathogens where repeat infections can recur.
- Physiological and psychological influences:** Both internal physiological states (i.e., inflammation & sickness behaviour; *Kelley et al., 2003*) and psychological needs (i.e.,

- fulfil need to belong; *Hall & Davis, 2017*) may shape whether individuals engage in or avoid social engagement.
- Hypothesis:** During infection, individuals are expected to exhibit social avoidance (sickness behaviour), whereas after recovery, they may compensate by increasing social engagement to fulfil “personal needs” to belong.

## METHOD

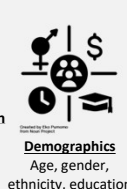
- Participants from the SOCRATES (Strengthening Our Community’s Resilience Against Threats from Emerging Infections) longitudinal community cohort in Singapore were surveyed between May to September 2022 (wave 34 & 36 of data collection).
- During survey period, COVID-19 Omicron variants were predominant strains in circulation in Singapore.
- Using mixed-effects regression model, we investigated if COVID-19 infection was associated with change in social distancing behaviours, controlling for demographics and perceived risk of infection.

### Variables measured:



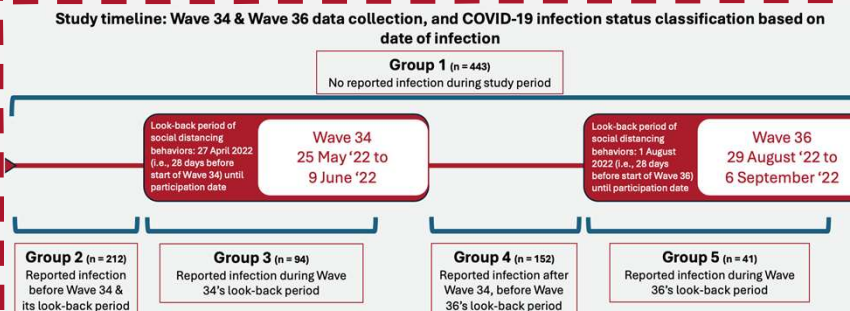
### Change in social distancing behaviours i.e. Wave 34 vs Wave 36

1. Avoid crowds
2. Avoid visiting others
3. Avoid eating out
4. Avoid mass gatherings
5. Avoid socializing
6. Avoid places of worship



### Hypothesized social behavioural tendency at Wave 36:

- Group 1: Referent (no infection induced change)
- Group 2: Infection before Wave 34 → social behaviour already changed to new post-infection baseline
- Group 3: Infection during Wave 34 → likely increase in social engagement by Wave 36; re-engage in activities avoided before and during infection
- Groups 4 & 5: Infection just before / during Wave 36 → engage in infection induced social avoidance behaviour



## RESULTS

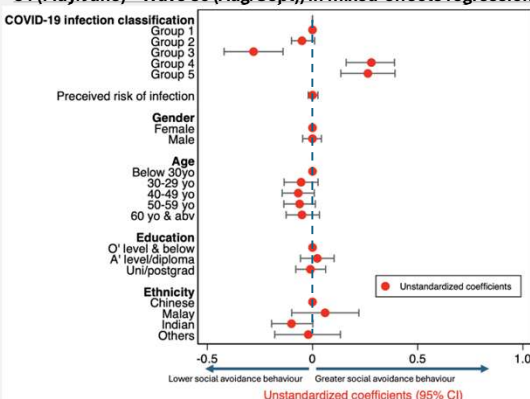
**Table 1: Characteristics of study participants**  
Participants surveyed in both Wave 34 & 36 (n = 942)

Age [n (%)]	
Below 30 years old	92 (10)
30 to 39 years old	167 (18)
40 to 49 years old	198 (21)
50 to 59 years old	215 (23)
60 years old & above	270 (29)
Gender [n (%)]	
Male	385 (41)
Ethnicity [n (%)]	
Chinese	862 (92)
Malay	20 (2)
Indian	43 (5)
Others	17 (2)
Education [n (%)]	
O' level & below	132 (14)
A' level / diploma	235 (25)
Uni / post-grad	575 (61)
COVID-19 infection status based on infection date [n (%)]	
Group 1 – no infections	443 (47)
Group 2 – infection before Wave 34	212 (23)
Group 3 – infection during Wave 34	94 (10)
Group 4 – infection after Wave 34, before Wave 36	152 (16)
Group 5 – infection during Wave 36	41 (4)

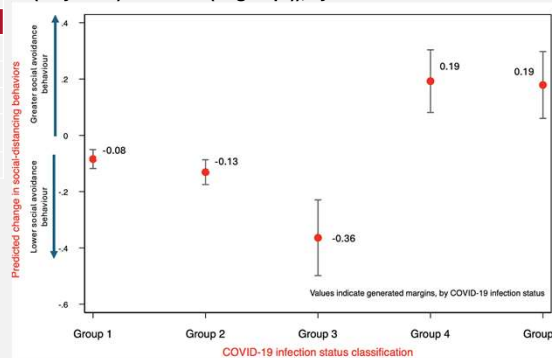
**Table 2: Self-reported measures by participants**

Perceived risk of infection [mean (SD)]	
Higher scores = perceived greater risk of infection	3.31 (1.0)
Change in social-distancing behaviours [mean (SD)]	
(Wave 34 – 36) Higher scores = increase in social distancing behaviours	-0.67 (0.7)

**Fig 1: Predictors of change in social-distancing behaviours (Wave 34 (May/June) – Wave 36 (Aug/Sept)) in mixed-effects regression**



**Fig 2: Predicted change in social-distancing behaviours (Wave 34 (May/June) – Wave 36 (Aug/Sept)), by COVID-19 infection status**



### Key Findings:

- In total, 942 participants were included in the study.
- After adjusting for age, gender, education, ethnicity and perceived risk of COVID-19 infection (Fig 1), the overall model was significant (Wald  $\chi^2(19) = 68.1, p < 0.001$ ). Predicted change in social-distancing behaviours by mixed-effects regression model (Fig 2):
  - Compared to Group 1 (no infection), change in Group 2 (i.e., participants who had been infected before Wave 34 and recovered by Wave 34) for social-distancing behaviours was not significantly different ( $\beta = -0.05, p = 0.10$ ).
  - Compared to Group 1, Group 3 (i.e., participants who had been infected during Wave 34, recovered by Wave 36) showed a significant decrease in social-distancing behaviours ( $\beta = -0.28, p < 0.001$ ).
  - Compared to Group 1, Group 4 and Group 5 (i.e., participants who had not yet/just got infected by Wave 36) showed increased social-distancing ( $\beta = 0.28, p < 0.001; \beta = 0.27, p < 0.001$  respectively).

## REFERENCES

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• Hall, JA & Davis, DC 2017, 'Proposing the Communicate Bond Beyond Theoretical Intersections With Episodic Interpersonal Communication', *Communication Theory*, vol. 27, no. 1, pp. 21–47.

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## CONCLUSION

- Our findings suggest that both internal physiological states (e.g., inflammation) and psychological needs (e.g., the need to belong) appear to influence whether individuals engage in or avoid social interactions across stages of COVID-19 infection (peri-infection till post-infection status).
- Of note, a period of increased social engagement may occur after infection; this may reflect a compensatory response following social withdrawal during illness, or partial abandonment of precautions they took to prevent their first infection.
- While previous work (e.g., Mori et al., 2022, Lam et al., 2025) attribute reduced preventive behaviour to lower perceived risk of infection or susceptibility to infection, our findings suggest that other internal factors also play a role above and beyond infection risk perceptions.
- Further research is needed to clarify how physiological state, psychological needs and infection status jointly influence social avoidance and re-engagement patterns.