

Individual Leaders and the State: The Case of Israel as a Complex Adaptive System

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Abstract

This paper focuses on foreign policy processes of states as social entities, which are made manifest as the “psychology of the state” and specified as learning effects due to external causes (object appraisal); steering effects due to internal causes (ego defense); and social interaction effects from learning and steering processes (self-other mediation). The cases under investigation are the manifest psychology of the state of Israel across three individual Israeli leaders: Prime Ministers Ariel Sharon, Ehud Olmert, and Benjamin Netanyahu. The dependent variables are their beliefs about the nature of the political universe (friendly/hostile), the most effective strategies for exercising power (cooperation/conflict), and historical control (low/high). The independent variables are the personality processes of object appraisal (terrorist attacks and fatalities), ego defense (mistrust and self-confidence), and mediation of self-other relations (task v. process orientation and belief in ability to control events). They are analyzed within the context of game theory models of complex adaptive systems.

Keywords: Operational code analysis, role theory, Israel, cooperation, conflict

Research Article | Received: 25 February 2024, Last Revision: 8 January 2025, Accepted: 9 January 2025

Introduction

When Nathan Leites (1951; 1953) initially conceived of the Bolshevik operational code, he viewed it as a social-psychological construct attributed to the state of Russia. Individuals in the Soviet Politburo did not operate based on their own idiosyncrasies, but in similar ways that derived from socialization into the politburo’s culture (George 1969). Since then, much

of the field of political psychology has focused only on individual-level psychology, leaving out the social construction of the operational code. In this paper we return to the idea of states as social entities that involve discussions, negotiations, and the influence of coalitions which generate the operational code of the state. We frame from this perspective our examination of the public statements of three disparate Israeli leaders (Ariel Sharon, Ehud Olmert, and Benjamin Netanyahu) as focal actors within a complex adaptive system (the state of Israel) rather than as predominant leaders (Holland 2014; Achen 1988; Hermann 2001).

The distinction between a focal actor and a predominant leader addresses whether each leader is a passive leader whose public statements simply reflect the influence of single groups and multiple coalitions in Israeli politics, or an active leader whose public statements reflect the influence of his personal beliefs and preferences (Stoessinger 1979; see also Achen 1988; Hermann 2000). It is possible that there is no significant conflict between a leader's beliefs and preferences and those around him/her; however, it is an empirical question as to whether such a conflict exists and whether it matters or not. Leaders may find themselves in a predominant position within the state, represented by the French King Louis XIV's famous statement, "*L'état, c'est moi*," or in a more egalitarian position as "first among equals," represented in our case by an Israeli leader of a coalition cabinet in a parliamentary democracy.

The leader in both cases is the "focal actor" who expresses the beliefs and preferences of the state. Conceptualized either as the utterances of a predominant leader or a focal actor, they are part of the operational code for a "complex adaptive system" that is the state of Israel (Axelrod and Cohen 1999; Holland 2014). Our goal in this paper is to investigate the following research questions about the sources of the key beliefs in the operational code of the state of Israel as a complex adaptive system (cas), which are contained in the public statements of Sharon, Olmert, and Netanyahu.

Q1. Object Appraisal. Does information from Israel's external environment affect the state's operational code beliefs?

Q2. Ego Defense. Do the ego-defense personality characteristics of Israel's decision makers affect their operational code beliefs?

Q3. Mediation of Self-Other Relations. Do personality characteristics pertaining to self-other mediation affect operational code beliefs?

These questions address the agent-level processes of object appraisal, ego defense, and mediation of self-other relations identified by Smith (1968) in his map for the analysis of personality and politics. Do the interactions among individuals, single groups, or coalitions of multiple autonomous actors (Hermann 2001) leave traces of individual-level personality traits in public statements by Israel's leaders as focal actors in a complex adaptive system (the state of Israel)? Do these same statements articulate the public operational code beliefs of the Israeli state (Schafer 2000; Ozdamar, Haliştoprak and Young 2023)?

The prototypical operational code study of the Soviet Politburo as a focal actor of the Soviet state identified the sources of the answers to these questions in the thoughts, emotions, and motivations of politburo members (Leites 1951; 1953; 1964). They thought the political universe was very hostile (object appraisal), were fearful of annihilation (ego defense), and

were motivated by the pursuit of power and control (mediation of self-other relations) in world politics (George 1969; Walker 1983: 2003). We follow this prototypical example in identifying below the following three kinds of variables as potential answers to our three research questions regarding the sources of Israel's operational code:

- **Object Appraisal Variables.** To assess the effect of the external environment on operational code beliefs, we use the level of hostility in the form of terrorist actions (number of terrorist events and number of fatalities).
- **Ego Defense Variables.** To assess the influence of ego-defense personality characteristics on key operational code beliefs, we use two variables from the Leadership Trait Analysis research program, Distrust and Self-Confidence.
- **Self-Other Mediation Variables.** To assess the influence of self-other mediation personality variables on key operational code beliefs, we use two more Leadership Trait Analysis variables, Task (vs. Process) Orientation and Belief in Ability to Control events.

We shall use the Profiler Plus system of automated content analysis, in conjunction with the Operational Code Analysis (OCA) and Leadership Trait Analysis (LTA) dictionaries, to retrieve and construct indices for three operational code beliefs and the various personality characteristics associated with them in the public statements of the three Israeli leaders (Walker, Schafer, and Young 1998; Young 2001; Hermann 2003). The source for measuring the hostility of the external environment is the Global Terrorism Database (START – GTD 2021). The source for the public statements by Israel's leaders is the Psychological Characteristics of Leaders (PsyCL) data set (Schafer and Lambert 2022).¹ Our research design with hypotheses linking personality and environmental variables from these sources with data for Israel's key operational code variables follows.

Research Design

To investigate our research questions, we have constructed a data set using the quarter-year as the unit of analysis, meaning that values for the psychological and terrorism variables were calculated to the calendar quarter-year for each leader's time in office.² This allows for operational code beliefs to vary over time for each leader, in response to personality characteristics and to changes in the environment (terrorist activities). Our theory is that operational code beliefs – the way the actor sees the world and the self – will be affected by two broad categories of variables: terrorist activity and personality variables. Beliefs about others (P-1), the self's best strategies (I-1), and the self's perceived level of control vis-à-vis others (P-4) will be affected by (1) the severity of actions by terrorists, and (2) the actor's own personality characteristics.

¹ The PsyCL data set is publicly available and can be found at: <https://www.psycldataset.com/>.

² For Sharon, we have verbal material from 6/1/04 to 5/12/05; for Olmert, 1/26/06 to 12/3/09; and for Netanyahu, 4/29/09 to 12/29/16. This results in n=53 quarter years. The data is available at <https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/3DWGTC>.

The dependent variable in each of our models is one of our three operational code beliefs. Each of them is derived from the public comments made by the leader as the focal actor of the state. The methodology uses the now common at-a-distance approach to discerning some psychological characteristics of actors. The general idea is that what an actor says provides some insight into the actor's psychology. A simple example of this speech-to-personality approach is: when an actor declares the glass to be "half full," we understand that actor as more of an optimist than a pessimist. This method may be used to discern cognition, as done by operational code analysis, and to discern other personality-based psychological characteristics, as found in Hermann's (2003) LTA research program.

Our first operational code belief, P-1, is conceptualized as an aggregation of the actor's beliefs about other actors in the political world. Its focus is on how cooperative vs. conflictual the actor sees others. The operationalization is a ratio of the cooperative to conflictual verb phrases used by the actor to describe others in the political universe. It ranges from -1 (very conflictual) to +1 (very cooperative). I-1 is similar except that it uses cooperative and conflictual verb phrases by the actor which describe the self and the self's actions in the political universe. Again, the ratio can range from -1, where the actor sees him/herself as highly conflictual, to +1, where the actor sees him/herself as highly cooperative.³ P-4 assesses the actor's perceptions of control in the political universe. It is operationalized as a ratio of verb phrases where the self is undertaking the action to verb phrases where others are seen as taking the action. Higher scores indicate that the actor sees her/himself as taking more action; lower scores indicate that the actor sees the locus of control residing more with others. The variable ranges from 0 (low control) to 1 (high control) (Schafer and Walker 2006).

Data for the severity of terrorist actions against Israel, our first set of independent variables, come from the Global Terrorism Database (START – GTD 2021). We use two variables to represent different dimensions of terrorist actions. The first is the total number of terrorist attacks against Israel in the quarter-year. The second is the number of people killed by terrorist actions in Israel in the quarter-year. While these two variables represent different dimensions, they are also highly correlated, so in our models below, we include only one at a time. We anticipate that more severe levels of terrorist activity will affect actors' beliefs in a more conflictual direction, i.e. as the severity of terrorist actions increase, we expect to see lower (more conflictual) scores on both P-1 and I-1. We also expect that more severe terrorist actions will result in actors feeling lower levels of control over events (P-4).

As noted above, the personality variables on the independent side of the equation come from the LTA research program (Hermann, 2003) and are derived using verbal-based, at-a-distance methods. We include four personality variables across the two different personality categories discussed above, ego defense and self-other mediation. The first ego-defense variable is Distrust, which indicates the actor's level of wariness and suspicion of others in the political world. This variable, as all LTA variables do, ranges from 0 to 1, with lower scores indicating a more trusting personality, and higher scores indicating more wariness. We expect that higher scores on Distrust will result in lower scores on the two conflict-oriented beliefs,

³ For more extensive discussion of these operational code variables, see Schafer and Walker (2006).

P-1 and I-1. And, as the actor is wary of others and distrusting of them, we expect that actor to feel a lower sense of control (P-4). Our second ego-defense variable is Self-Confidence. This variable marks individuals who may overestimate their capabilities and their probabilities for success, thus leading us to expect high-confidence actors to have a higher sense of control (P-4). This overestimation may also often result in bravado and conflict escalation (see also Johnson 2009), hence, we expect Self-Confidence to have a negative effect on the actors' I-1 and P-1 beliefs.

Our two personality variables representing self-other mediation are Belief in Ability to Control Events and Task (vs. Process) Orientation. High scores on the former indicate an actor who believes s/he has a high level of control over the unfolding of events. Similar to our reasoning for those who exhibit overconfidence, we expect actors who have high control orientations to have more conflictual beliefs (lower scores on P-1 and I-1) and to have higher scores on their beliefs about control (P-4). High scores on the Task variable indicate an actor who tends to focus on accomplishment, getting things done, pushing things forward. We expect such actors to have higher scores on their beliefs about their level of control, P-4. Low scores on Task, however, indicate an actor who is more relationship and process oriented, caring more about relationships and team building than pushing to finish the next task. Therefore, we expect high scorers on Task (low on relationships) to have more hostile beliefs about self and others in the political universe (I-1 and P-1). This analysis leaves us with the following sets of hypotheses:

- **Object Appraisal Hypothesis.** As the severity of terrorist actions increases (in terms of: (1) number of terrorist attacks and (2) number of people killed in attacks), there will be a decrease in all three operational code variables, P-1, I-1, and P-4.
- **Ego Defense Hypothesis.** As Distrust increases, there will be a decrease in all three operational code variables, P-1, I-1, and P-4. As Self-Confidence increases, there will be a decrease in P-1 and I-1, and an increase in P-4.
- **Self-Other Mediation Hypothesis.** As Belief in Ability to Control Events increases, there will be a decrease in P-1 and I-1, and an increase in P-4. As Task vs. Process Orientation increases, there will be a decrease in P-1 and I-1 and an increase in P-4.

We shall conclude our analysis by examining how different combinations of our operational code beliefs (P-1, I-1, P-4) construct different foreign policy roles attributed to Self (Israel) as Ego and a generalized Other as Alter in the public statements of our three Israeli leaders (Sharon, Olmert, and Netanyahu).

Results

We begin by considering each of our three dependent variables (operational code beliefs) in turn, starting with the first philosophical index (P-1). The results can be seen in Table 1. As noted above, each model includes only one of the variables assessing the severity of terrorist attacks, with the first model including the number of attacks and the second including the number of people killed in the attacks. The four personality variables are in each model. Looking first

at the terrorist variables in Table 1, we see that neither is significant. It is not the case that the number of terrorist acts or the number of people killed had any significant statistical effect on the actors' beliefs about others in the political universe. We do note, however, that Number Killed has the correctly anticipated direction of association (more people killed by terrorists results in more hostile beliefs about others) and approaches significance with a p-value of less than .2.

Two of the personality variables -- both of which are in our category of ego defense variables -- on the other hand, have significant statistical effects. The higher the level of Distrust in a leader, the more conflictual are his beliefs about others. And, the higher the actor's level of Self-Confidence, the more conflictual are his beliefs about others. Both of those are as hypothesized and both are highly significant in each model in Table 1. But, while the signs for our two self-other-mediation variables (Control and Task (vs. Process) orientation) are in the hypothesized direction, neither approaches statistical significance. Overall, both models do a good job at predicting the variance in P-1, with adjusted R²s of .56 and .574, respectively.

Table 1. Explaining Differences in P-1: Beliefs about Others*

	Model 1	Model 2
Number of Attacks	0.0002	
	<.001	
Number Killed		-0.002
		0.002
Distrust	-1.587***	-1.34***
	0.277	0.239
Self Confidence	-0.677***	-0.575***
	0.229	0.196
Control	-0.246	-0.334
	0.312	0.3
Task (vs. Process)	-0.107	-0.028
	0.171	0.167
Observations	50	50
R2	0.605	0.618
Adjusted R2	0.56	0.574
Residual Std. Error	0.081(df = 44.0)	0.079(df = 44.0)
F Statistic	13.494***(df = 5.0; 44.0)	14.227***(df = 5.0; 44.0)
Note:		
* p<0.1		
** p<0.05		
***p<0.01		
* The first number in the table for each independent variable is the OLS regression coefficient for that variable; the number below the coefficient is the standard error.		

Our second dependent variable is I-1 in the operational code, which is a conflict-cooperation indicator of the actor's beliefs about his own strategies and tactics, lower numbers indicating that the actor sees more utility with conflictual actions and higher numbers indicating more utility with cooperative actions. The results can be seen in Table 2. In these two models, the two terrorist-severity variables are statistically significant in the expected direction. In Model 1, as the number of terrorist attacks in the quarter-year increased, the actor's beliefs about tactics and strategies became more conflictual, and that result is highly statistically significant. And, in Model 2, as more people were killed by terrorists, the actor's beliefs about the self's actions became more hostile.

Table 2. Explaining Differences in I-1: Beliefs about Self's Actions*

	Model 1	Model 2
Number of Attacks	-0.001**	
	<-0.001	
Number Killed		-0.004*
		0.002
Distrust	-0.916***	-1.064***
	0.299	0.263
Self Confidence	-0.098	-0.295
	0.247	0.216
Control	-0.173	-0.091
	0.336	0.33
Task (vs. Process)	-0.242	-0.258
	0.185	0.184
Observations	50	50
R2	0.48	0.475
Adjusted R2	0.421	0.415
Residual Std. Error	0.087(df = 44.0)	0.087(df = 44.0)
F Statistic	8.114***(df = 5.0; 44.0)	7.948***(df = 5.0; 44.0)
Note:		
* p<0.1		
** p<0.05		
***p<0.01		
* The first number in the table for each independent variable is the OLS regression coefficient for that variable; the number below the coefficient is the standard error.		

In terms of the personality variables, only Distrust is statistically significant. Higher levels of Distrust result in more hostile beliefs about the self's actions. Distrust is highly significant in both models in Table 2. Two other personality variables approach significance ($p<.20$) in our models in the expected directions, though our confidence in these, of course, is lower. Task (vs. Process) orientation has a weak negative effect in both models, meaning

that as the actor’s Task orientation goes up (and, therefore, his process/people orientation goes down), his beliefs about strategies become more conflictual. Self-confidence is somewhat related to I-1 in the anticipated negative direction in Model 1 in Table 2. This mirrors, albeit weakly, the conflict-cooperation relationship seen in Table 1 with this variable: the more self-confident the actor is, the more hostile are his beliefs about strategies. These models also explain a large amount of the variance in the dependent variable -- over 40% each -- as seen in the adjusted R²s.

Table 3. Explaining Differences in P-4: Beliefs about the Locus of Control*

	Model 1	Model 2
Number of Attacks	-0.0001	
	<.001	
Number Killed		-0.0001
		0.001
Distrust	-0.218*	-0.265**
	0.116	0.103
Self Confidence	0.186*	0.152*
	0.096	0.084
Control	0.239*	0.259*
	0.131	0.129
Task (vs. Process)	0.147**	0.135*
	0.072	0.072
Observations	50	50
R2	0.357	0.35
Adjusted R2	0.284	0.276
Residual Std. Error	0.034(df = 44.0)	0.034(df = 44.0)
F Statistic	4.893***(df = 5.0; 44.0)	4.742***(df = 5.0; 44.0)
Note:		
* p<0.1		
** p<0.05		
***p<0.01		
* The first number in the table for each independent variable is the OLS regression coefficient for that variable; the number below the coefficient is the standard error.		

We turn now to our final dependent variable in the study: P-4, the actors’ beliefs about where the locus of control is, with higher numbers indicating that the actor sees the self as more in control and lower numbers indicating that the actor sees others as having more control. The results are presented in Table 3. The severity of terrorist attacks had no discernible statistical effect on the actors’ beliefs about who has more control in the political universe. Though both coefficients show the anticipated level of importance (more terrorist actions leads to less

control), neither approaches significance. It is not the case that as terrorism activity increases Israeli actors feel less in control.

It is the case, however, that the actors' underlying personality characteristics are good predictors of their beliefs about the locus of control. In both models, Distrust is significant in the expected direction: higher levels of Distrust result in a sense of less control over political matters. Higher Self-Confidence – also significant in both models -- results in a higher belief about the self's level of control. The actor's level of Belief in his Ability to Control Events (BACE) is significant and positive, as expected, in both models. Finally, Task (vs. Process) is significant in both models; those who are more Task focused are more likely to feel in control.

Taken together, there are some clear patterns in our results. First, while there was some support for our hypothesis regarding the effect of terrorist attacks, it was relatively modest. For instance, it was not the case that the severity of terrorist attacks affected how the Israeli actors viewed other actors in the political universe (P-1) or their sense of control over politics (P-4). Those results are surprising. We hypothesized that more terrorist activities would cause the actors to see the world in more hostile terms, and to feel less control over events, but neither of those ideas was supported. It may be that Israel's history affects the expectations of the actors in such a way that they are not surprised about terrorist attacks, and therefore their beliefs about others and their level of control is not notably affected.

It is a somewhat different story when it comes to I-1, the actor's beliefs about their own strategies and tactics. As terrorist actions increase, both in terms of number of attacks and number of people killed, the Israeli leaders' beliefs about their own strategies and tactics become more hostile. While it appears to be the case that terrorist actions do not affect Israeli actors' perceptions of others and the nature of politics, they do cause the leaders to shift their beliefs, so as to become more conflict-oriented through their own actions.

Our broad expectation that leaders' personality characteristics will affect their operational code beliefs is largely supported in our results, though some personality characteristics had more of an effect than others. Distrust was by far the most important independent variable in our results. It was found to be significant in all six models, and highly significant in five of them, always in the expected direction. Leaders who are more distrusting are likely to see other actors as more hostile, to prefer more aggressive policies themselves, and to feel less control over politics in general. Self-Confidence affects actors' views of others: those who are more confident tend to see others as more hostile. It also affects actors' perceptions of the locus of control: more confident actors think they have more control. Both Distrust and Self-Confidence are in our ego-defense category of personality variables, and those clearly had more of an effect than the variables in our self-other category.

Though Belief in Ability to Control Events and Task Orientation, our two variables in the self-other category, were less powerful predictors of our operational code beliefs, they still had statistically significant effects, and were always in the hypothesized direction. Their most important contributions were for the P-4 dependent variable. Both BACE and Task positively affect P-4; as each increases, the actor's perception of the self's historical control increases as well. Each of these two variables had a negative effect on the two conflict-cooperation op

code beliefs; as the actor’s belief in their level of control and their focus on Task (vs. Process and People) increased, their beliefs tended toward conflict, though those variables only at best approached statistical significance in the models for P-1 and I-1.

The results of our analysis suggest that cognitive and extra-cognitive characteristics of an agent are related in a way that is coherent and consistent. The personality variables are linked to key operational code variables at a statistical level of significance which is also substantively significant. These patterns emerge at a higher level of aggregation when the identity of the state’s leader is not considered. The state is conceptualized as a complex adaptive system (Holland 2014) which generates an operational code of foreign policy roles expressed by a focal actor from the interaction of its elements (individuals, groups, and organizations). The next steps along this research path can be advanced by first making theoretical progress in linking patterns of foreign policy decisions and international relations of cooperation and conflict across differing levels of analysis in world politics (Schafer and Walker 2021).

Operational Code Beliefs and Foreign Policy Roles

Toward that end, we offer binary role theory as a candidate for exploring this link, by generating models with hypotheses about potential linkages. Binary role theory identifies four families of roles enacted by states in world politics: as friend, partner, rival, and enemy. A *role* is identified by the strategy enacted by an agent as Ego in interaction with another agent as Alter in a role dyad. The signature strategies that identify different roles include bandwagoning (friend), appeasement (partner), balancing (rival), and hegemony (enemy), which binary role theory specifies in terms of 2 x 2 ordinal game theory models. We differentiate the four roles by their respective highest-ranked preferences (4 = highest to 1 = lowest) for the different outcomes from Ego and Alter interactions in a 2 x 2 game model, as shown by the example in Figure 1 (Marfleet and Walker 2006; 2021; Walker, He and Feng 2021).

The numbers in the cells of the game matrices in Figure 1 are the rankings (4 highest to 1 lowest) for the row player (Ego) regarding the four possible outcomes of mutual cooperation (+,+), mutual conflict (-, -), domination by one player and submission by the other player (-, +) or (+, -). Players who enact a partner role rank mutual cooperation (+,+) highest while players who enact a rival role rank mutual conflict (-,-) highest. Players who enact a friend role rank alignment (+,-) highest while players who enact an enemy role rank domination (-,+). Ego ranks (+, +) highest while Alter ranks (+, -) highest in this example.

Figure 1. Roles in Binary Role Theory*

		Alter	
		CO+	CF-
Ego	CO+	4, <u>3</u> (+,+)	1,4 (+,-)
	CF-	2,1 (-,+)	<u>3,2</u> * (-,-)

*Cooperate (CO+); Conflict (CF-). The dominant strategy by Alter and the nonmyopic solutions to the game are underlined. A myopic solution to the game is asterisked. Ego’s Role: Partner; Alter’s Role: Enemy.

Ego and Alter as the two players in these game models have two choices: cooperate (CO+) or conflict (CF-), as shown by the game matrix in Figure 1. Different strategies of cooperation or conflict specify the roles enacted in a game. A dominant strategy of cooperation (always choose cooperation) enacts a role of friend, while a dominant strategy of conflict (always choose conflict) enacts a role of enemy. Conditional strategies of cooperation or conflict enact roles of partner or rival, respectively, following the rule of reciprocity in which a player initiates and reciprocates cooperation as a partner, or initiates and reciprocates conflict as a rival.

In the game shown in Figure 1, Alter 's enemy role has a dominant strategy of conflict while Ego's partner role enacts a strategy of conditional cooperation. Alter has a dominant strategy of conflict: if Ego chooses cooperation, Alter will choose conflict (4) rather than cooperation (3); if Ego chooses conflict (-), then Alter will still choose conflict (2) rather than cooperation (1). In contrast, Ego has a conditional strategy of cooperation (+): if Alter chooses cooperation, then: Ego will choose cooperation (4) rather than conflict (2); however, if Alter chooses conflict, then Ego will choose conflict (3) rather than cooperation (1).

These strategies are signature strategies for the different roles of friend or enemy (dominant strategies) and partner or rival (conditional strategies), which may be qualified by different "initial states." For example, Alter will enact a conditional strategy of cooperation by choosing "move" from the initial state of mutual conflict (3,2) to (2,1) in Figure 1, because Ego will then reciprocate and choose "move" from (2,1) to (4,3) as a nonmyopic solution to the game where both players are better off (4,3) vs. (3,2). Conversely, Ego will not choose "move" from (3,2), because Alter will not reciprocate and choose "move" from (1,4) to (4,3).

Is it possible to infer from a focal actor's key operational code beliefs (I-1, P-1, P-4) the propensity to select and enact one role rather than another? One analytical strategy is to see if a leader is more or less likely than another leader to enact a role for Self (Ego) or attribute a role for Other (Alter). The three Israeli prime ministers in this paper have I-1, P-1, and P-4 scores shown in Table 4, which also shows mean and standard deviation scores for 130 leaders from different geographical regions and historical eras in the PsyCL data set (Schafer and Lambert 2022). The scores for the three Israeli leaders are within one standard deviation above or below the average leader scores, except for Sharon's P-4 score (.27), which is more than one standard deviation higher than the average leader's score.

This pattern indicates that conditional strategies of cooperation or conflict are likely to be enacted by Israeli leaders and attributed to others in the political universe by the three Israeli prime ministers. Netanyahu is likely to enact a Partner role as Ego while attributing a Rival role to Alter, because his I-1 score is higher than the average leader and his P-1 score is below the average leader. In contrast, Olmert is likely to enact a Rival role as Ego and attribute a Partner role to Alter, because his I-1 score is lower and P-1 score is higher than the average leader. Both leaders attribute symmetrical historical control to Ego and Alter with P-4 scores that are within one standard deviation of the average world leader. Sharon

is likely to enact a Strong Partner role as Ego and attribute a Weak Partner role to Alter with I-1 and P-1 scores above the average world leader and a P-4 score more than one standard deviation above the average world leader.⁴

The games of strategic interaction specified by these roles for each Israeli leader also appear in Table 4. The role games for Netanyahu and Olmert show a Partner role with a strategy of conditional cooperation for Netanyahu as Ego, and a Rival role of conditional conflict for Olmert as Ego. A strategy of conditional conflict is attributed to Alter as a Rival by Netanyahu; a conditional cooperation strategy as a Partner is attributed to Alter by Olmert. The solutions to these games show an oscillating pattern of strategic interaction between mutual cooperation (+,+) and mutual conflict for the Netanyahu and Olmert games while there is a convergent pattern of strategic interaction toward mutual cooperation (+,+) in Sharon’s game. Sharon’s Ego role of Patron (Strong Partner) is enacted by a conditional strategy of cooperation, while Alter’s role of Weak Partner (Client) is enacted by a dominant strategy of cooperation.

Table 4. The Operational Codes and Role Games for Israeli Prime Ministers*

VICS Index	Netanyahu (2009-2016)	Olmert (2006-2009)	Sharon (2004-2005)	World Leaders (N = 130)
I-1	.54	.52	.57	.53 (.16)
P-1	.25	.37	.39	.34 (.12)
P-4	.25	.23	.27	.19 (.07)
Ego	+, =	-, =	+, >	±, =
Alter	-, =	+, =	+, <	±, =

Alter		Alter		Alter		Four Cells	
+	-	+	-	+	-	+	-
+ <u>4,3*</u>	1,2	+ <u>3,4*</u>	1,2	+ <u>4,4*</u>	1,1	+ 0 1	
Ego - 2,1	<u>3,4*</u>	Ego 2,1	<u>4,3*</u>	Ego 3,3	2,2	- 3 2	
-							
Netanyahu Game		Olmert Game		Sharon Game		Four States	
Partner, Rival		Rival, Partner		Patron, Client		0 = (+ +); 1 = (+ -)	
**[0100] *[1011]		**[1110] [0001]		**[0100] [0001]		2 = (- -); 3 = (- +)	

*Nonmyopic solutions are underlined and myopic solutions are asterisked for each game.

**The numbers in brackets refer to each player’s next move (0 = cooperate; 1 = conflict) from each cell as an ‘initial state’ for each game. The numbers inside the brackets for each cell are listed clockwise from the upper-left cell to the lower-left cell.

Although the operational codes of all three Israeli leaders show that they prefer to enact roles of conditional cooperation or conflict, this continuity is qualified by Netanyahu’s more hostile view of a political universe populated by rivals rather than partners. Olmert’s

⁴ The derivation rules from binary role theory to identify these roles are in Appendix 1.

Rival role for Israel also deviates from the Partner roles favored by Netanyahu and Sharon. Sharon's Strong Partner role as a Patron is also slightly different than Netanyahu's Partner role. Do these disparities make a difference? Are Israel's strategies of cooperation or conflict likely to exhibit continuity over time, as the Sharon government (2004-2005) is succeeded first by the Olmert government (2006-2009) and then by the Netanyahu government (2009-2016)? Would an Olmert or Sharon government response to the October 2023 terrorist attack by Hamas been different than the Netanyahu government's all-out invasion of Gaza?

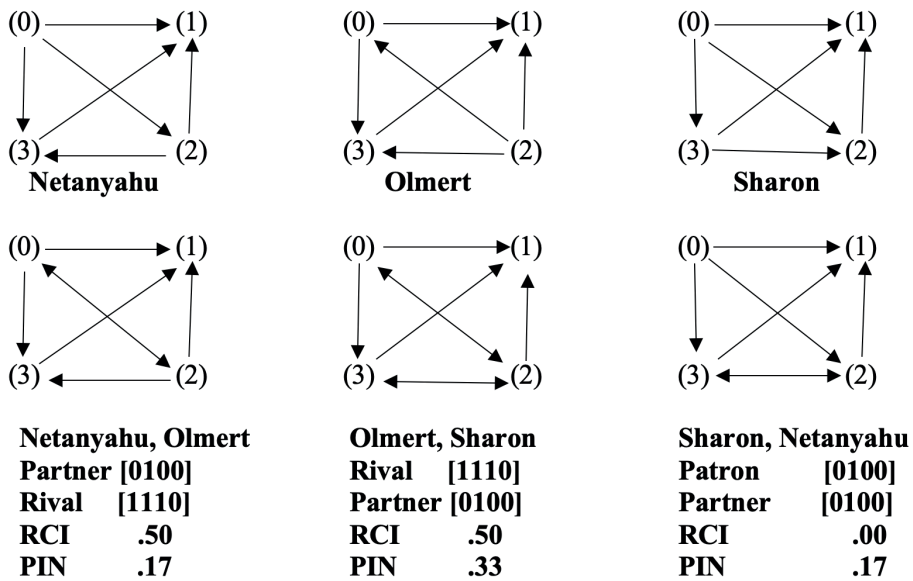
These questions raise issues associated with the limits of counterfactual analysis. As Tetlock and Belkin (1996: 16) remind us, "the tape of history only runs once." Unless we are able to model the Hamas-Israel situation well enough to get the same pattern as the tape of history and then substitute the operational code of first one leader and then the other into the model, any answers to this question are likely to be approximate. An indirect approach is to compare the differences in their respective operational codes and infer from the differences whether they are likely to impact Israel's response to the Hamas terrorist attack. The digraphs of role contestation in Figure 2 specify these differences. The Role Contestation (RCI) Index and the PIN (Power/ Identity/National Interest) index in Figure 2 show exactly how each leader's roles for Ego and Alter differ from one another regarding the moves by Ego and Alter, and rankings for the different outcomes of the role games that define their general operational codes (Malici and Walker 2017: 185-188; Walker and Malici 2021).

We conclude by inferring from the comparisons across models that Prime Minister Netanyahu is likely to respond to a Hamas attack more aggressively than the other two leaders. It is a relatively weak inference based on his more hostile role of Rival attributed to Alter compared to the Partner roles assigned to Alter by Olmert and Sharon. The analysis in the top half of Figure 2 shows that the rankings for the different outcomes (cells) with roles for Israel of mutual cooperation (+,+) as a Partner, alignment (+,-) as a Friend, mutual conflict (-,-) as a Rival, and domination (-,+) as an Enemy are nearly identical. The PIN indices of role contestation regarding outcomes are relatively low, ranging between .17 and .33, which indicates that they are not congruent (do not match up) and so match up only one out of six (.17) or two out of six (.33) times.

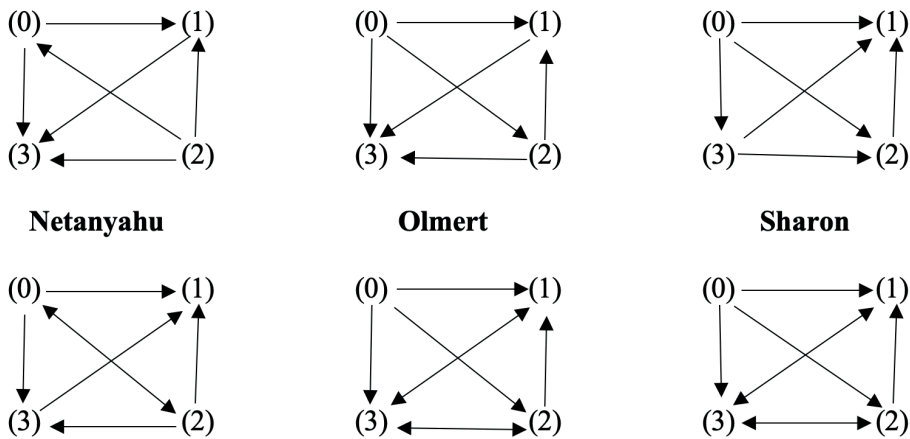
The differences in role contestation between the Israeli leaders regarding next moves from each of the four cells are more dramatic. The level of role contestation in the top half of Figure 3 regarding next moves by Israel rises to .50 between Olmert and either Netanyahu and Sharon while dropping to .00 between Sharon and Netanyahu. Olmert is more likely than either Netanyahu or Sharon to choose "move" from mutual cooperation (+,+) to domination (-,+). Olmert is less likely to choose "move" from mutual conflict (-,-) toward mutual cooperation (+,+) than Sharon and Netanyahu. All three leaders are likely to choose "move" from domination (-,+) as an "initial state" to mutual cooperation (+,+).

Figure 2. Role Contestation Patterns between Israeli Prime Ministers*

Role Contestation between Prime Ministers over Ego's Role



Role Contestation between Israeli Prime Ministers over Alter's Role



Netanyahu, Olmert	Olmert, Sharon	Sharon, Netanyahu
Rival [1011]	Rival [0001]	Client [0001]
Partner [0001]	Client [0001]	Rival [1011]
RCI .50	RCI .00	RCI .50
PIN .17	PIN .33	PIN .33

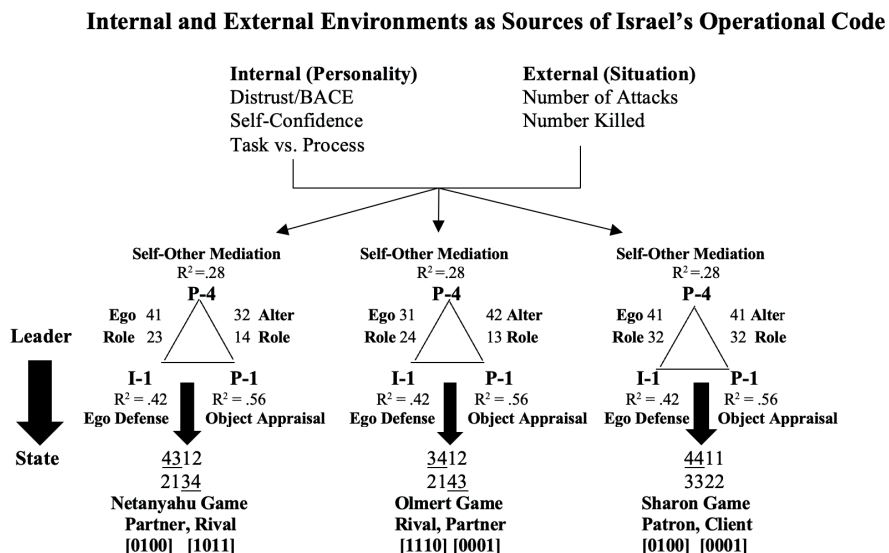
*Role Contestation Index (RCI) over next moves is calculated as 1 minus C where C = the number of cells that match up between a pair of bracketed role algorithms. PIN index of role contestation over outcomes is calculated as 1 minus C where C = the number of arrows that match up between a pair of digraphs. The nodes of the digraphs are the four cells of a 2 x 2 game linked by arrows going in the same direction or in opposite directions.

The role contestation patterns among the three Israeli prime ministers regarding the next moves of Alter are in the bottom half of Figure 2. They show no contestation between Olmert and Sharon (RCI = .00), as they agree that Alter will choose cooperation as a Partner or Client from any cell except domination (-,+), by Israel as an “initial state.” Netanyahu agrees with the other two PM’s that Alter as either a Rival or a Partner will choose cooperation from (+,-) and conflict from (-,+), as the next move from these “initial states.” However, he disagrees with both Olmert and Sharon that Alter as a Rival will choose cooperation as the next move from either (+,+) or (-,-) as an “initial state.” Therefore, Netanyahu will respond more aggressively to a Hamas attack from (-, -) as a *military* deadlock than the other two leaders, even though he and Sharon are more willing to initiate cooperation from an initial state of *diplomatic* deadlock (-,-).

Conclusion

A summary of the theoretical and empirical results from our binary role theory analysis is in Figure 3. It models the emergence of the role games expressed in the public statements of the three Israeli leaders, and generated from the interactions between internal or external sources and the operational code beliefs of Israel as a complex adaptive system (Schafer and Walker 2021; Holland 2014; Simon 1969). Steps for future research include testing the following empirical links between the games modeled by the role selection processes in Figure 3 and Israel’s role enactment strategies of actual cooperation and conflict behavior in the Middle East.

Figure 3. Individual Leaders and the State: Israel as a Complex Adaptive System*



* The leader’s personality traits and the situation’s objects influence a leader’s key operational code beliefs (I-1, P-1, P-4), which define the roles of Ego for Self and Alter for Other as a complex adaptive system (cas). Internal/external sources and R^2 statistics are from Tables 1-3; role games and algorithms are from Table 4. Roles are specified as Ego and Alter and then combined to construct the role games for each leader (see Appendix 1). Nonmyopic equilibrium solutions for each game are underlined, and the algorithms for each game are in brackets.

- See if the patterns at the state level between beliefs and personality traits remain constant and links between beliefs and foreign policy behaviors remain robust at lower levels of aggregation such as role dyads rather than reflecting the general environment.
- Extend the analysis of these patterns over time and different levels of foreign policy behavior (strategies, tactics, and moves) to identify belief change (learning) and social change (adaptation or transition) in Israel's foreign policy roles across time, issues, and leaders.
- Expand the study to other actors and broader samples. This is particularly important, given that some of the findings here may be idiosyncratic to Israel's history. For example, it may be unique to the Israeli case that as others increase violence toward Israel, it has no effect on their beliefs toward others or their level of control (though the Hamas violence did appear to affect their beliefs about their own strategies).

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Notes

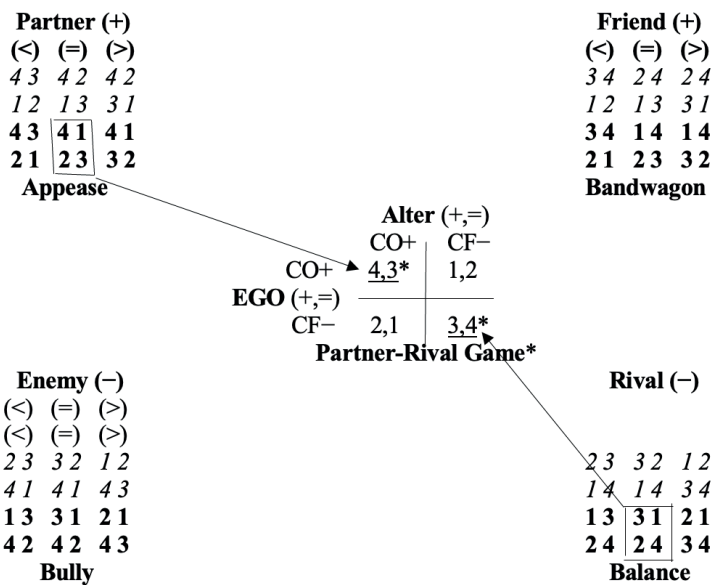
Revised and expanded version of a paper presented at the Annual Meeting of the International Studies Association, Nashville, TN, March 28-April 2, 2022.

Appendix 1. Taxonomy of Role Dyads Identified by Binary Role Theory

The combinations of twenty-four roles in Figure A.1 exhaust the possible role dyads specified by binary role theory. Each pair represents a set of possible role combinations differentiated by variations in their distributions of power and interests. The variations within these families of roles can specify social power games between Ego and Alter under different power and interest distributions, either identified by an outside observer or extracted from the operational code beliefs of the agents in role dyads. These variations identify the ranked preferences of Ego and Alter for the different outcomes of 2 x 2 games of cooperation (+) and conflict (-) between Ego and Alter and the different power relations (<, =, >) and secondary(+) or vital(-) national interests constituted with each set of preferences (Walker and Malici 2011; Malici and Walker 2017).

The strategies in Figure A.1 are grouped by highest-ranked outcome into the four families of roles associated with the different possible outcomes in the cells of a 2 x 2 ordinal game of cooperation and conflict (Rapoport and Guyer 1966; Brams 1994; Malici and Walker 2017). The example in the center of Figure A.1 shows the ranked preferences for Ego as the Row player and Alter as the Column player with equal power and vital interests, extracted from the family of Partner roles for Ego in the upper left corner of the figure, and from the family of Rival roles for Alter in the lower right corner of the figure. The ranked preferences have the same logic for the Column player (not shown) as for the Row player shown in each family, but the entries into some of the cells are reversed, e.g., for Alter’s role of Rival in the Partner-Rival game in Figure A.1 (Malici and Walker 2017: 185-188).

Figure A.1. Binary Role Theory with Partner-Rival Game Example**



*Preferences for game outcomes are ranked from 4 (highest) to 1 (lowest) for each player. Myopic (Nash) solutions are asterisked while the nonmyopic (Brams) solution is underlined.

**The taxonomies of preference rankings for each role show rankings for different combinations of power (<, =, >) and national interests (secondary in italics and vital in bold). The cells of the preference rankings are shown for Ego in each family of roles and are reversed for Alter.