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Regular Article

Six of one: The relationship between social dominance orientation and orientation to cyclists

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ABSTRACT

Cycling uptake in Ireland is very low, and communications related to cycling and cyclists is generally negative. The author hypothesised that Social Dominance Theory can be applied to understand this. A survey was designed and distributed which allowed respondents to complete the well-established Social Dominance Orientation scale, and a Cyclist Orientation scale designed by the author to test a respondent's orientation towards cycling and cyclists. Scores for both were converted to percent so as to compare like for like. A correlation was found between respondents' SDO score and CO score. This suggests that there is a relationship between Social Dominance Orientation and one's attitude to cyclists.

1. Introduction

Cycling uptake in Ireland is very low, while private car use is very high. The annually published *Transport Trends* report, which is “An Overview of Ireland’s Transport Sector”, estimated national modal share for the bicycle at 1% in 2009, 1.2% in 2012 (Department of Transport Tourism and Sport, 2015, pp. 16, 23) and 1.7% in 2016 (Department of Transport Tourism and Sport, 2017, p. 12). The 2019 report does not give a separate estimate for cycling mode share. Instead, the mode share for cycling and walking together is given as 15%, a reported 1.3% drop from 2016 (Department of Transport Tourism and Sport, 2020, p. 4). In contrast private car use is reported as 74.3% in 2016 – “virtually unchanged since 2014” (Department of Transport Tourism and Sport, 2018b, p. 6) – and 73.7% in 2019 (Department of Transport Tourism and Sport, 2020, p. 4). Forced car dependency is a widespread and significant problem across Ireland (Carroll et al., 2021).

This is in spite of considerable effort to increase cycling uptake. A scheme was launched on January 1, 2009 that lets employees buy bicycles through their employer at a discount (Bike to Work Ltd., 2018; Houses of the Oireachtas, 2018). Dedicated travel officers helping schools towards more sustainable transport completed “2921 visits to schools over the 2016 calendar year” (Taise, 2016, p. ii). *National Bike Week* events aimed at encouraging cycling uptake have taken place annually since 2009 (Department of Transport Tourism and Sport, 2018a; The Irish Times, 2009). Safe, suitable infrastructure has been widely identified as an important factor in cycling uptake (Lanzendorf &

Busch-Geertsema, 2014; Pospischil & Mailer, 2014; Pucher & Buehler, 2008; Song et al., 2017), yet the development of such infrastructure is often resisted, either outright or indirectly by being mired in delays for years (Burke, 2022; Early, 2019).

There are some positive developments, for instance, the number of cyclists recorded entering Dublin City in 2018 is “more than double the number of cyclists counted in 2010” (Department of Transport Tourism and Sport, 2019, p. 10). The total private car kilometres driven in 2019 fell by 1.5% (Department of Transport Tourism and Sport, 2020, p. 2). Nevertheless, this progress is painfully slow and insufficient considering the extreme urgency of the climate crisis – transport is responsible for 20% of Ireland’s greenhouse gas emissions and the private car is the source of more than half of this share (Department of Transport Tourism and Sport, 2018b, p. 27).

A number of studies mention indicators that cyclists are viewed as an outgroup without directly stating this conclusion (Aldred, 2013; Cavill & Watkins, 2007, p. 412; Daley & Rissell, 2011, pp. 211–216; Pooley et al., 2013, p. 69). Hoekstra et al. (2018) found that Dutch road users considered their own self-described road user groups as ingroups and other road user groups as outgroups. These findings all mean that road user groups are social groups. It stands to reason, if this is the case, that social theory may help us towards a deeper understanding of the continued resistance to cycling uptake in Ireland, and in any other region where motorised transport is dominant.

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2. Method

Based on years of observation of communication related to cycling and cyclists, combined with lived experience in and observation of communication related to a subordinate group in an extremely unequal society, the author hypothesised that Social Dominance theory (Sidanius & Pratto, 1999) is applicable to the roads network. This is where “one or a small number of dominant hegemonic groups [are] at the top and one or a number of subordinate groups [are] at the bottom” (p.31). Social Dominance is either gender-based, age-based, or arbitrary-set, where the basis for elevation and empowerment of one group and discrimination against and disempowerment of another can be based on any perceived group characteristics (p. 33). It is important to understand that Social Dominance is a system of inequality. Not everyone caught up in such systems are their extremes, but the extremes are the visible symptoms of the wider, embedded, normalised, systemic discrimination.

A number of phenomena would be consistent with the hypothesis, their absence inconsistent with the hypothesis. This paper focuses on Social Dominance Orientation (SDO): the degree to which an individual supports or opposes the domination of one group over others (Sidanius & Pratto, 1999, p. 61). The researcher predicted that if a Social Dominance dynamic existed on Irish roads, with drivers the dominant group, a higher SDO score should correspond with higher opposition to cyclists and cyclists’ cause. A lower SDO score should correspond with lower opposition to cyclists and cyclists’ cause. In other words, if the hypothesis is supported the more a person supports the dominance of one group over another, the more negative they will feel about cyclists and oppose cyclists’ cause. In colloquial terms: if there is six of the one, there should be half a dozen of the other.

2.1. The SDO scale

Sidanius and Pratto developed and extensively tested the SDO Scale, finding it to be reliable and stable over time (Sidanius & Pratto, 1999, p. 68). In their original work two scales are given: SDO₅ and SDO₆. The latter places greater emphasis on “orientations toward intergroup relations, rather than unspecified or interpersonal relationships” (ibid, p. 62). A new version of the scale, SDO₇, is designed to give a more multidimensional result (Ho et al., 2015). Road use is usually an individualised experience, and the interest of this study is not the details of respondents’ SDO but the general score. Therefore, SDO₅ was selected for a one-dimensional assessment of interpersonal-focused SDO.

2.2. The cyclist orientation scale

A scale was then developed to measure respondents’ orientation towards cyclists – the Cyclist Orientation (CO) score. This scale drew on results from an earlier analysis in which common anti-cyclist sentiments and beliefs were identified in the media discourse in Ireland. Questions were crafted based on these beliefs and sentiments where higher agreement would be consistent with higher anti-cyclist sentiment, and lower agreement would be consistent with lower anti-cyclist sentiment, tested for comprehension, then tested for consistency of results with a test/retest.

Questions on this scale were.

1. You can’t blame drivers for sometimes getting angry and frustrated with cyclists.
2. You can’t blame drivers for sometimes being aggressive to cyclists.
3. (A Minimum Passing Distance Law obliges drivers to leave enough space between them and cyclists when overtaking: depending on the speed limit, either 1 m or 1.5 m (3 or 5 ft).) A Minimum Passing Distance law is a good thing.*
4. Cyclists must start paying road tax and insurance, then we can start talking about things like separated cycle lanes.

5. Cyclists are lawless and reckless.
6. Cyclists are a danger to themselves.
7. Cyclists are a danger to others.
8. Drivers should be prioritised on the roads.
9. We need to do more for cyclists.*
10. Cyclists should be banned.
11. Most cyclist deaths and injuries can be traced back to something the cyclist did wrong.

Questions marked with an asterisk were reverse coded in the results processing.

2.3. Distribution

The two scales were combined into a single survey, one after the other, followed by questions collecting demographic data. It was distributed electronically combining the researcher’s own social media platform, acquaintances’ social media platforms, and survey swap sites.

3. Results

A total of 415 responses were gathered, with demographics shown in Table 1. “All” is where a respondent wrote in an answer rather than selecting an option (private car user, cyclist, pedestrian, and public transport user, or other with space for more information were offered). “None” is where respondents explicitly rejected the notion of identifying as any kind of road user group (see Table 2).

Data was processed using Microsoft Excel. There were 14 questions in the SDO scale and 11 in the CO scale, therefore scores in both were converted to percentages so as to compare like for like. The highest score in both surveys was 100% and the lowest 14%. If this range is divided into twenty bands, 27% of respondents’ score in the two tests fell within the first and narrowest band, 22% fell within the second band, 12% in the third band, and 14% in the fourth band.

The significance of this result can be demonstrated by comparing it to the well known balls into bins problem (Fig. 1). If there are twenty bins, the chances of a ball randomly tossed landing in a given bin is 1/20 or 5%. If there are ten bins, the chances of a ball randomly tossed landing in a given bin is 1/10 or 10% (see Fig. 2).

This should not change if the ball is tossed again, and the given bin is the one into which it fell the first time. In this survey 27% of balls “fell within the same bin” on the second round if there were twenty bins. If there were ten bins 10% of balls could be expected to fall into the same bin on the second round. Instead 59% of balls fell in the same bin. This comparison is limited in mathematical terms as each bin would be

Table 1
Respondent demographics.

Gender	Female	Male	Other choices
	198	200	17
Country of residence	Ireland	USA	Others
	201	73	141
Age Group	18–25	26–35	36–45
	125	111	86
	46–55	56–65	66+
	67	16	10
Road User Group First Choice	Private Car User (PCU)	Cyclist	Pedestrian
	185	92	78
	Public Transport User (PTU)	Motorcyclist	HGV Driver
	48	1	2
	All	None	
	6	3	
Road User Group Second Choice	PCU	Cyclist	Pedestrian
	82	88	137
	PTU	Motorcyclist	HGV Driver
	57	6	0

Table 2
SDO and CO score differences all respondents.

SDO and CO score differ by	Number	Percent (rounded to whole)	SDO and CO score differ by	Number	Percent (rounded to whole)
Band 1 0–4.3%	112	27	Band 11 Between 43.1 and 47.3%	0	0
Band 2 Between 4.4 and 8.6%	93	22	Band 12 Between 47.4 and 51.6%	3	1
Band 3 Between 8.7 and 12.9%	50	12	Band 13 Between 51.7 and 55.9%	2	0
Band 4 Between 13.0 and 17.2%	59	14	Band 14 Between 56 and 60.2%	1	0
Band 5 Between 17.3 and 21.5%	24	6	Band 15 Between 60.3 and 64.5%	0	0
Band 6 Between 21.6 and 25.8%	21	5	Band 16 Between 64.6 and 68.8%	0	0
Band 7 Between 25.9 and 30.1%	16	4	Band 17 Between 68.9 and 73.1%	0	0
Band 8 Between 30.2 and 34.4%	11	3	Band 18 Between 73.2 and 77.4%	0	0
Band 9 Between 34.5 and 38.7%	15	4	Band 19 Between 77.5 and 81.7%	0	0
Band 10 Between 38.8 and 43%	5	1	Band 20 Between 81.8 and 86%	1	0

defined per the position of the ball in the first drop.

However, the research question is not a mathematical one, it is whether there is a relationship between A and B. The proximity of results in the two tests is sufficiently beyond what would be expected if they were random and unconnected to conclude that a relationship exists between a person’s Social Dominance Orientation and their orientation to cyclists: a high SDO score correlates to high antipathy to cyclists.

3.1. Age and gender

Results split by gender were close to those of the overall sample in terms of distribution across bands. Only the top bands are shown in Table 3, but this similarity continues through the lower bands. Respondents who selected options other than male or female were not included in this breakdown as the number (17, or 4% of the sample) is too small for any conclusions.

When split by age group (Table 4) the highest deviation from the overall band distribution is +6%: in the 36–45 age group, in band 1. The greatest negative deviation is –5%, also in band 1, in the 18–25 age group. The 56–65 and 66+ age groups are not included, as their numbers (16 and 10 or 4% and 2% respectively of the overall sample) were too low to draw conclusions.

Neither age nor gender seem to have had a significant impact on the relationship between respondents’ SDO and CO scores.

3.2. Road user group

Respondents’ road user group identity (Table 5) had a more significant effect on score correlation than age or gender, and the effect was most noticeable among those thinking of themselves first and foremost as pedestrians. For this group SDO and CO scores falling in band 1 was 5% higher than the whole sample and in band 2 9% higher. Therefore, 63% of respondents who thought of themselves first and foremost as pedestrians had scores falling within 0–8.6% of each other. Those identifying first and foremost as cyclists had 35% of scores in band 1, which is 5% higher than the overall sample and higher than any of the other road user groups. For those identifying as PCUs and PTUs 5% and 2% fewer respondents’ scores for the two tests fell in band 1 than the overall sample.

The mode of transport respondents identified with first and foremost seems to therefore have had a significant effect on their score correlations. However, the correlation is higher, reinforcing the argument that there is a relationship between a person’s SDO score and their CO score rather than casting any doubt on it. The lowest correlation was among people who identified first and foremost as public transport users, but the figure still falls well above what one would expect in a random result. Therefore, while there is scope for further exploration, for the purpose of answering the central question of this study, whether a relationship exists between SDO and CO scores, the road user group does not affect the results in any significant way.

3.3. Disability

Respondents were given an opportunity to provide information, if they wished, on any disability or chronic illness they live with, and how it may affect them when navigating streets and roads. There were 33

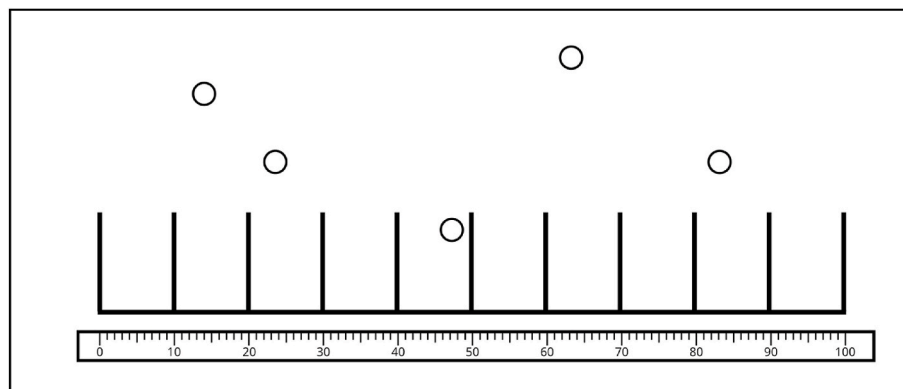


Fig. 1. Illustration of the “Balls and Bins” problem.

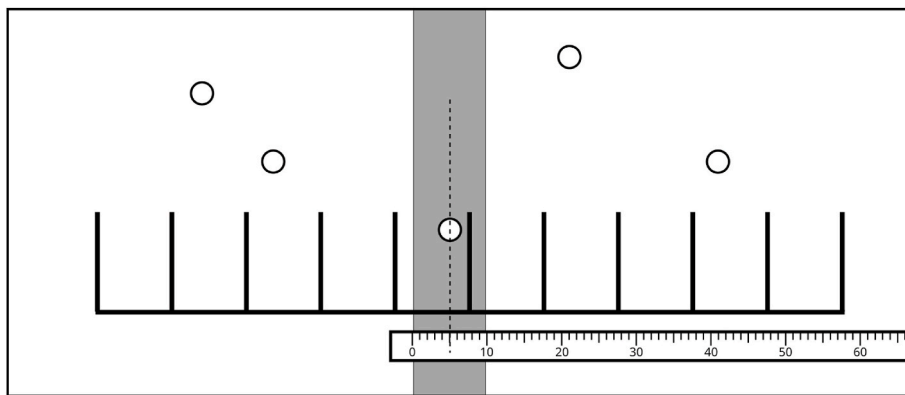


Fig. 2. Visual representation of the limitation of the comparison.

Table 3
SDO and CO score difference top two bands female and male separate and combined.

SDO and CO differ by (%)	All respondents (% rounded to whole)	Female (% rounded to whole)	Male (% rounded to whole)
Band 1 0–4.3%	27	30	26
Band 2 Between 4.4 and 8.6%	22	21	24
Combined: Between 0 and 8.6%	49	51	50

Table 4
SDO and CO score top bands differences by age group.

SDO and CO differ by (%)	All respondents (% rounded to whole)	18-25 (% rounded to whole)	26-35 (% rounded to whole)	36-45 (% rounded to whole)	46-55 (% rounded to whole)
Band 1 0–4.3%	27	22	25	33	31
Band 2 Between 4.4 and 8.6%	22	20	18	27	25
Combined: Between 0 and 8.6%	49	42	43	60	56

Table 5
SDO and CO score top bands differences by road user group.

SDO and CO differ by (%)	All respondents (% rounded to whole)	PCU (% rounded to whole)	Cyclists (% rounded to whole)	Pedestrians (% rounded to whole)	PTU (% rounded to whole)
Band 1 0–4.3%	27	22	35	32	25
Band 2 Between 4.4 and 8.6%	22	23	20	31	15
Combined: Between 0 and 8.6%	49	45	55	63	40

responses where such data was provided (Table 6).

There was considerable difference between the scores overall and those in this group, in each band. The biggest difference was in band 2, where the portion of respondents whose scores fell between 4.4 and 8.6% of each other was nearly half of the overall sample at 12% as opposed to 22% - a difference of 10%. However, 10% of 33 is only three responses in actual numbers. The number is too small to draw any firm conclusions. Taken together, the proportion of responses in band 1 and 2 combined, where scores fell within 0–8.6% of each other, were similar in the overall sample and this subgroup at 49% and 45% respectively.

4. Conclusion

The findings suggest that there is a correlation between a person’s SDO and CO. The finding is consistent regardless how the data is separated by various demographics that may also influence respondents’ orientations. This suggests that the more a person supports the dominance of one group over others, the more they are likely to oppose cyclists and cyclists’ rights. The findings holds potential significance and possible application in three areas: traffic policing, road crash investigation, and infrastructure planning.

This study is not about law enforcement, nor did it specifically include people working in law enforcement. However, police officers were previously, in other peer-reviewed research, found to generally have a higher SDO score than the general population (Sidanius & Pratto, 1999, p. 94). If there is a relationship between A (SDO) and B (antipathy to cyclists), and there is a relationship between A and C (working as police officer), it is possible that there may be a relationship between A and C. If this is the case, it could be that there is a tendency to higher anti-cyclist sentiment among those enforcing the law on roads and streets than among the general population. If so, how does that affect decisions on prosecutions, assignation of blame in a collision report, decisions on when to pursue a transgression and when not to? This is a connection that can be the basis of further exploration.

There is also a relationship between the location of blame and SDO when it comes to evaluating the causes of subordinate groups’ misfortunes. Higher SDO scores correlate with a tendency to locate blame internally, in other words on characteristics of the individual or group, while lower SDO scores correlate with a tendency to locate blame externally, in other words on factors outside the control of the individual or group (ibid, pp. 87–88). An example of this is blaming a high rate of poverty in a majority Black neighbourhood on either laziness and bad character (internal location of blame) or lack of quality education and work opportunities (external location of blame). This affects conclusions with regards to remedy: if the blame is internal, surely better outcomes depend on the group or individual modifying their behaviour. If the blame is external, surely better outcomes depend on modification of the environment, such as providing more, better schools.

Table 6
SDO and CO score top bands differences for respondents with a disability or chronic illness.

SDO and CO differ by (%)	All respondents (% rounded to whole)	Respondents with disability or chronic illness (% rounded to whole)	SDO and CO differ by (%)	All respondents (% rounded to whole)	Respondents with disability or chronic illness (% rounded to whole)
Band 1 0–4.3%	27	33	Band 4 Between 13.0 and 17.2%	14	9
Band 2 Between 4.4 and 8.6%	22	12	Band 5 Between 17.3 and 21.5%	6	12
Band 3 Between 8.7 and 12.9%	12	15	Band 6 Between 21.6 and 25.8%	5	0

In Ireland road traffic deaths require an inquest with a jury (Coroner Service Ireland, 2019). While the goal is not to determine fault, recommendations are often made from the inquest on how to avoid similar deaths in the future. If the coroner, the jury, or both have a high SDO score they could be more likely to assign blame to the subordinate group – cyclists, in this case – and less willing to find fault with the behaviour of the dominant group – drivers, in this case. They could also tend to recommend behaviour modification from the subordinate group rather than external measures such as improved infrastructure.

For those involved in spatial planning a higher SDO score can lead to a greater tendency to think “car first” in the allocation of space. In challenging spaces, such as narrow streets, a higher SDO score may inhibit creativity in finding solutions as there is a greater resistance, either conscious, subconscious, or both, to prioritising subordinate groups over the dominant group. For those involved in traffic management, a higher SDO score may lead to favouring the dominant group in terms of allocation of priority. Traffic lights are a good example of this, where in Ireland pedestrians have an almost 100% chance of encountering a red light at junctions, while drivers – except perhaps in very heavy, slow-moving traffic – would consider it exceptional to see red at every single traffic-light-controlled junction on a given journey.

Further research into possible relationships between SDO and behaviours and decisions in these fields is therefore recommended.

5. Limitations of the study

The sample size was relatively small, and the proportion of respondents who live with disability was not sufficient to draw conclusions. Respondents were also not confined to a specific geographic region – it would be very interesting to repeat this test with a sufficient sample from geographic locations specifically chosen based on modal share of cycling, to ascertain if modal share of cycling in the respondent’s vicinity affects especially the CO score. The CO scale is also newly created and relatively untested.

Credit Author Statement

Nadia Williams: All work connected to this study and the writing of this article was carried out by Nadia Williams. No other researchers were involved.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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