Is confidence in one's knowledge good or bad? An empirical investigation into the behavioral effects of confidence

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The Basic Issue

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- We all have beliefs about how much we know about things, and these beliefs drive our behavior.

- How much do I know about cars?

- My answer: Virtually nothing

The JDM Approach to this Question

- Most of the JDM work views confidence through an overconfidence lens.

    - Confidence is often only weakly associated with knowledge.

    - On tests of knowledge people typically express greater confidence than they get items correct.

- "No problem in the [judgment and decision-making] field is more prevalent and potentially catastrophic than overconfidence." (Plous, 1993, p. 217)

Outside the JDM Field

- Confidence has generally been considered as a highly desirable attribute, with substantial effort devoted to increasing one's confidence.

  https://inside.ewu.edu/calelearning/psychological-skills/confidence/

So Who Is Right?

- If people are generally overconfident, then increasing confidence should just make people more overconfident.

- So it seems like this advice to increase one's confidence is problematic.
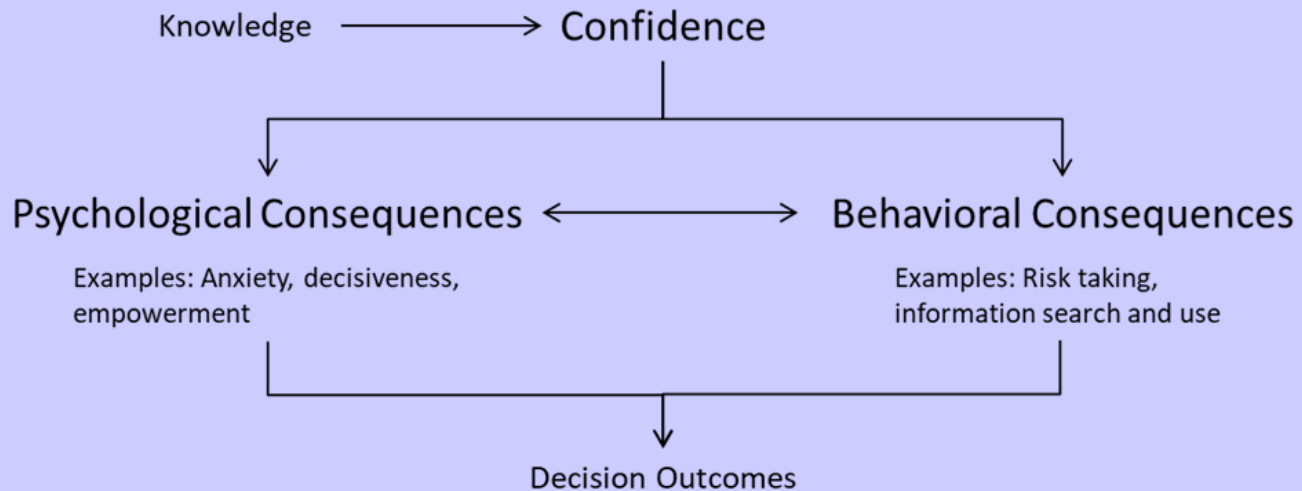
So Who Is Right?

- If people are generally overconfident, then increasing confidence should just make people more overconfident.

- So it seems like this advice to increase one's confidence is problematic.

- Or is it?

Some Past Findings

- Confidence is negatively associated with willingness to get advice and to entertain other ideas (this is typically negative)

- Confidence is positively associated with risk taking (could be either negative or positive)

- Confidence is negatively associated with anxiety (this is typically positive)

Our Conceptual Framework

Knowledge ⟶ Confidence

Psychological Consequences ⟷ Behavioral Consequences

Examples: Anxiety, decisiveness, empowerment

Examples: Risk taking, information search and use

Decision Outcomes

Exploratory Research

- Aim: To get a broader set of consequences of confidence than are generally examined in the JDM literature

- Approach: Surveyed the general public (1,666 panelists from the RAND American Life Panel) and JDM experts (103 members of the listservs for Judgment and Decision Making and the European Association for Decision Making).

Exploratory Research: Method

- Respondents were asked pairs of questions – one on thoughts and feelings and one on behaviors.

- Respondents were given one of the following four hypothetical people, someone who:

    1) had low confidence

    2) had high confidence

    3) was underconfident

    4) was overconfident

- Example question: "Please list the first three things that come to mind regarding how having low confidence affects a person's behaviors."

Exploratory Research: Results

Proportion of general public respondents perceiving each category as resulting from high, low, over-, or underconfidence.

Coded Response Category	High Confidence	Low Confidence	Overconfidence	Underconfidence
Assured/empowered	69.9	1.0	24.0	1.4
Unassured/unempowered	2.4	56.3	18.2[a]	64.4[a]
Friendly/sociable	31.3	0.2	4.1	0.0
Unfriendly/unsociable	17.2[a]	69.2[a]	56.8[a]	59.3[a]
Positive emotion/Well-being	59.5	0.5	10.0	0.7
Negative emotion/well-being	4.9	63.1	14.1	63.3
Arrogant/high self-image	34.7	0.5	66.3	1.4
Low self-image	1.0	53.6[a]	2.7	50.7[a]
Makes good decisions	21.1	0.5	4.1	0.7
Makes bad decisions	5.3	24.8	27.9	22.6
Doesn't listen/closed-minded	13.4[a]	1.0	46.4	2.6
Listens to others/seeks out information	7.3	0.7[a]	0.7	2.1[a]
Informed/thoughtful	19.1	1.0	4.4	0.2
Uninformed/unthinking	5.3	7.3	36.7	7.9[a]
Decisive	17.0	0.2	1.5[a]	0.2
Indecisive	0.5	20.4	0.5	23.3
Rash/risk-taking	9.5	0.7	28.2	1.9
Careful/risk-averse	1.0	6.8[a]	0.2	10.0
Influential	17.2	0.0	3.9	0.7
Dependence/easily influenced by others	0.2	12.9	0.0	14.0

Exploratory Research: Results

Proportion of JDM respondents perceiving each category as resulting from high, low, over-, or underconfidence.

Coded Response Category	High Confidence	Low Confidence	Overconfidence	Underconfidence
Assured/empowered	53.9	3.0	28.2	6.1
Unassured/unempowered	5.1	51.5	2.6	39.4
Positive emotion/Well-being	41.0	0.0	20.5	0.0
Negative emotion/well-being	0.0	63.6	12.8	48.5
Doesn't listen/closed-minded	35.9	0.0	41.0	6.1
Listens to others/seeks out information	2.6	18.2	0.0	33.3
Rash/risk-taking	28.2	3.0	48.7	0.0
Careful/risk-averse	0.0	33.3	0.0	21.2
Decisive	20.5	0.0	15.4	0.0
Indecisive	0.0	39.4	0.0	36.4
Arrogant/high self-image	23.1	0.0	48.7	0.0
Low self-image	0.0	27.3	0.0	15.2
Friendly/sociable	12.8	3.0	2.6	3.0
Unfriendly/unsociable	2.6	33.3	15.4	30.3
Informed/thoughtful	7.7	0.0	0.0	0.0
Uninformed/unthinking	12.8	6.1	41.0	0.0
Makes good decisions	15.4	0.0	0.0	0.0
Makes bad decisions	5.1	21.2	25.6	6.1
Influential	5.1	0.0	5.1	0.0
Dependence/easily influenced by others	0.0	24.2	0.0	21.1

College Football

- <u>Aim</u>: To investigate the effect of confidence on a number of different potential consequences, including some of those identified in our exploratory research.

- <u>Approach</u>: We measured the knowledge and confidence of participants (Qualtrics panelists) about college football, and then measured a number of psychological and behavioral variables. We examined the relationship between confidence and these outcome variables, controlling for knowledge.

College Football: Method

- <u>KCA</u>: Participants filled out a 40-item KCA (knowledge-confidence assessment) to measure their knowledge and confidence:

- <u>Sample Item</u>:

College Football: Method

- Psychological variables: Participants answered a number of items designed to measure the following constructs:

  1) Empowerment

  2) Decisiveness

  3) Openness to Information

College Football: Method

- <u>Behavioral variables</u>: Participants completed a performance task that included 16 questions like the following:

- <u>Sample Item</u>:

At the end of the 2021-2022 college football season, who do you think will be better ranked, **Xavier or Western Kentucky**, and by how many rankings?

- ○ Xavier will be ranked a lot better (26+ rankings)
- ○ Xavier will be ranked quite a bit better (13-25 rankings)
- ○ Xavier will be ranked somewhat better (6-12 rankings)
- ○ Xavier will be ranked a little bit better (1-5 rankings)
- ○ Western Kentucky will be ranked a little bit better (1-5 rankings)
- ○ Western Kentucky will be ranked somewhat better (6-12 rankings)
- ○ Western Kentucky will be ranked quite a bit better (13-25 rankings)
- ○ Western Kentucky will be ranked a lot better (26+ rankings)

College Football: Method

- Behavioral variables:

1) Risk taking: Participants bet on their predictions. Larger bets indicate greater risk taking.

2) Information Search: For half the trials, participants had the option to purchase information about the team's rankings. Purchasing this information indicates greater information search.

3) Information Use: For the other half of the trials, participants were provided information about the teams' rankings. Using this information when making one's predictions indicates greater information use

College Football: Results

Correlations between confidence and the outcome variables, controlling for knowledge

Outcome Variable

Psychological variables

Empowerment	.21***
Decisiveness	.16***
Openness	.01

Behavioral variables

Risk taking	.15***
Information search	.14**
Information use	.003

Note. † p < .10; * p < .05; ** p < .01, *** p < .001

Conclusions and Future Work

1) There is good reason to believe that confidence influences a larger number of variables than are typically studied in the research literature.

2) Future research needs to examine these relationships in more detail, which we're doing now.

3) One challenging issue is causality. Much of the work in this field is correlational. Concurrent with the previous work, we are also investigating ways to manipulate confidence.

Thank you!