Applying Soft OR to Assessing Conduct

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ABSTRACT

To date the approaches taken to assess deterrence have applied hard Operations Research (OR). Hard OR is appropriate for problems where the problem is well defined, it is possible to define a model of the problem which, ideally, can be verified and validated and the desired outcome is to identify an optimum or range of acceptable solutions. Soft OR is appropriate for problems where the problem is not well defined, it is not possible to define a model that can be verified and validated and the desired outcome is to improve our understanding of the problem. Soft OR can be a precursor to hard OR.

There are multiple definitions of 'deterrence' and even more interpretations. One thing that most definitions and interpretations of deterrence have in common is that they define it, or interpret it, in absolute terms. The fact that there are so many definitions and interpretations implies that deterrence may not be an absolute but that it is more relative. There are differences of opinion as to what is acceptable conduct and what is unacceptable conduct. Some people apply deterrence to nuclear and conventional conflict only, whereas others apply it to the hybrid threat as well. Unfortunately, the hybrid threat is hardly any better defined than deterrence, however, there are observed hybrid tactics. This paper describes an analysis of observed hybrid tactics to determine if soft OR can help to define the hybrid threat and to assess if a potential adversary's conduct is becoming more confrontational or more conciliatory. This approach avoids the political pitfall of trying to establish a threshold for deterrence that is acceptable to all and the analytical challenge of proving causation. If feasible, such a method could be used for comparative analysis (e.g. conduct in year 20xx was the most confrontational for the last 10 years) and trend analysis (e.g. conduct has become more confrontational for three years consecutively).

The author applied soft OR to a range of hybrid tactics in mid-2017. This paper reports on the results and analysis of a pairwise comparison of observed hybrid tactics.

The paper concludes that it is possible to rank hybrid tactics on a scale of conduct. Therefore, it is feasible to perform comparative analysis of an actor's conduct.

1.0 BACKGROUND

"The events of 2014 heightened awareness of deterrence and assurance among NATO nations. Whereas the Alliance had previously been focussed on out-of-area operations, instability along NATO's eastern and southern borders re-focussed attention on security closer to home. At the political and operational levels, greater attention is now being devoted to ways and means of countering a range of adversarial behaviours. Age-old theories of deterrence are being re-visited, while contemporary theories incorporating new vocabularies and domains are being offered up as a way of helping the Alliance navigate through a rapidly-evolving security environment." (Copied from the background paragraph of the calling notice.)

The established mechanism in NATO for warning of impending crisis and informing decision making during crisis is the system of Indicators and Warnings (I&W). Clearly this is considered insufficient for dealing with

the evolving security environment, as evidenced by this symposium. If the I&W system is insufficient then what else is required and how does it relate to the I&W system?

There are multiple definitions of 'deterrence' and even more interpretations. One thing that most definitions and interpretations of deterrence have in common is that they define it, or interpret it, in absolute terms. The fact that there are so many definitions and interpretations implies that deterrence may not be an absolute but that it is more relative. The Oxford definition of deterrence is "the action of discouraging an action or event through instilling doubt or fear of the consequences." By definition deterrence is both the action of discouraging and the effect of instilling doubt or fear. Therefore, to assess deterrence requires assessing the action, the effect and proving causation. However, there are different opinions about which act or event NATO is trying to discourage. Some people have the opinion that NATO is only trying to deter conflict (both conventional and nuclear), some have the opinion that NATO is trying to deter the hybrid threat against NATO countries and some have the opinion that NATO is trying to deter actions that disrupt the international political order or violate NATO's values.

If it cannot be agreed what action it is that NATO is trying to deter and if proving causation is unrealistic is it at least possible to rank the actions of a potential adversary and to assess their current conduct and any changes in their conduct?

If it is possible to rank actions of a potential adversary, is there any consistency between the ranking of actions and objective characteristics?

This paper describes an attempt to answer these questions utilising a list of observed hybrid tactics.

2.0   SPECTRUM OF CONDUCT

AJP-01(E) Allied Joint Doctrine describes the spectrum of conflict, see Figure 2-1. This idea has been expanded into a spectrum of conduct, see Figure 2-2. The terms conflict and crisis are used in NATO doctrine however there are not standardised terms for describing states other than crisis and conflict. The terms confrontation and concord have been chosen because they describe a gradation of conduct but they are not the only terms that could have been used. Other terms that could have been that draw on theories of cooperation versus competition or relational versus transactional relationships.
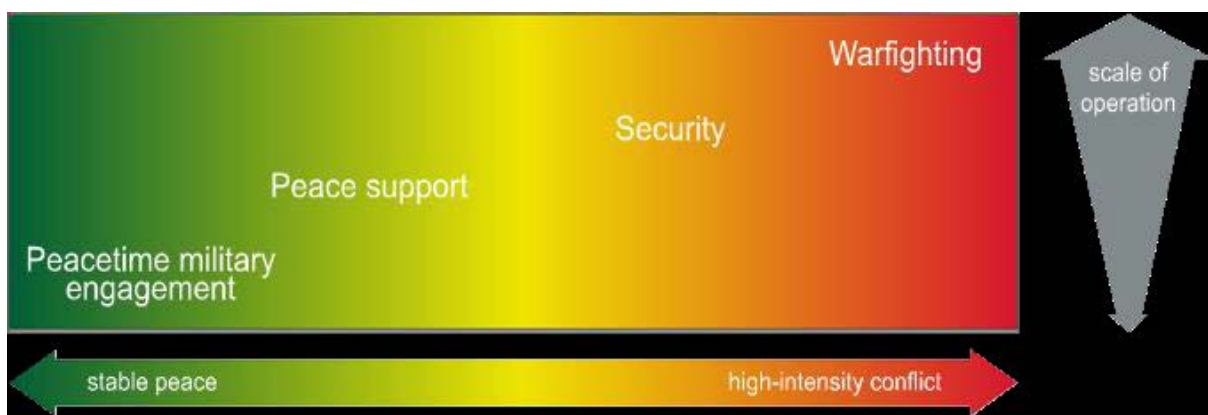

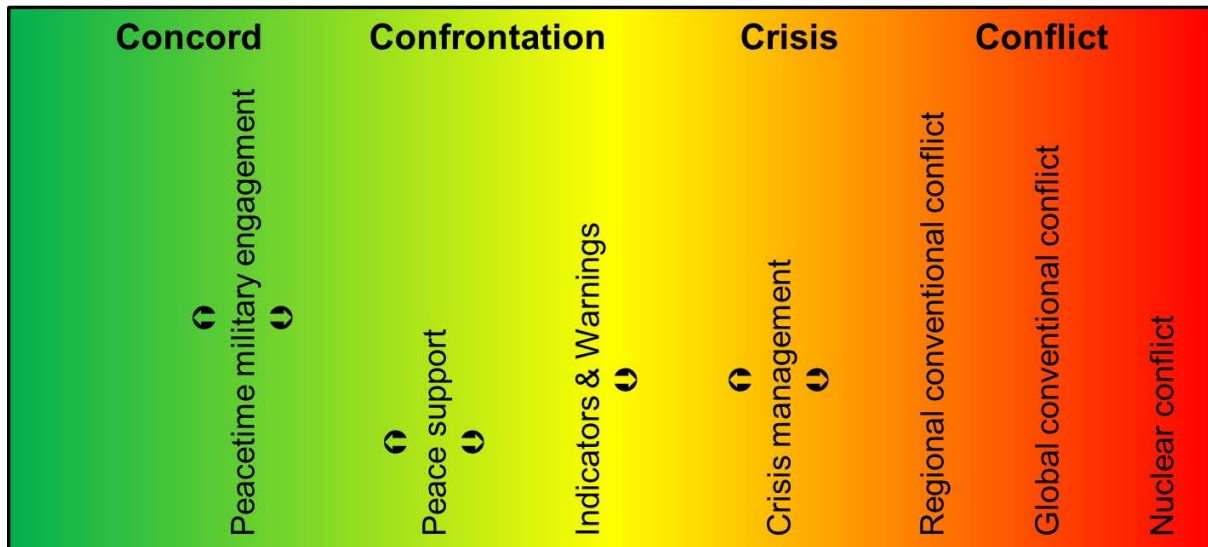**Figure 2-1: The Spectrum of Conflict**

Figure 2-2: The Spectrum of Conduct

2.1 General Characteristics of the Spectrum of Conduct

Figure 2-3 shows some general characteristics of the spectrum of conduct. These characteristics were derived from a consideration of why NATO would be involved in different types of operation. If the spectrum of conduct were revised based upon theories of cooperation versus competition or relational versus transactional relationships then it might be possible to identify additional characteristics.
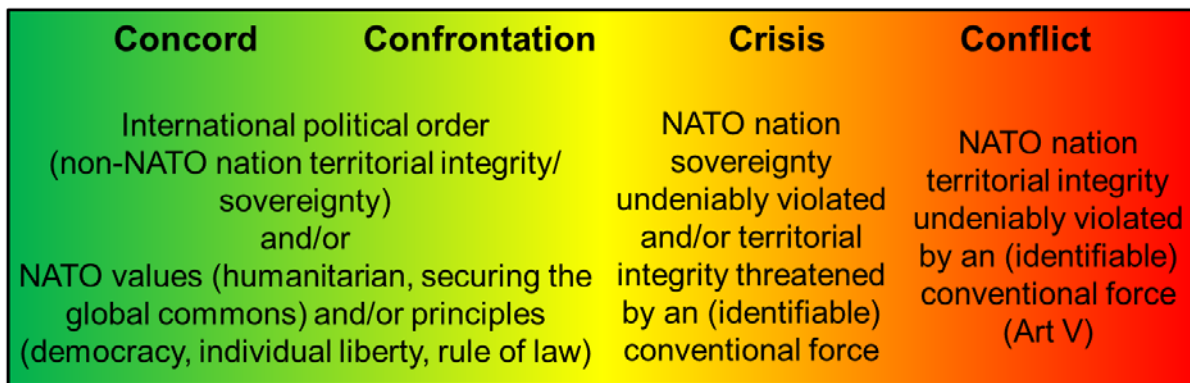

Figure 2-3: General Characteristics of the Spectrum of Conduct

3.0 HYBRID THREAT

There are multiple definitions of the hybrid threat. There are common elements to all these definitions:

- The employment of conventional (i.e. the military instrument of power) in combination with unconventional (e.g. the diplomatic, information and economic instruments of power) capabilities.

- Capabilities are employed asymmetrically (e.g. a capability from one instrument of power is employed to affect a system in a different domain of the target).

- Adaptability of the threat.

Some definitions may focus on specific elements, for example the use of high-tech disruptive technologies but the dominant aspect of the hybrid threat is its lack of predictability.

Although the employment of any future hybrid action is unpredictable it is possible to consider hybrid tactics that have been employed previously.

3.1 Hybrid Tactics

Table 3-1 lists hybrid tactics that have been observed.

Table 3-1: List of Hybrid Tactics.

Serial	Action
1	Land force build-up
2	Air/sea patrols
3	Snap exercises
4	Media Ops
5	Cyber-attacks on NATO and national CIS
6	Dedicated assassinations and kidnappings
7	Acts of sabotage
8	IED attacks on critical infrastructure
9	Organised armed groups
10	Agent provocateurs / violent demonstrations
11	Physically blocking critical infrastructure
12	Funding RUS oriented media / political parties
13	Economical pressure
14	Distributing RUS passports to RUS speaking minorities

3.2 Characteristics of Hybrid Tactics

Each action in Table 3-1 was categorised against a number of different factors or characteristics. Some of the factors addressed the nature of the action of itself and some addressed the effect of the action. Clearly the consideration of the effect required an inference which was not always clear. The characteristics considered were:

- The instrument of power being employed. Both the NATO categorisation (Political, Military, Economic and Civil) and the US categorisation (Diplomatic, Information, Military, Economic, Financial, Intelligence and Legal) were applied.

- The target system for the action (inferred) categorised by the Political, Military, Economic, Social, Information and Infrastructure.

- The use of force, whether the action employed the actual use of force, the threatened use of force or is non-violent.

- The general characteristics of the spectrum of conduct both in terms of whether the action was conducted against a NATO nation and if it was conducted against a non-NATO nation. Actions against a NATO nation would be against either the sovereignty or territorial integrity of a NATO

nation whereas actions against a non-NATO nation would be against either the international political order or NATO values.

• Whether the action could be attributed or not.

Table 3-2 shows the categorisation of the hybrid tactics against the different characteristics. In some cases the action was so broad that it could not be categorised against some characteristics.

Table 3-2: Characteristics of Hybrid Tactics

Serial	Action	Instrument of Power		Domain	Use of Force	General Characteristics (against NATO)		General Characteristics (against non-NATO)		Attribution
		PMEC	DIMEFIL	PMESII						
1	Land force build-up	Military	Military	Political	Threatening the use of force	Threatens	Territorial Integrity	Threatens	Political Order	Immediately and clearly attributable
2	Air/sea patrols	Military	Military	Political	Threatening the use of force	Threatens	Territorial Integrity	Threatens	Political Order	Immediately and clearly attributable
3	Snap exercises	Military	Military	Political	Threatening the use of force	Threatens	Territorial Integrity	Threatens	Political Order	Immediately and clearly attributable
4	Media Ops	Civil	Information	Multiple	Non-violent					Attributable with evidence
5	Cyber-attacks on NATO and national CIS	Civil	Information	Multiple	Non-violent	Violates	Sovereignty	Threatens	Political Order	Highly deniable
6	Dedicated assassinations and kidnappings	No match	No match	Political	Actual use of force	Violates	Sovereignty	Threatens	Political Order	Deniable
7	Acts of sabotage	No match	No match	Multiple	Actual use of force	Violates	Sovereignty	Threatens	Political Order	Deniable
8	IED attacks on critical infrastructure	No match	No match	Multiple	Actual use of force	Violates	Sovereignty	Threatens	Political Order	Deniable
9	Organised armed groups	No match	No match	Multiple	Actual use of force	Violates	Territorial Integrity	Threatens	Political Order	Attributable with evidence
10	Agent provocateurs / violent demonstrations	No match	No match	Multiple	Actual use of force	Violates	Sovereignty	Threatens	Political Order	Deniable
11	Physically blocking critical infrastructure	Civil	Complementary capabilities	Multiple	Threatening the use of force	Violates	Sovereignty	Threatens	Political Order	Immediately and clearly attributable
12	Funding RUS oriented media / political parties	Economic	Economic	Political	Non-violent					Deniable
13	Economical pressure	Economic	Economic	Economic	Non-violent	Threatens	Political Order	Threatens	Political	Immediately and

Serial	Action	Instrument of Power		Domain	Use of Force	General Characteristics (against NATO)		General Characteristics (against non-NATO)		Attribution
		PMEC	DIMEFIL	PMESII						
									Order	clearly attributable
14	Distributing RUS passports to RUS speaking minorities	Civil	Complementary capabilities	Political	Non-violent	Threatens	Political Order	Threatens	Political Order	Immediately and clearly attributable

4.-0 METHOD

A pairwise comparison of the hybrid tactics was conducted by a group of volunteer staff officers in Joint Force Command Brunssum. Figure 4-1 shows the spreadsheet worksheet for the pairwise comparison containing a single set of responses.

Figure 4-1: Completed Worksheet for Pairwise Comparison

5.0 RESULTS

The results for all judges are shown in Table 5-1. The hybrid tactics have been reordered based upon their average ranking.

The agreement between the judges is statistically significant.

- Kendall coefficient of concordance, $W = 0.56$

- Spearman correlation, $r = 0.48$

- p-value $= 2.0E\text{-}06$, which is sufficient to accept the result as statistically significant with a 95% confidence interval.

There were some hybrid tactics where there was a notable difference of opinion between the judges. For example, the hybrid action 'organised armed groups' (Serial 4) was ranked highly by Judges A, B, C and E, was ranked in the middle by Judge F and was ranked lowly by Judge D. From discussion afterwards it became clear that different judges had interpreted the action differently. This implies that greater agreement could have been achieved between judges if more information on these actions had been provided.

Table 5-1: Results of Pairwise Comparison for All Judges.

Serial	Hybrid action	Judge	A	B	C	D	E	F	G	Average rank across all judges
1	IED attacks on critical infrastructure	H	2.5	2	3	3	2.5	1	1	2.1
2	Dedicated assassinations and kidnappings	F	2.5	2	6	4	5.5	2.5	2	3.5
3	Acts of sabotage	G	2.5	2	3	5	4	4	5.5	3.7
4	Organised armed groups	I	2.5	5	3	13.5	1	7.5	4	5.2
5	Physically blocking critical infrastructure	K	5.5	6.5	6	13.5	2.5	7.5	3	6.4
6	Cyber-attacks on NATO and national CIS	E	10	9	1	7	7.5	7.5	7	7.0
7	Agent provocateurs / violent demonstrations	J	5.5	6.5	13.5	6	5.5	7.5	5.5	7.1
8	Economical pressure	M	8	8	11.5	1	9	11	8	8.1
9	Land force build-up	A	11	10.5	6	8.5	11	2.5	9	8.4
10	Distributing RUS passports to RUS speaking minorities	N	7	4	11.5	12	7.5	12	11.5	9.4
11	Funding RUS oriented media / political parties	L	9	10.5	9	2	10	13	13.5	9.6
12	Snap exercises	C	13	12	8	8.5	12.5	5	13.5	10.4
13	Air/sea patrols	B	14	13.5	10	11	14	10	10	11.8
14	Media Ops	D	12	13.5	13.5	10	12.5	14	11.5	12.4

6.0 ANALYSIS

Table 6-1 lists the hybrid tactics in their order of rank and includes the characteristics that had previously been categorised for each hybrid action. In most cases there is no consistency between the ranking of the hybrid tactics and their corresponding categorisation. There are two exceptions.

For the characteristic 'use of force' those actions that involve the 'actual use of force' are consistently ranked higher than those actions that 'threaten the use of force' or are 'non-violent'.

For the general characteristic of the spectrum of conduct those actions that violate sovereignty or territorial integrity are consistently ranked higher than those that merely threaten territorial integrity, sovereignty or the political order.
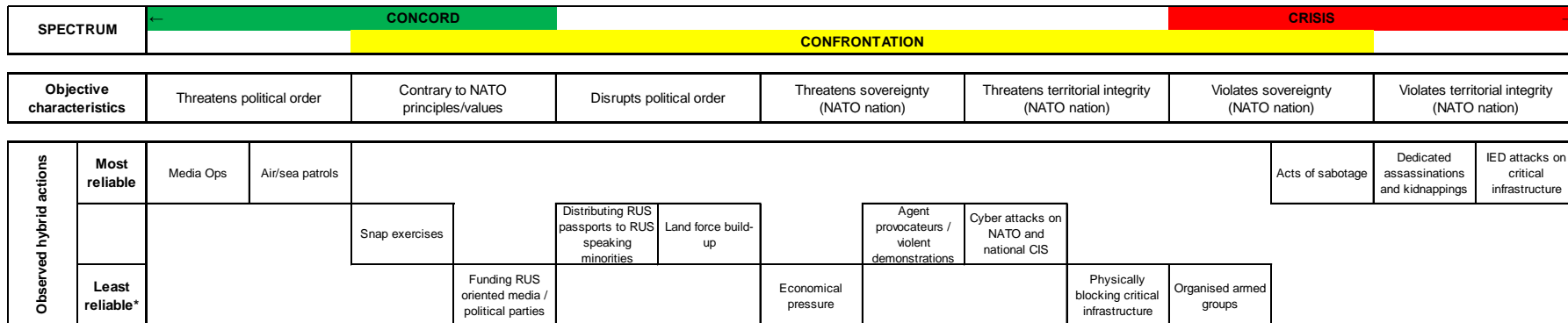
6.1   The Spectrum of Conduct as a Scale

Figure 6-1 shows the spectrum of conduct with both the objective characteristics and the individual hybrid tactics ordered as a scale along the spectrum. As stated above the NATO I&W system provides warning of impending crisis and informs decision making during crisis. As can be seen from Figure 6-1 the scale developed based upon hybrid tactics and their characteristics extends well beyond the area of crisis and impending crisis. As such an assessment of current hybrid tactics on this scale would be complimentary to and overlap with the NATO I&W system.

Table 6-1: Characteristics and the Results of the Pairwise Comparison

Serial	Action		Instrument of Power		Domain	Use of Force	General Characteristics (against NATO)		General Characteristics (against non-NATO)		Attribution
			PMEC	DIMEFIL	PMESII						
1	IED attacks on critical infrastructure	H	No match	No match	Multiple	Actual use of force	Violates	Sovereignty	Threatens	Political Order	Deniable
2	Dedicated assassinations and kidnappings	F	No match	No match	Political	Actual use of force	Violates	Sovereignty	Threatens	Political Order	Deniable
3	Acts of sabotage	G	No match	No match	Multiple	Actual use of force	Violates	Sovereignty	Threatens	Political Order	Deniable
4	Organised armed groups	I	No match	No match	Multiple	Actual use of force	Violates	Territorial Integrity	Threatens	Political Order	Attributable with evidence
5	Physically blocking critical infrastructure	K	Civil	Complementary capabilities	Multiple	Threatening the use of force	Violates	Sovereignty	Threatens	Political Order	Immediately and clearly attributable
6	Cyber-attacks on NATO and national CIS	E	Civil	Information	Multiple	Non-violent	Violates	Sovereignty	Threatens	Political Order	Highly deniable
7	Agent provocateurs / violent demonstrations	J	No match	No match	Multiple	Actual use of force	Threatens	Political Order	Threatens	Political Order	Deniable
8	Economical pressure	M	Economic	Economic	Economic	Non-violent	Threatens	Political Order	Threatens	Political Order	Immediately and clearly attributable
9	Land force build-up	A	Military	Military	Political	Threatening the use of force	Threatens	Territorial Integrity	Threatens	Political Order	Immediately and clearly attributable
10	Distributing RUS passports to RUS speaking minorities	N	Civil	Complementary capabilities	Political	Non-violent	Threatens	Political Order	Threatens	Political Order	Immediately and clearly attributable
11	Funding RUS oriented media / political parties	L	Economic	Economic	Political	Non-violent					Deniable

Serial	Action		Instrument of Power		Domain	Use of Force	General Characteristics (against NATO)		General Characteristics (against non-NATO)		Attribution
			PMEC	DIMEFIL	PMESII						
12	Snap exercises	C	Military	Military	Political	Threatening the use of force	Threatens	Territorial Integrity	Threatens	Political Order	Immediately and clearly attributable
13	Air/sea patrols	B	Military	Military	Political	Threatening the use of force	Threatens	Territorial Integrity	Threatens	Political Order	Immediately and clearly attributable
14	Media Ops	D	Civil	Information	Multiple	Non-violent					Attributable with evidence

Figure 6-1: The Scale of Conduct

7.0 CONCLUSIONS

It is possible to rank hybrid tactics on a scale of conduct.

A spectrum of conduct has been developed based on the ranking of hybrid tactics and the characteristics of those actions.

8.0 POTENTIAL APPLICATION

This analysis has demonstrated the ability to produce a unified ranking based upon subject matter opinion. Therefore, it is feasible to conduct comparative analysis to compare the opinions of different groups or to compare different time periods. By comparing multiple historic time periods (years) a comparative scale could be built that would enable it to be determined if the current situation was better or worse than last year or any preceding year.

The list of hybrid tactics used for this analysis was produced in 2016. The analysis could be repeated with a more current list of hybrid tactics.

Although there was strong agreement between judges when ranking hybrid tactics there were notable differences of opinion in some areas. It could be investigated whether providing additional information would increase the agreement.

The list of actions included in the analysis could be broadened to include actions that disrupt the international political order and actions against NATO's values. There are multiple organisations that produce annual reports that could be used as the basis for such a list, e.g. Amnesty International, The Economist Intelligence Unit, EU European External Action Service, Freedom House, Human Rights Watch, US State Dept. and World Justice Project.

If the list of actions is broadened to include actions that disrupt the international political order and actions against NATO's values then the spectrum of conduct should be revised based upon theories of cooperation versus competition and relational versus transactional relationships in order to develop a more complete list of general characteristics.

All of the above applications would improve our collective understanding of the problem. They could also assist in the development of a model of conduct, and the verification and validation of that model. Using such a model it would be possible to test for correlations between NATO's actions and changes in conduct, however, it must be remembered that correlation is not causation.