# Escalation of competition into conflict in competitive networks of Formula One drivers

**Henning Piezunka**[a], **Wonjae Lee**[b], **Richard Haynes**[c], and **Matthew S. Bothner**[d,1]

[a]INSEAD, 77305 Fontainebleau, France; [b]Graduate School of Culture Technology, Korea Advanced Institute of Science and Technology, 34141 Daejeon, Republic of Korea; [c]US Treasury, Washington, DC 20581; and [d]European School of Management and Technology, 10178 Berlin, Germany

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**This article investigates the factors that escalate competition into dangerous conflict. Recent sociological theorizing claims that such escalations are particularly likely in dyads of structurally equivalent people (i.e., actors who have the same relations with the same third parties). Using panel data on Formula One races from 1970 through 2014, we model the probability that two drivers collide on the racetrack (an observable trace of conflict) as a function of their structural equivalence in a dynamic network of competitive relationships. Our main hypothesis, that the likelihood of conflict rises with structural equivalence, receives empirical support. Our findings also show that the positive association between structural equivalence and conflict is neither merely a matter of contention for official position nor an artifact of inherently hostile parties spatially exposed to each other. Our analyses further reveal that this positive association is concentrated in a number of theoretically predictable conditions: among age-similar dyads, among stronger performers, in stable competitive networks, and in safe, rather than dangerous, weather conditions. Implications for future research on conflict, networks, and tournaments are discussed.**

competition | conflict | social networks | status | tournaments

Competition, although often viewed positively as a contributor to social welfare, can escalate into destructive conflict. The classical sociologists Park and Burgess (1) discussed the escalation of competition into conflict much as one might describe a phase transition: as heat converts water to steam, a shift in social context can turn dispassionate competitors into warring enemies. Well-known cases range from Thomas Edison bullying and slandering Nikola Tesla in the "war of the currents" to Michael Tyson biting Evander Holyfield's ear in the boxing ring. Gould (2) theorized that such escalations of competition into conflict are especially likely in dyads of structurally equivalent people; that is, two people who have the same relations with the same third parties (3). In Gould's theory, such dyads are particularly conflict-prone because they are fraught with discordant understandings of who is superior to whom. Unlike those in obviously hierarchical relations—manager and subordinate, for example, or professor and student—for whom norms of deference are fixtures of the social background, dyads marked by structural equivalence are susceptible to ambiguous conceptions of their relationship and thus to incompatible rules for interaction. Competition for deference and status may then escalate dangerously, as when one young man ends up killing a near-peer in the wake of a "little ol' argument [. . .] over nothing at all." (ref. 4, p. 59).

In this article, we pursue answers to two questions: Is there an empirical foundation for the supposed link between structural equivalence and conflict? If so, under what conditions does this link hold? Our inquiry is important for three reasons.

First, our study helps to clarify situations in which conflict is most likely to arise. Structural equivalence regularly seems to create occasions for dangerous yet preventable conflict in a variety of dynamic networks. When organizations merge under the same leadership, or perhaps more dramatically, when a CEO abolishes job titles (5), competition for status is inevitable and can intensify dangerously. More generally, whenever a network gets reshuffled, its members may be caught off guard as they encounter new near-peers with no obvious hierarchy to organize (and normalize) their interactions. If these new near-peers develop situational awareness and prepare to interact well, destructive conflict may be avoided. Additionally, if those monitoring such networks—executives, laboratory directors, project leaders, and coaches—can forecast which pairs of competitors are most conflict-prone, they are also more likely to prevent trouble.

Second, our project has theoretical implications for two vibrant areas of interdisciplinary research: tournaments and networks. Tournaments—for promotion, funding, prestige, and other prizes—are widely used to structure competition. However, work on the subject has largely ignored (*i*) network-related methods when explaining behavior among competitors and (*ii*) how this behavior escalates into conflict. We draw directly on these methods, revealing how positions in competitive networks matter net of the official performance levels typically thought to shape tournament behavior. Network measures, like structural equivalence, can distill the interlocking histories of competitors in ways that aggregated measures of official tournament performance cannot. In research on networks, structural equivalence is a canonical concept (6–8) whose theoretical logic suggests that conflict is often its result, but relatively little is known about the specific contextual conditions in which competition is most likely to escalate into conflict. Our analyses clarify several of these conditions.

Third, our empirical setting is an ideal model system for examining if (and when) structural equivalence—rather than the spatial nearness of innately aggressive competitors—fuels conflict.

## Significance

Competition, while often seen as beneficial, can escalate into destructive conflict. This occurs, for instance, when athletes sabotage each other or when rival executives get caught up in a career-derailing fight. These escalations into conflict are especially likely among status-similar competitors, who are fraught with discordant understandings of who is superior to whom. We examine the link between status similarity and conflict as well as the conditions under which this link holds. We find that status-similar Formula One drivers are more prone to collide, especially when they are age-similar, perform well, are embedded in a stable role structure, and feel safe. Our inquiry deepens our understanding of when violent conflict emerges and can guide conflict prevention efforts.

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[1]To whom correspondence should be addressed. Email: matthew.bothner@esmt.org.

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We draw on a multiyear panel of Formula One (hereafter, F1) auto racers embedded in networks of competitive relations, whose collisions offer observable traces of conflict on the racetrack. The precise data available on F1 allow us to measure the structural equivalence of two drivers as a function of the degree to which they have finished better and worse than the same third-party drivers in prior races. F1 data also enable us to devise mandatory conditioning variables. In particular, drivers' locations in the "starting grid" of each race stem from their efforts to surpass their competitors—not from an attempt to self-select into positions near their structurally equivalent peers. Conditioning on these differences in starting positions adjusts for spatial proximity or exposure. In addition, our empirical setting lets us exploit within-dyad variations, sweeping out effects of stable traits conducive to conflict. Observational and experimental data broadly supportive of our theoretical argument are available on the effects of stable traits on conflict for nonhuman primates. For instance, baboons with similarly high levels of testosterone are unusually conflict-prone (9). Our interest, however, is in the human social architecture of conflict, adjusting for such stable traits. Disentangling the effect of structural equivalence from the consequences of stable traits is important for addressing selection effects: one can readily imagine that intrinsically aggressive competitors self-select into nonhierarchical settings in which picking a fight is relatively easy.

In the brief narrative that follows, we sketch reasons for expecting more conflict between tournament competitors who grow increasingly structurally equivalent. Using the logic of this expectation as our baseline, we then discuss and empirically explore different contextual conditions in F1 in which we anticipate the sharpest effects of structural equivalence on conflict.

## Hypothesis

Imagine $J$ and $K$ as two people competing in a multiperiod tournament. $J$ and $K$ also compete with others (e.g., $A, B, \dots I$ and $L, M, \dots Z$) across times $t = 1, 2, \dots T$. One of their aims is to gain material resources that depend, at least in part, on their relative performances over the $T$ iterations of the tournament. $J$ and $K$ could be executives competing for promotion, scientists in the same domain striving for superior scientific impact (10), or—as in our setting—professional auto racers competing for superior rank. Importantly, however, $J$ and $K$ do not consider material rewards as their only aim.

$J$ and $K$ also value their status (11, 12). Status, for them, is a function of their location in a pecking order—locations in an unofficial competitive network that grant "bragging rights" to elites while tainting peripheral actors (13–15). Status similarity—or structural equivalence, in the language of network science—is salient for $J$ and $K$ at $t$ insofar as they have beaten the same third parties and lost to the same third parties. They sense that the value of their location in this pecking order depreciates when it is shared with a structurally equivalent other (16).

$J$ and $K$ thus desire to resolve their status similarity. How far this ambition can go is evident from the competition between Fernando Alonso and Michael Schumacher, both multiyear F1 champions. Alonso was not satisfied with becoming world champion; he was content only when his performance allowed him to advance in the frequent comparison drawn between him and Schumacher. Alonso recounted: "It was fantastic to fight with Michael [Schumacher], a privilege for me. I said in 2005 that it was important to become Champion when Michael was still there, for the value and the recognition that people outside the sport would give to the championship. But people said we did not fight directly in 2005; this year, it was me versus Michael all year. The history books will say that the last two Championships he raced in were won by Alonso, and that makes me very proud" (17). Resolving ambiguity in status is crucial for competitors to establish their identity.

Suppose further that, as time elapses, $J$ and $K$ grow more structurally equivalent; that is, their histories of competitive outcomes vis-à-vis others become more similar. Several outcomes follow: $J$ and $K$ monitor each other with greater focus (18), each increasingly seeing the other as his or her most relevant peer (19); they engage in close, invidious comparisons (7); they experience acute, mutual feelings of rivalry (20, 21); and they face uncertainty about how to orient to each other (22, 23). Neither sees a clear reason to cede social turf to the other: $J$ thinks $K$ should defer and vice versa. (Vice versa applies throughout our dyadic argument.) Wishing to resolve the ambiguity, $J$ tries to intimidate and subdue $K$. These efforts are ultimately "taken one step too far, enraging one of the parties to the point" (ref. 2, p. 74) that he or she attacks dangerously. What began as a self-disciplined effort to compete spirals into a (psychically or physically) violent conflict.

Such conflicts can begin when one driver, keen on signaling that he will "not be intimidated in wheel-to-wheel racing (24)," turns his car toward another to initiate a "game of chicken." When one driver taunts another—in particular, when a driver puts "you in a compromising position and leave[s] it up to you to make the decision" whether to crash or not (25)—car-on-car contact can occur. An escalating series of actions and reactions then culminates in a collision as neither is willing to "give way." As former F1 world champion Damon Hill stated: "if I am pushed, I will push back, that is the way I am. I am very British. We don't like to be pushed around. When the chips are down we might have to step into grey areas" (26).

Our main hypothesis is therefore as follows: The likelihood of conflict between two people in a tournament increases with their structural equivalence.

## Empirical Setting and Measures

We test this hypothesis using a multiyear panel of F1 drivers competing for the title of World Champion across a series of Grands Prix (27, 28). Grands Prix occur on international racetracks [e.g., Yas Marina (Abu Dhabi), Shanghai (China), Monza (Italy), and Silverstone (United Kingdom)]. A Grand Prix consists of a Friday practice session, a qualifying session on Saturday, and the race on Sunday. In the qualifying session, the order of the starting grid for the race is determined. In the race, the drivers earn points based on the order in which they finished, according to a convex function. On average, 23 drivers compete for points in each Grand Prix. The driver with the most points at the season's end is the World Champion. Our panel contains the F1 Championship seasons 1970 through 2014, during which time frame the number of races per season rose from 13 to 19, after a minimum of 11 races in 1971 and a peak at 20 in 2012. Our panel includes a total of 732 races, 355 distinct drivers, and 9,668 dyads, defined as pairs of drivers who entered jointly in at least one race. Since these dyads appear in multiple races over drivers' careers, our panel includes a total of 193,395 dyad-races.

We operationalize conflict by the occurrence of a race-ending collision, of which there are 506 in our panel. A race-ending collision is a rare event that by definition includes more than one driver, at least one of whom does not finish the race. We exclude "mass collisions," which entail more than two drivers. Since F1 is open-wheel racing—in contrast, for instance, to closed-wheel racing in NASCAR—and given the high speeds reached on F1 tracks, collisions are dangerous. They often result from overly aggressive takeover maneuvers or hostile attempts to intimidate a competitor. While it has generally been challenging to measure conflict—one of the primary hindrances to research on the subject—collisions offer a clear, publicly available indicator.

Our measurement of structural equivalence relies on F1 drivers' past finishing positions across all races in the current season before the focal race (at $t + 1$). We work from Euclidean distances (29) between $J$'s and $K$'s vectors of total wins over—and losses to—other drivers across all of the current season's races before race $t + 1$. We calculate these distances from temporally updated matrices of competitive outcomes $\mathbf{M}_t = [m_{jk,t}]$ in which $m_{jj,t} = 0$ and $m_{jk,t}$ is the number of races from 1 to $t$ in which $J$ finished ahead of $K$. In $\mathbf{M}_t$, low distance between $J$'s and $K$'s row vectors reflects shared patterns of beating others, while low distance between their column vectors reflects shared patterns of losing to others. We define structural equivalence as follows:

$$streq_{jk,t} = 1 - d_{jk,t}/\max\left(d_{jk,t}\right), \quad [1]$$

where $\mathbf{D}_t = [d_{jk,t}]$ and $d_{jk,t}$ is the sum of the Euclidean distances between $J$'s and $K$'s rows and columns, and the max is taken over pairs at $t$: 1 denotes interlocking competitive histories; 0 marks the most structurally differentiated pair of drivers. While all information for [**1**] is transparent to each driver, we do not assume that they calculate this before each race. Rather, we view structural equivalence as a summary proxy for drivers' (latent) sense that they are ambiguous in terms of status.

## Estimation and Conditioning Variables

Our measure of structural equivalence is the main explanatory variable in rare-events logistic regression models of the form:

$$L\left(\mu_{jk,t+1}\right) = a + \theta streq_{jk,t} + \mathbf{X}_{jk,t}\beta + \mathbf{Z}_{jk,t+1}\Upsilon + track_{r(t+1)} + year_{y(t+1)}, \quad [2]$$

where $L$ is the logit transformation and $\mu_{jk,t+1}$ is the probability that drivers $J$ and $K$ collide during race $t + 1$. Our unit of analysis is thus the dyad facing the hazard of a collision in each race in which that dyad appears over 45 seasons, from 1970 through 2014. We assign a 1 to the dyad's time-varying entry in the event vector if the Motorsportarchiv database recorded a collision between $J$ and $K$, and a 0 otherwise (*Supporting Information*).

Our most important conditioning variables in $\mathbf{X}_{jk,t}$ and $\mathbf{Z}_{jk,t+1}$ (*Supporting Information*) are various dyad-level absolute differences (with corresponding sums), which we enter to disentangle the effect of structural equivalence from the effects of associated relational factors. "Start difference," the delta between $J$'s and $K$'s ranks in the starting grid, captures (initial) physical proximity and correlates closely with differences in race-day speeds and thus with forecasted finishing positions. Start difference is an imperative control for physical exposure—the opportunity to collide. "Points difference" in terms of accumulated world championship points measures differentiation in official standing, as does "rank difference," which we compute from dyad members' positions in the world championship rankings. Entering rank difference together with points difference allows us to assess the effect of structural equivalence more conservatively. "Age difference" and "experience difference" (from total kilometers for each driver thus far in F1 over the course of our panel) may also affect how dyad members interpret their interactions on the track.

Corresponding to these difference-based measures, "start sum," "points sum," "rank sum," and "experience sum" enter our models linearly. Conversely, we fit the effects of "age sum" using four quintile-based dummies. Following prior research on age dependence in competitive domains (30), we let age coefficients fluctuate nonlinearly, with the fifth (oldest) quintile as the reference category.

We use three other control variables: (*i*) "same team"—a dummy indicating whether $J$ and $K$ race for the same constructor (e.g., Ferrari, Lotus, or Red Bull), which may lower (or raise) their likelihood of colliding; (*ii*) "propensity"—a time-varying measure of the tendency of the drivers in the dyad to collide, which we compute as the continuously updated sum of $J$'s proportion of collisions in all of his or her prior races and $K$'s proportions of collisions in all of his or her prior races; and (*iii*) various measures of race-level temporal heterogeneity.

Of this third set of measures, "race number" is season specific. "Stability" is a time-varying, race-level measure of the degree to which the competitive network has "congealed." (31) We compute stability as follows: calculate $\mathbf{C}_t$ as the covariance of $\mathbf{D}_t/\max(\mathbf{D}_t)$ and $\mathbf{D}_{t-1}/\max(\mathbf{D}_{t-1})$; divide the eigenvalue of the first principal component of $\mathbf{C}_t$ by the sum of that eigenvalue and the eigenvalue of the second component of $\mathbf{C}_t$ (32). When stability is large, the amount of race-to-race change in drivers' positions in the competitive network is minimal. "Poor weather" is a binary indicator for dangerous race-day weather conditions (*Supporting Information*).

We also enter two kinds of fixed effects related to external conditions. First, we include racetrack fixed-effects $track_{r(t+1)}$ to absorb differences in street width, maximum car speed, and

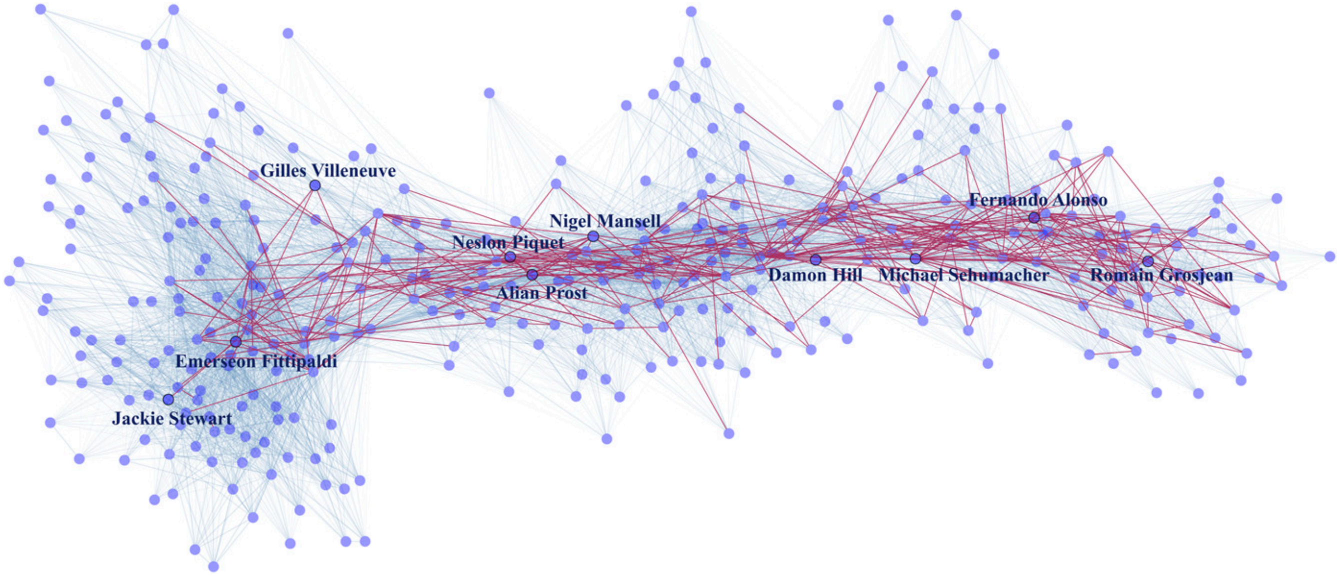

**Fig. 1.** Drivers' competitive network and collisions. Nodes are drivers. Nodes encircled in black are labeled by name. Edges denote joint competition in at least one race. Red edges connecting nodes indicate that the two drivers collided at least once. Using Fruchterman–Reingold, nodes are generally proximate to the extent that their average structural equivalence (over all races, from 1970 to 2014) is high.

sharpness of curves, which vary both across racetracks and when a given racetrack is redesigned. Capturing these differences is crucial, as the chances of a collision vary across tracks. Second, we enter year dummies $year_{y(t+1)}$ to account for the effects of annually changing incentives, rules, and technologies. Separate from these conditioning variables, our interest is in determining whether $\theta$ is significantly different from zero in our full panel and in clarifying the cuts of the panel in which the effect of structural equivalence on the probability of collision is concentrated.

## Results

If our theoretical claims are correct, then, as an initial test, a positive bivariate association between structural equivalence and colliding will be apparent. The sociogram in Fig. 1 visualizes this association. Nodes are drivers. Edges link nodes if they competed jointly in at least one race. Using the Fruchterman–Reingold algorithm, nodes are typically close insofar as their average structural equivalence (over all races from 1970 through 2014) is high. Calendar time runs from west to east. Red edges connect nodes if the drivers represented by these nodes collided at least once. Nodes labeled by drivers' names are encircled in black. Collisions are clearly concentrated among more structurally equivalent drivers.

Starting at the top row of Fig. 2, we see that the coefficient (2.36) on average structural equivalence predicting at least one collision in a bivariate between-dyad logistic regression is discernibly different from zero. Estimating from pairs of drivers who raced against each other at least once, this model indicates that a full-range increase in average structural equivalence is associated with more than a 10-fold increase in the odds of colliding [exp(2.36) = 10.59].

Additional coefficients on structural equivalence, from a range of multivariate rare-events logistic regression models as depicted in Eq. **2**, are also summarized in Fig. 2. Fig. 3 extends Fig. 2 by plotting predicted probabilities of collision across the full range of structural equivalence for various subsamples.

Controlling for the covariates noted previously, and supporting our main hypothesis, we find in our full panel that structural equivalence exerts a strong positive effect on the collision rate. Importantly, structural equivalence matters net of adjustments for similarity of official position in the tournament (captured by the difference in points and in points rank). Structural equivalence

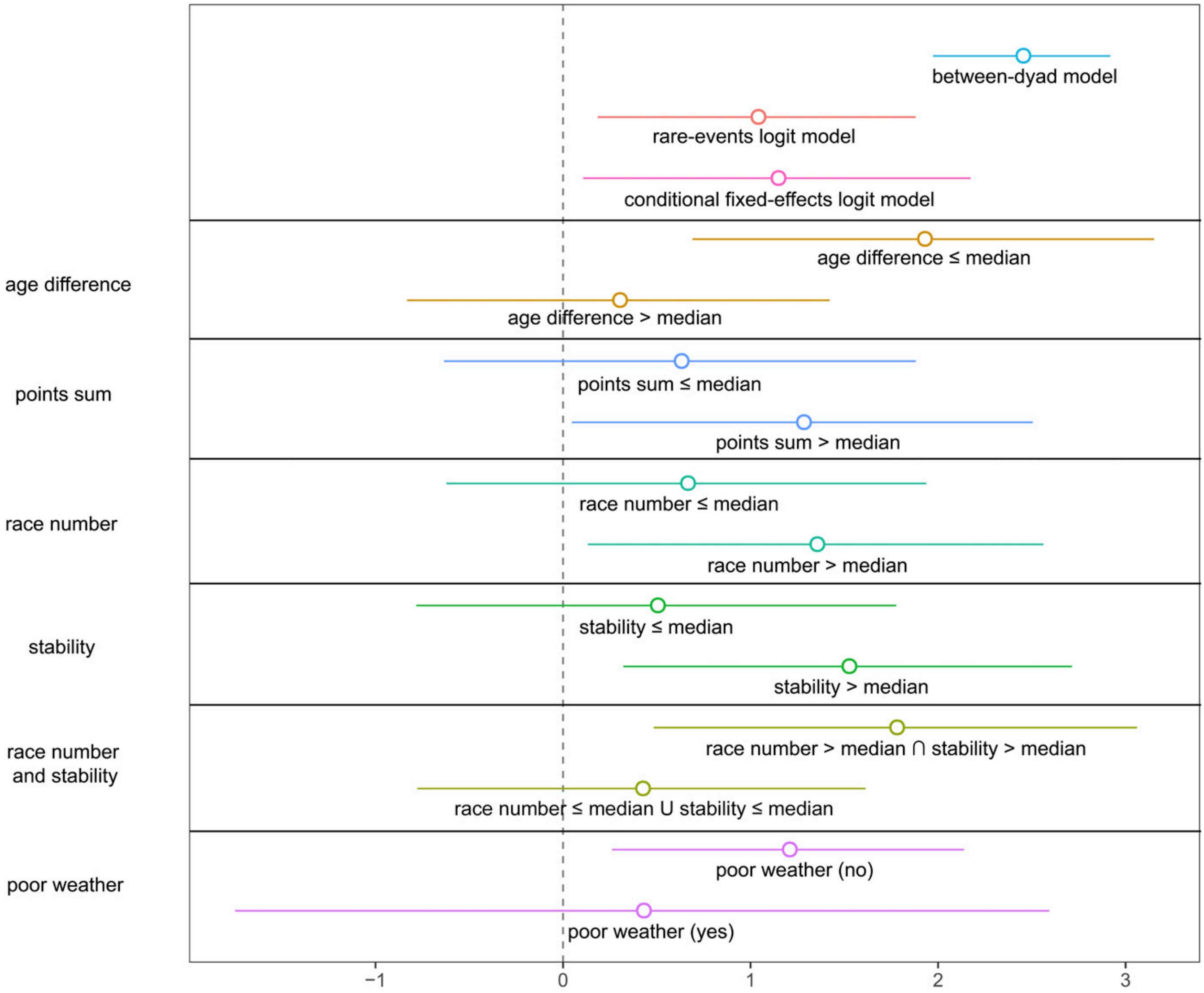

**Fig. 2.** Point estimates, with 95% CIs, for structural equivalence predicting the probability of a collision in logit models shown across Tables S2 and S3, and S7 and S8 (*Supporting Information*).

also matters conditioning on spatial proximity at the race's start. This is in keeping with our claim that interactions prompted by a kind of social symmetry, beyond mere physical exposure, are consequential, microlevel antecedents of conflict.

The effect of structural equivalence also remains significant across several robustness checks. These checks include allowing for nonlinear effects of distance in the starting grid and the use of coarsened exact matching (*Supporting Information*).

Critically, in our models assessing robustness, we also adjust for dyad fixed effects. Using a conditional fixed-effects logit model, we ensure that neither stable traits of individual drivers [for example, innate aggression (33)] nor those of the dyad (for instance, same country of birth) account for the effect of structural equivalence. Examining the possibility that stable traits undergird the observed link between structural equivalence and conflict is important, because strategic sorting based on structural equivalence is plausible for those with a strong preference for conflict. As members of a focal dyad increasingly overlap in their competitive histories, they are more prone to collide. This effect, especially since we hold starting-grid proximity constant, is important because it counters the possibility that stable traits and exposure are the only antecedents of attack behavior.

We also expect the effect of structural equivalence on the collision rate to vary in theoretically predictable ways across distinct contextual conditions. Exploiting different cuts of the panel, our next models (*Supporting Information*), also summarized in Fig. 2, examine whether our effect of interest is concentrated in the following subsamples: (*i*) concerning driver-traits, among drivers close in age and among drivers who are jointly high performing; (*ii*) regarding timing, toward the end of the season; and (*iii*) with respect to environmental context, in relatively safe weather conditions rather than dangerous ones. We rely on median splits in Tables S7 and S8 (*Supporting Information*), rather than linear interactions in Table S6, because of our interest in the particular subsamples in which we can and cannot reproduce a statistically discernible main effect of structural equivalence. Confidence intervals in Fig. 2 reveal where structural equivalence stays significantly different from zero, clarifying limits on the generalizability of our main hypothesis.

Age similarity in the focal dyad should make its members' structural equivalence particularly engrossing to both the drivers and the audience. In part because age similarity is a complementary (demographic) form of equivalence, age-similar people are, in general, disproportionately conscious of each other's network positions (22, 34). Audience members are also drawn to the drama of equality among rivals (35), making ambiguity more public and thus more captivating. Structural equivalence and collisions are therefore likely to be most tightly coupled in age-similar dyads. When we split our sample at the median of age difference, we find that our covariate of interest is statistically discernible only for lower–age-difference dyads. Closeness in age appears to further animate the hostility evoked by structural equivalence, in a sense catalyzing the escalation of competition into conflict.

Higher-performing drivers also appear more susceptible to structural equivalence. Splitting at the median in total points earned, structural equivalence is statistically indiscernible below the median, but it is significant above the median where the stakes are higher than for lower-performing drivers. Audience members are also particularly interested in comparing high performers. Their focus on the dyad may accelerate microlevel dynamics set in motion by structural equivalence.

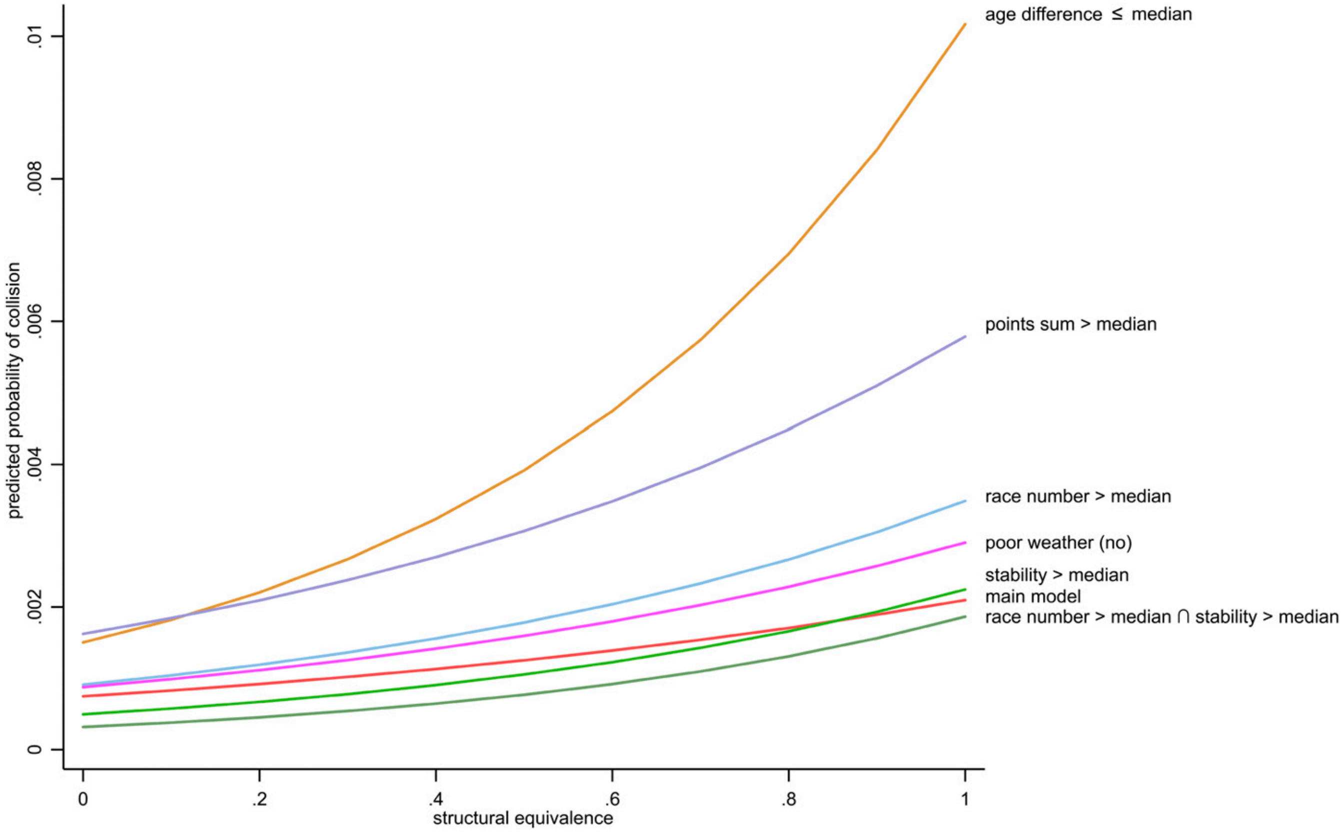

**Fig. 3.** Illustrative contingent effects of structural equivalence predicting the probability of a collision, corresponding to estimates in Fig. 2. Intercepts derive from applying subsample-specific estimates to overall means of continuous variables, and setting categorical variables to zero except for the second age category, the Mexico City racetrack and the 1992 season.

Moving to broader contextual conditions, we present estimates for a median split on race number in the season. When a season is fully underway and a stable role structure has emerged, we expect drivers to shift from a global to a local competitive focus (36). Some (distant) drivers are now irrelevant, while other, structurally equivalent drivers can no longer be dismissed: occupying the same niche is not a fluke once enough time has passed. Structurally equivalent drivers may also grow more salient to each other because the window for establishing clear dominance is narrowing—a process that might work in tandem with competitive arousal, familiar from studies of bidding behavior as auctions draw to a close (37). Consistent with our expectation, time-dependent processes such as these appear to be at work among F1 drivers: a significant effect of structural equivalence is replicable when the season is more mature, but not when the season is still getting started.

To ensure that the insignificance of structural equivalence in the first half of the season is not an artifact of measurement error, we exploit variation in our stability measure. Recall that stability corresponds to recent race-over-race autocorrelation in drivers' positions in the competitive network. Structural equivalence is significant for stability above the median, but not below. It is also significant for race number and stability jointly above their medians, but not when one or both of these covariates are below their medians. Viewed together, the estimates visualized in Fig. 2 suggest that a time-dependent process of network congealing, rather than time pressure alone, is necessary for structural equivalence to prompt conflict.

Our final contingent prediction is that drivers react to structural equivalence most forcefully when they feel safe in their physical environment. Our reasons for expecting the strongest link between structural equivalence and collisions to be found in safe conditions is perhaps best summarized by considering unsafe conditions. Two processes go hand in hand with perceived danger, making local struggles for respect unlikely if not implausible.

First, and most obviously, drivers must prioritize staying alive. They will focus less on resolving status ambiguity with structurally equivalent others when their survival is at stake. Second, it is reputationally costly to (unsuccessfully) taunt a peer in pernicious conditions. If, in such conditions, hostile interactions escalate into severe injury or death, the cost to the perpetrator's reputation will likely be greater than normal. In addition, external, collectively felt threats are expected to evoke cooperative—more than competitive—impulses (38). Consequently, to ignore this norm—and put a peer's life in clear danger—is likely to be coded as dishonorable conduct.

To test these intuitions, we use our poor weather indicator. When drivers sense relative safety—in the absence of poor weather—equivalence should most strongly affect their willingness to be aggressive and thus experience a collision. We see support for our expectation: structural equivalence significantly predicts collisions only in the safe conditions. So, while structural equivalence is by definition an emergent property, exogenous weather conditions govern when its effect gains expression.

## Discussion

Our study reveals that the association between network position and conflict is neither merely a matter of contention for official position nor an artifact of inherently hostile parties exposed to each other. Instead, shared locations in an emerging competitive network have important behavioral ramifications.

Our finding that structural equivalence affects the collision rate, controlling for similarity in points and rank, is important for tournament research. Tournaments, even those with rankings based on objective criteria, are in fact intensely social. By design, they repeatedly force competitors to define themselves relative to each other in an evolving pecking order. However, most prior empirical work in this area has relied only on official information on competitors' performance, thus failing to capture important elements of past competitive encounters (39). Official positions in tournaments, although clearly informative, can also be reductionist—abstracting out emotionally salient features of competitors' histories and forcing competitors together on a scalar metric, even when the competitors themselves do not see each other as comparable (40). Network analysis, and structural equivalence in particular, offers an important method and associated set of insights that will benefit future research on tournaments.

Our results from sample-split models are important for social network research, which has paid scant attention to the contextual conditions in which structural equivalence is most consequential for social action—especially hostile social action. Our results suggest that new work will benefit from examining how demographic overlap, network stability, and perceived costs of conflict "activate" a structurally equivalent relationship to the point that it is not only salient but also conducive to conflict.

Our findings are subject to boundary conditions. First, for our main hypothesis to hold, dyad members cannot see either exit or greater effort as a superior response to structural equivalence (2). In some cases, however, trying harder or exiting may be the only alternatives. For example, in tournaments like footraces (41), in which staying in your own lane is compulsory, conflict akin to F1 collisions cannot occur; exerting more effort or quitting altogether (42) are the only ways to avoid being beaten.

Second, upon sensing their roughly equal standings in the pecking order, dyad members cannot form a coalition either to attack down, as in coalitional killings (43), or to attack up, as in instances of political insurgency. Unable to pursue a collectively defined goal (44), such as expanding a broader, opportunistically shared status grade, they must instead fight solo for a single position in a pecking order.

Third, dyad members cannot construct their own theory of structural equivalence, to the point that they purposefully guard themselves against overreacting to the taunts of near-peers (45). In such a scenario, dyad members would strategically engage in benign neglect or even show lateral deference (46), not aggression.

When these boundary conditions are met, structural equivalence likely triggers antagonism among interactants. Incompatible opinions of who should give way to whom is an important feature of social and economic life and will grow in importance as new kinds of networks and bases for status foster novel opportunities for perceiving structural equivalence.

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