

Chess, Handshakes, and Post-Conflict Reconciliation

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In primates, post-conflict reconciliation likely helps preserve valuable relationships in accordance with the Valuable Relationships Hypothesis (VRH). If reconciliation serves to mend valuable relationships, then we might expect the degree of reconciliation to scale with the intensity of the conflict. The experiment explores this in the context of chess, focusing on whether the length of post-conflict reconciliation contact is explained by certain properties of the conflict such as game length and outcome. The experiment finds no correlation between game length or game outcome and the duration of post-game conciliatory contact in 51 games in the FIDE 2022 Candidates Tournament.

1 INTRODUCTION

1.1 Post Conflict Reconciliation

De Waal describes two ways to maintain friendship despite fierce competition: *tolerance* and *reconciliation*. Tolerance prioritizes friendship and reduces competition, while reconciliation prioritizes competition, and salvages friendship afterwards. De Waal argues that together, tolerance and reconciliation form a ‘highly developed cooling system that prevents overheating, explosion, or disintegration of the social machinery.’ Primates act much like ‘human families, many of which are able to cohere... in spite of being veritable battlegrounds.’ [de Waal 1989]. Since 1979 when de Waal first published his observations, post-conflict reconciliation has been verified using the PC-MC method [Preuschoft et al. 2002][Watts 2006]. Some notable behaviors include: ‘kiss’, ‘embrace’, ‘submissive vocalization’, ‘touch’, and ‘hold-out-hand’. Reconciliation among non-human primates seems strikingly human.

1.2 VRH

The *Valuable Relationships Hypothesis* (VRH) posits that relationships vary in nature and value. Thus maintaining such relationships should have a proportional derivative value. Reconciliation improves relationships; it reduces aggression and fear from the aggressor and subordinate in macaques [Cords 1992]. Naturally, more valuable relationships seem to be prioritized. Mutually grooming, allied chimpanzees, and ‘friends’ are more likely to reconcile post-conflict [Watts 2006] [Preuschoft et al. 2002]. In humans, stronger

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men are more likely to receive post-conflict conciliatory behavior because the immense risk/cost of fighting [Brown and Neiswender 2022]. Additionally, ‘the instrumentality of achieving the participants’ goals increases their willingness to make a costly apology,’ and they reconcile more with valuable partners [Ohtsubo and Yagi 2015]. Taken together, these suggest humans and primates similarly reconcile to preserve valuable relationships and prevent harmful relationships per the VRH and de Waal’s original observations.

In the context of chess, perhaps the game models conflict and voluntary post-game contact models conciliatory behavior. This framework is used by professor Benenson in a similar study where post-game contact is a measure of reconciliation [Benenson and Wrangham 2016].

2 HYPOTHESIS

The general topic is post-conflict reconciliation. The big question is whether the length and outcome of conflict affects the degree of reconciliation. The specific question looks at chess: the length is measured by the number of moves, the outcome is whether a draw occurred or not, and reconciliation is measured by handshake duration. Therefore, the specific question is whether the length and outcome of chess games affects the duration of contact during post-game handshakes.

I suspect drawn games results in shorter handshakes. If handshakes serve to mend relationships, then games with a winner and loser might strain the relationship more (due to the imbalanced outcome), thus requiring increased reconciliation in the handshake. The secondary hypothesis is that longer games similarly represent more intense conflict and also require more reconciliation and a longer handshake.

3 METHODS

3.1 Definitions

- (1) **handshake duration:** intentional hand-to-hand contact time between adversaries, beginning and ending on physical contact. Handshakes are unambiguous in the footage and are the only post-game contact observed.
- (2) **post-game:** after the last move before either player leaves the tournament room.
- (3) **outcome (win/loss/draw):** there is no distinction between white winning and white losing. This is a binary metric if there is a tie or not.
- (4) **game length:** number of moves as defined in chess. This metric was used instead of time because there is 2 hours and 1 hour before the 40th and 60th moves, and 15 minutes + 30 seconds for move 61 onwards. Due to the non-uniformity of the timing scheme, the number of moves seemed a simpler/cleaner metric for quantifying the ‘amount’ or intensity of conflict.

As noted previously, studies such as Benenson’s have similarly used post-game contact to measure reconciliation with promising

results. Game length and the outcome seem to be reasonable metrics for the intensity and outcome of conflict, directly informing our hypothesis.

3.2 Data Collection

Data was collected by watching all the rounds of the tournament posted by FIDE (the International Chess Foundation) on Youtube [chess 2022]. The tournament had 14 rounds of 4 games. Of the 56 games, 5 ended during an ad, resulting in missing footage. These missing games are assumed to not confound the experiment because they were evenly interspersed throughout the stream (though not quantitatively shown).

To record contact, the video was played at 0.25x speed for increased accuracy, and the exact contact duration was determined by best judgement; these measurements are reported, though the actual times are a quarter of the reported durations. All observed games finished and had handshakes. Corresponding data (game length, result, etc) was from ChessBase. [ChessBase 2022].

4 RESULTS

4.1 Handshake Duration vs Game Length

A linear regression shows a non-significant negative correlation between game length and handshake duration; the evidence does not support the original hypothesis and has weak correlation ($R^2 = 0.0116$).

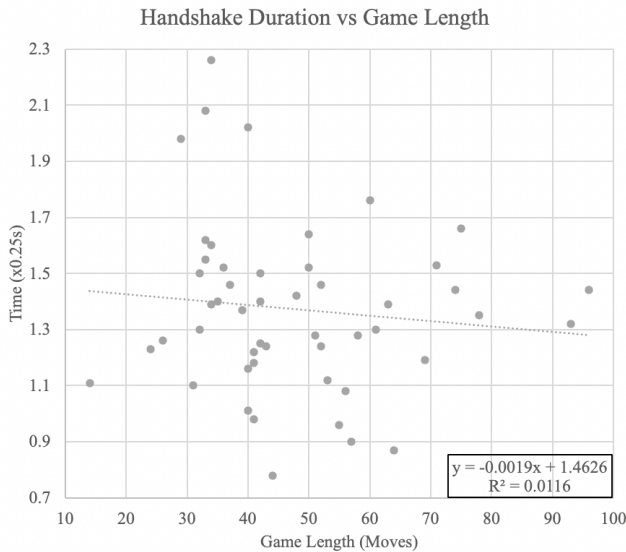


Fig. 1. The effect of the number of moves in a game on average handshake duration

4.2 Handshake Duration vs Game Outcome

Similarly, no significant difference between the handshake duration of winning ($\mu = 1.33$) and drawn ($\mu' = 1.41$) games was found according to a two-tailed equal-variance difference-in-means t-test

($p = 0.34$). In contrast to the hypothesis, drawn games have slightly longer handshakes (though the data is not statistically significant).

4.3 Additional Data Summary

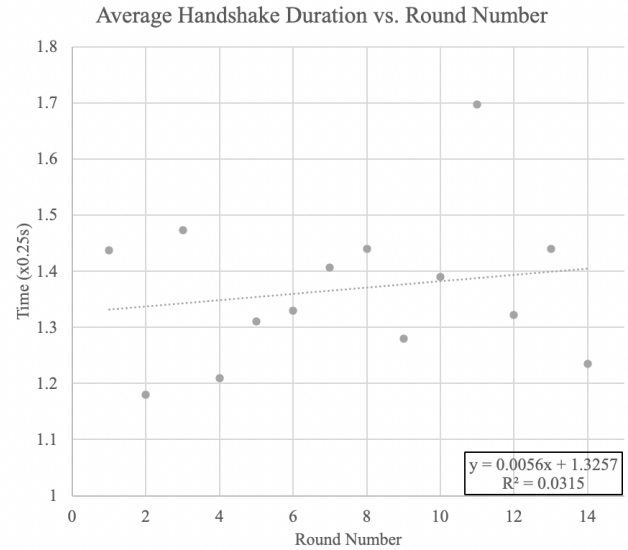


Fig. 2. The effect of the round number on average handshake duration, mentioned in Limitations

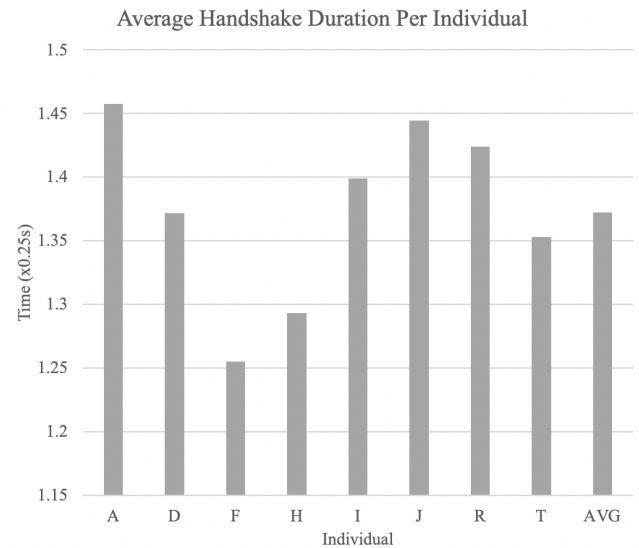


Fig. 3. The average handshake duration per individual, mentioned in Limitations

5 DISCUSSION

The data suggests increased game length and imbalanced outcomes do not (or even perhaps negatively) affect handshake duration. In terms of the big picture question, this does not support the idea that conflict intensity requires more reconciliation or that imbalanced outcomes requires more reconciliation. Instead, I speculate on two new hypotheses for future testing.

5.1 Contact Hypothesis

While chess is a contest, perhaps it is different from physical contests such as tennis or boxing. Perhaps post-conflict reconciliation is needed, but the outcome of a chess game is far removed from direct, physical, male-to-male aggression (the chess players were male) such that the severity of the conflict is not coded in the duration or outcome.

Recall that reconciliation is stronger towards stronger male chimps [Brown and Neiswender 2022]. Another possibility is that in chess, perhaps the same concept holds except strength is skill-based. Thus, game length and outcome would not necessarily correspond to how the men gauged each-other's strength (for example cautious, longer games are a sign of weakness), affecting the results.

5.2 Too Soon Hypothesis

Observations made by de Waal and others show that after conflict, chimpanzees distance themselves from each other and only reconcile after some time [de Waal 1989][Preuschoft et al. 2002]. In chess, handshakes occurs almost immediately after ending moves. Thus, perhaps humans, like chimpanzees, are not immediately ready to reconcile. Therefore, there is no (or a negative) correlation if the reconciliation is forced too soon after conflict.

In the evolutionary context, perhaps it is vital for a primate to have a clear idea of when the conflict has ended, and the reconciliation has begun. Otherwise, the subordinate may risk further injury or negative consequences if the aggression continues. Therefore, reconciliation is more tentative immediately after fierce conflict.

5.3 Limitations

There are many possible limitations. One possible limitation is statistical analysis. The Candidates Tournament consists of only 8 players who play a series of 56 games. The games are sequential, and perhaps not independent samples. We might expect reconciliation to increase as round number increases, because longer-term relationships could be more valuable (though this is not the intended independent variable). Fig 2 shows the effect of round number on handshake duration.

Moreover, the experiment is sensitive to outliers because while there are many samples, these samples are only over the 8 tournament players. Individual differences could be overshadowing the effect of the intended independent variables. Fig 3 shows the differences in the handshake durations for each player.

6 DATA

All experiment data is publicly accessible on Github:

(1) github.com/elijahtai14/HEB1330

(Word count \approx 1400 of raw paragraph text).

7 CONCLUSION

The mechanisms determining post-conflict reconciliation are complex and require continued investigation.

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