Fratricidal Coercion in Modern War

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Dartmouth College

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summary

we study how intentional violence, threats, intimidation against one's own soldiers shapes their combat behavior

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theory: more coercion $\rightarrow$ more conformity

- less under-performance
- less over-performance
- and much higher casualties
- on aggregate: more coercion $\rightarrow$ less likely to win war

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evidence:
- sub-national evidence from Soviet Army in WWII:
  100+ million military, secret police personnel records
- cross-national evidence from battle-, war-level data:
  526 battles, 75 wars, 185 belligerents, 1939-2011

how does fratricidal coercion shape combat resolve?

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fratricidal coercion = intentional, extrajudicial violence and intimidation by government authorities against their own soldiers in wartime

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how does fratricidal coercion shape combat resolve?

combat resolve = soldiers' willingness to endure hardships &
risk personal safety in battle

how does fratricidal coercion shape combat resolve?

combat resolve = soldiers' willingness to endure hardships & risk personal safety in battle

low resolve

or

high resolve

how does fratricidal coercion shape combat resolve?

how does fratricidal coercion shape combat resolve?

answering this question will help us understand:

in **international relations**	in **political science**, broadly
microfoundations of military power	microfoundations of state capacity
how states generate military effort from unwilling populations	when coercion can substitute for voluntary compliance
why some armies fight effectively while others collapse	why monitoring and enforcement can undermine performance
how institutional choices shape strategic outcomes	how extrajudicial violence shapes state authority
sources of bargaining leverage	limits of coercive governance

fratricidal coercion is empirically common

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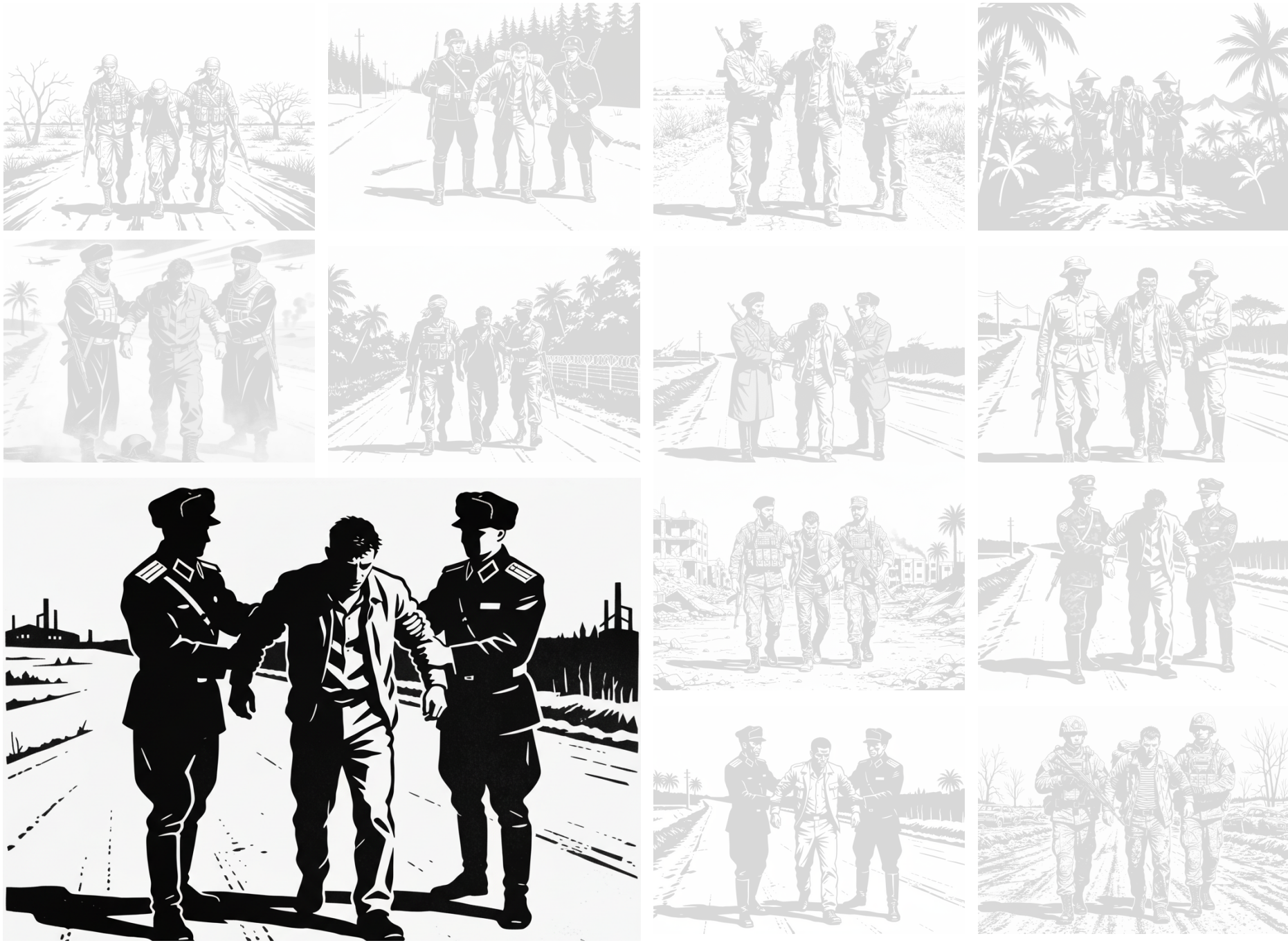
$^1/_3$ of armies in wars since 1800 have used "blocking units"









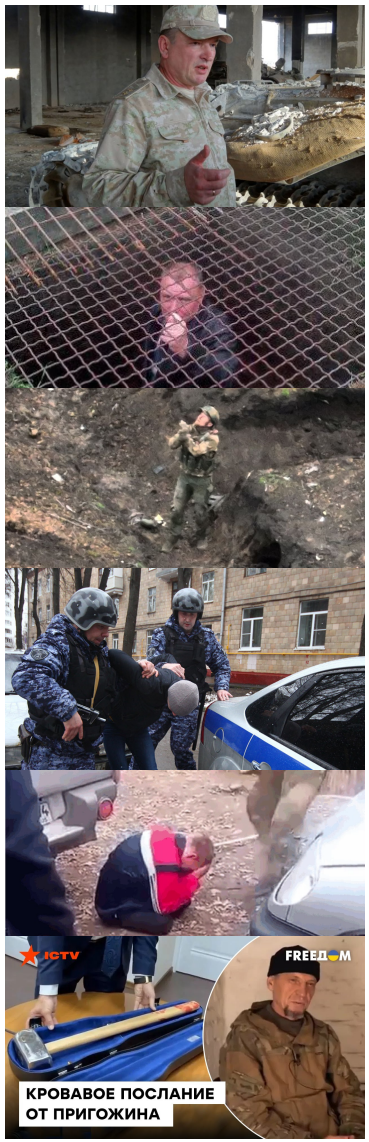









fratricidal coercion in practice / Russia's war on Ukraine



general threatens retreating conscripts with pistol
(Svatove, October 2022)

detaining deserters, refuseniks in open-air prisons
(vicinity of Donets'k, April 2023)

shelling of surrendering troops by mortar
(near Bakhmut, June 2023)

100s of conscripts arrested for desertion
(New York Times, April 2023)

commanders execute soldiers who refuse to fight
(New York Times, December 2025)

execution of returned POW by sledgehammer
(Wagner PMC, November 2022)

research on combat resolve neglects coercion

leading explanations of combat motivation include:

pecuniary incentives: Grossman 1991; Lichbach 1998; Weinstein 2007; Berkovich 2017; Hall, Huff and Kuriwaki 2019

ideology & nationalism: Lynn 1984; Posen 1993; Levi 1997; Lynn 2003; Reiter 2007; Castillo 2014; Barber IV and Miller 2019

group loyalties: Marshall 1947; Shils and Janowitz 1948; Stouffer et al. 1949; Moskos 1975; Henderson 1985; Costa and Kahn 2003

status competition: Ager, Bursztyn and Voth 2022

court-martial discipline: Chen 2025

pre-war ethnic discrimination: Lyall 2020

pre-war political repression: Rozenas, Talibova & Zhukov 2023

past research / explaining combat motivation

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open empirical question:

can states intimidate or force unwilling soldiers to fight?

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open empirical question:

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outline

theory / fratricidal coercion and combat resolve
- theoretical model
- observable implications

empirical test 1 / NKVD and Soviet soldiers in WWII
- data
- results

empirical test 2 / cross-national battle data, 1939-2011
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discussion
- alternative explanations
- summary and implications

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theory / fratricidal coercion and combat resolve

theoretical prediction: **coercion** $\rightarrow$ **conformity**

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`conformity` = adherence to homogeneous standard of behavior by actors with heterogeneous preferences (Bernheim, 1994; Benabou and Tirole, 2003)

theory / fratricidal coercion and combat resolve

low
combat resolve

high
combat resolve

info

theory / fratricidal coercion and combat resolve

low
combat resolve

average soldier's
intrinsic motivation

high
combat resolve

info

theory / fratricidal coercion and combat resolve

low combat resolve

average soldier's intrinsic motivation

high combat resolve

action ordered by commanders ("Advance!")

info

theory / fratricidal coercion and combat resolve

low combat resolve

minimally acceptable action ("Hold!")

average soldier's intrinsic motivation

action ordered by commanders ("Advance!")

high combat resolve

info

theory / fratricidal coercion and combat resolve

low combat resolve

average soldier's intrinsic motivation

high combat resolve

minimally acceptable action

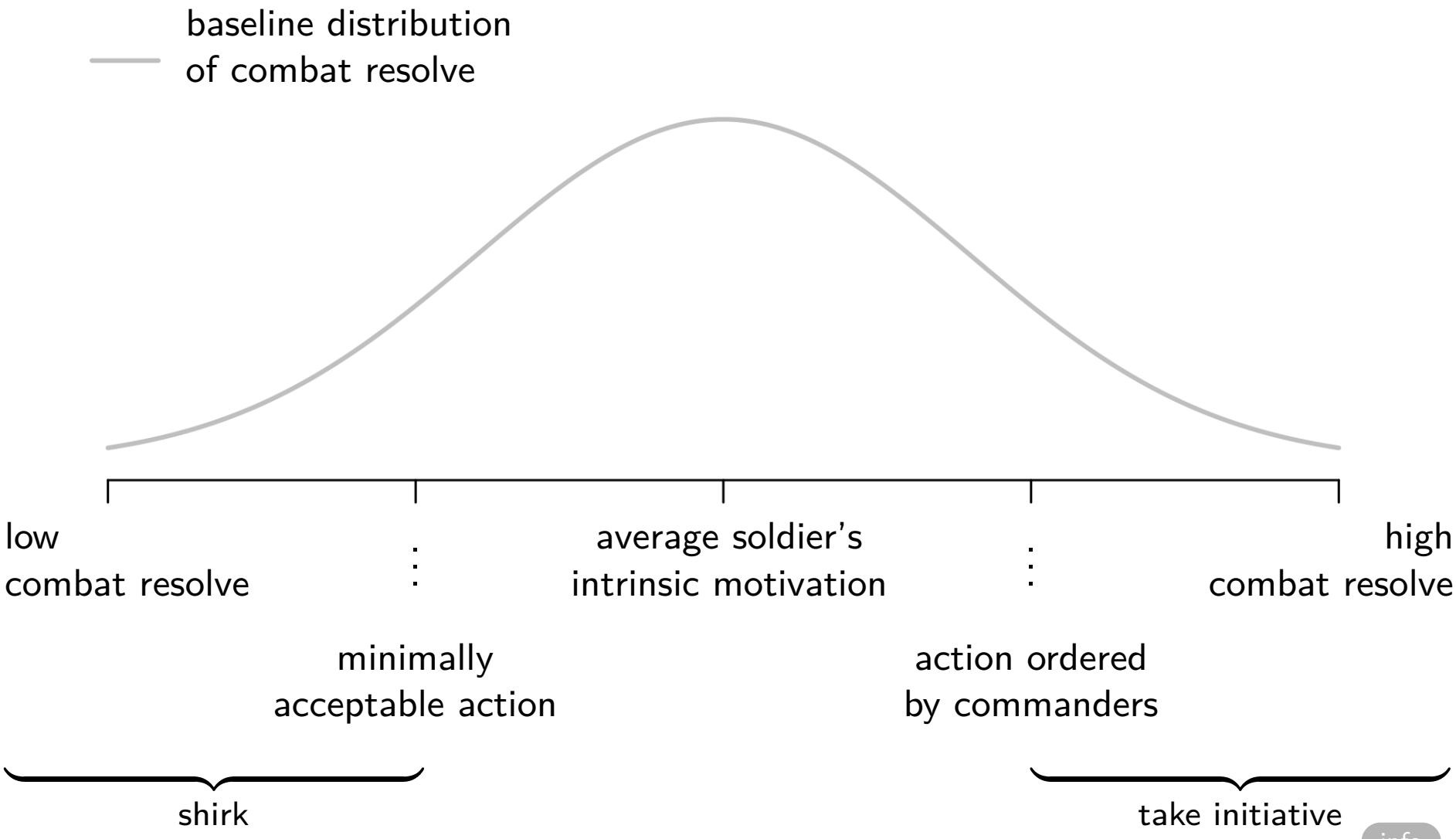
action ordered by commanders

shirk

take initiative

info

theory / fratricidal coercion and combat resolve



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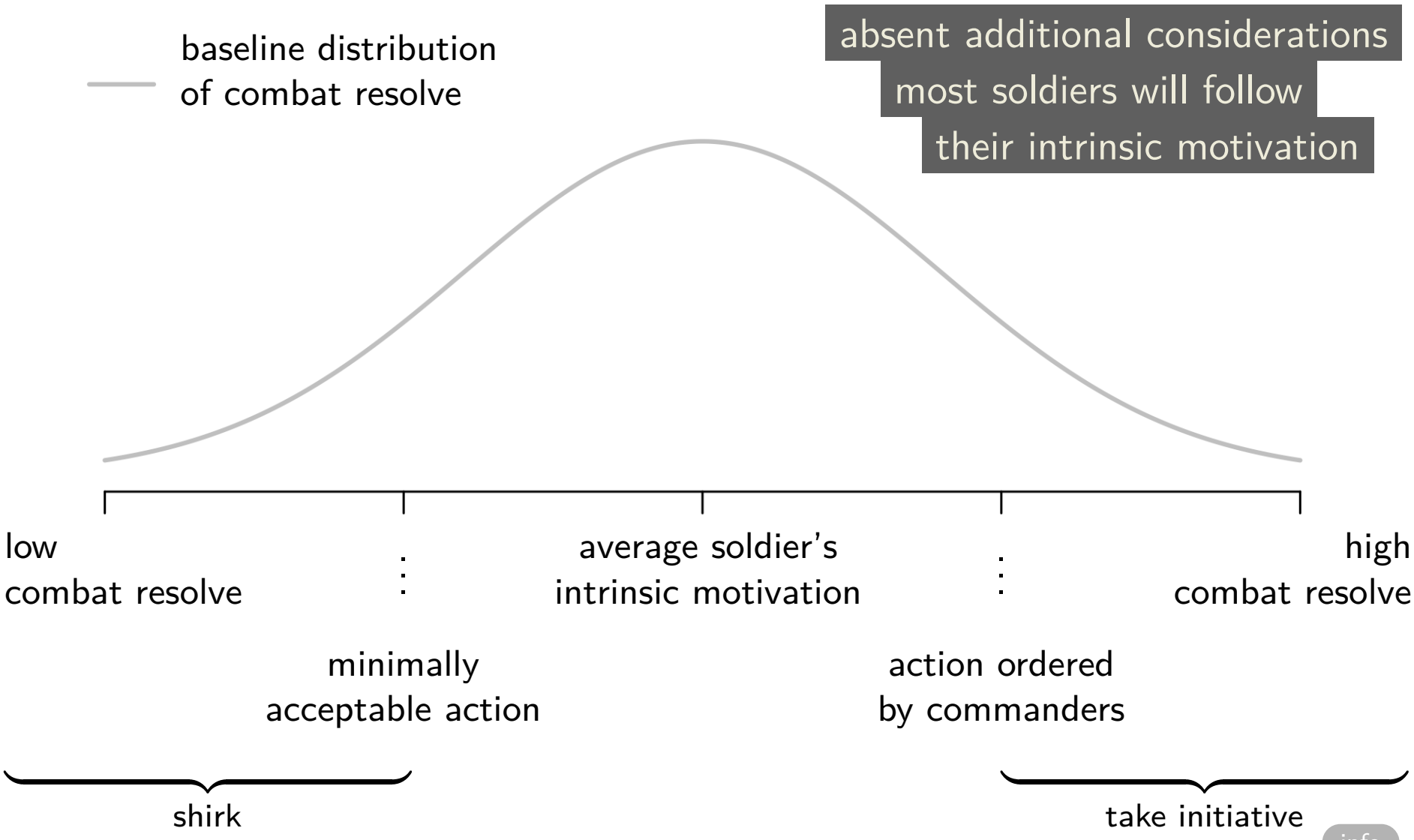
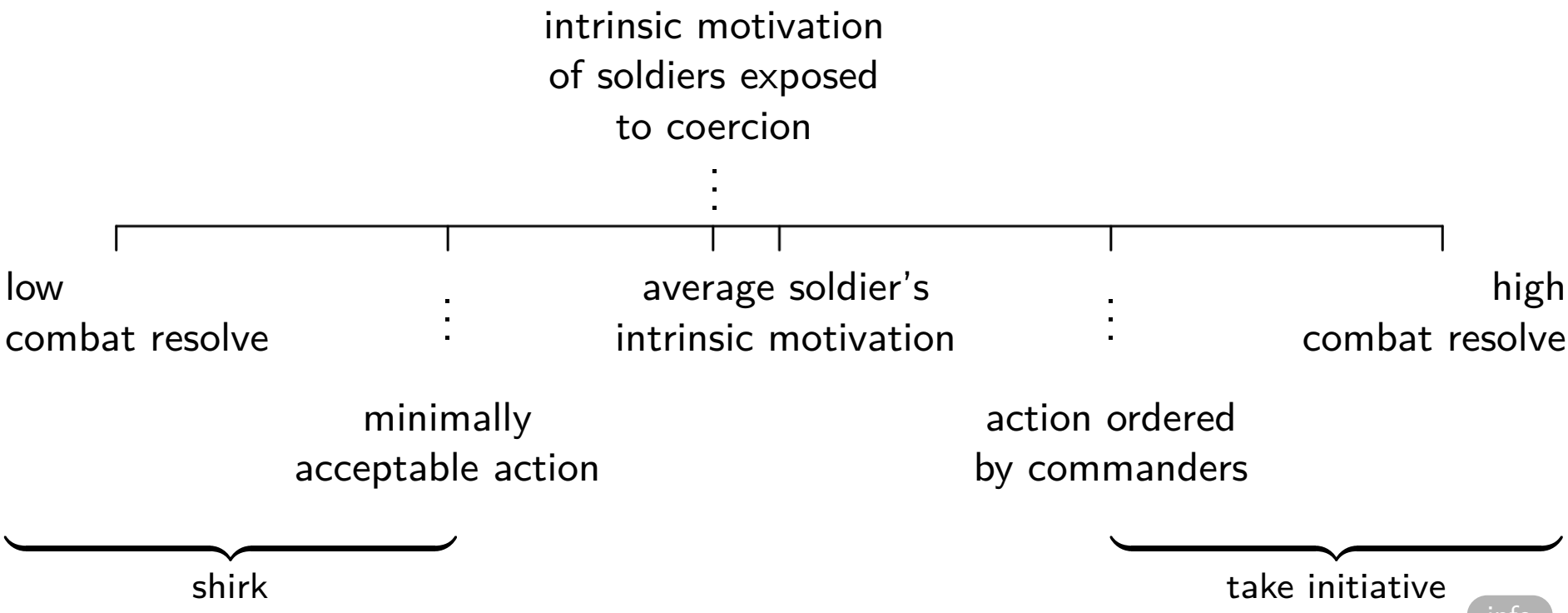


theory / fratricidal coercion and combat resolve

now let's suppose

soldiers exposed to **coercion**

are less motivated to fight



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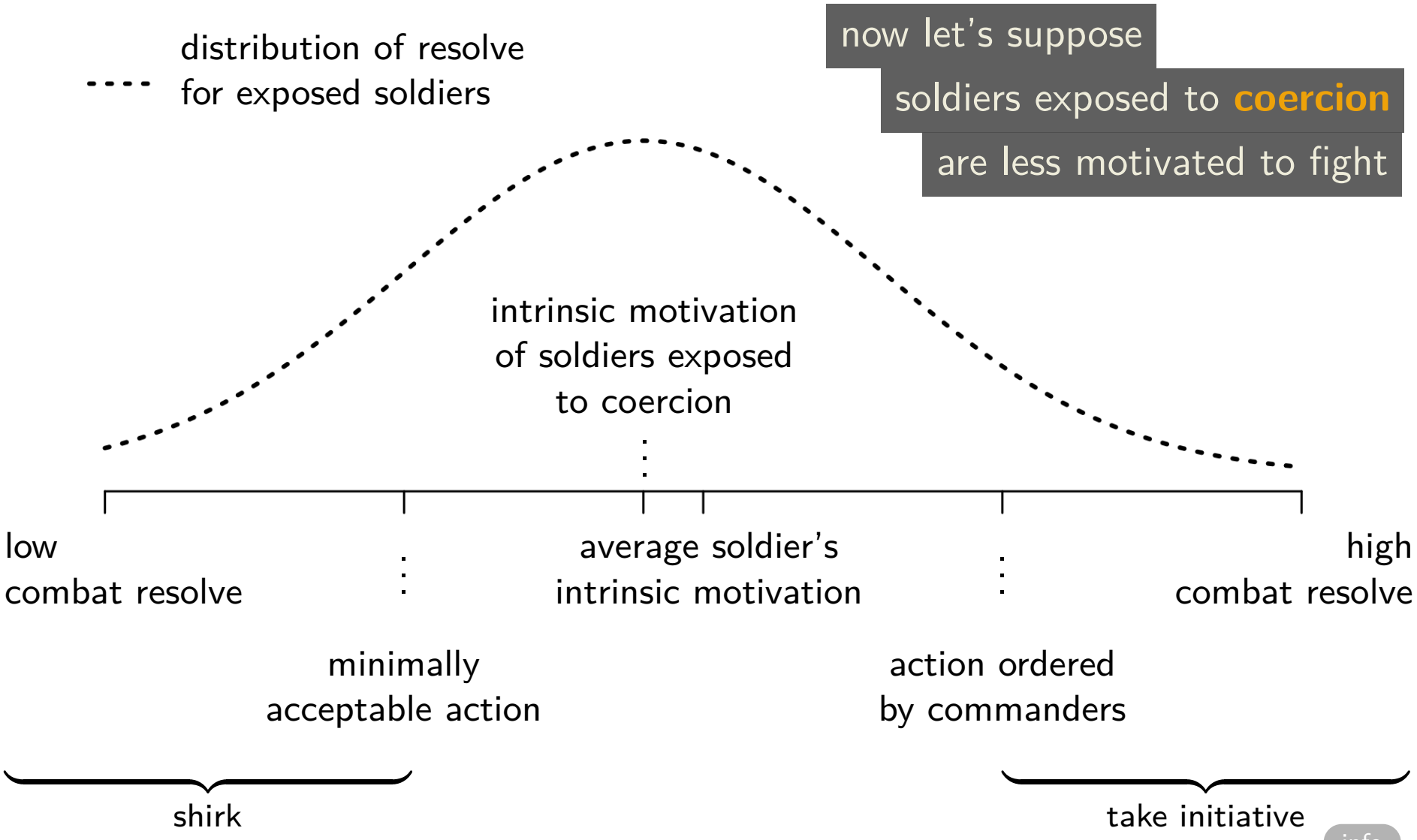

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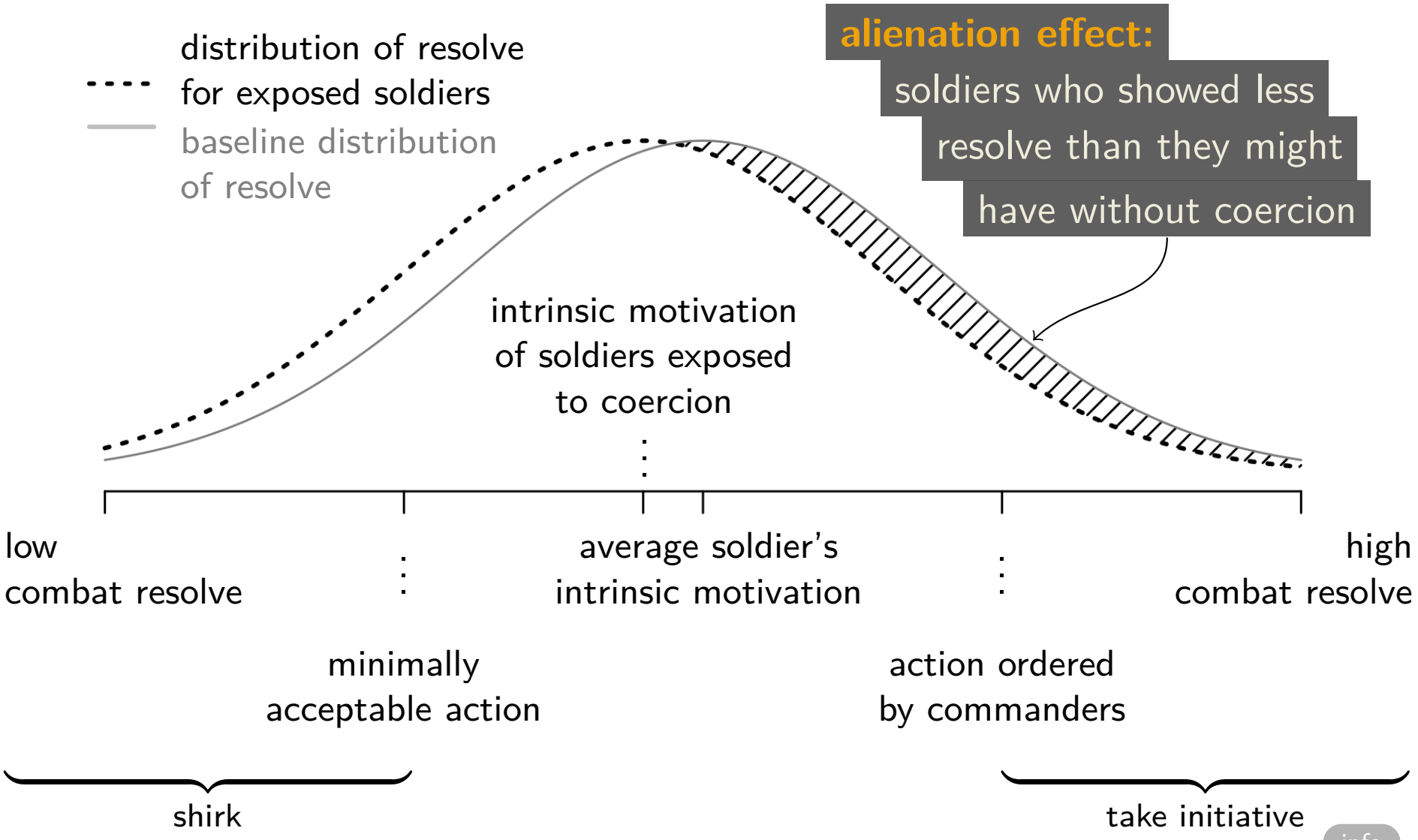

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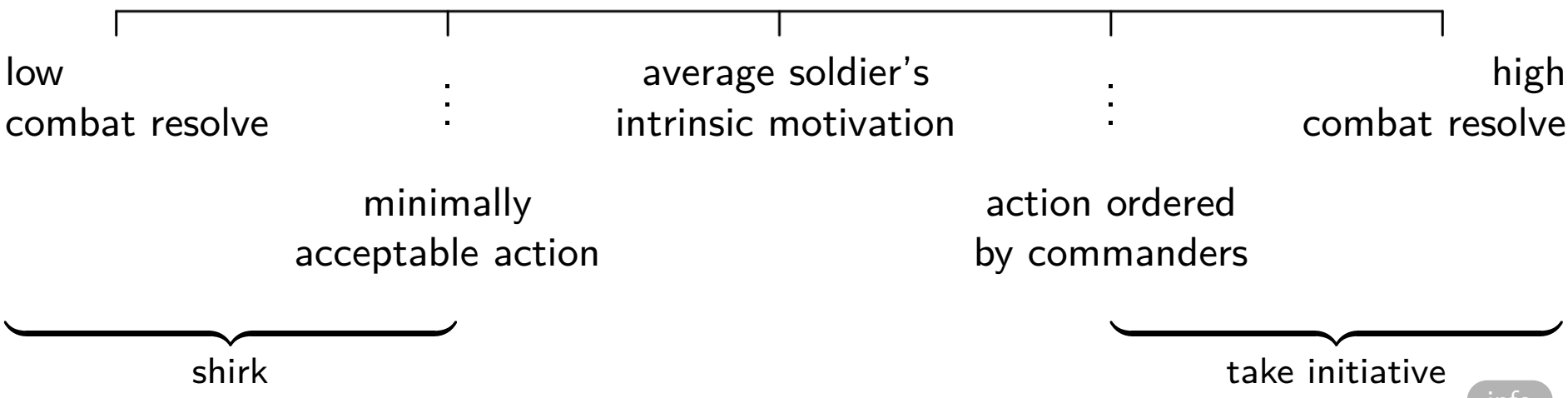
theory / fratricidal coercion and combat resolve

but what if soldiers expect
to pay an extrinsic cost
for under-performance?



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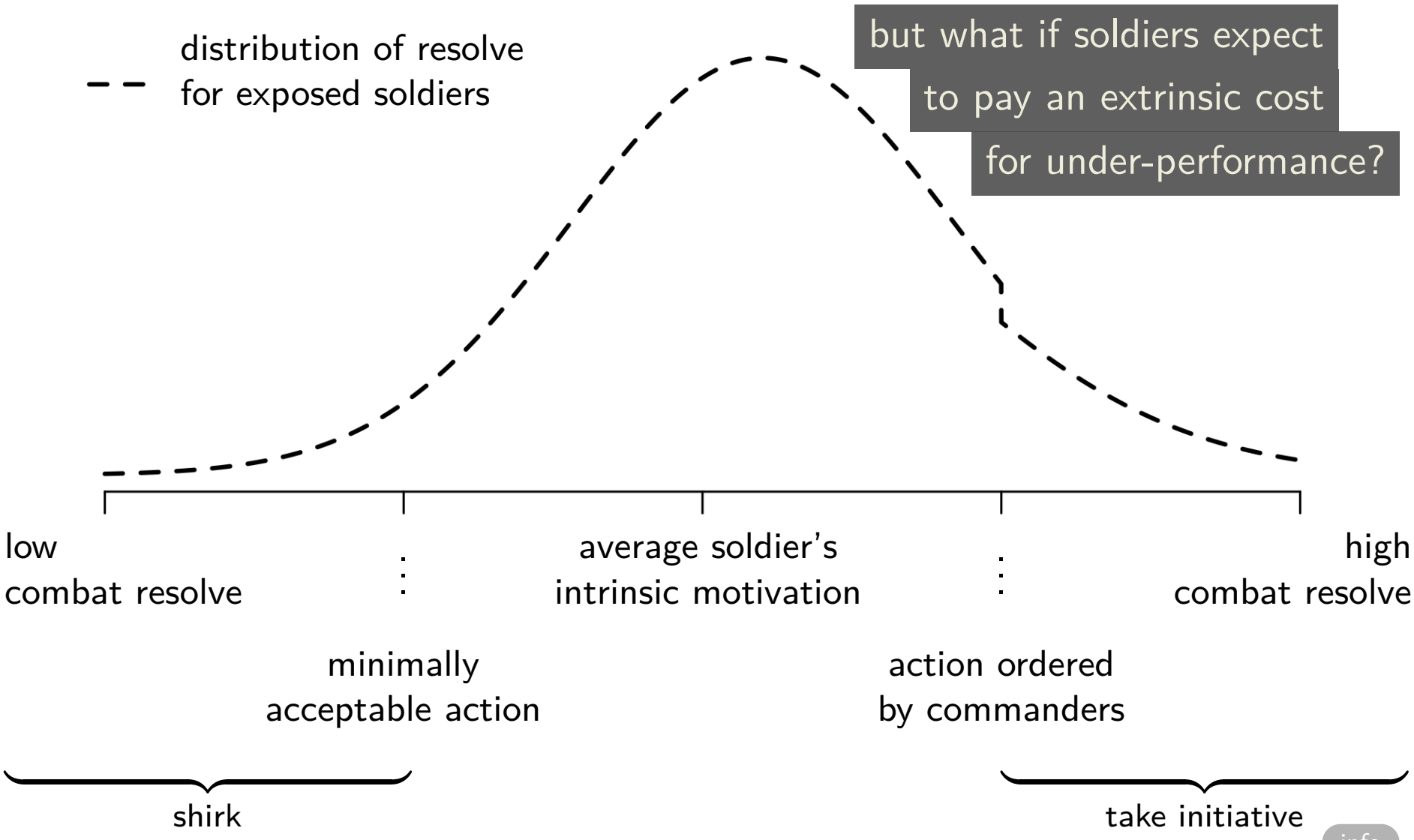

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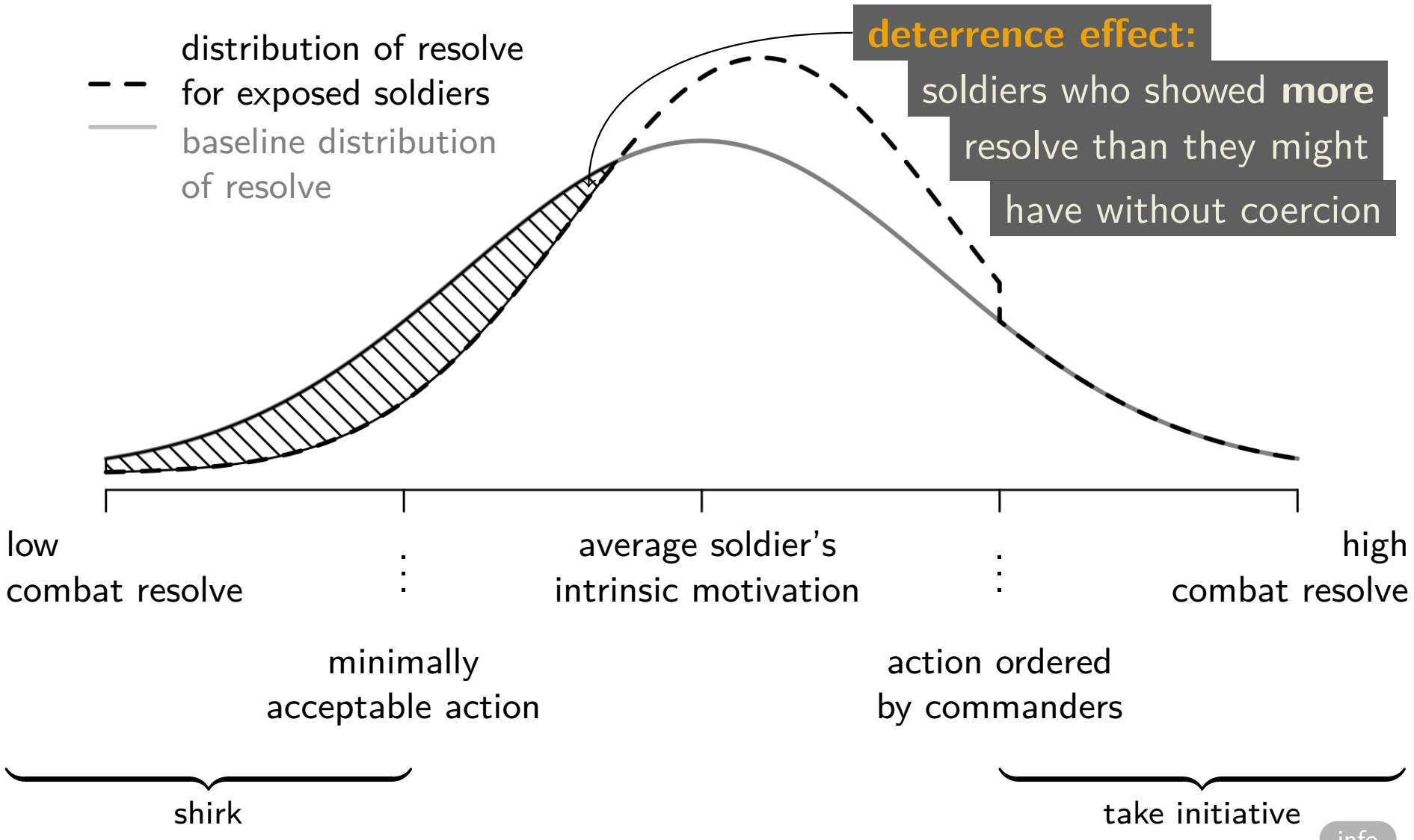

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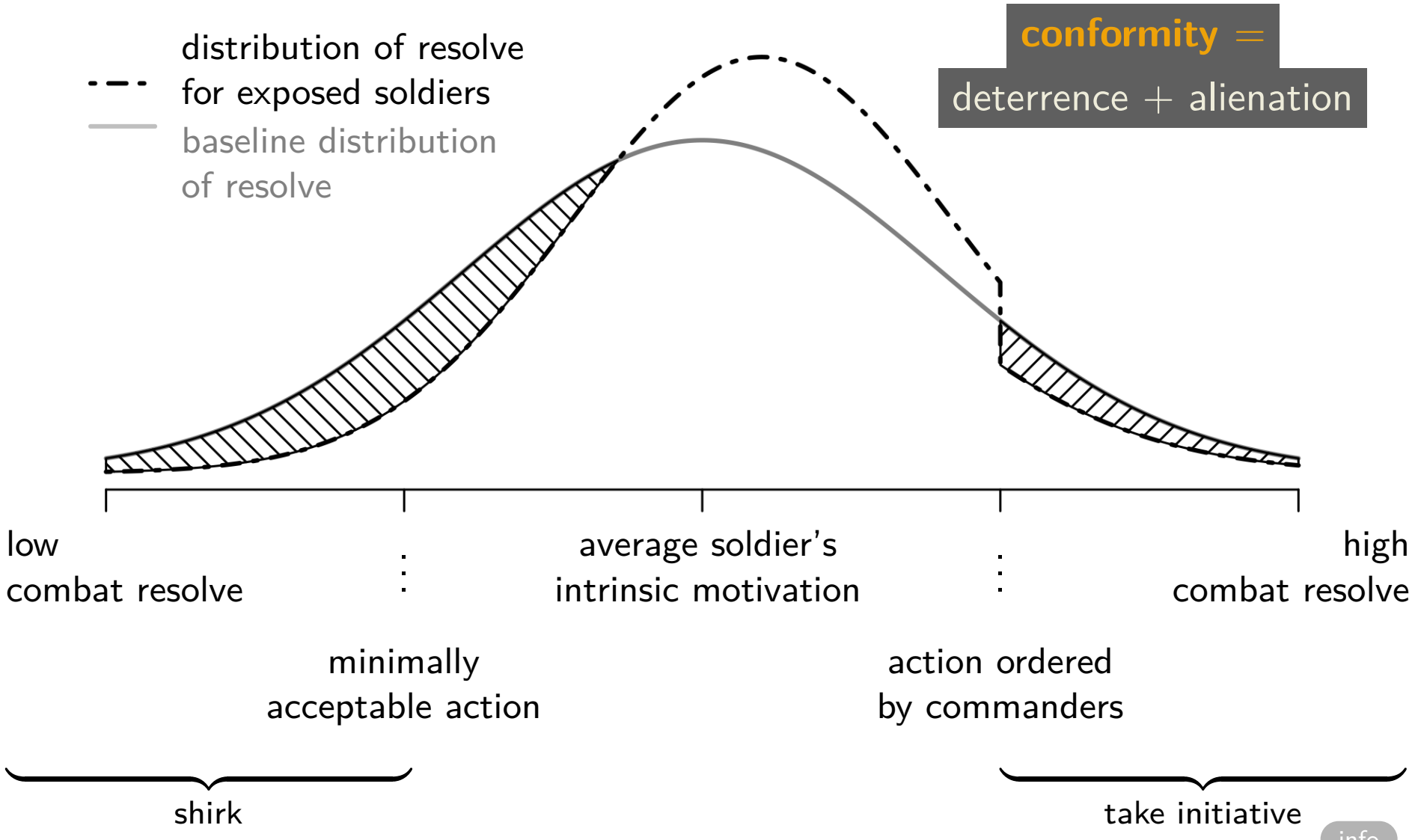

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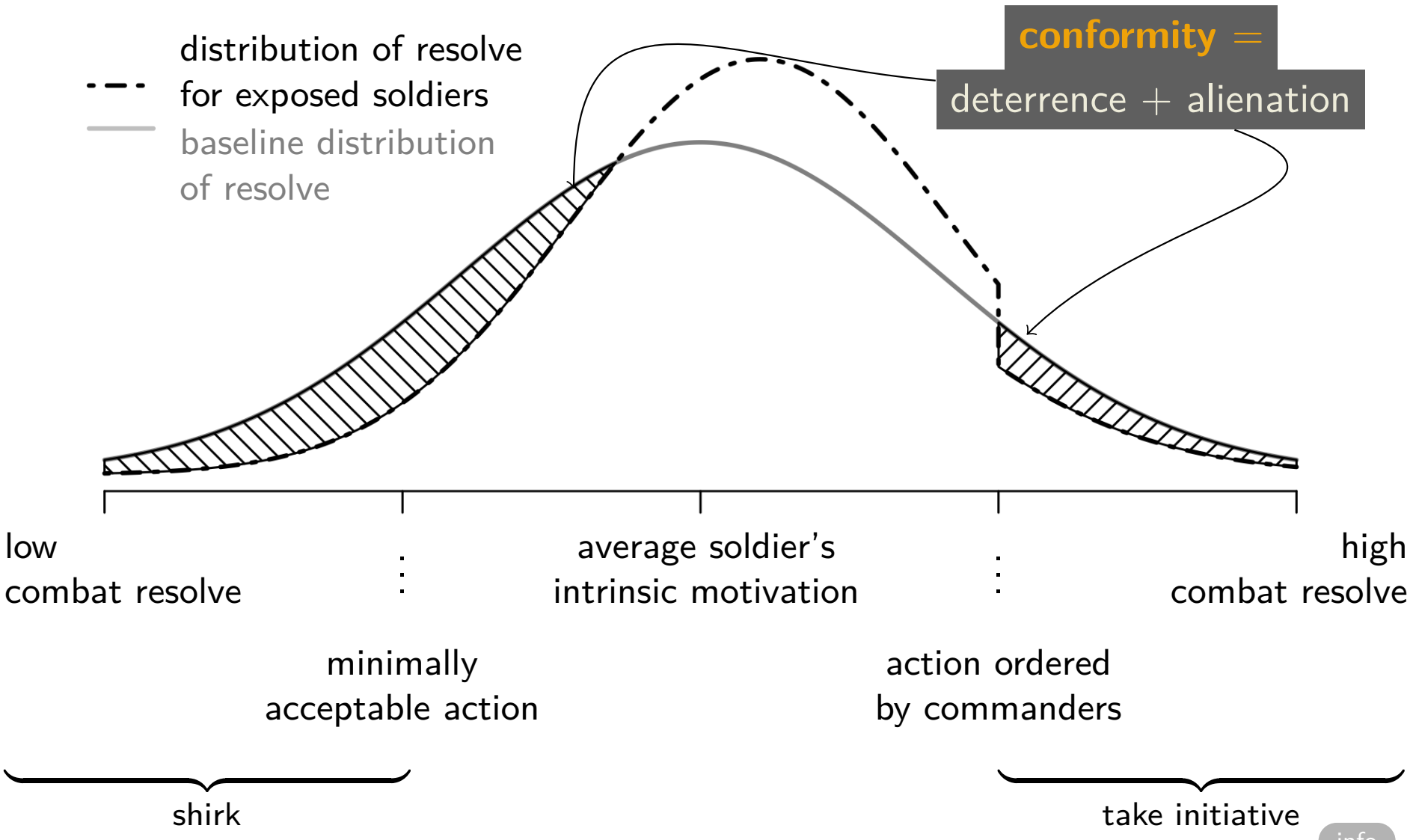

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theoretical prediction: coercion → conformity

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coercion increases effort by less-motivated soldiers (deterrence)
but decreases effort by highly-motivated soldiers (alienation)

(i.e. density of combat resolve has higher mean, lower variance)

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observable implications

as soldiers' exposure to coercion increases, they should become

- more likely to follow orders
- less likely to shirk
- less likely to take initiative

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empirical test 1 / NKVD and Soviet soldiers in WWII

Great Patriotic War, 1941-1945

- Germany attacks USSR 6/1941
- all military-age Soviet males mobilized to fight in Red Army
- 30M new recruits

17.9M civilian deaths

11.2M irrecoverable military losses

- 60% combat deaths
- 40% POW, MIA, deserters

empirical test 1 / NKVD and Soviet soldiers in WWII

fratricidal coercion

- extreme measures to stop flight

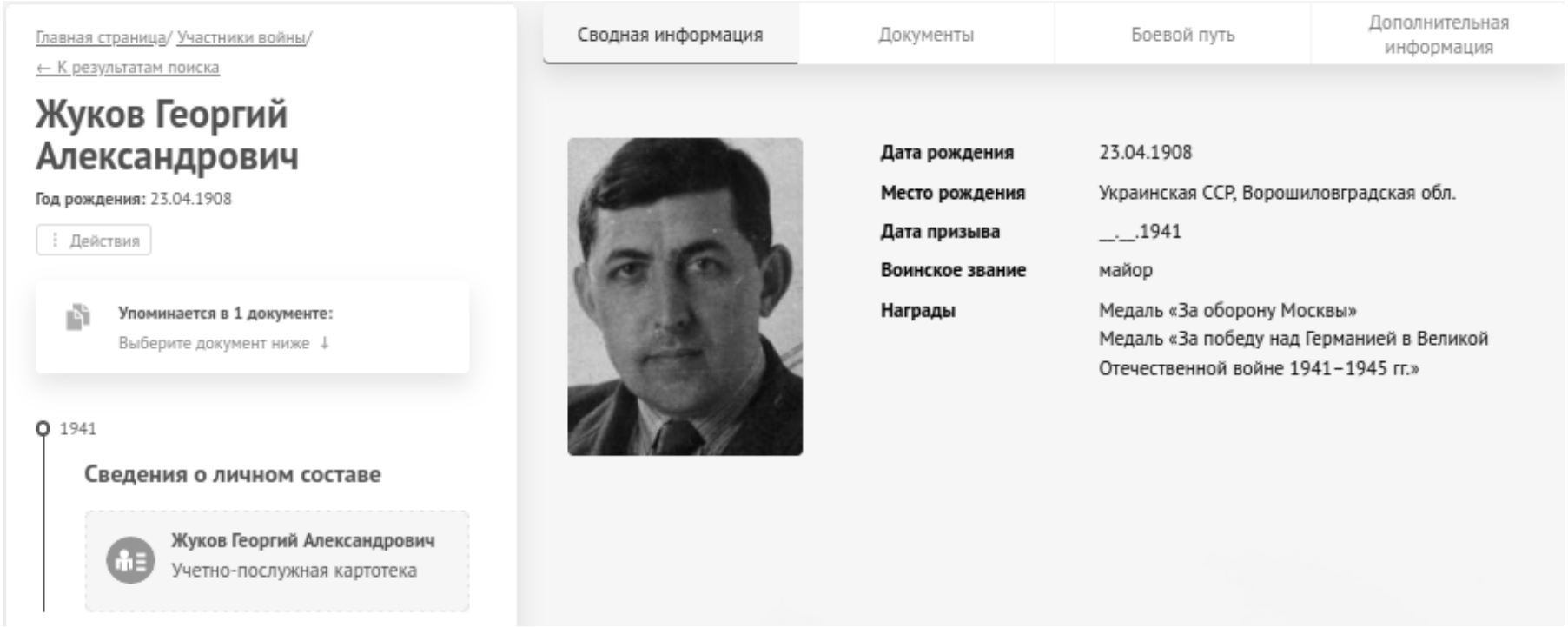
orders 270 (8/1941), 227 (7/1942)

- surrender = treason
- families of POWs to be arrested
- blocking units in each army

NKVD (secret police) special sections

- authorized to arrest, execute deserters, stragglers
- in charge of blocking units

empirical test 1 / data on Soviet soldiers



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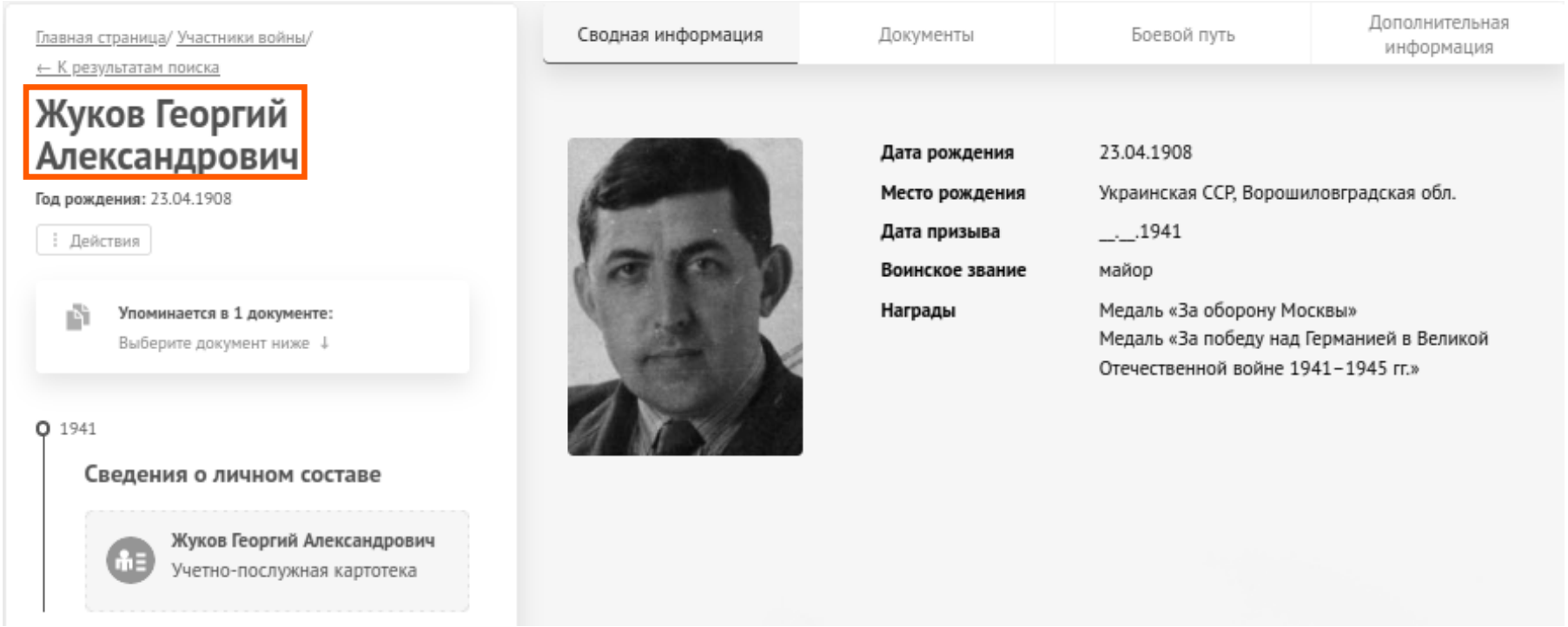

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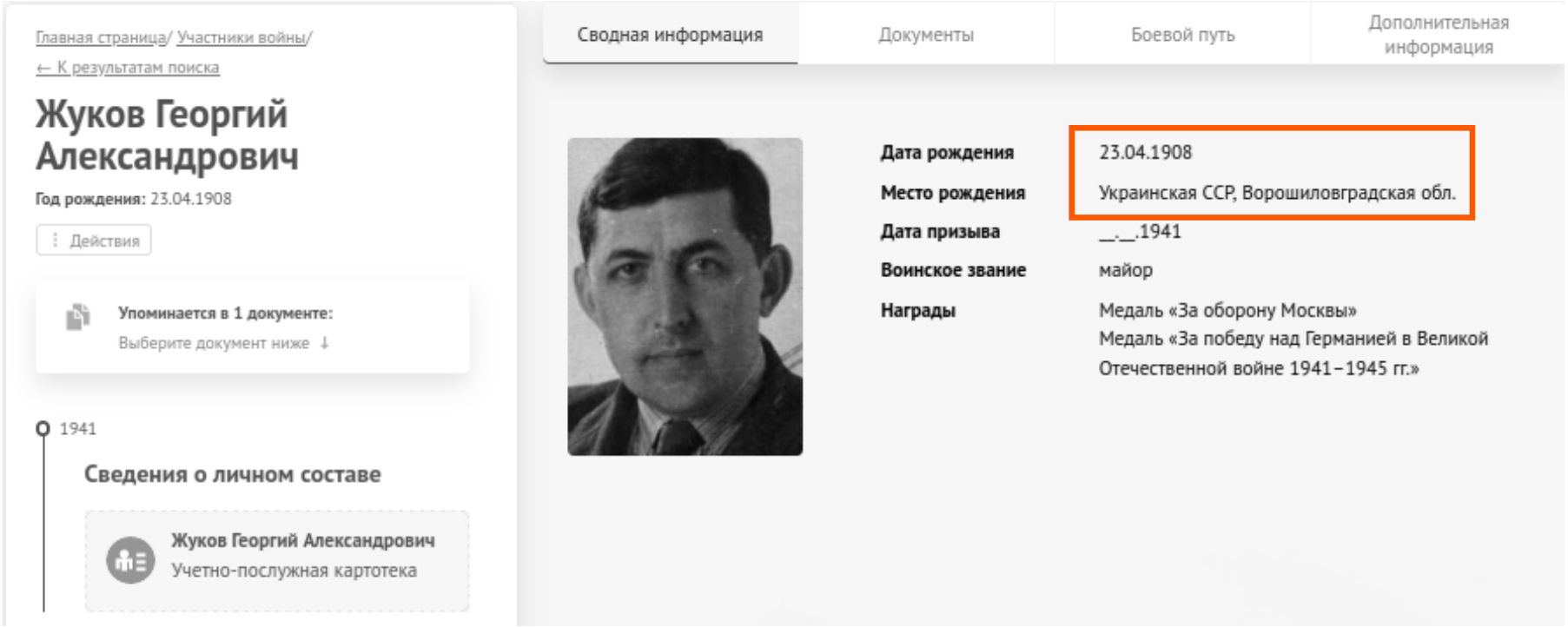

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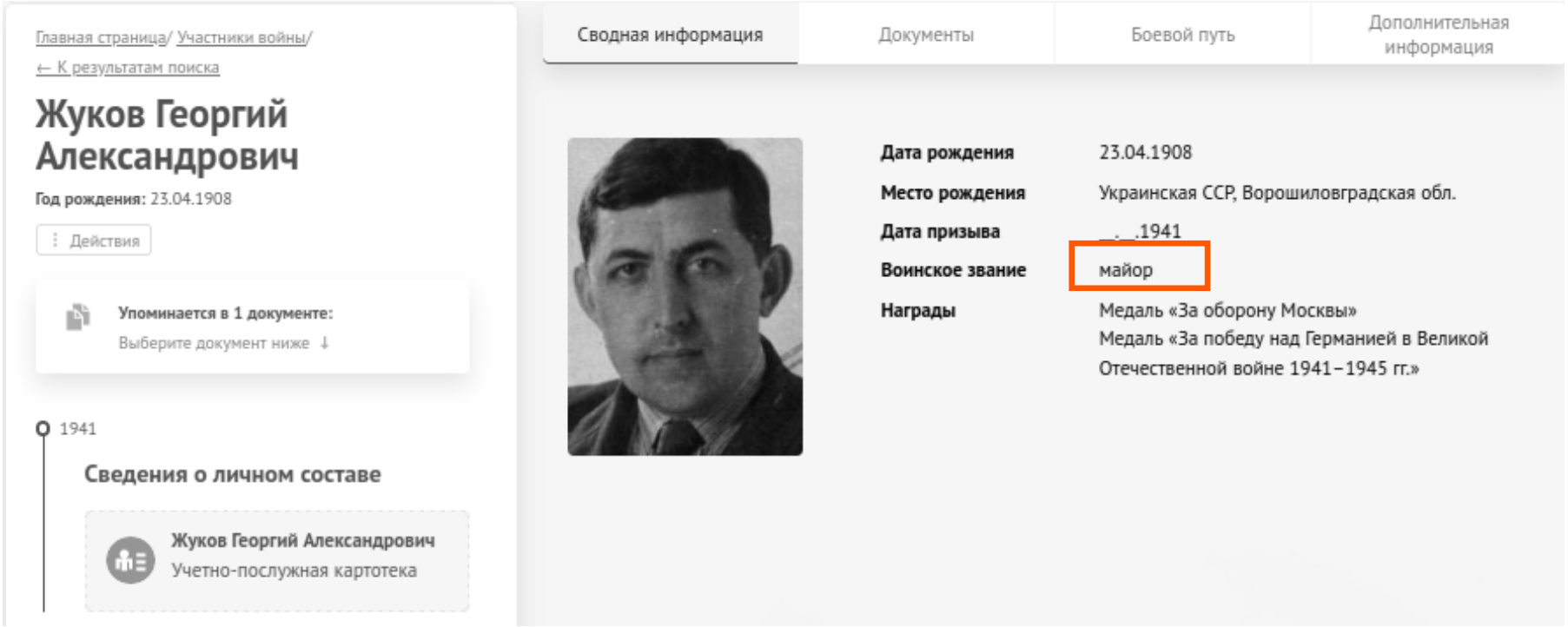

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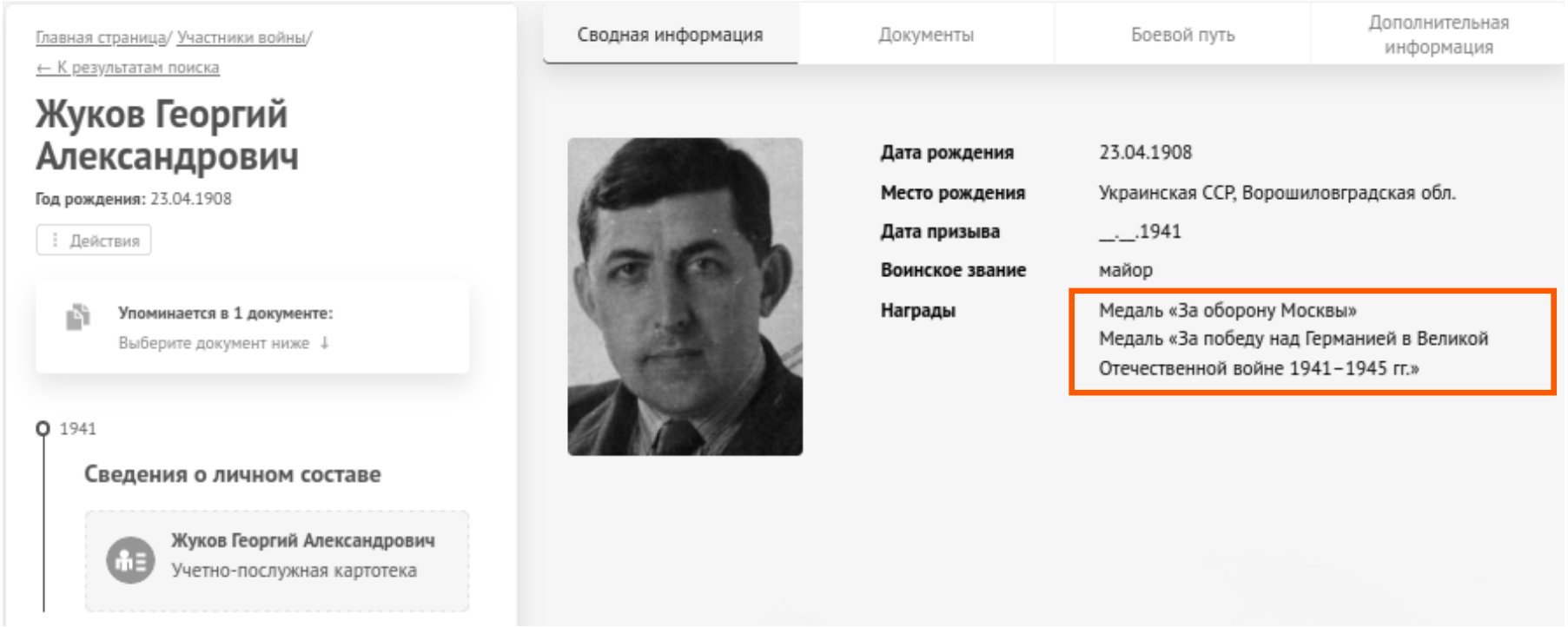

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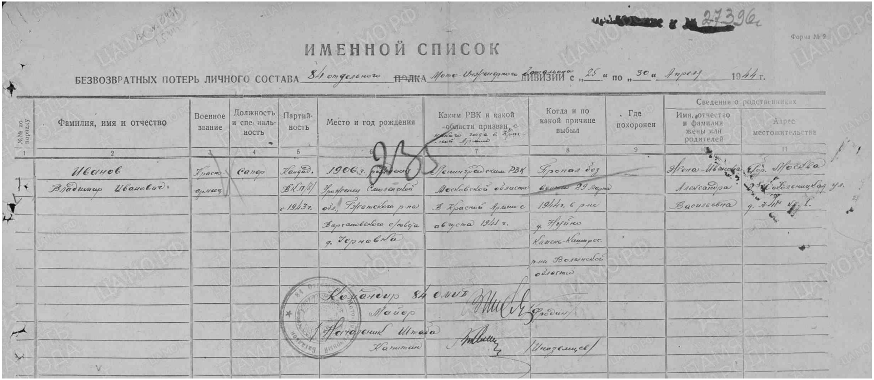

Форма № 9

ИМЕННОЙ СПИСОК

БЕЗВОЗВРАТНЫХ ПОТЕРЬ ЛИЧНОГО СОСТАВА 84 отдельного ~~полка~~ Мото-Инженерного батальона ~~дивизии~~ с „25" по „30" Апреля 1944 г.

№№ по порядку	Фамилия, имя и отчество	Военное звание	Должность и специальность	Партийность	Место и год рождения	Каким РВК и какой области призван, с какого года в Красной Армии	Когда и по какой причине выбыл	Где похоронен	Сведения о родственниках: Имя, отчество и фамилия жены или родителей	Сведения о родственниках: Адрес местожительства
1	2	3	4	5	6	7	8	9	10	11
	Иванов Владимир Иванович	Красноармеец	Сапер	Кандид. ВКП(б) с 1943 г.	1906 г. рождения. Уроженец Смоленской обл. Угранского р-на Варгановского с/совета д. Черновка	Ленинградским РВК Московской области. В Красной Армии с августа 1941 г.	Пропал без вести 29 марта 1944 г. в р-не г. [illegible] Камень-Каширск. р-на Волынской области		Жена – Иванова Александра Васильевна	гор. Москва [illegible]

Командир 84 ОМИБ Майор (Бродин)

Начальник Штаба Капитан (Иноземцев)

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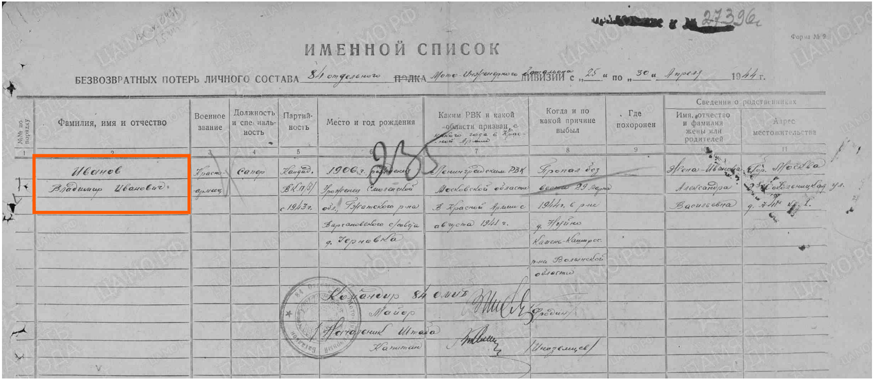
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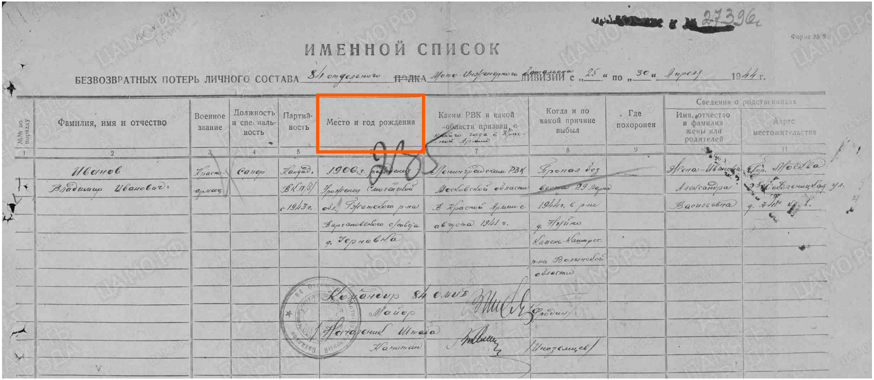

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ИМЕННОЙ СПИСОК

БЕЗВОЗВРАТНЫХ ПОТЕРЬ ЛИЧНОГО СОСТАВА ... ПОЛКА ... ДИВИЗИИ с „ “ по „ “ 19 г.

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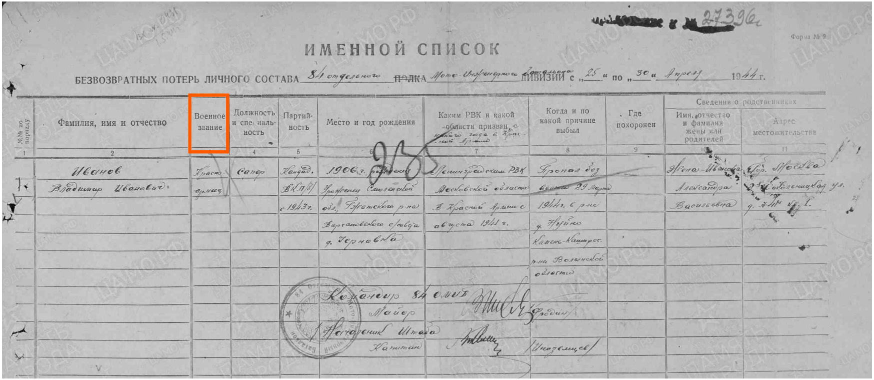

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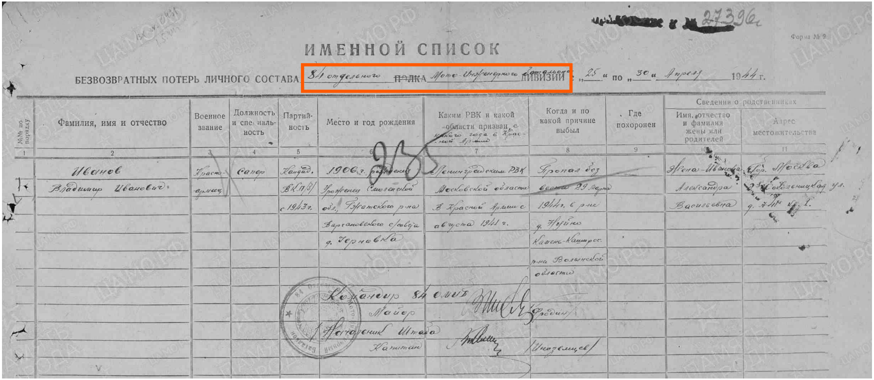

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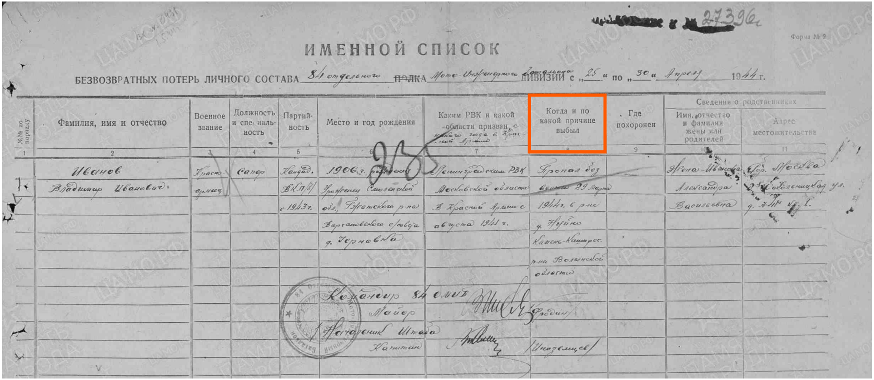

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Форма № 9

ИМЕННОЙ СПИСОК

БЕЗВОЗВРАТНЫХ ПОТЕРЬ ЛИЧНОГО СОСТАВА 84 отдельного ~~ПОЛКА~~ Мото-Инженерного батальона ДИВИЗИИ с „25" по „30" Апреля 1944 г.

№№ по порядку	Фамилия, имя и отчество	Военное звание	Должность и специальность	Партийность	Место и год рождения	Каким РВК и какой области призван, с какого года в Красной Армии	Когда и по какой причине выбыл	Где похоронен	Сведения о родственниках: Имя, отчество и фамилия жены или родителей	Сведения о родственниках: Адрес местожительства
1	2	3	4	5	6	7	8	9	10	11
	Иванов Владимир Иванович	Красноармеец	Сапер	Кандид. ВКП(б) с 1943 г.	1906 г. рождения Уроженец Смоленской обл., Гжатского р-на Баргановского с/совета д. Черновка	Ленинградским РВК Московской области В Красной Армии с августа 1941 г.	Пропал без вести 29 марта 1944 г. в р-не д. [illegible] Камень-Каширск. р-на Волынской области		Жена — Иванова Александра Васильевна	гор. Москва [illegible] ул. д. [illegible] кв. 1.

Командир 84 ОМИБ Майор /Фродин/

Начальник Штаба Капитан /Иноземцев/

"Memory of the People" (Central Archive of Ministry of Defense)

- 105 million Red Army personnel records for 35 million soldiers
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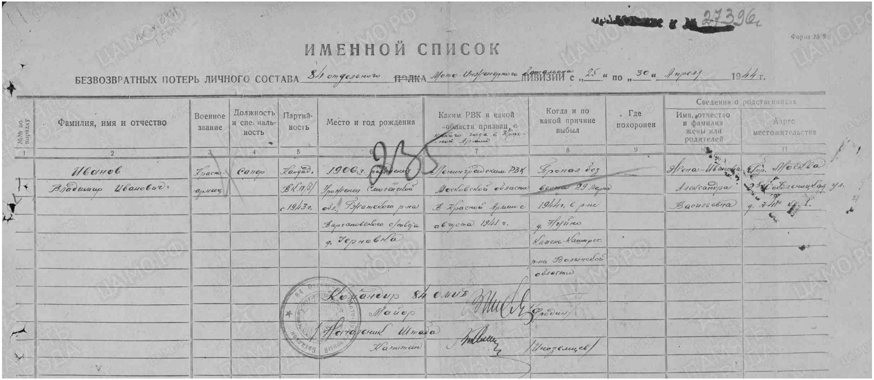
empirical test 1 / data on Soviet soldiers



Форма № 9

27396

ИМЕННОЙ СПИСОК

БЕЗВОЗВРАТНЫХ ПОТЕРЬ ЛИЧНОГО СОСТАВА 84 отдельного ~~полка~~ Мото-Инженерного батальона ~~дивизии~~ с „25" по „30" Апреля 1944 г.

№№ по порядку	Фамилия, имя и отчество	Военное звание	Должность и специальность	Партийность	Место и год рождения	Каким РВК и какой области призван, с какого года в Красной Армии	Когда и по какой причине выбыл	Где похоронен	Сведения о родственниках: Имя, отчество и фамилия жены или родителей	Сведения о родственниках: Адрес местожительства
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	Иванов Владимир Иванович	Красноармеец	Сапер	Кандид. ВКП(б) с 1943 г.	1906 г. рождения Уроженец Смоленской обл. Угранского р-на Баргановского с/совета д. Черновка	Ленинградским РВК Московской области в Красной Армии с августа 1941 г.	Пропал без вести 29 марта 1944 г. в р-не д. Нуйно Камень-Каширск. р-на Волынской области		Елена Ивановна Александра Васильевна	гор. Москва [illegible]

Командир 84 ОМИБ Майор (Фродин)

Начальник Штаба Капитан (Иноземцев)

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empirical test 1 / data on Soviet soldiers

	last_name	first_name	middle_name	rank	date_birth	prichina_vibitiya
1	Авдеев	Александр	Николаевич	ст. сержант	__.__.1922	убит
2	Авдеев	Александр	Николаевич	рядовой	__.__.1921	ранен
3	Авдеев	Александр	Николаевич	сержант	__.__.1925	убит
4	Авдеев	Александр	Николаевич	красноармеец	__.__.1916	убит
5	Авдеев	Александр	Николаевич	ст. сержант	__.__.1922	убит
6	Авдеев	Александр	Николаевич	капитан		убит
7	Авдеев	Александр	Николаевич	красноармеец		убит
8	Авдеев	Александр	Николаевич	рядовой	__.__.1921	пропал без вести
9	Авдеев	Александр	Николаевич	ст. сержант	__.__.1903	убит
10	Авдеев	Александр	Николаевич	красноармеец	__.__.1925	пропал без вести
11	Авдеев	Александр	Николаевич	красноармеец	__.__.1915	пропал без вести

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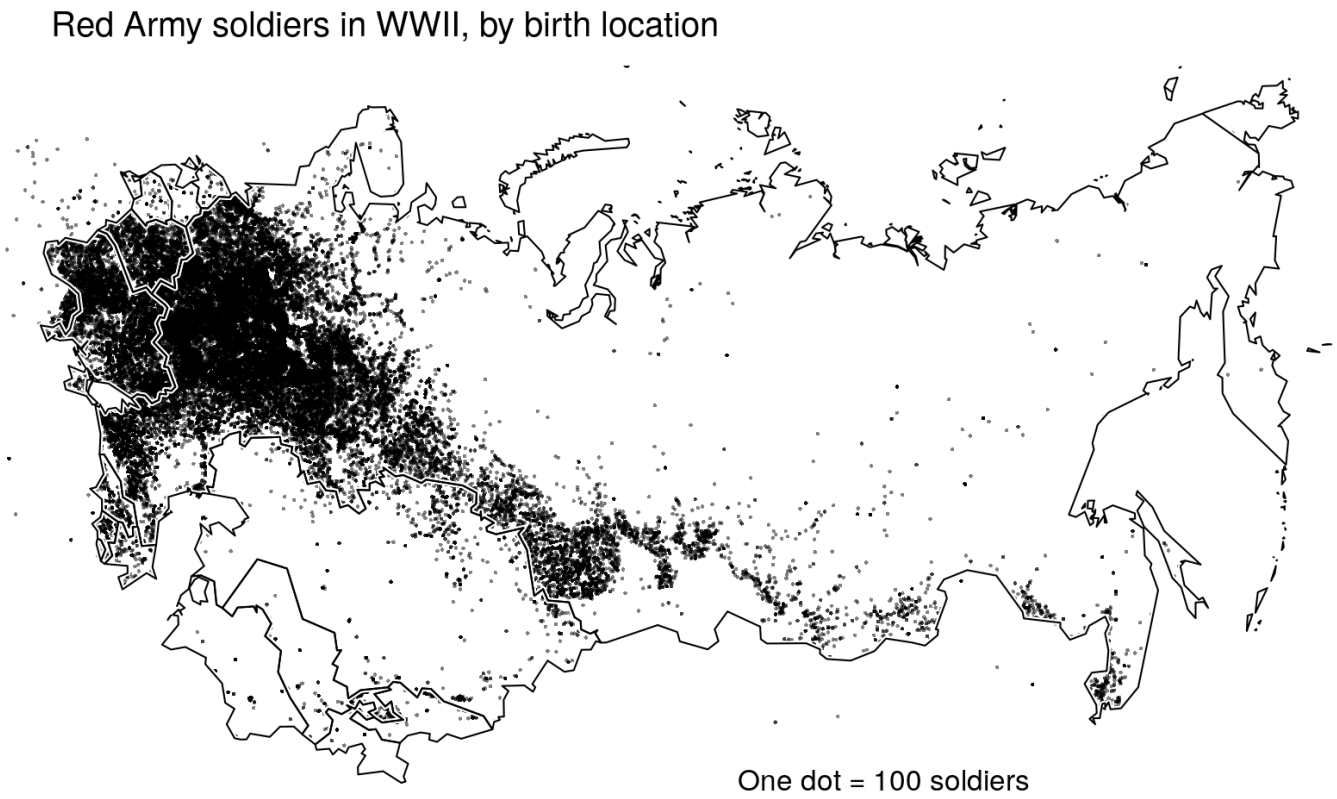

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empirical test 1 / data on fratricidal coercion

	officer_name	service_hist
1:	Алименко, Алексей Власович	10.09.1944: 1 стрелковая дивизия (оперуполномоченный ОКР СМЕРШ 1 с
2:	Бапишев, Ашим Таксамбаевич	02.04.1943: 100 стрелковая бригада (ст. оперуполномоченный ОО НКВД
3:	Белов, Павел Иванович	13.02.1942: 7 армия (оперуполномоченный ОО НКВД 7 армии по 184 сап
4:	Бондаренко, Павел Прокофьевич	07.03.1945: 1 стрелковая дивизия (ст. оперуполномоченный ОКР СМЕРШ
5:	Веретенников, Арсений Павлович	13.05.1945: 1 стрелковая дивизия (оперуполномоченный 1 стрелковой
6:	Грачев, Михаил Степанович	17.06.1943: 5 стрелковая дивизия (нач. ОКР СМЕРШ 5 стрелковой диви
7:	Зинченко, Андрей Митрофанович	07.05.1942: 31 стрелковая бригада (оперуполномоченный ОО НКВД 31 с
8:	Иванов, Константин Александрович	22.03.1936: Сталинградский край (). 15.05.1942: 55 армия (нач. 3 о
9:	Ивашков, Алексей Миронович	24.11.1943: 6 гв. армия (оперуполномоченный ОКР СМЕРШ 6 гв. армии
10:	Калюжный, Денис Иванович	22.06.1939: УССР (). 07.05.1942: 31 стрелковая бригада (зам. нач.
11:	Куликов, Филипп Григорьевич	31.01.1936: Северо-Кавказский край (). 23.03.1937: Орджоникидзевск
12:	Маленький, Василий Петрович	09.01.1944: 1 стрелковая дивизия (оперуполномоченный ОКР СМЕРШ 1 с
13:	Носов, Петр Ефимович	17.10.1942: 31 стрелковая бригада (следователь ОО НКВД 31 стрелков
14:	Сафонов, Георгий Михайлович	22.05.1938: Ленинград (). 10.09.1942: 1 стрелковая дивизия (нач. О
15:	Сочнев, Федор Иванович	27.07.1942: 1 стрелковая дивизия (нач. ОО НКВД 1 стрелковой дивизи
16:	Тищенко, Порфирий Данилович	05.03.1943: 160 стрелковая дивизия (оперуполномоченный ОО НКВД 160
17:	Фетисов, Митрофан Дмитриевич	16.05.1943: 1 стрелковая дивизия (оперуполномоченный ОО НКВД 1 стр
18:	Хапий, Осман Исакович	15.09.1944: 1 стрелковая дивизия (оперуполномоченный ОКР СМЕРШ 1 с
19:	Хомяков, Емельян Вячеславович	01.12.1942: 1 стрелковая дивизия (нач. ОО НКВД 1 стрелковой дивизи
20:	Шадрухин, Николай Николаевич	10.09.1944: 1 стрелковая дивизия (ст. оперуполномоченный ОКР СМЕРШ

“Personnel of USSR State Security Services” (Memorial NGO)

- service history for 41,383 NKVD officers
- 25,079 served in special sections & SMERSH units during the war
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empirical test 1 / data on fratricidal coercion

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1:	Алименко, Алексей Власович	10.09.1944:	1 стрелковая дивизия (оперуполномоченный ОКР СМЕРШ 1 с
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3:	Белов, Павел Иванович	13.02.1942:	7 армия (оперуполномоченный ОО НКВД 7 армии по 184 сап
4:	Бондаренко, Павел Прокофьевич	07.03.1945:	1 стрелковая дивизия (ст. оперуполномоченный ОКР СМЕРШ
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16:	Тищенко, Порфирий Данилович	05.03.1943:	160 стрелковая дивизия (оперуполномоченный ОО НКВД 160
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- includes: name / rank / combat unit / dates / position / medals

empirical test 1 / data on fratricidal coercion

	officer_name		service_hist
1:	Алименко, Алексей Власович	10.09.1944: 1 стрелковая дивизия	(оперуполномоченный ОКР СМЕРШ 1 с
2:	Бапишев, Ашим Таксамбаевич	02.04.1943: 100 стрелковая бригада	(ст. оперуполномоченный ОО НКВД
3:	Белов, Павел Иванович	13.02.1942: 7 армия	(оперуполномоченный ОО НКВД 7 армии по 184 сап
4:	Бондаренко, Павел Прокофьевич	07.03.1945: 1 стрелковая дивизия	(ст. оперуполномоченный ОКР СМЕРШ
5:	Веретенников, Арсений Павлович	13.05.1945: 1 стрелковая дивизия	(оперуполномоченный 1 стрелковой
6:	Грачев, Михаил Степанович	17.06.1943: 5 стрелковая дивизия	(нач. ОКР СМЕРШ 5 стрелковой диви
7:	Зинченко, Андрей Митрофанович	07.05.1942: 31 стрелковая бригада	(оперуполномоченный ОО НКВД 31 с
8:	Иванов, Константин Александрович	22.03.1936: Сталинградский край (). 15.05.1942: 55 армия	(нач. 3 о
9:	Ивашков, Алексей Миронович	24.11.1943: 6 гв. армия	(оперуполномоченный ОКР СМЕРШ 6 гв. армии
10:	Калюжный, Денис Иванович	22.06.1939: УССР (). 07.05.1942: 31 стрелковая бригада	(зам. нач.
11:	Куликов, Филипп Григорьевич	31.01.1936: Северо-Кавказский край (). 23.03.1937: Орджоникидзевск	
12:	Маленький, Василий Петрович	09.01.1944: 1 стрелковая дивизия	(оперуполномоченный ОКР СМЕРШ 1 с
13:	Носов, Петр Ефимович	17.10.1942: 31 стрелковая бригада	(следователь ОО НКВД 31 стрелков
14:	Сафонов, Георгий Михайлович	22.05.1938: Ленинград (). 10.09.1942: 1 стрелковая дивизия	(нач. О
15:	Сочнев, Федор Иванович	27.07.1942: 1 стрелковая дивизия	(нач. ОО НКВД 1 стрелковой дивизи
16:	Тищенко, Порфирий Данилович	05.03.1943: 160 стрелковая дивизия	(оперуполномоченный ОО НКВД 160
17:	Фетисов, Митрофан Дмитриевич	16.05.1943: 1 стрелковая дивизия	(оперуполномоченный ОО НКВД 1 стр
18:	Хапий, Осман Исакович	15.09.1944: 1 стрелковая дивизия	(оперуполномоченный ОКР СМЕРШ 1 с
19:	Хомяков, Емельян Вячеславович	01.12.1942: 1 стрелковая дивизия	(нач. ОО НКВД 1 стрелковой дивизи
20:	Шадрухин, Николай Николаевич	10.09.1944: 1 стрелковая дивизия	(ст. оперуполномоченный ОКР СМЕРШ

“Personnel of USSR State Security Services” (Memorial NGO)

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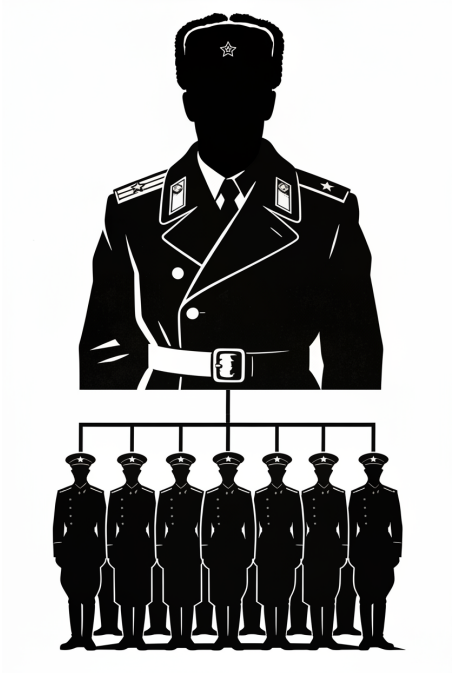
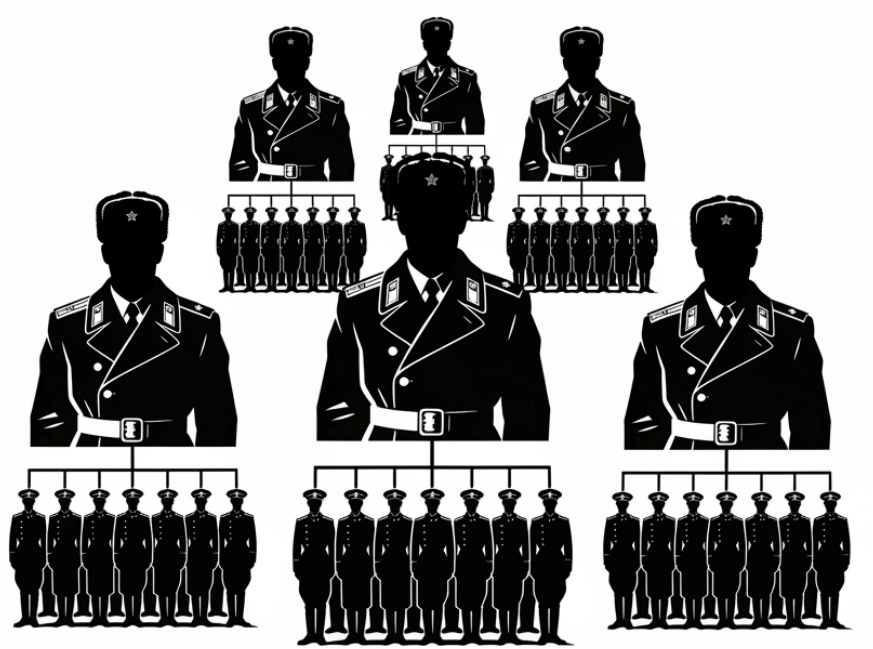


1 NKVD officer, 1 blocking unit



6 NKVD officers, 6 blocking units

more NKVD officers embedded in unit → more fratricidal coercion

- more blocking units (staffed by regular troops, led by NKVD officer)
- higher monitoring capacity (more checkpoints, patrols, investigations)
- more credible threat of punishment for flight or disobedience

empirical test 1 / linking the two datasets

NKVD records

officer	unit	date
Afanasyev	168 RD	1941.07.28
Bogdanov	90 RD	1941.07.29
Danilov	31 RBde	1942.10.28

Red Army records

soldier	unit	date	outcome
Belov	198 RD	1941.06.29	
Kuznets	168 RD	1941.07.15	KIA
Magomedov	14 SD	1941.07.30	MIA

link by combat unit and month

order of battle

division	army	month
168 RD	7 A	1941.06
168 RD	7 A	1941.07
168 RD	23 A	1941.08
168 RD	55 A	1941.09
168 RD	55 A	1941.10
⋮	⋮	⋮

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division	army	month	nkvd	kia	mia	...
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168 RD	55 A	1941.09				
168 RD	55 A	1941.10				
⋮	⋮	⋮				

empirical test 1 / linking the two datasets

repeat for all soldiers,
NKVD officers,
units and months
(1,048 rifle divisions, 48 months)

order of battle

division	army	month	nkvd	kia	mia	...
168 RD	7 A	1941.06	11	14%	38%	...
168 RD	7 A	1941.07	33	13%	43%	...
168 RD	23 A	1941.08	66	38%	21%	...
168 RD	55 A	1941.09	67	37%	20%	...
168 RD	55 A	1941.10	57	34%	33%	...
⋮	⋮	⋮	⋮	⋮	⋮	⋱

empirical test 1 / measurement of outcomes

low combat resolve

minimally acceptable action

average soldier's intrinsic motivation

action ordered by commanders

high combat resolve

shirk

take initiative

empirical test 1 / measurement of outcomes

empirical test 1 / measurement of outcomes

shirking

proxy	frequency
MIA	20.1%
POW	5.7%
Deserted	0.2%
Punished	0.8%

(Costa & Kahn 2003)

following orders

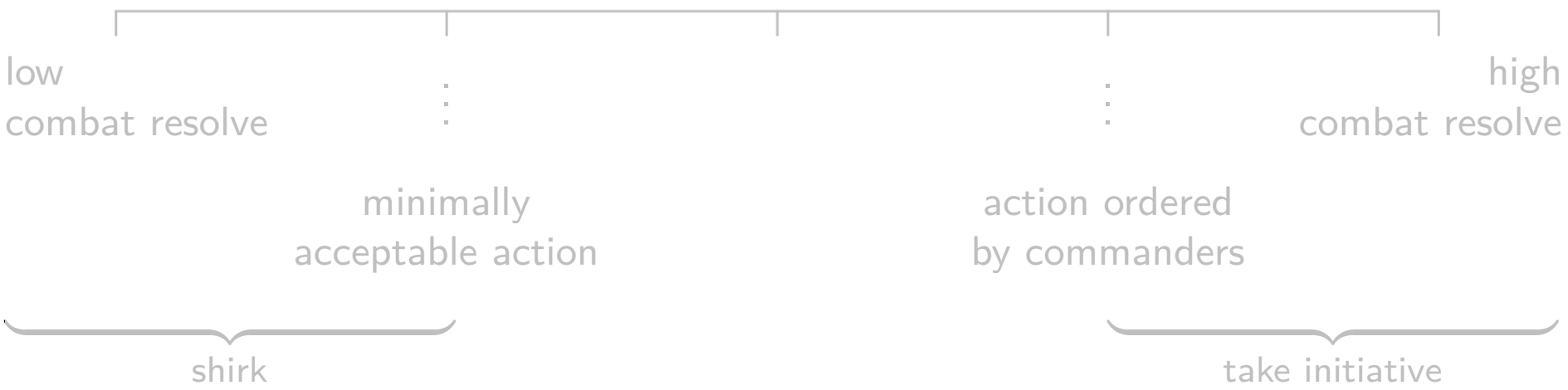
proxy	frequency
KIA/WIA	21.4%

(Ager et al 2022)

taking initiative

proxy	frequency
Medals	17.9%

(Barber & Miller 2019)



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MIA:

"By official reports, out of our five million-plus missing in action just 100 thousand were reported as prisoners of war. In reality, there were 4.5 million. So the **majority of those missing in action were prisoners of war**. Everyone knew this. I'm certain that even Stalin knew."

– Gen-Maj Aleksandr Kirilin (Russian MOD official, 2011)

empirical test 1 / measurement of outcomes

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MIA: $P(\text{POW}|\text{MIA}) = 4.5\text{M}/5\text{M} = 0.9$

empirical test 1 / measurement of outcomes

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Medals	17.9%

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Medals:

includes valor decorations:	excludes:
'For Courage'	career service awards
'For Battle Merit'	battle participation awards
Order of Glory	commemorative/jubilee awards
Hero of the Soviet Union	medals to units, towns, factories

empirical test 1 / measurement of outcomes

shirking

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taking initiative

proxy	frequency
Medals	17.9%

(Barber & Miller 2019)

validation exercise (unit-level):

how well does each proxy measure predict army unit's territorial gains?

predictor	coefficient
MIA	-0.3 $(0.1)^{**}$
POW	-0.6 $(0.2)^{*}$
Deserted	-1.9 $(0.3)^{**}$
Punished	-1.1 $(0.5)^{*}$

predictor	coefficient
KIA/WIA	0.14 $(0.07)^{*}$

predictor	coefficient
Medals	0.2 $(0.1)^{*}$

info

empirical test 1.1 / estimation

info

panel fixed effects / 1,048 Soviet rifle divisions, 48 months

$$\text{Outcome}_{it}^{(k)} = \ln(\text{NKVD}_{it})\beta + X_{it}\,\gamma + \text{Unit}_i + \text{Month}_t + \text{Battle}_j + \epsilon_{it}$$

share of monthly losses in category k
$k \in \{$KIA, WIA, MIA, POW, Deserted, Punished, Medal$\}$

number of NKVD special section personnel

pre-treatment covariates
average soldier demographics

fixed effects
i:rifle division, t:month, $j(i,t)$:battle

clustered robust standard errors

empirical test 1.1 / estimation

info

panel fixed effects / 1,048 Soviet rifle divisions, 48 months

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share of monthly losses in category k
$k \in \{\text{KIA}, \text{WIA}, \text{MIA}, \text{POW}, \text{Deserted}, \text{Punished}, \text{Medal}\}$

number of NKVD special section personnel

pre-treatment covariates
average soldier demographics

fixed effects
i:rifle division, t:month, $j(i,t)$:battle

clustered robust standard errors

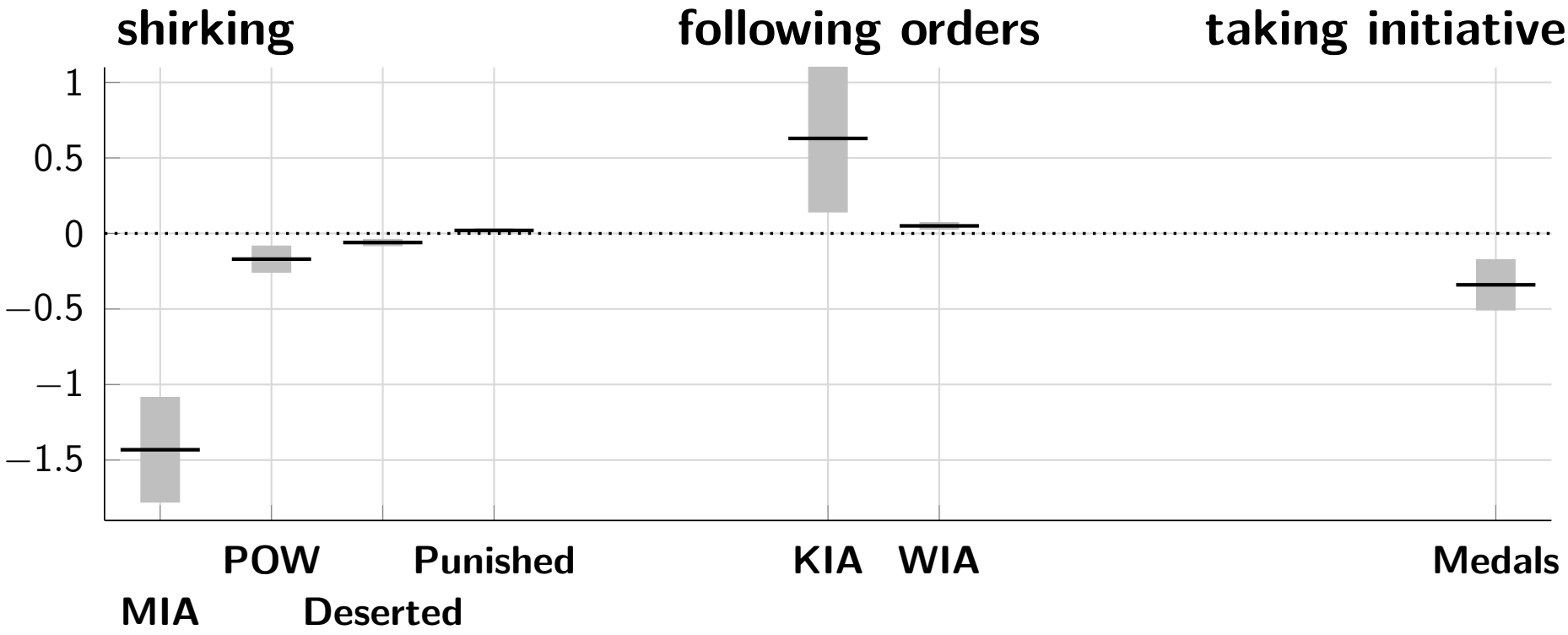
assumption: assignment of NKVD to units is exogenous, conditional on observables and differences across units, battles, time

how did NKVD presence affect Soviet combat resolve?

low combat resolve

high combat resolve

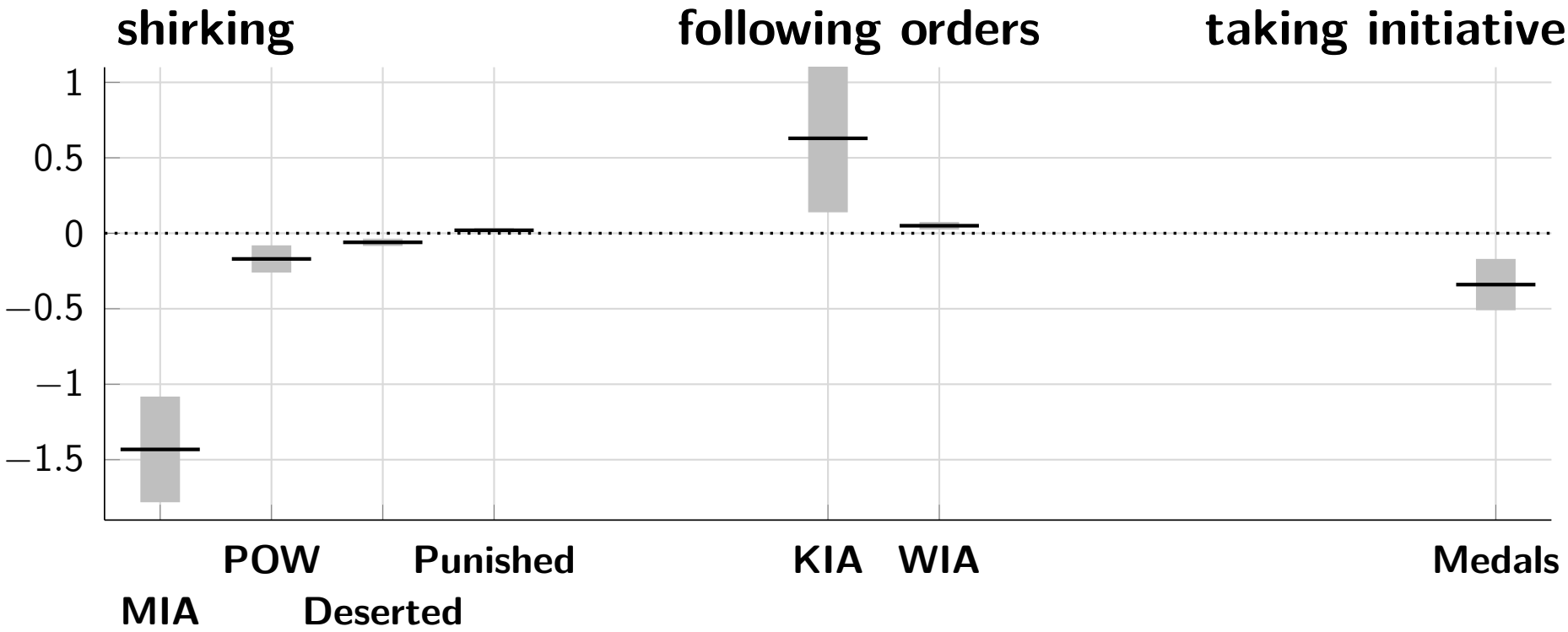
empirical test 1.1 / results



low combat resolve

high combat resolve

empirical test 1.1 / results



empirical test 1.1 / results

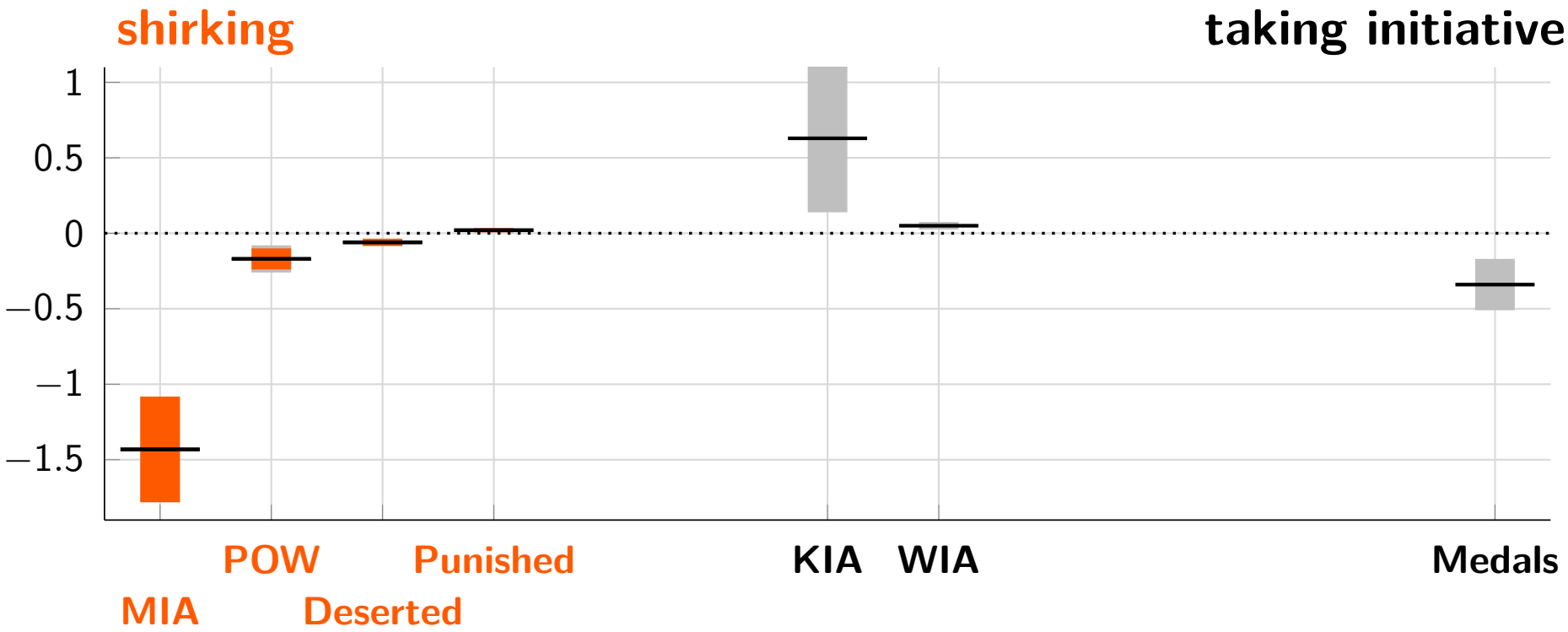
soldiers in units with larger NKVD sections
were **more likely to follow orders**

empirical test 1.1 / results

larger NKVD sections → more soldiers killed or wounded

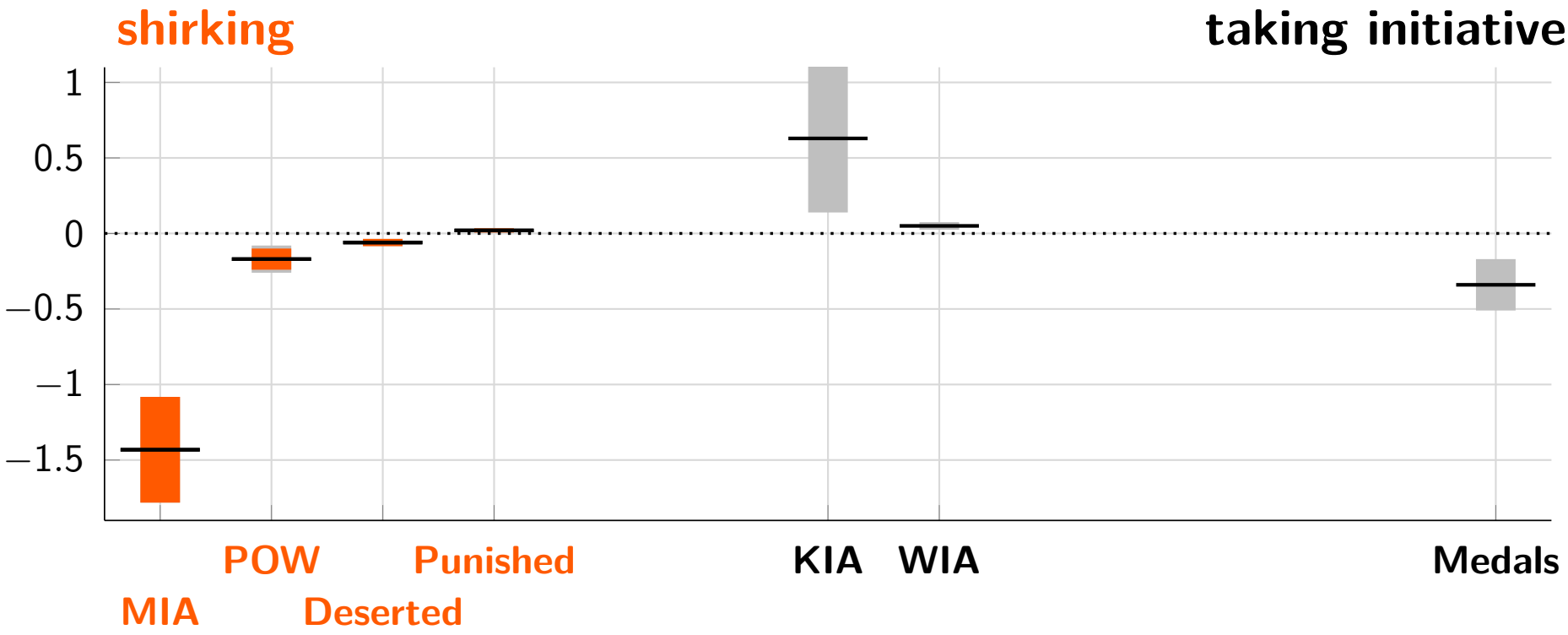
$$\underbrace{\frac{0.63}{100}}_{\text{scaled effect of log NKVD } (\hat{\beta})} \times \underbrace{\ln\left(\frac{13.4}{4.3}\right)}_{\text{1 SD increase from mean: 4.3→13.4 NKVD}} \times \underbrace{549}_{\text{avg KIA per unit-month}} \approx \mathbf{4}$$ **more deaths per unit-month**
from ↑1 SD in NKVD presence

empirical test 1.1 / results



soldiers in units with larger NKVD sections
were **less likely to shirk**

empirical test 1.1 / results

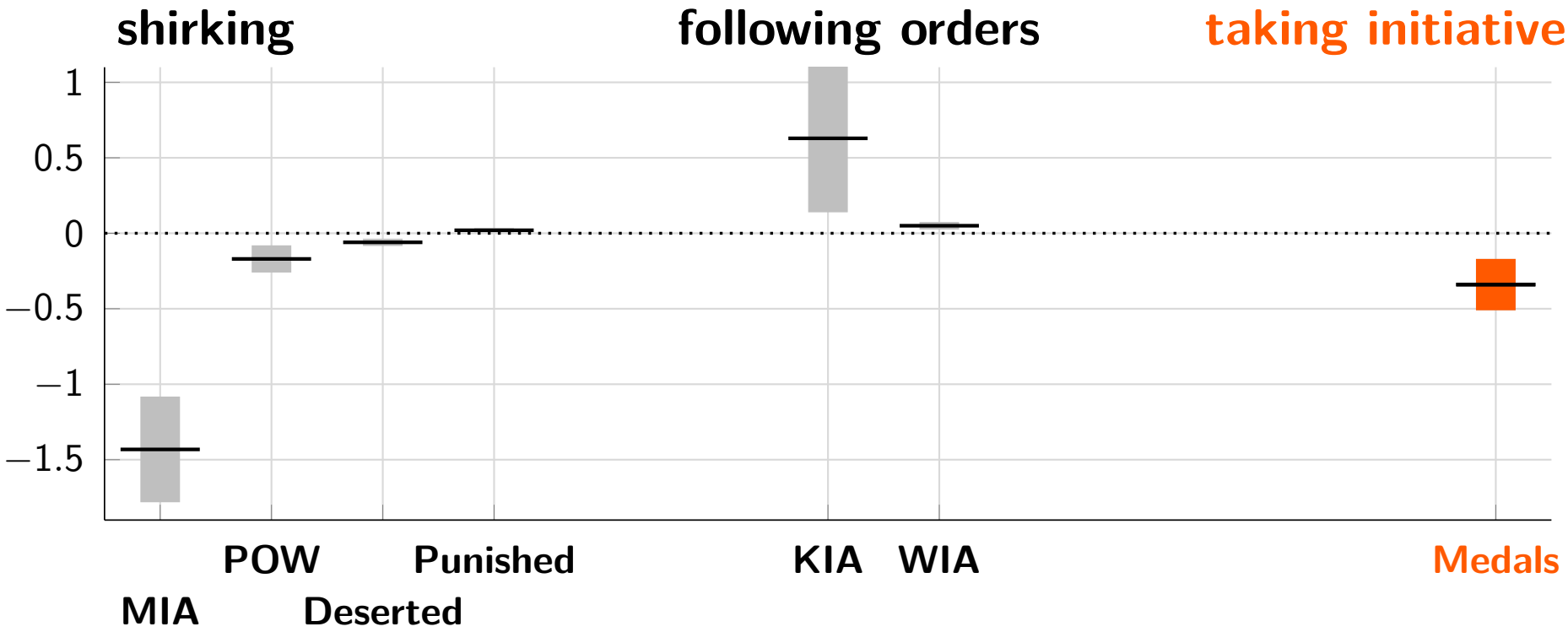


larger NKVD sections → fewer soldiers missing, captured, deserted

$$\underbrace{\frac{-1.43}{100}}_{\text{scaled effect of log NKVD } (\hat{\beta})} \times \underbrace{\ln\left(\frac{13.4}{4.3}\right)}_{\substack{\text{1 SD increase from mean:} \\ 4.3 \rightarrow 13.4 \text{ NKVD}}} \times \underbrace{137}_{\substack{\text{avg MIA} \\ \text{per unit-month}}} \approx \mathbf{2} \text{ fewer MIA's per unit-month}$$

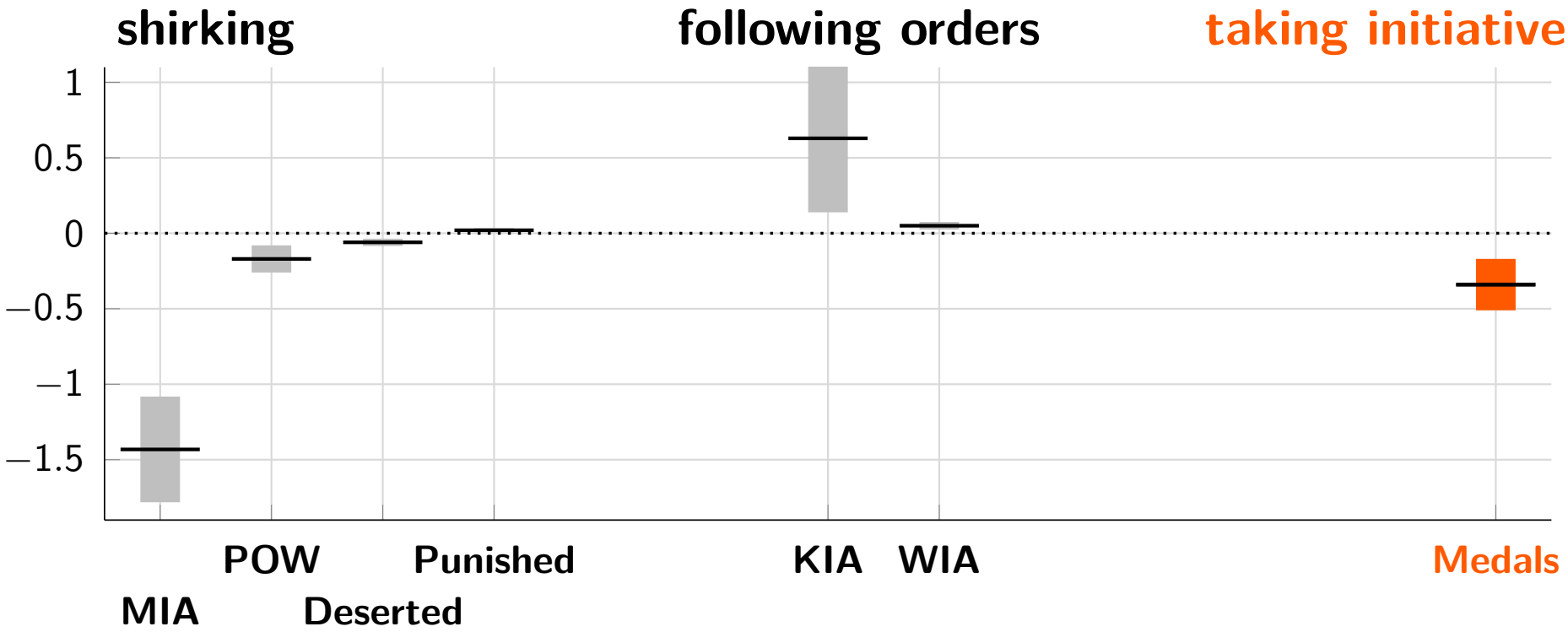
from ↑1 SD in NKVD presence

empirical test 1.1 / results



soldiers in units with larger NKVD sections
were **less likely to take initiative**

empirical test 1.1 / results



larger NKVD sections → fewer soldiers receive medals for valor

$$\underbrace{\frac{-0.29}{100}}_{\text{scaled effect of log NKVD } (\hat{\beta})} \times \underbrace{\ln\left(\frac{13.4}{4.3}\right)}_{\text{1 SD increase from mean: 4.3→13.4 NKVD}} \times \underbrace{28}_{\text{avg medals per unit-month}} \approx .1$$

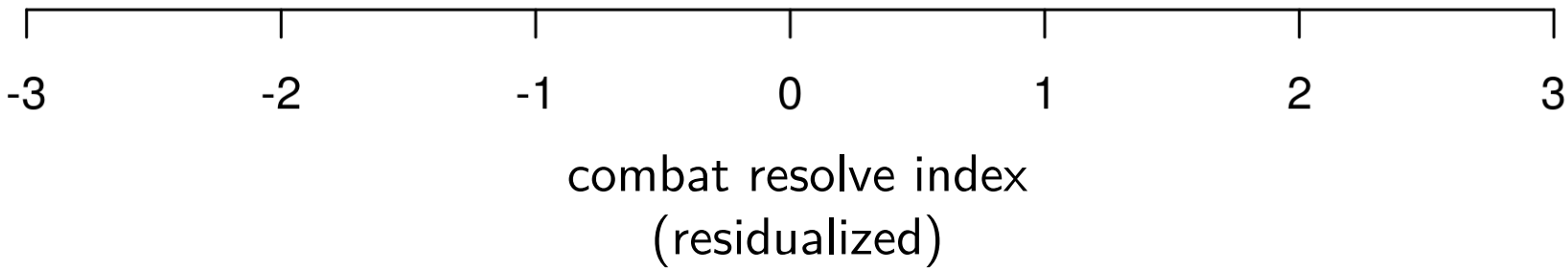
.1 fewer medal per unit-month
from ↑1 SD in NKVD presence

empirical test 1.2 / distributional test

low combat resolve

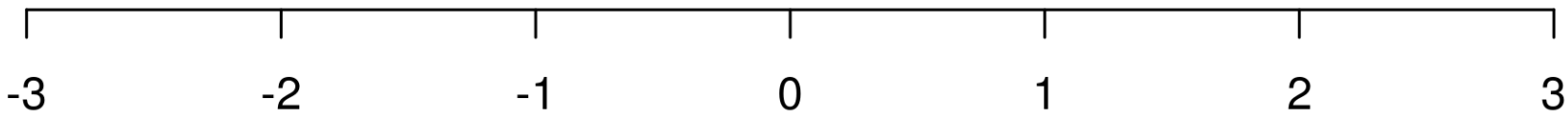
high combat resolve

empirical test 1.2 / distributional test



empirical test 1.2 / distributional test

combat resolve index (CRI)
is the predicted probability that
an army unit gained territory
in a battle, conditional on the
proportion of its service
members that experienced
each battlefield outcome info



combat resolve index
(residualized)

empirical test 1.2 / distributional test

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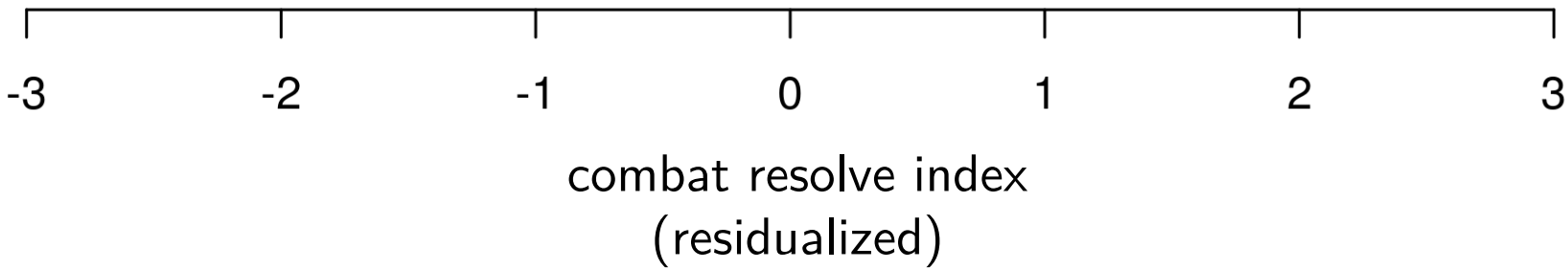
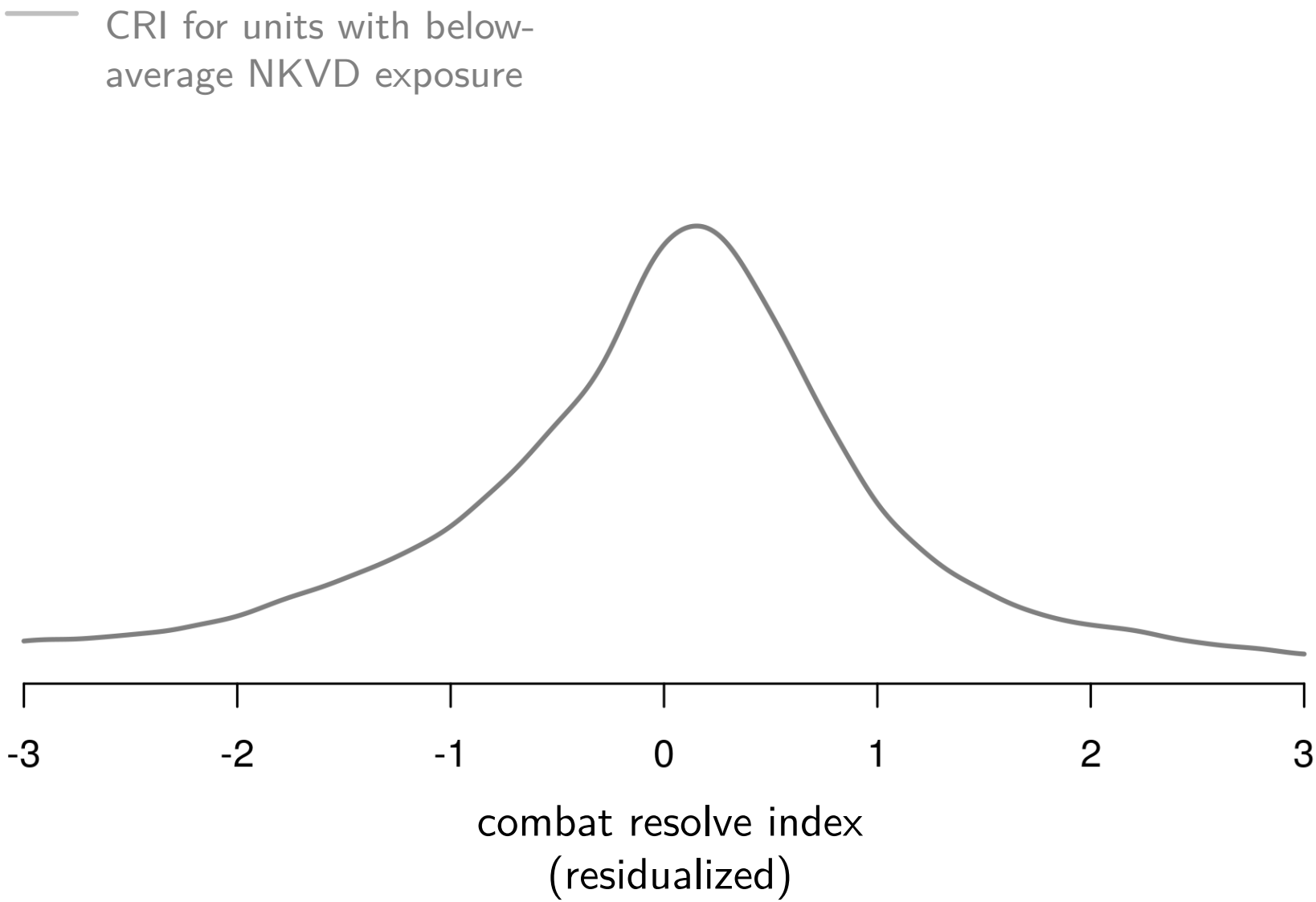


empirical test 1.2 / distributional test



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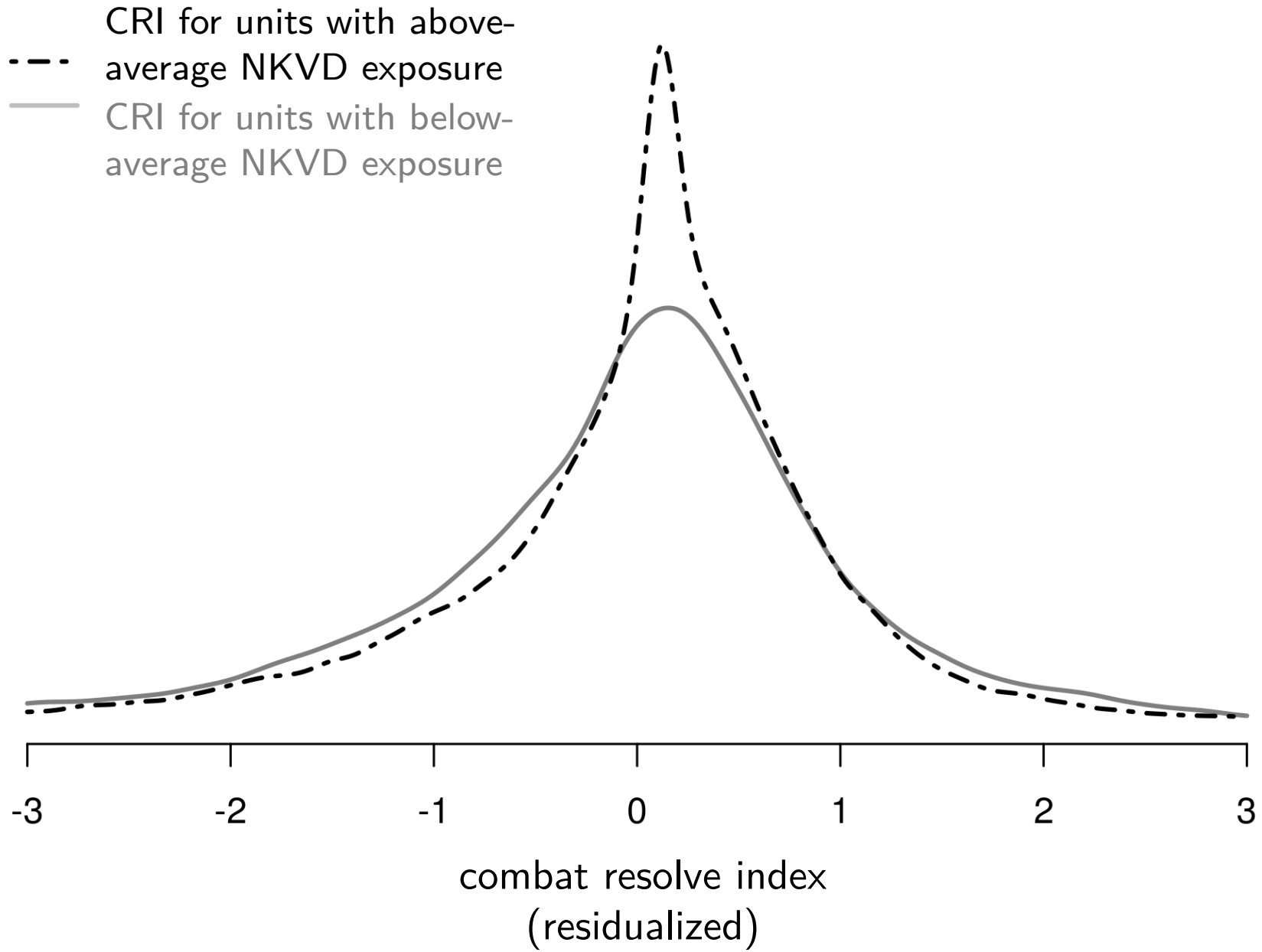

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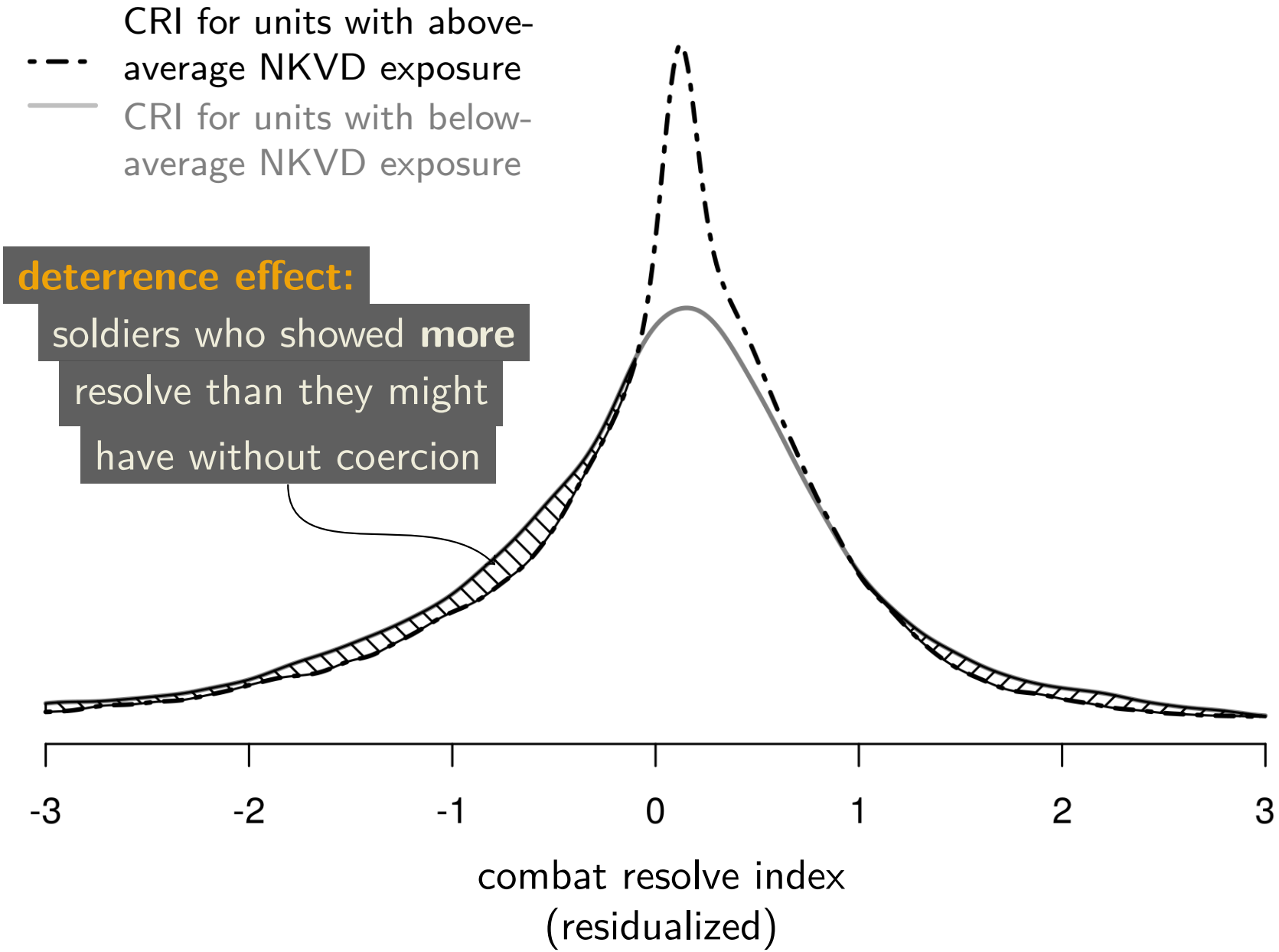
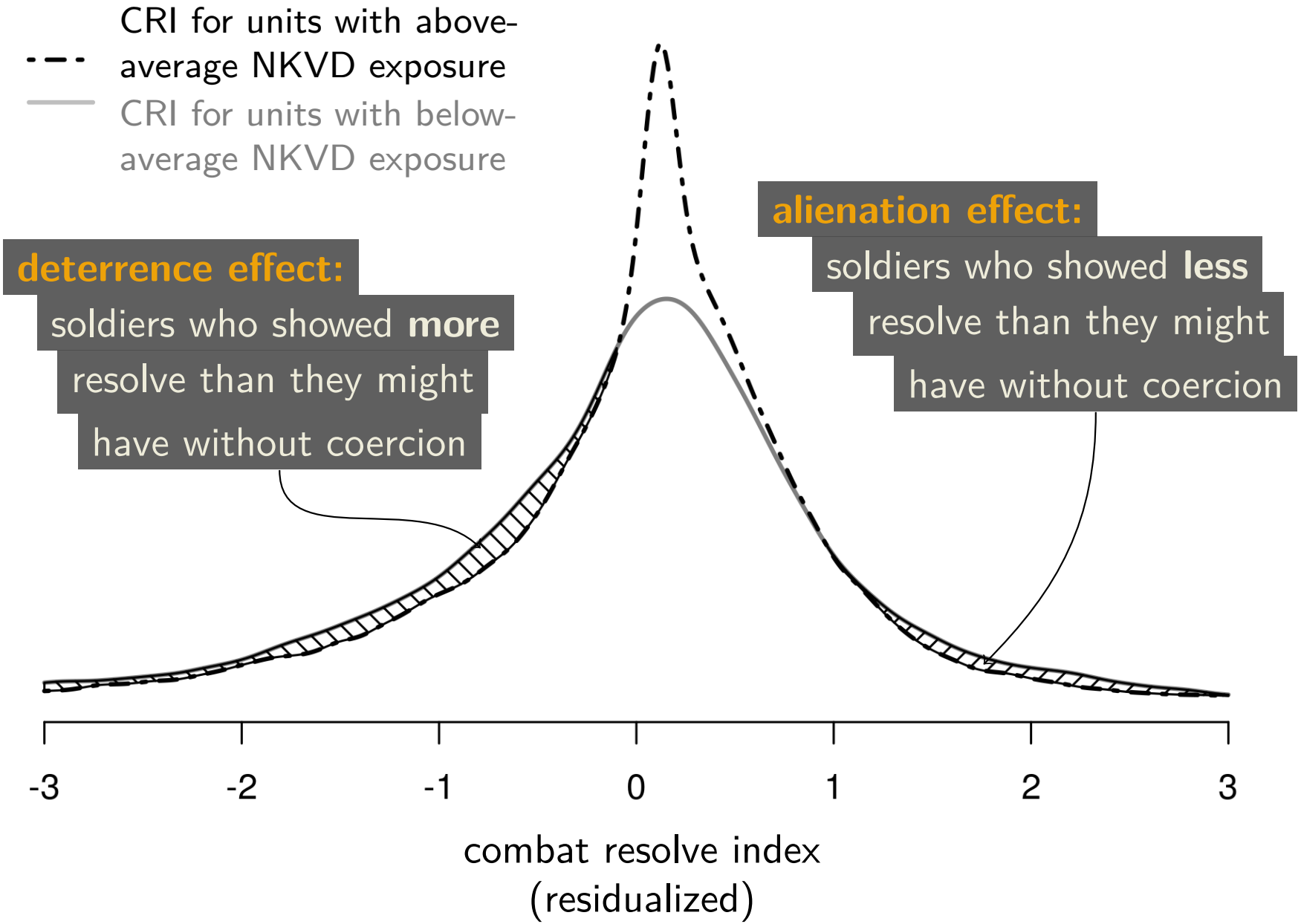


empirical test 1.2 / distributional test



outline

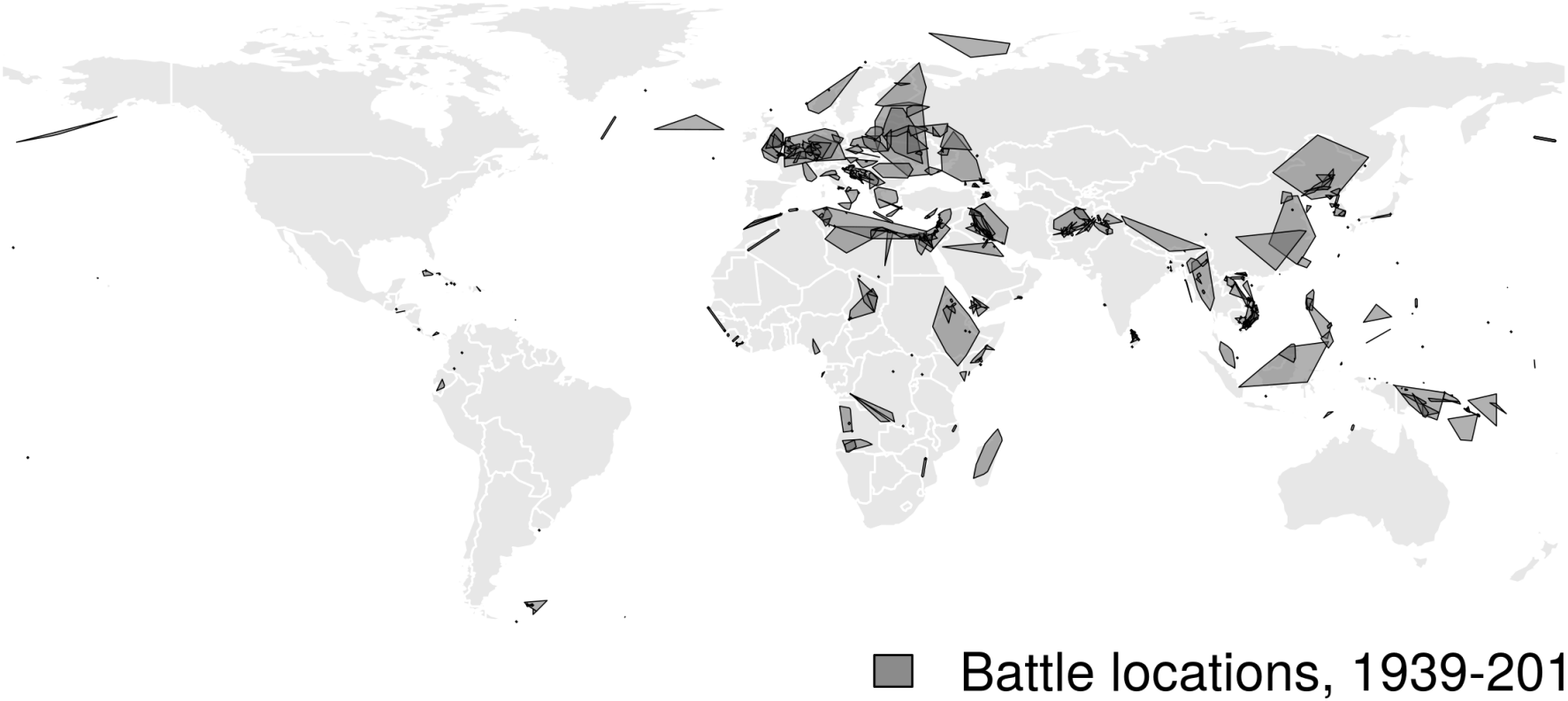
theory / fratricidal coercion and combat resolve
- theoretical model
- observable implications

empirical test 1 / NKVD and Soviet soldiers in WWII
- data
- results

empirical test 2 / cross-national battle data, 1939-2011
- data
- results

discussion
- alternative explanations
- summary and implications

empirical test 2 / cross-national data on battles



cross-national battle data (Lehmann & Zhukov 2019)

- 526 land battles from 75 wars involving 185 belligerents
- covers 83% of interstate wars in Correlates of War, 1939-2011
- merge with Project Mars data on blocking units (Lyall 2020)

empirical test 2.1 / battle-level outcomes

grouped fixed effects / 185 belligerents, 526 battles

$$\ln(\text{Outcome}_{ij}^{(k)}) = \text{Coercion}_{ij}\beta + X_{ij}\gamma + \text{War}_j + \text{Season}_j + \text{Year}_j + \epsilon_{ij}$$

battle losses in category k

$k \in$ {KIA, WIA, MIA, POW, percent force lost, LER}

covariates

force ratio, battle size, aggregate power balance, deployment distance, democracy score, conscription, Geneva Conventions

clustered robust standard errors

blocking units in army

1 if yes, 0 if no

fixed effects

war, season, year of belligerent i's involvement in battle j

empirical test 2.1 / battle-level outcomes

shirking **following orders** **performance***

*relative combat effectiveness in attrition warfare (loss-exchange ratio: $\frac{\text{enemy losses}}{\text{friendly losses}}$)

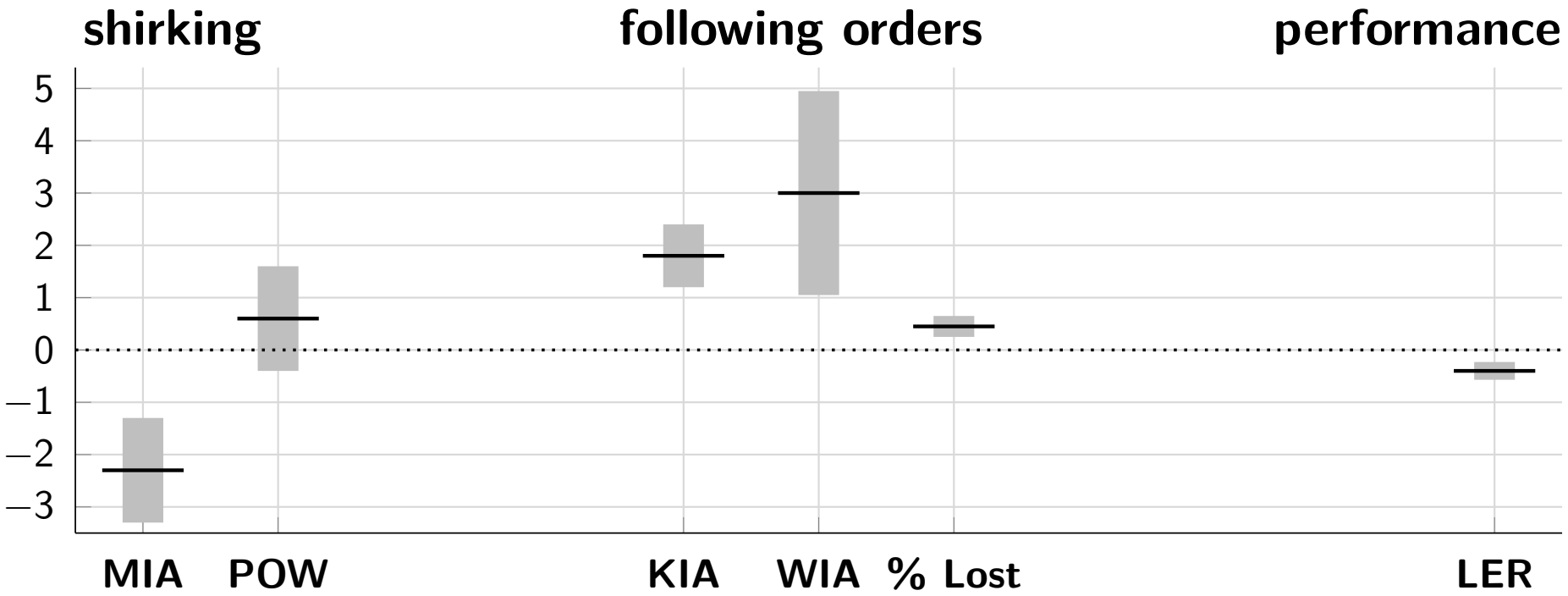
low combat resolve — high combat resolve

how do blocking units affect battle casualties?

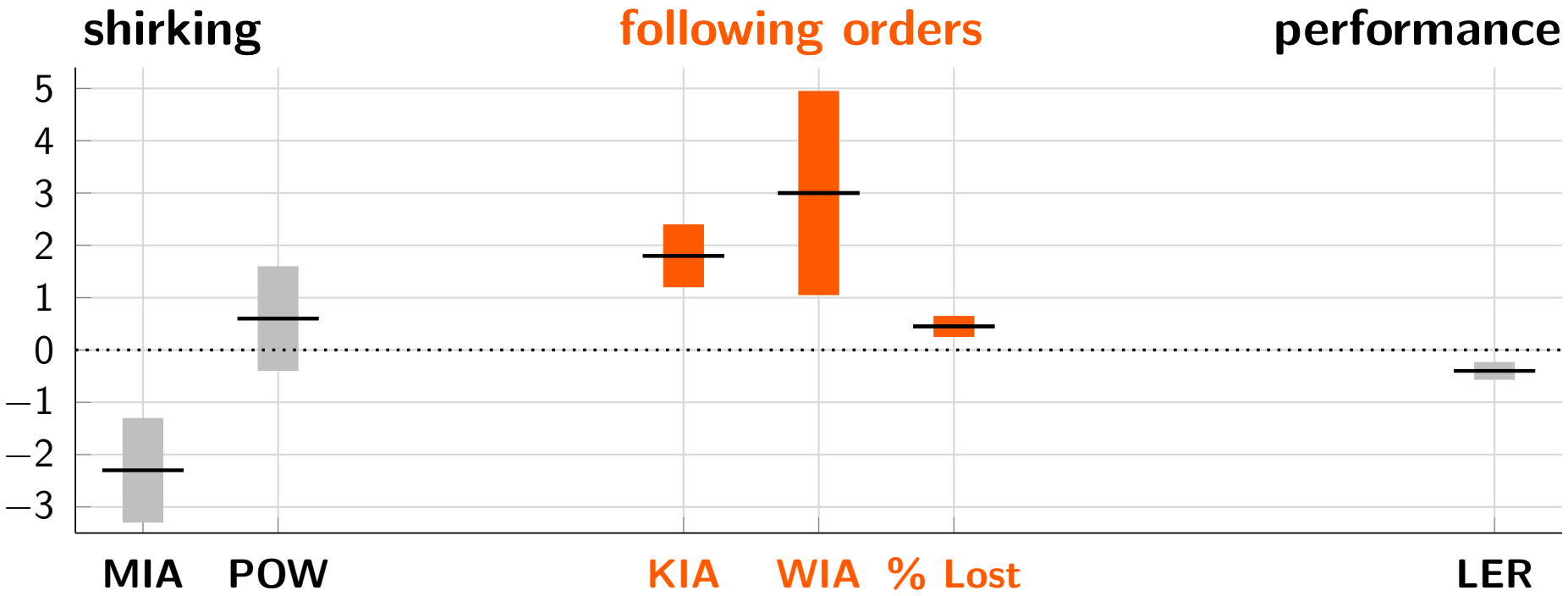
low combat resolve

high combat resolve

empirical test 2.1 / battle-level outcomes

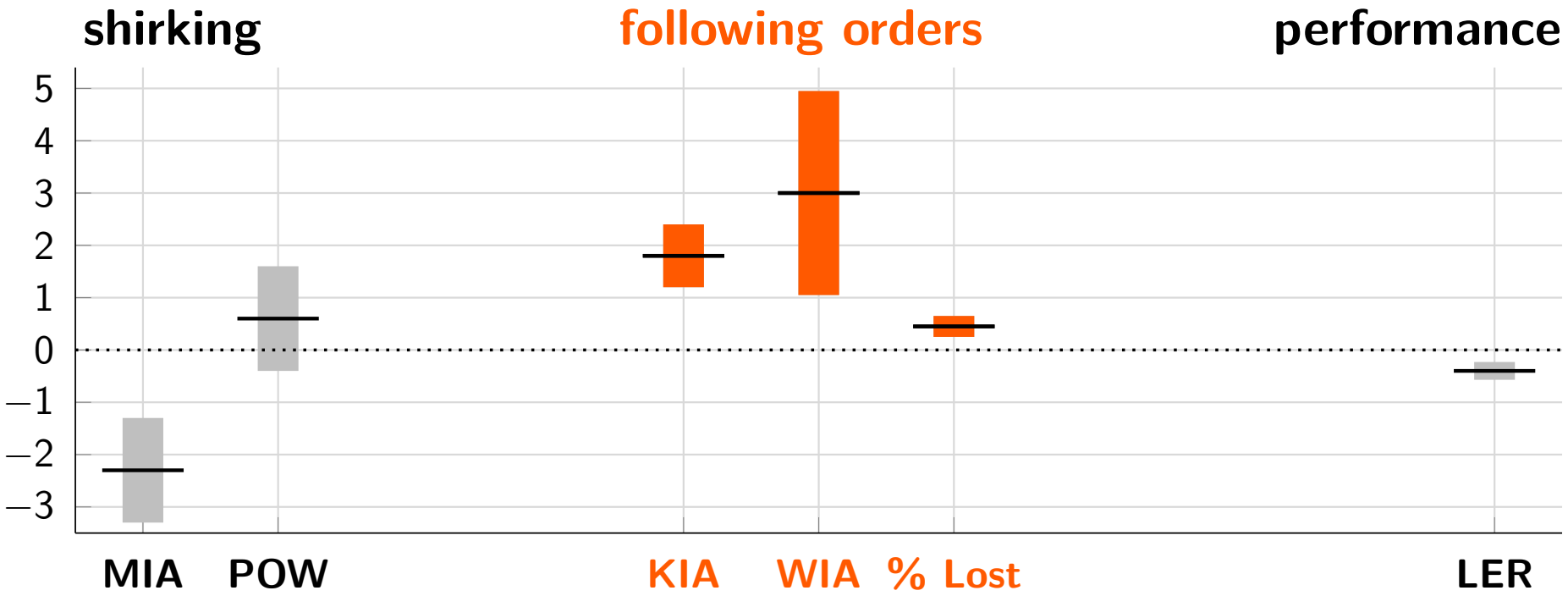


empirical test 2.1 / battle-level outcomes



armies with blocking units → more soldiers killed or wounded

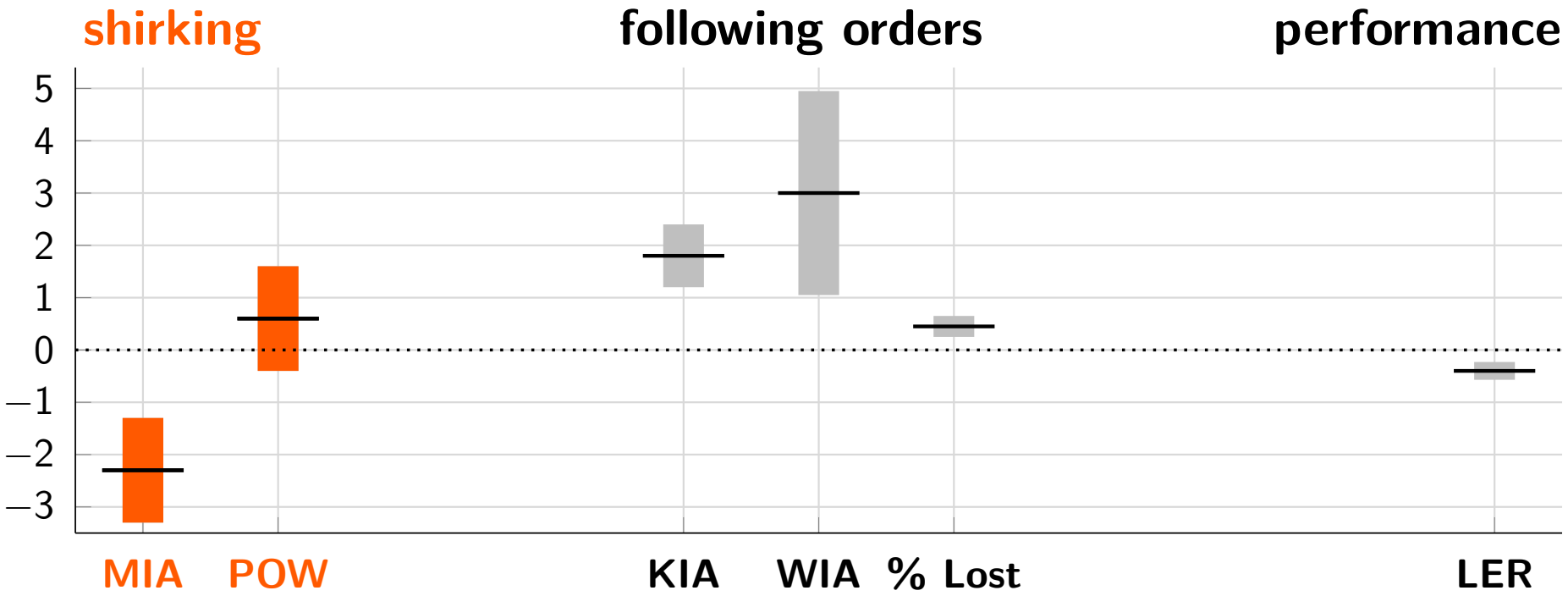
empirical test 2.1 / battle-level outcomes



armies with blocking units → more soldiers killed or wounded

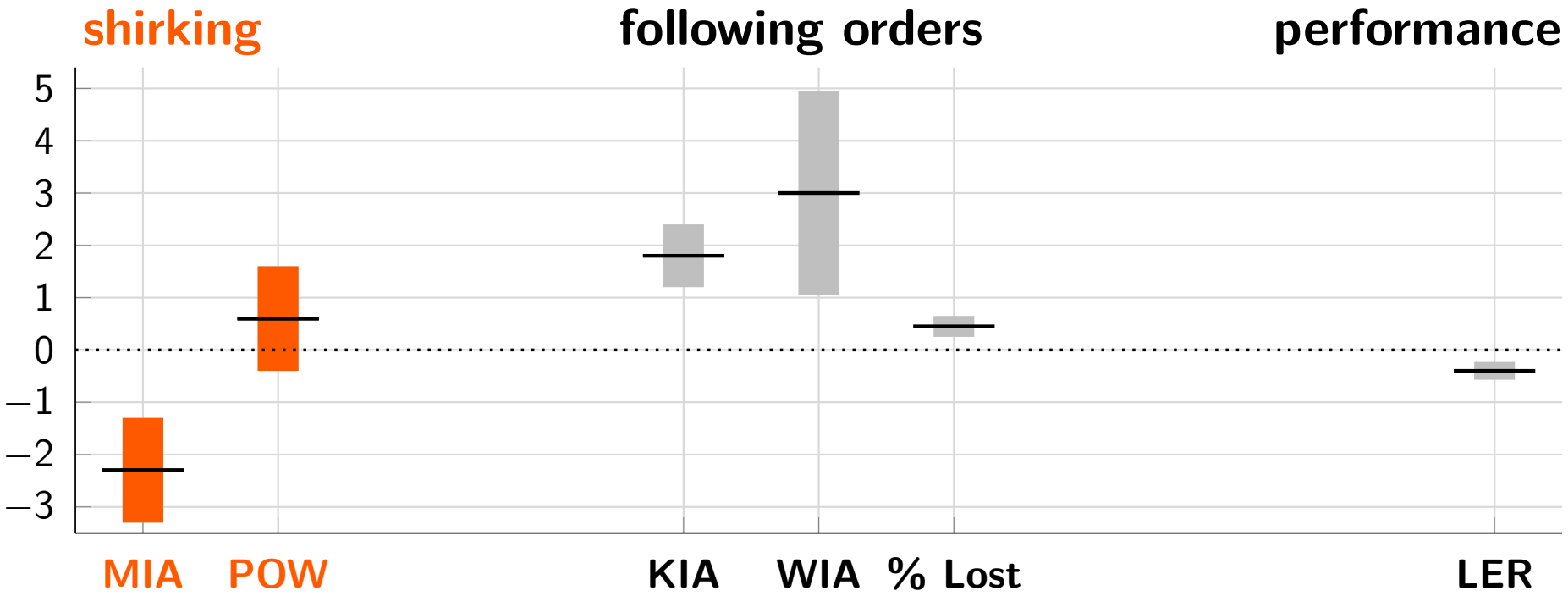
$\underbrace{(\exp(1.8) - 1)}_{\text{proportional change in KIA from blocking units}} \times \underbrace{387}_{\text{median KIA for battle participants}} \approx \mathbf{1{,}950}$ **more deaths per battle participant**
with blocking units present

empirical test 2.1 / battle-level outcomes



armies with blocking units → fewer soldiers missing

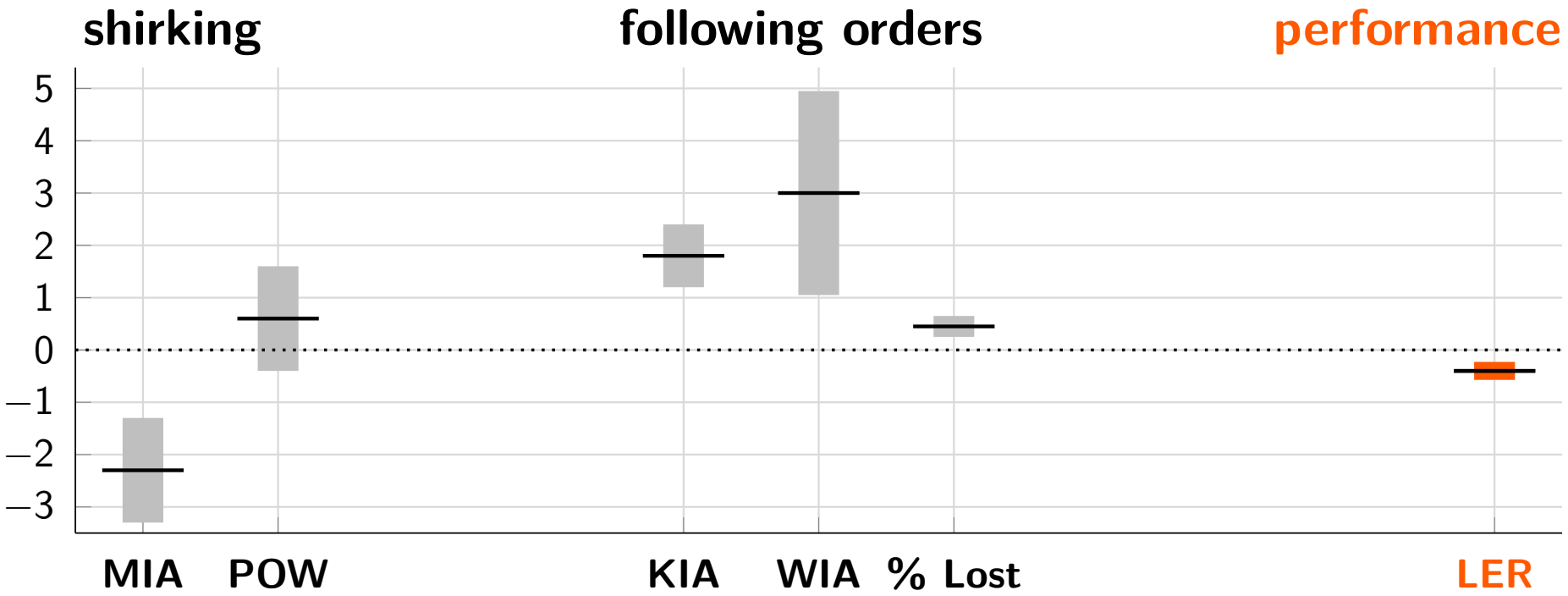
empirical test 2.1 / battle-level outcomes



armies with blocking units → fewer soldiers missing

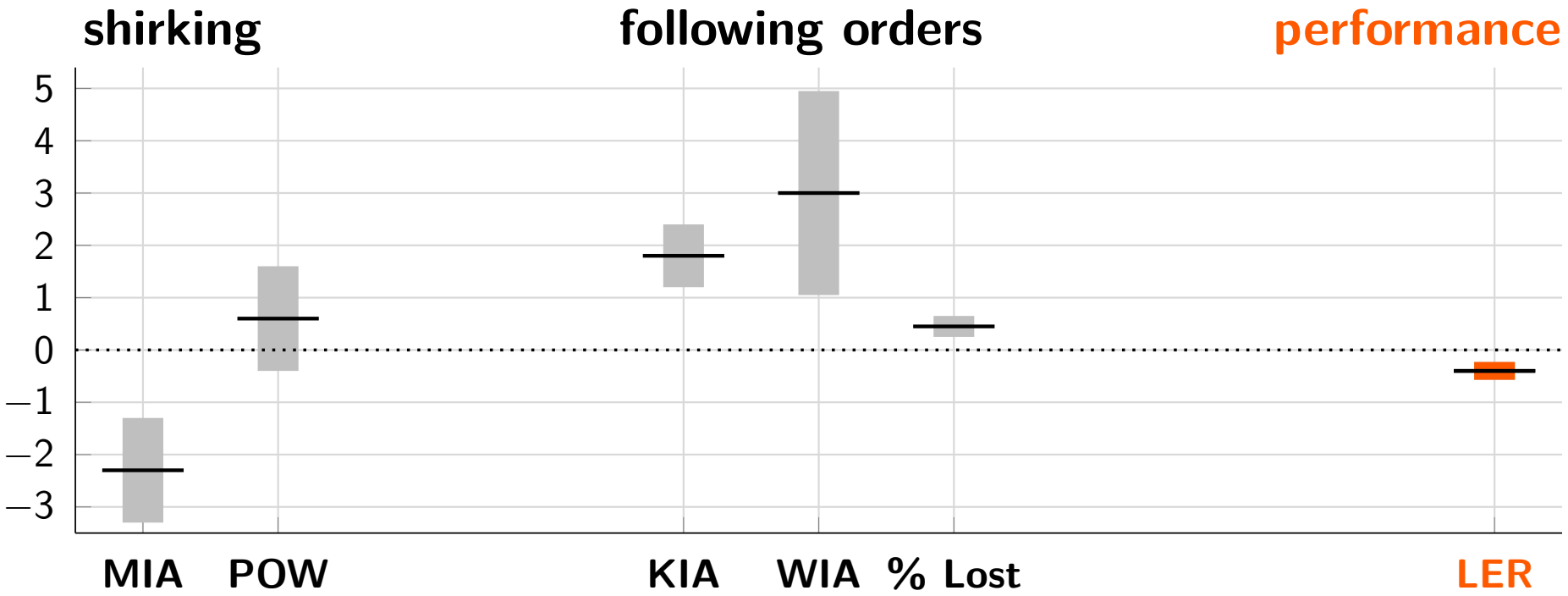
$$\underbrace{\big(\exp(-2.3)-1\big)}_{\text{proportional change in MIA from blocking units}} \times \underbrace{425}_{\text{mean MIA for battle participants}} \approx \mathbf{382}$$ **fewer MIA's per battle participant**
with blocking units present

empirical test 2.1 / battle-level outcomes



armies with blocking units → worse combat effectiveness

empirical test 2.1 / battle-level outcomes



armies with blocking units → worse combat effectiveness

$\underbrace{\big(\exp(-.4)-1\big)}_{\text{proportional change in LER from blocking units}} \times \underbrace{1.2}_{\text{median LER for battle participants}} \approx$ **4 fewer enemies killed for every 10 friendly deaths**
with blocking units present

empirical test 2.2 / war-level outcomes

grouped fixed effects / 185 belligerents, 75 wars

$$\underbrace{\text{Outcome}_{iw}^{(k)}}_{\text{war outcome } k} = \underbrace{\text{Coercion}_{iw}\beta}_{\text{blocking units in army}} + \underbrace{X_{iw}\gamma}_{\text{covariates}} + \underbrace{\text{Country}_i + \text{Decade}_w}_{\text{fixed effects}} + \underbrace{\epsilon_{iw}}_{\text{clustered robust standard errors}}$$

war outcome k

$k \in \{\text{victory}, \text{defeat}, \text{other}\}$

covariates

aggregate power balance, average deployment distance to battles, democracy score, conscription, Geneva Conventions

clustered robust standard errors

blocking units in army

1 if yes, 0 if no

fixed effects

belligerent i's country, decade in which war w happened

empirical test 2.2 / war-level outcomes

how do blocking units affect chances of victory in war?

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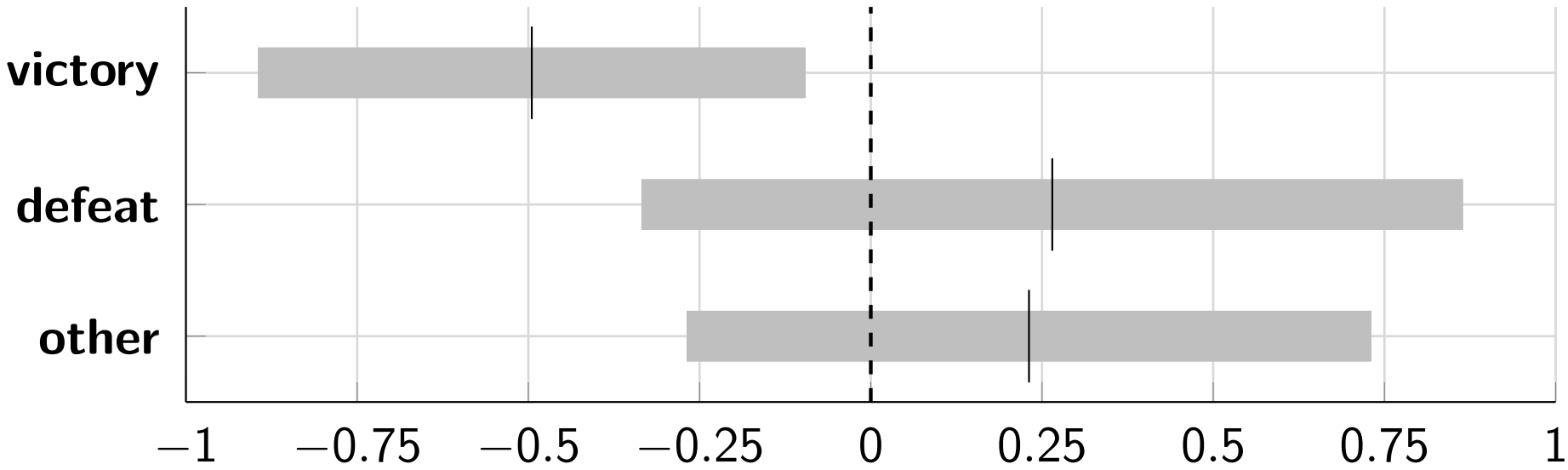

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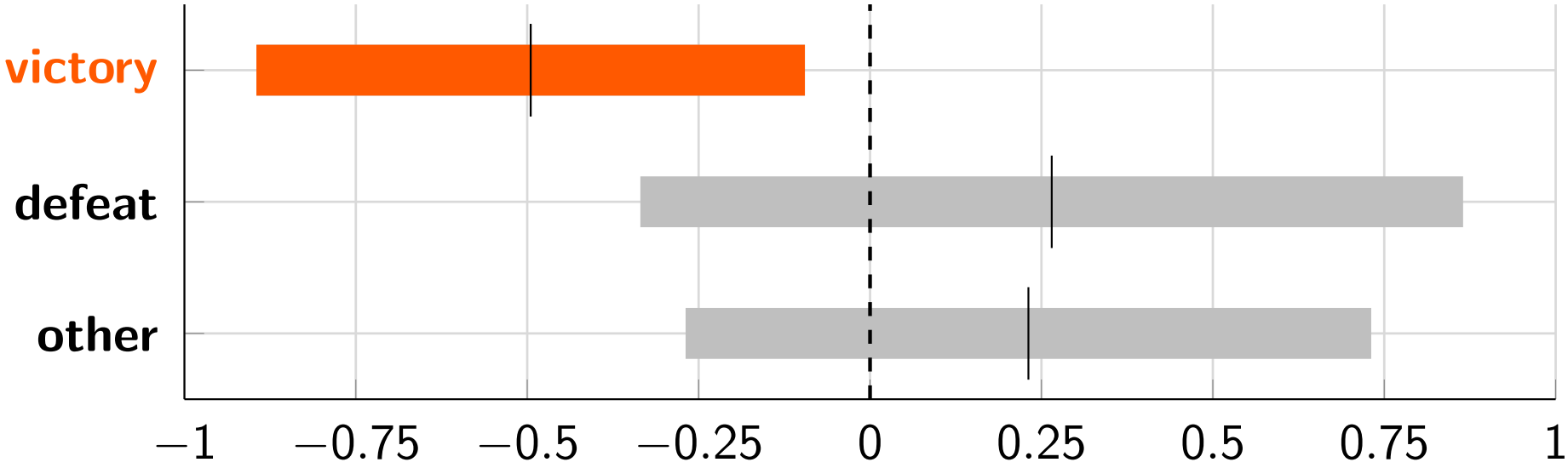
how do blocking units affect chances of victory in war?



armies with blocking units → less likely to win wars

≈ **49.5 percentage point reduction in probability of victory**
with blocking units present

but if that's true, why didn't USSR lose in WWII?

USSR had **material advantages** that overwhelmed the coercion penalty
(large population, ability to replace losses, absorb costs of attrition)

for most other belligerents, cost of fratricidal coercion is unsustainable

outline

theory / fratricidal coercion and combat resolve
- theoretical model
- observable implications

empirical test 1 / NKVD and Soviet soldiers in WWII
- data
- results

empirical test 2 / cross-national battle data, 1939-2011
- data
- results

discussion
- alternative explanations
- summary and implications

threats to inference and alternative explanations

selection	
"NKVD was sent to politically unreliable or under-performing units"	response
"armies select into coercion when they are losing"	response
measurement	
"Soviets cooked the books to make NKVD look effective"	response
"unobserved variation in division strength drives results"	response
estimation	
"interdependence across units biases estimates"	response
"fixed effects specification has overly restrictive assumptions"	response
discrimination	
"soldiers from disfavored groups receive fewer medals"	response
"armies assign soldiers from disfavored groups to rear duties"	response
"armies use soldiers from disfavored groups as cannon fodder"	response
organizational factors	
"what if soldiers surrendered on commanders' orders?"	response
"newer, disorganized units present more opportunities for flight/bravery"	response
"officers and enlisted personnel respond differently to coercion"	response
"prewar purges and repression amplify effect of wartime coercion"	response

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how does fratricidal coercion shape combat resolve?

the effect of fratricidal coercion is conformity

- coercion reduces under-performance
- but coercion also reduces over-performance

how does fratricidal coercion shape combat resolve?

the effect of fratricidal coercion is conformity

- coercion reduces under-performance
- but coercion also reduces over-performance
- fratricidal coercion increases the human cost of war

Fratricidal Coercion in Modern War

Jason Lyall
Dartmouth College

Yuri M. Zhukov
Georgetown University

February 13, 2026

back

formal model

- $\omega \in \mathbb{R}$: intrinsic motivation of soldiers, drawn from distribution F
- $a \in \mathbb{R}$: action selected by soldier, denoting level of combat effort
- $\bar{a}$: action ordered by commanders ($a > \bar{a}$ denotes taking initiative)
- $\underline{a}$: minimally acceptable action ($a < \underline{a}$ denotes shirking)
- $r \geq 0$: level of coercion exposure
- α: alienation parameter
- $\omega - \alpha r$: intrinsic motivation of soldiers exposed to coercion level r
- $(a - (\omega - \alpha r))^2$: intrinsic loss associated with action a
  (absent other considerations, a soldier would choose $a = \omega - \alpha r$)
- $\delta \geq 0$: deterrence parameter
- $\mathbb{E}(\pi|r) = \delta r$: expected penalty for under-performance
- $\delta r(\bar{a} - a)^2$: extrinsic loss associated with action a

back

formal model (continued)

each soldier chooses optimal level of combat resolve a^*

$$a^* \in \arg\min_{a \in \mathbb{R}} (a - (\omega - \alpha r))^2 + \delta r (a - \bar{a})^2 \mathbb{1}\{a < \bar{a}),$$

which solves to

$$a^*(\omega, r) = \begin{cases} \dfrac{\omega + r(\delta \bar{a} - \alpha)}{1 + \delta r} & \text{if } \omega \leq \bar{a} + \alpha r; \\ \omega - \alpha r & \text{if } \omega > \bar{a} + \alpha r. \end{cases}$$

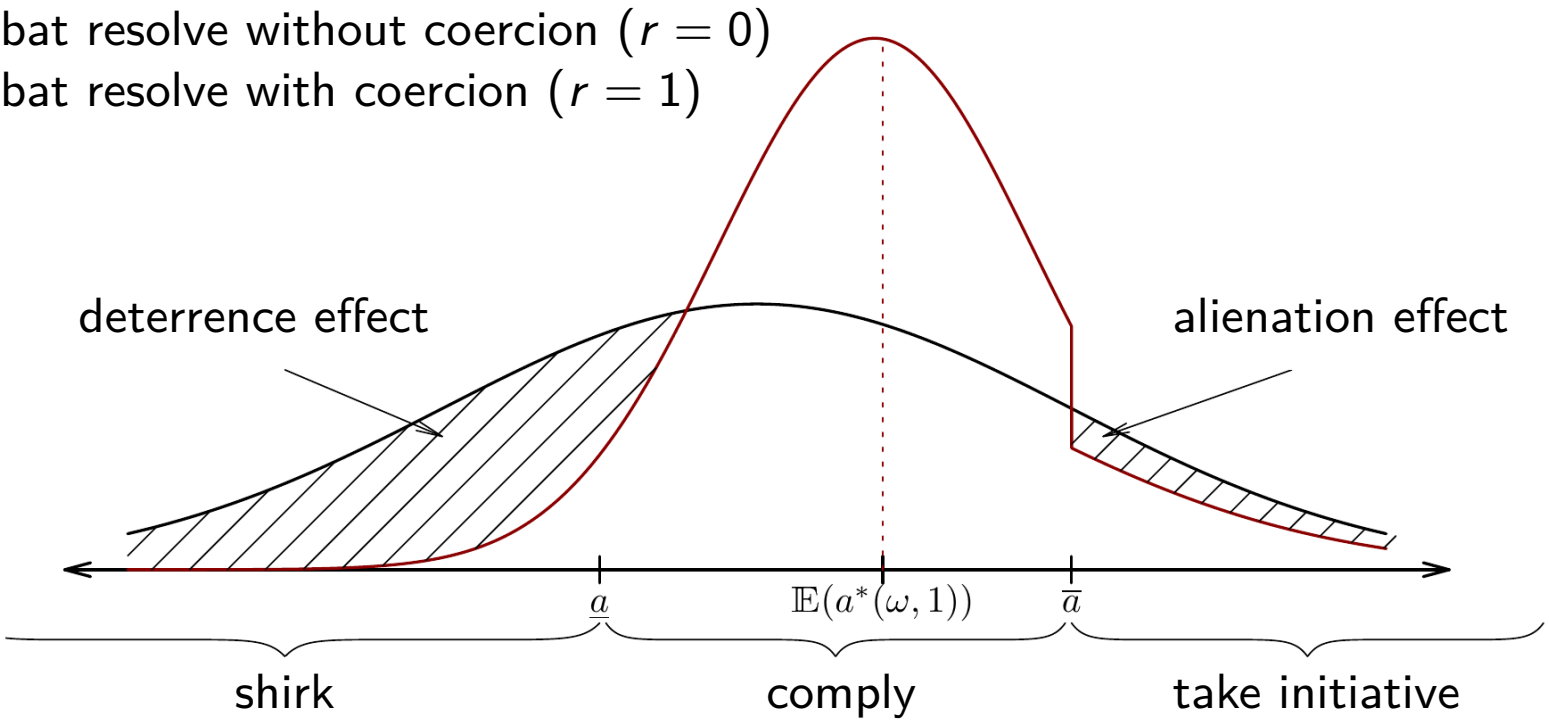
optimal combat resolve a^* is increasing in r for soldiers with low $\omega \leq \bar{a} - \alpha/\delta$, and decreasing for soldiers with high $\omega > \bar{a} - \alpha/\delta$

back

formal model (continued)

Proposition

For each $\alpha > 0$ *and* $\delta > 0$*, there is an* $\tilde{a}(\alpha, \delta)$ *such that, if* $\overline{a} \geq \tilde{a}(\alpha, \delta)$*, then* $\mathbb{E}(a^*(\omega, r))$ *is increasing everywhere in* r*, while* $\Pr(a^*(\omega, r) < \underline{a})$ *and* $\Pr(a^*(\omega, r) > \overline{a})$ *are decreasing everywhere in* r*.*



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validation exercise

our measures of combat resolve are valid only if they correlate in a predictable fashion with military units' aggregate performance

to establish this, we did the following:

- matched soldiers to 5,756 active combat units over 48 months
- for each unit-month, calculated proportions of soldiers who were KIA, MIA, POW, received a medal, etc.
- matched combat units to 225 major battles
- classified battle outcomes as territorial gain / loss / no change (from official Russian MoD descriptions)
- regressed battle outcomes on unit-month proportions of soldiers' individual outcomes (plus FE for units, years, months)

back

	last_name	first_name	middle_name	rank	date_birth	prichina_vibitiya
1	Авдеев	Александр	Николаевич	ст. сержант	__.__.1922	убит
2	Авдеев	Александр	Николаевич	рядовой	__.__.1921	ранен
3	Авдеев	Александр	Николаевич	сержант	__.__.1925	убит
4	Авдеев	Александр	Николаевич	красноармеец	__.__.1916	убит
5	Авдеев	Александр	Николаевич	ст. сержант	__.__.1922	убит
6	Авдеев	Александр	Николаевич	капитан		убит
7	Авдеев	Александр	Николаевич	красноармеец		убит
8	Авдеев	Александр	Николаевич	рядовой	__.__.1921	пропал без вести
9	Авдеев	Александр	Николаевич	ст. сержант	__.__.1903	убит
10	Авдеев	Александр	Николаевич	красноармеец	__.__.1925	пропал без вести
11	Авдеев	Александр	Николаевич	красноармеец	__.__.1915	пропал без вести

105 million records for 35 million soldiers

why this is a problem:

- multiple records per individual
- each new unit assignment / promotion / decoration → new record
- need to combine into single record, with soldier's entire career
- ... but incomplete info, misspellings prevent easy record linkage

backup slides / record linkage

back

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105 million records for 35 million soldiers

our solution:

- link by name fields, DOB, birth location, discharge/death date
- probabilistic linkage (Fellegi & Sunter 1969, Enamorado et al 2017)
- deterministic linkage (fuzzy string matching w/ cosine distance)
- result: 11.6M usable, geocoded records of soldiers born in Russia

back

step 1: blocking

partition data into maximally similar blocks of records

hierarchical procedure:

1. partition records by first letter of the surname
2. use size-constrained k-means clustering to group surnames in each block using frequent surnames as primary data points (s.t. $\geq$ 500 unique surnames in each cluster)
3. partition blocks w/ $\geq$ 25,000 records based on first name
4. partition remaining blocks w/ $\geq$ 25,000 records on patronymic

procedure yields 12,997 blocks of 1,014 – 29,748 records each

back

step 2: compute linkage probilities

compute probability that any two records belong to same soldier, conditional on 19 fields in 3 strata:

1. (1) surnames, (2) first name, (3) patronymic, (4) date of birth;
2. (5) birth region, (6) birth oblast, (7) birth rayon, (8) birth town, (9) discharge year, (10), discharge month, (11) discharge day;
3. (12) enlistment year, (13) enlistment month, (14) enlistment day, (15) enlistment oblast, (16) enlistment committee, (17) outcome, (18) rank, (19) military unit

let π_{ij}^{s} be Probability(records i, j are a match | fields in stratum s)

calculate *pairwise linkage weights* for i, j across the strata as

$$m_{ij} = \pi_{ij}^{1}(1 + \pi_{ij}^{2} + \pi_{ij}^{3})$$

back

step 3: classification

assign records to soldiers, using hierarchical agglomerative clustering:

1. assign records into clusters (soldiers) using low similarity threshold
2. partition clusters w/ ≥ 10 records using higher similarity threshold

calculate total linkage weight for each cluster (soldier): geometric mean of pairwise linkage weights of all records assigned to k:

$$w_k = \left(\prod_{i<j} m_{ij} \right)^{1/n_k} = \left(\prod_{i<j} \pi_{ij}^1 (1 + \pi_{ij}^2 + \pi_{ij}^3) \right)^{1/n_k}$$

where n_k is number of records assigned to soldier k

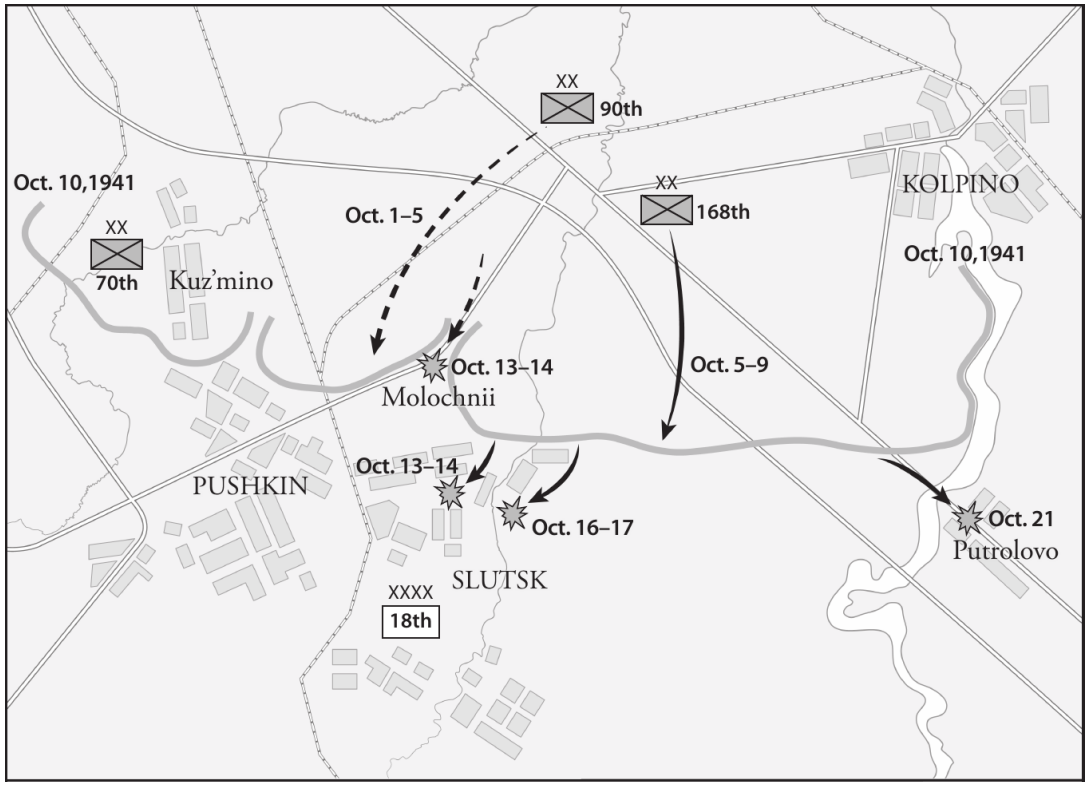
we weight each soldier by w_k to give more weight to observations that are classified with greater certainty

back

	Probabilistic	Deterministic
Soldiers	11,606,552	12,415,618
K/WIA	22.42%	21.84%
MIA	20.17%	19.46%
POW	5.65%	5.33%
DDT	0.16%	0.15%
PUN	0.78%	0.72%
Medal	17.47%	15.89%
Promotion	12.9%	11.29%

Table: Probabilistic and deterministic clustering, marginal properties.

backup slides / matched case study



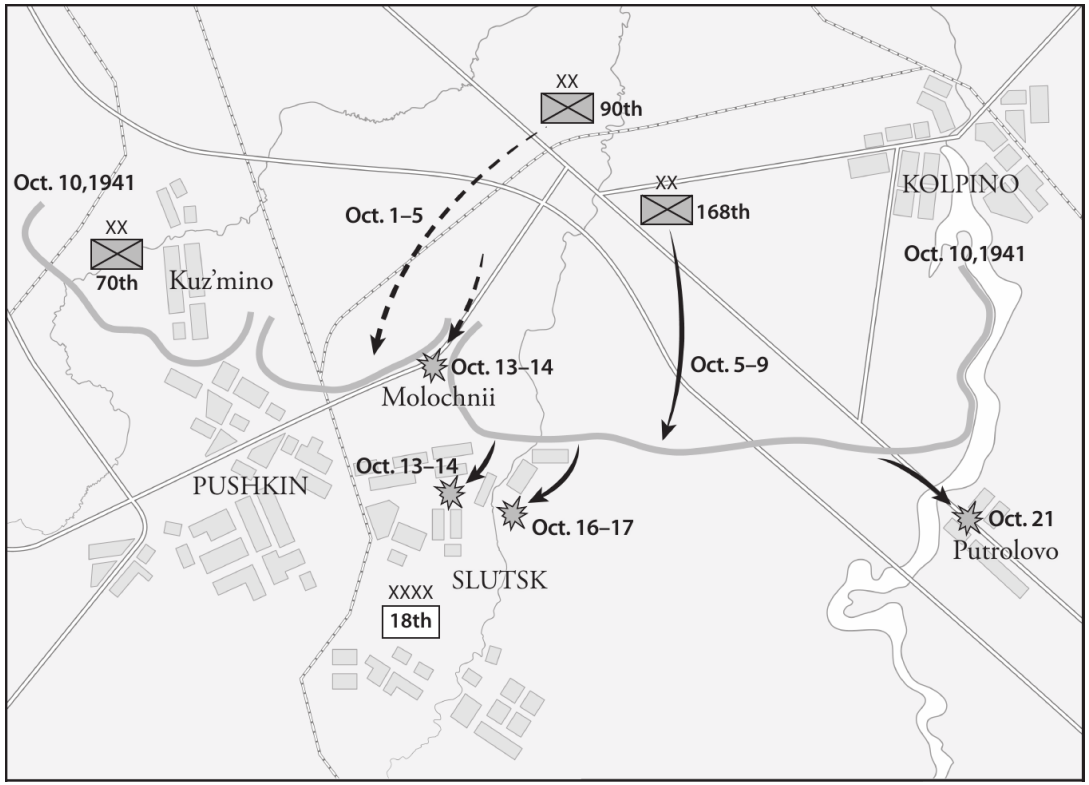
Battle of Leningrad, October 1941

168th Rifle Division, 55th Army
high NKVD presence (57 officers)

90th Rifle Division, 55th Army
low NKVD presence (1 officer)

info

backup slides / matched case study



Battle of Leningrad, October 1941

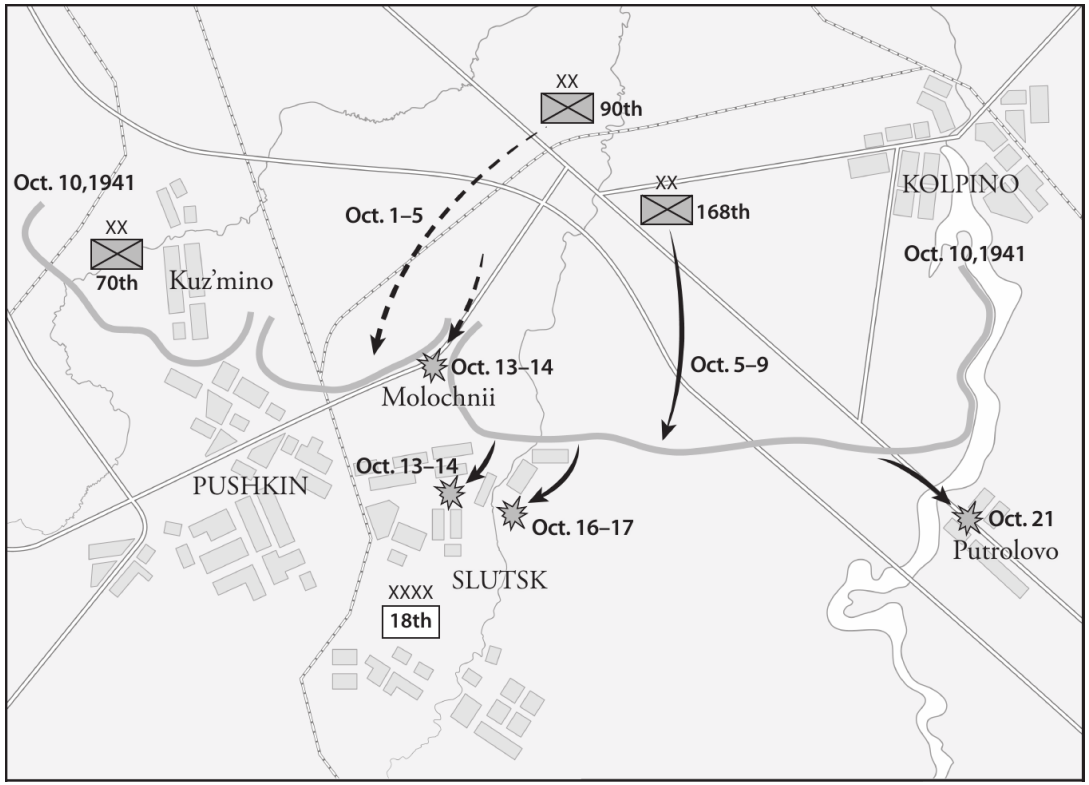
168th Rifle Division, 55th Army
high NKVD presence (57 officers)

90th Rifle Division, 55th Army
low NKVD presence (1 officer)

more soldiers killed in action

info

backup slides / matched case study



Battle of Leningrad, October 1941

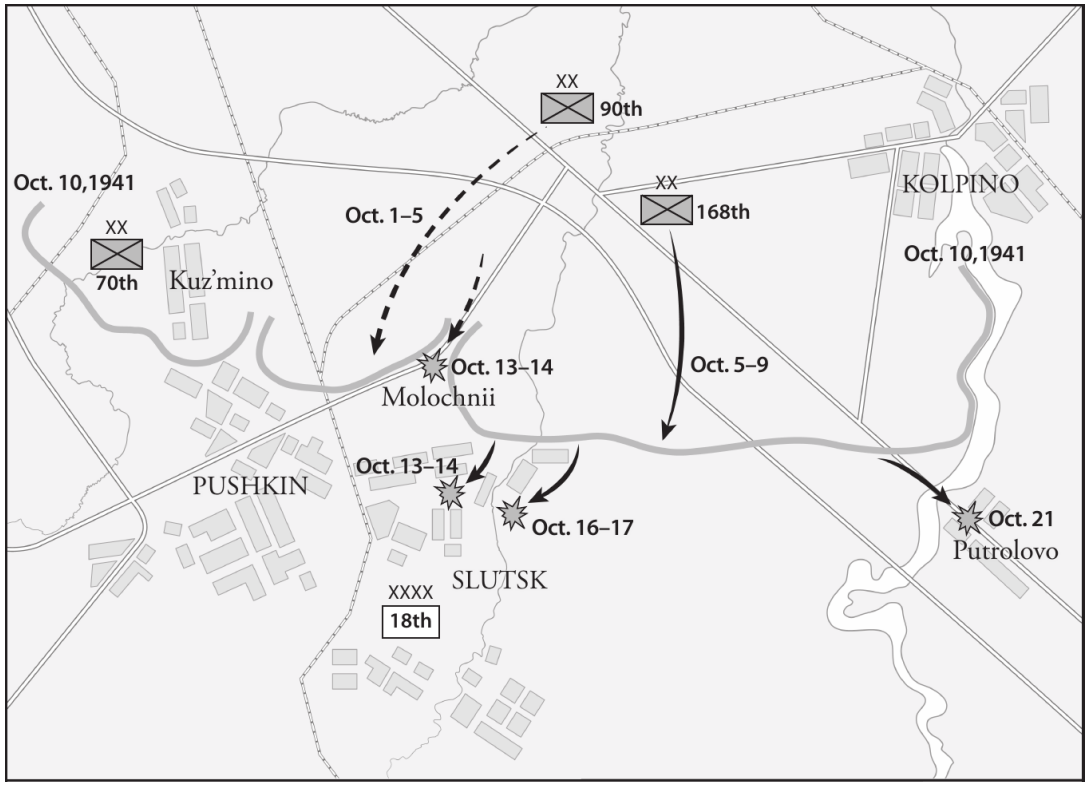
168th Rifle Division, 55th Army
high NKVD presence (57 officers)

90th Rifle Division, 55th Army
low NKVD presence (1 officer)

fewer missing, captured, deserted

info

backup slides / matched case study



Battle of Leningrad, October 1941

168th Rifle Division, 55th Army
high NKVD presence (57 officers)

90th Rifle Division, 55th Army
low NKVD presence (1 officer)

fewer receive medals for valor

info

back

3-step matching procedure

1. **create sample of matched division pairs** (high + low NKVD)

   match divisions *exactly* on:

   - battle
   - month
   - army
   - type (infantry, armor, artillery, etc.)
   - guards designation
   - number of discharge records (quantile)

   548,628 potential pairs $\rightarrow$ 1,686 matched pairs

2. **extract 10 pairs with largest disparities in NKVD personnel**
3. **manually select 1 pair from "top-10" for qualitative analysis**

   our winners:

   - 168th Rifle Division, 55th Army, Battle of Leningrad (high NKVD)
   - 90th Rifle Division, 55th Army, Battle of Leningrad (low NKVD)

backup slides / summary

back

	168th RD	**90th RD**	Δ
NKVD OO/SMERSH	57	1	$+56$
exact matching			
front	Leningrad	Leningrad	
army	55th	55th	
unit type	Rifle Division	Rifle Division	
additional unit traits			
formation date	1939	1936	
formation	second	second	
soldiers (approx.)	10,000–13,654	10,000–10,258	$+[0, 3396]$
artillery/howitzers	38	42	-4
anti-aircraft guns	8	4	$+4$
anti-tank guns	54	48	$+6$
vehicles	771	690	$+81$
initial front (linear km)	60–65	50–52	$+[10, 13]$
force-to-space ratio (linear km)	167–210	198–200	$\pm[10, 21]$
force-to-force ratio (USR:GER)	1:2.5–1:3	1:2.5–1.3	0
soldiers per vehicle	13–18	14–15	$-[1, 3]$
support %	37%	31%	$+6\%$

backup slides / summary

back

	168th RD	**90th RD**	Δ
NKVD OO/SMERSH	57	1	+56
battlefield performance			
KIA	33.87%	18.9%	+14.97%
WIA	0%	0%	0%
MIA	33.64%	34.12%	−0.48%
POW	3.66%	20.21%	−16.55%
desertions	1.14%	1.84%	−0.70%
medals for valor	1.83%	4.99%	−3.16%

backup slides / summary

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soldiers in units with larger NKVD sections were **more likely to follow orders**

backup slides / summary

back

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larger NKVD section → more soldiers killed in action

backup slides / summary

back

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soldiers in units with larger NKVD sections were **less likely to shirk**

backup slides / summary

back

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larger NKVD section → fewer soldiers missing, captured, deserted

backup slides / summary

back

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soldiers in units with larger NKVD sections were **less likely to take initiative**

backup slides / summary

back

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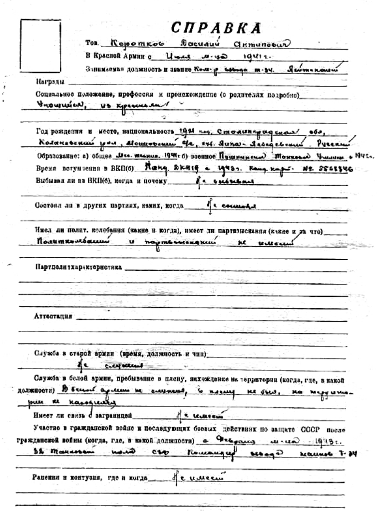
medals for valor	1.83%	4.99%	−3.16%

larger NKVD section → fewer soldiers receive medals for valor

backup slides / service record case file example

back


СПРАВКА

Тов.

В Красной Армии с

Занимаемая должность и звание

Награды

Социальное положение, профессия и происхождение (о родителях подробно)

Год рождения и место, национальность

Образование: а) общее б) военное

Время вступления в ВКП(б)

Выбывал ли из ВКП(б), когда и почему

Состоял ли в других партиях, каких, когда

Имел ли полит. колебания (какие и когда), имеет ли партвзыскания (какие и за что)

Партполитхарактеристика

Аттестация

Служба в старой армии (время, должность и чин)

Служба в белой армии, пребывание в плену, нахождение на территории (когда, где, в какой должности)

Имеет ли связь с заграницей

Участие в гражданской войне и последующих боевых действиях по защите СССР после гражданской войны (когда, где, в какой должности)

Ранения и контузия, где и когда

English translation

Comrade: Korotkov Vasiliy Antipovich

In Red Army since: July 1941

Current post and rank: T-34 tank platoon commander, lieutenant

Decorations: —

Social status, profession and background (parents' details): from a peasant family

Year and place of birth, nationality: 1921, Stalingrad oblast, Kalachevskiy distrit, Mestovskiy locality, Lebedevsk khutor, Russian

Education - a) general: mechanical-technical in 1941 b) military: Pushkin Tank School in 1942

VKP(b) [Communist party] membership start date: since 1939, Communist card number: 5568846

Withdrawal from VKP(b), when and why: no withdrawal

Membership in other parties, which ones, when: none

History of political dithering (what kind and when), party disciplinary actions (what kind and what for): no political dithering or party disciplinary actions

Party political assessment: —

Performance review: —

Service in old [Tsarist] army (time, post, rank): no service

Service in White Army, captivity, place of deployment (when, where, in what capacity): never served in White Army, never in captivity, and never deployed in indicated territories

Foreign connections: no foreign connections

Participation in civil war and subsequent military operations in defense of USSR after civil war (when, where, in what capacity): since February 1943, served as the commander of T-34 tank platoon

Injuries and contusions, where and when: none

back

estimating the CRI

we exploit correlations between soldier-level and unit-level outcomes by constructing a scalar index of combat resolve for each unit-month

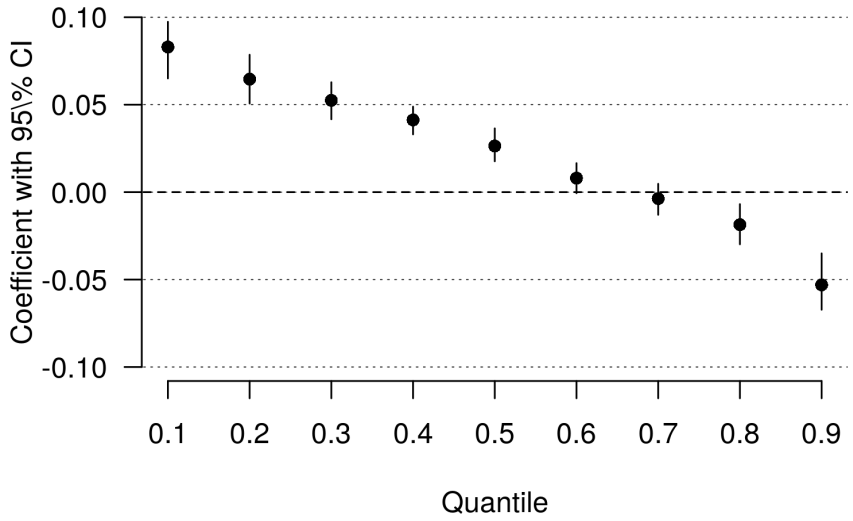
to this end, we did the following:

- fit semiparametric regression Territorial gain$_{it} = \sum_k f_k(y_{itk}) + \epsilon_{it}$ where y_{itk} is proportion of soldiers in unit i and year-month t with outcome k; f_k is a smooth function (cubic splines)
- in raw form, CRI values are predicted probabilities from this model

$$\text{CRI}_{it} = \sum_k \hat{f}_k(y_{itk})$$

- residualize CRI and coercion by regressing each on FEs for units, years, and months, plus the covariates used in our main regressions

back



quantile regressions

we test the prediction about variance reduction more formally using conditional quantile regression:

- DV is residualized CRI, X is residualized coercion
- coefficient estimates are positive for lower quantiles, negative for upper quantiles (units with high NKVD exposure had higher CRI at low end of distribution, lower CRI at high end)

threats to inference / measurement

back

"Soviets manipulated records to make NKVD look effective"

this is unlikely...

- Soviet Army, not NKVD, reported casualties
  ... army commanders had few incentives to inflate NKVD's reputation
- if NKVD presence improved reporting accuracy, should expect some relabeling of MIAs as POWs (positive correlation b/w NKVD, POW)
  ... we see the opposite
- if "cooking the books," why leave KIA and medals untouched?
  ... misreporting cannot explain consistent pattern across all outcomes (less flight, but also more KIA and fewer medals)

back

"unobserved variation in division strength drives results"

why this matters:

- divisions vary in size due to attrition, rest, refitting
- this variation could affect NKVD's ability to monitor and punish
- each additional NKVD officer may have larger effect on behavior in under-strength units (fewer troops to watch and deter)

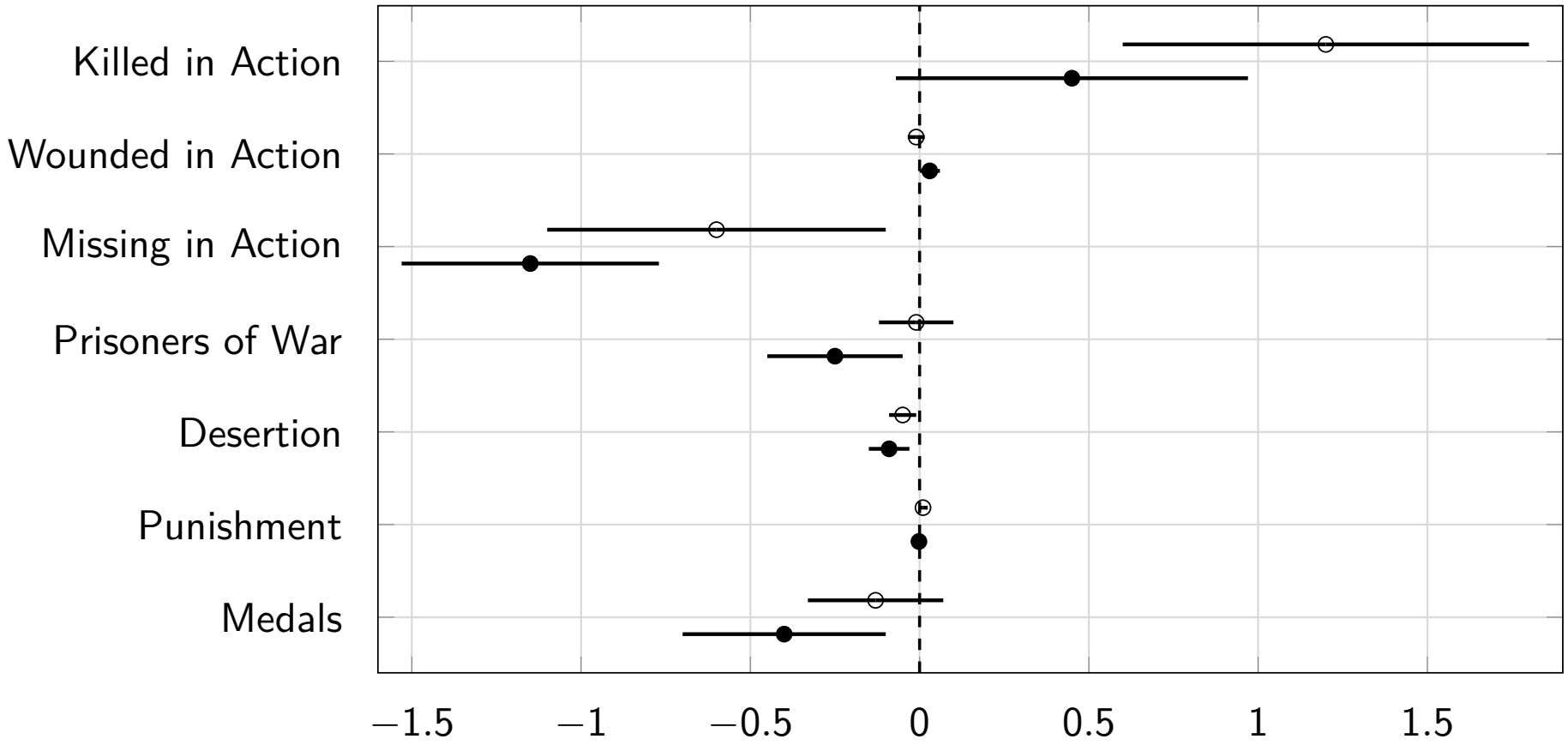
but results robust to:

1. first-month subsamples (units at full strength)
2. time-varying coefficients (capturing attrition over time)
3. simulations with random strength shocks

back

subsample analysis: **rifle divisions at full strength**

(first month of participation in war ○ or battle ●)



back

"three-way FE imposes overly restrictive assumptions"

why this is important to address:

- Imai & Kim (2021): 2FE cannot nonparametrically adjust for unit- and time-specific confounders (relies on linear additive separability)
- our three-way FE (unit + battle + month) adds battle-specific confounders, imposing even stronger functional form assumptions
- Plümper & Troeger (2019): FE can amplify bias from dynamic misspecification by dropping between-unit variation

specific concerns:

- assumes no interactions b/w unit quality, time trend, battle conditions
- assumes no unit-specific time trends in NKVD deployment patterns
- assumes no omitted time-varying confounders
- assumes no misspecified lag structure
  (NKVD effects may accumulate or decay over time)

back

"three-way FE imposes overly restrictive assumptions"

why our three-way FE specification is still justified:

- battle FEs absorb battle-specific selection factors and battle difficulty (battles vary in enemy strength, terrain, objectives)
- including battle FEs imposes additivity assumptions, but...
- alternative (omitting battle FEs) creates worse confounding from unobserved battle difficulty
- the additivity assumption is not implausible (NKVD operates through soldier compliance decisions, not complex higher-order interactions)
- and additivity violations aren't critical (results robust to specifications without battle FEs)

threats to inference / fixed effects bias

back

"three-way FE imposes overly restrictive assumptions"

our findings do not hinge on specific FE assumptions

extensive robustness checks mitigate dynamic misspecification concerns:

- specifications without battle FEs (relaxes three-way assumption)
- first-month subsamples (limited time for unit-specific trends)
- time-varying NKVD effects (addresses temporal heterogeneity)

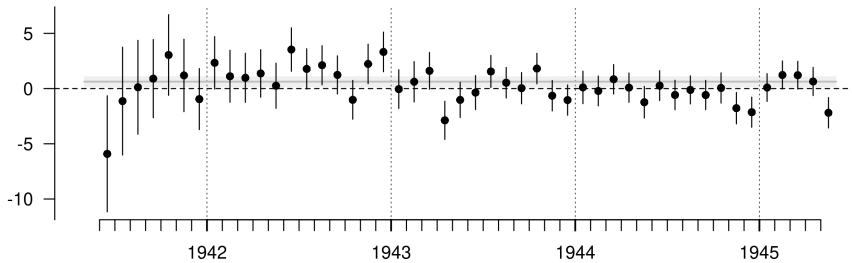
validation outside FE framework

- matched qualitative analysis ("design-based" comparison without relying on additivity assumptions or dynamic specification)
- cross-national battle analyses (external validation in completely different data structure)

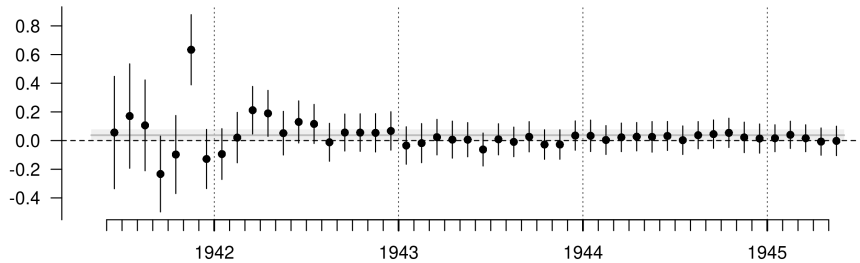
back

time-variant coefficient estimates

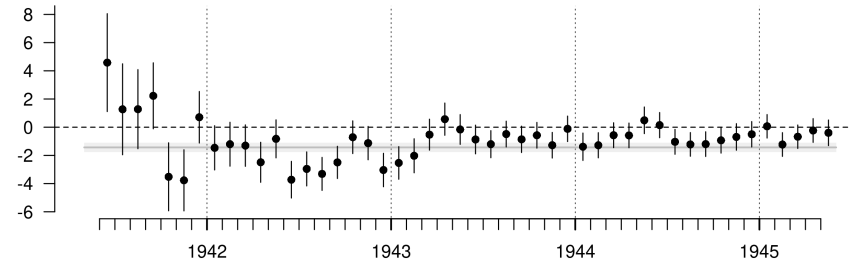
Killed in Action



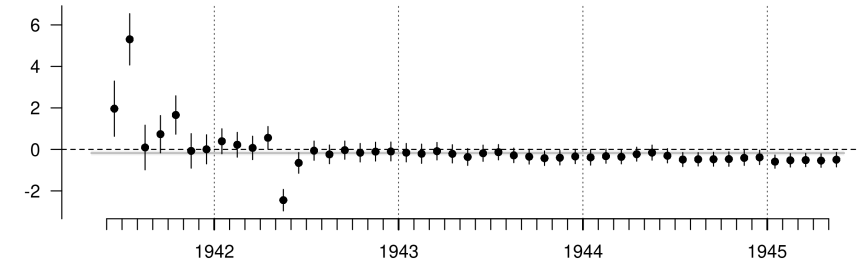
Wounded in Action



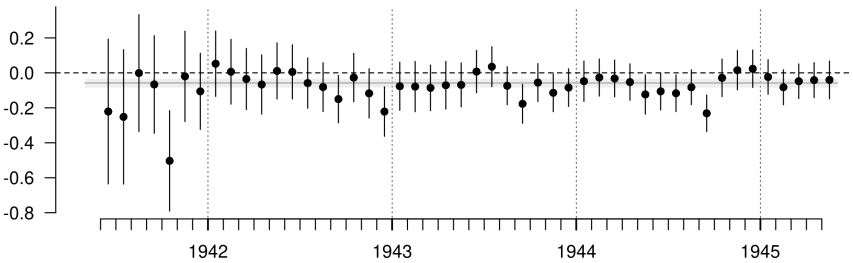
Missing in Action



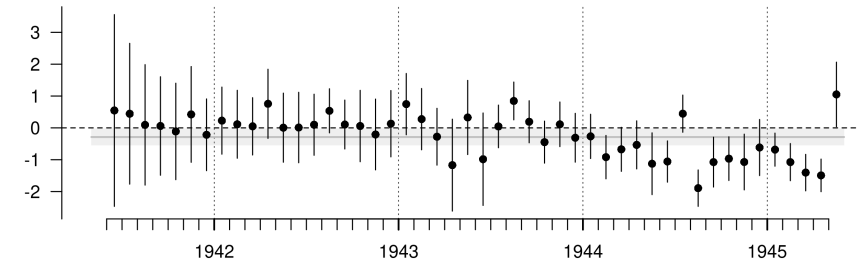
Prisoner of War



Desertion



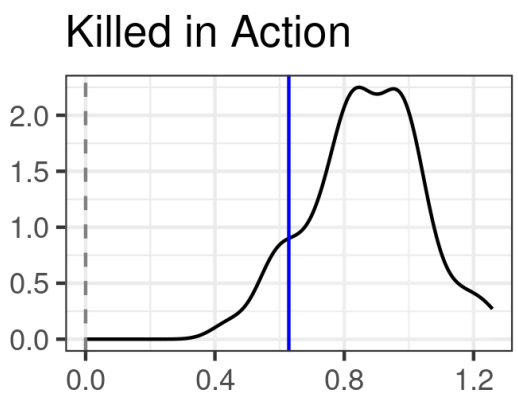
Medals

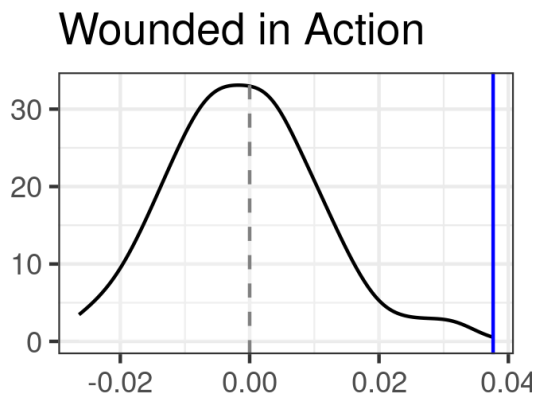


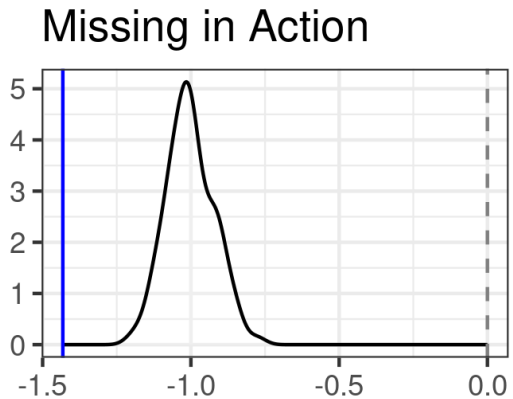
back

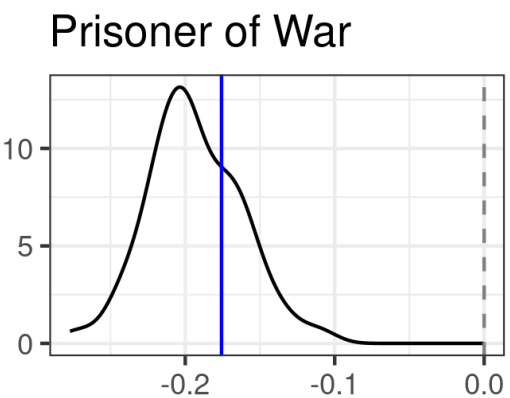
random shocks to force strength

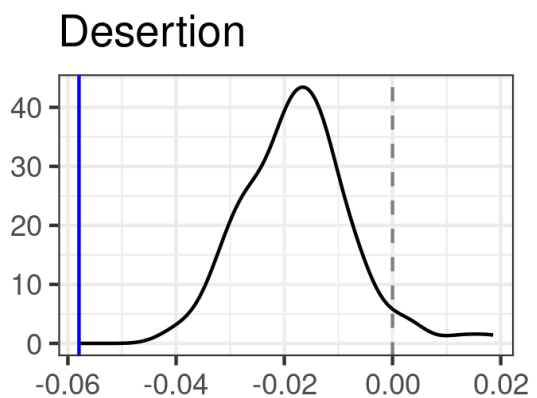
10,000 simulations, where each division receives a monthly random shock to its strength (mean div.: 10,500 troops, range: 6,000-15,000)

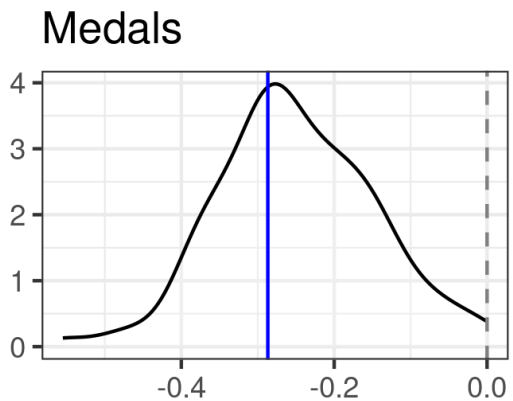












back

"interdependence across units biases estimates"

why this is important to address:

- military units do not exist in a vacuum
- fortunes of one unit depend on fortunes of other units

to account for this interdependence, we extend our model:

$$y_{it}^{(k)} = \ln(\text{Coercion}_{it})\beta + \ln(\overline{\text{Coercion}}_{lt[-i]})\psi + \mathbf{X}_{it}\gamma + u_{it}$$

$$u_{it} = \text{unit}_i + \text{battle}_{j(i,t)} + \text{month}_t + \epsilon_{it}$$

where

$\overline{\text{Coercion}}_{lt[-i]}$ is average number of NKVD officers assigned to other units in parent formation l on month t

β is "direct effect" of NKVD presence in unit i on outcomes in i

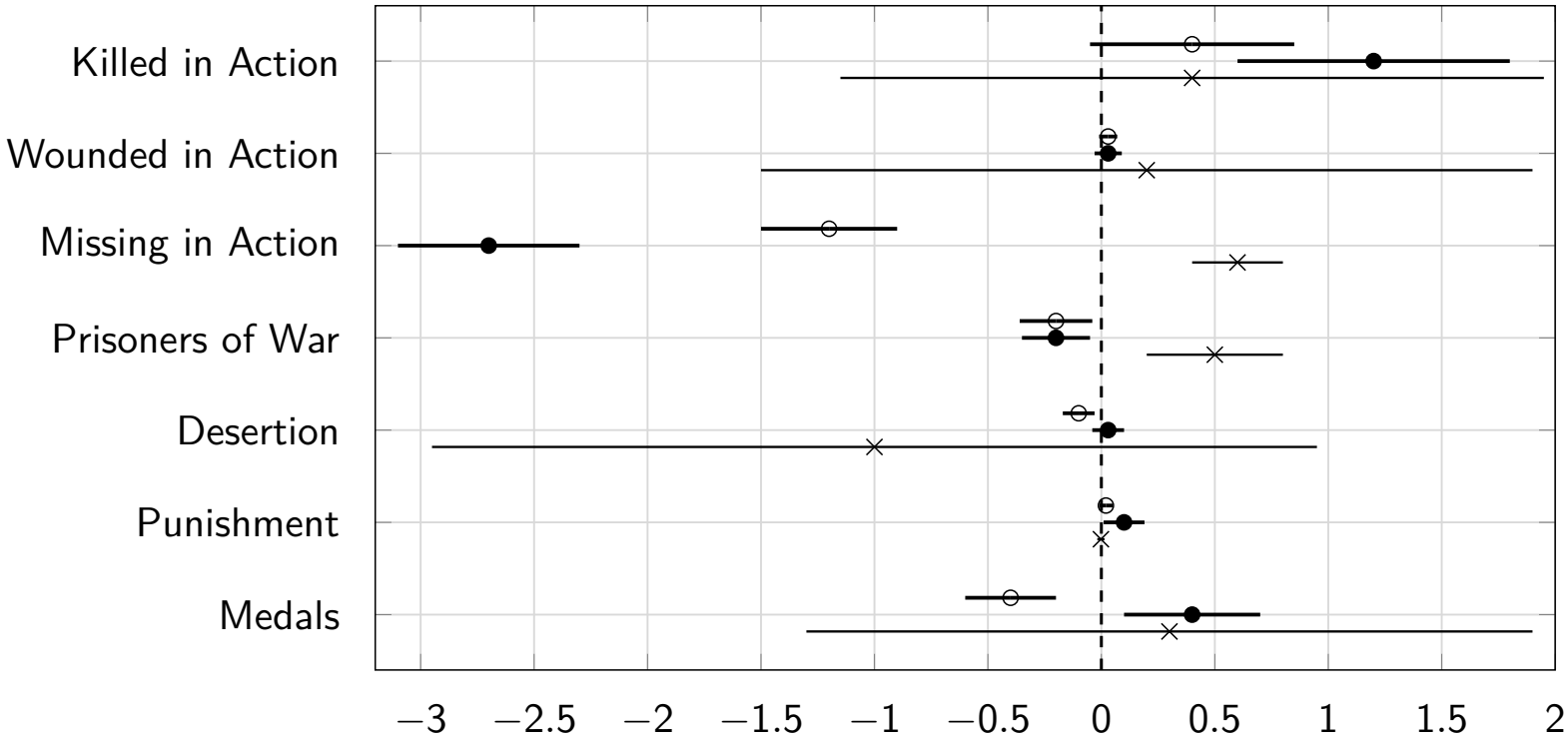
ψ is the reduced-form peer effect

$\rho = \psi/(\beta + \psi)$ is the endogenous peer effect

back

peer effects model estimates

(○ direct effect, ● reduced form peer effect, × endogenous peer effect)



back

what predicts NKVD presence?

we regressed NKVD presence on attributes of RKKA division-months:

$$\log(\text{NKVD}_{it}) = \mathbf{X}_{it}\gamma + \text{Army}_i + \epsilon_{it}$$

NKVD assigned more personnel to units that had

- more opportunities for direct contact with the enemy and crossing of front lines (infantry)
- higher share of non-Russian soldiers
- older troops
- more troops with peasant/rural backgrounds
- soldiers conscripted from geographically distant communities
- higher levels of prewar exposure to NKVD purges, repression

threats to inference / selection

back

"NKVD was sent to unreliable/under-performing units"

why this is important to address:

- NKVD assigned more personnel to units with higher expected flight risk (minorities, rural conscripts, high pre-war repression)
- NKVD concentrated in branches with more exposure to front lines (rifle divisions had 2× NKVD of armored units)

if this is true, we are probably under-estimating coercion effect:

- units "treated" with NKVD had higher MIA/POW baseline, yet we observe lower MIA/POW with NKVD presence
- unit/battle FE eliminate time-invariant selection; within-unit changes reveal marginal effect net of baseline unit quality
- reverse selection bias (NKVD sent to problem units) would suppress estimated deterrent effect, not inflate it

threats to inference / selection

back

"armies select into coercion when they are losing"

why this is important to address:

- war-level data cannot determine direction of causality: do blocking units cause defeat, or do losing armies adopt blocking units?
- if armies rationally adopt coercion when prospects dim, observed correlation reflects selection, not causal effect

why selection does not fully explain our cross-national findings:

- fixed effects exploit within-conflict variation in blocking unit use (e.g., one belligerent uses blocking units, opponent doesn't)
- mechanism consistency: war-level defeat aligns with battle-level inefficiencies (fewer MIAs but higher casualties, reduced initiative)
- selection bias works against us: we should observe *positive* correlation between blocking units and MIA/desertion
- detecting a deterrent effect (MIA$\downarrow$, desertion$\downarrow$) despite selection into treatment suggests effects are real, not spurious

alternative explanations / discrimination

back

"results are just reflecting ethnic or class discrimination"

why this is important to address:

- there was a greater NKVD presence in units with more ethnic minorities, more soldiers from rural areas
- "NKVD effect" may therefore be picking up differential treatment of soldiers by state, not differential behavior by soldiers

for example:

- lower medal rate may reflect **heavier scrutiny** of minority soldiers
- ... or fewer combat opportunities due to assignment to **rear duties**
- if disfavored groups were **cannon fodder**, this explains higher KIAs

alternative explanations / discrimination

back

"results are just reflecting ethnic or class discrimination"

but...

- NKVD effects remain significant after controlling for unit ethnic composition and urbanization rates
- heavier scrutiny should result in less flight — instead, we see deterrence failure (more flight) in minority, rural units
- if disfavored groups assigned to rear duties, should also see fewer KIAs (because farther from front), not just fewer medals
- KIA results do not align with either "cannon fodder" or "rear duties" (KIA rates higher among "favored" urban troops; no relationship between unit ethnic composition and KIA)
- discrimination cannot explain consistent patterns across all outcomes — conformity tells a more coherent story

back

"newer, disorganized units present more opportunities for flight/bravery"

why this is important to address:

- outcomes may reflect variation in opportunities for initiative, not variation in NKVD's deterrent capacity
- such opportunities may be greater in "greener" units

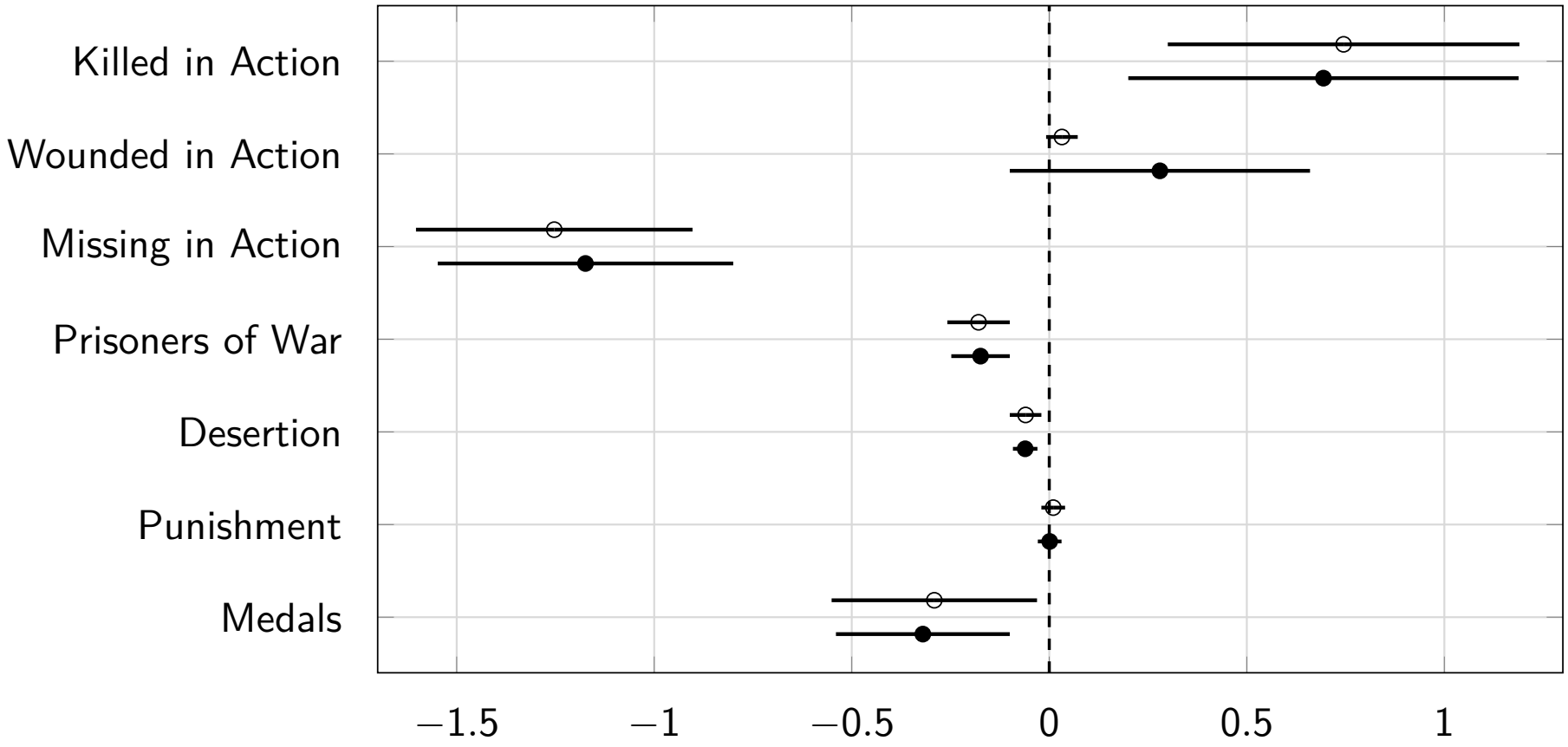
we consider two proxies for organizational maturity:

- an indicator for division's first month on the front
- cubic spline for duration of deployment

back

models accounting for unit "greenness"

(○ first-month dummies, ● deployment duration spline)



threats to inference / commanders' orders

back

"soldiers are surrendering on commanders' orders, not individually"

why this is important to address:

- Soviet units did surrender en masse under commanders' orders, particularly in early 1941 (Kyiv encirclement, Vyazma-Bryansk pocket)
- if POW counts reflect commander decisions rather than individual soldier choices, our "deterrent effect" may be spurious
- NKVD might constrain commanders, not soldiers

two versions of this critique:

- **measurement error story**: commander-ordered surrenders contaminate POW measure, biasing coercion effect estimates
- **alternative mechanism story**: NKVD affects commanders' surrender decisions, not soldiers' individual compliance behavior

threats to inference / commanders' orders

back

"soldiers are surrendering on commanders' orders, not individually"

but...

- **direction of measurement error bias**: if POW measure includes both individual surrenders (signal) and commander-ordered surrenders (noise), estimated coercion effect would be *attenuated toward zero*
- **pattern across all outcomes**: coercion affects desertion (purely individual), going missing (mostly individual), discipline infractions, medals, deaths — almost all point to individual-level responses
- **officer-level analysis**: commissioned officers show similar conformity pattern in individual compliance decisions as enlisted personnel
- **qualitative evidence**: case studies show blocking detachments directly intervening at individual level (stopping deserters at checkpoints, executing stragglers, driving reluctant soldiers forward)

the weight of evidence points to individual behavioral responses

back

"officers and enlisted personnel respond differently to coercion"

why this is important to address:

- NKVD may have differential authority over officers vs. rank-and-file
- different exit options at different ranks
- if commanders order mass surrenders, officer-level analysis isolates whether coercion affects *individual* behavior

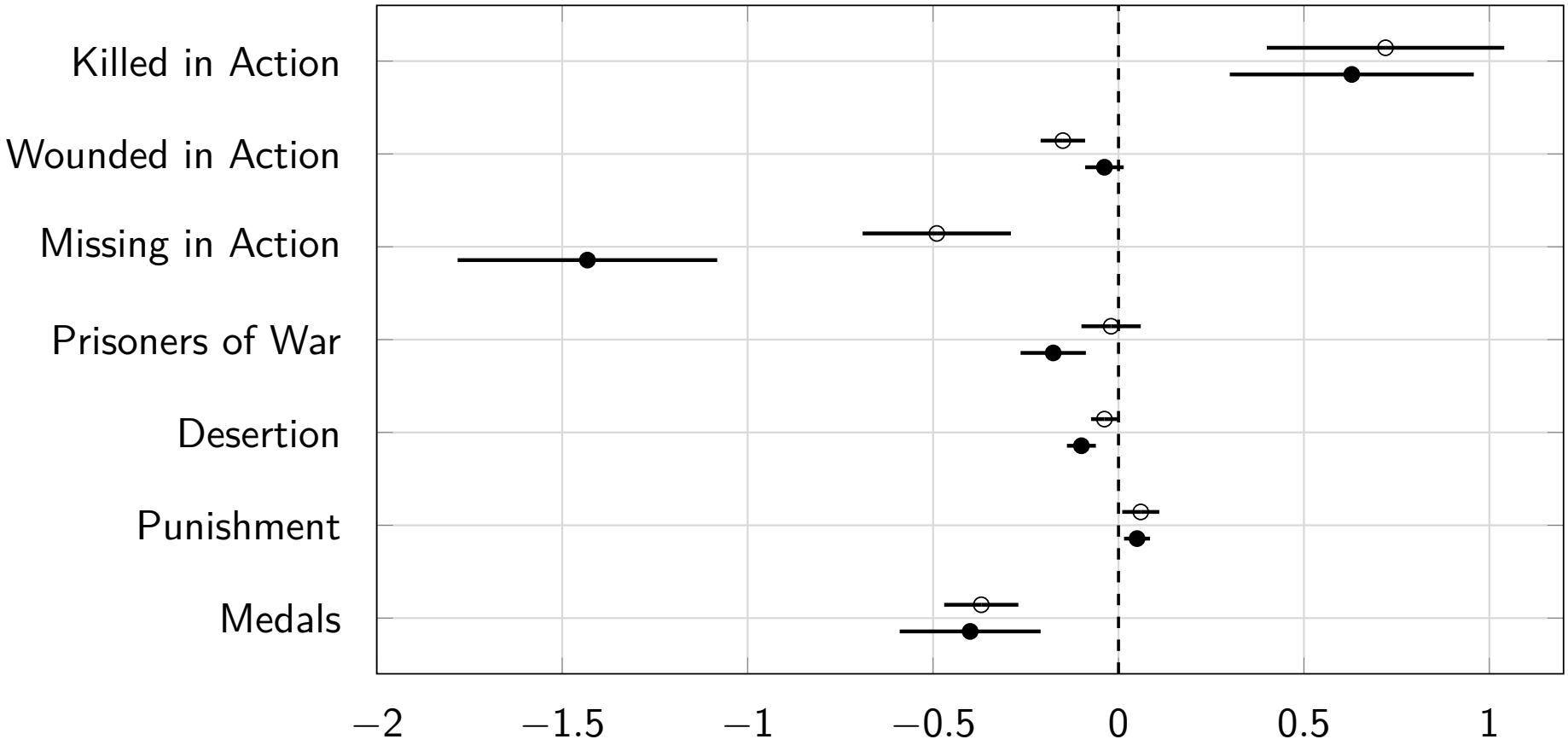
we test heterogeneous effects by rank:

- replicate main models using only commissioned officers
- compare magnitude and significance across rank groups
- officer results largely align with enlisted personnel (who form bulk of sample), suggesting individual-level responses

back

heterogeneous effects by rank

(○ officers only, ● all troops)



threats to inference / organizational factors

back

"prewar purges/repression amplify effect of wartime coercion"

why this is important to address:

- WWII was not most soldier's first encounter with NKVD
- exposure to officer purges and mass terror in the 1930's may have 'primed' some units to be more responsive to wartime coercion

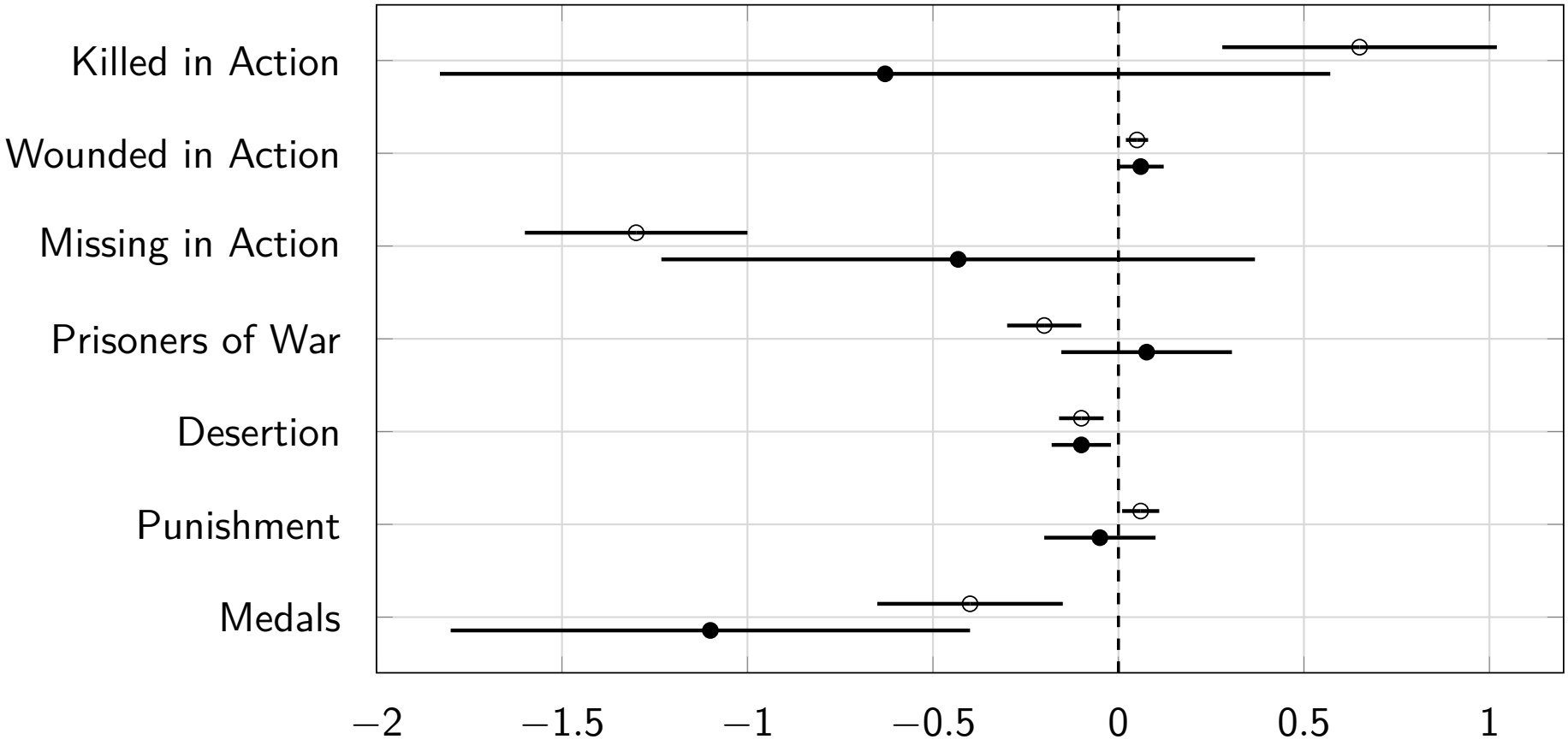
we test heterogeneous effects by pre-WWII exposure to NKVD:

- prewar repression of civilians in soldiers' hometowns
  (averaged over all soldiers in unit-month)
- prewar repression of officers who served in unit
  (among units that existed in 1938, ∼10.5% of sample)

back

heterogeneous effects by pre-war NKVD exposure

(○ above-median civilian repression, ● below-median)



heterogeneous effects by pre-war NKVD exposure

(○ above-median officer purges, ● below-median)