



Conformity, obedience, and the Better than Average Effect in health professional students

Conformité, obéissance et supériorité illusoire chez les étudiants en sciences de la santé

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Résumé de l'article

Contexte : La conformité, par le biais du respect des normes et de l'obéissance à l'autorité, peut avoir des effets négatifs tant pour la sécurité des patients que pour l'éducation des médecins. À ce jour, les interventions éducatives portant sur la conformité ou la déviance positive se sont soldées par des résultats mitigés. Une des difficultés auxquelles se heurte l'enseignement de la conformité provient de l'écart entre les attentes des apprenants quant à la possibilité d'appliquer la déviance positive et la probabilité qu'ils adoptent réellement ce comportement. Plus précisément, les étudiants peuvent faire preuve de supériorité illusoire, c'est-à-dire la tendance à se croire supérieur à la moyenne des gens par rapport à un éventail de comportements et d'habiletés.

Méthodes : Quatre vignettes, deux sur la conformité et deux sur l'obéissance à l'autorité, ont été conçues et mises à l'essai dans le cadre d'entretiens cognitifs afin d'étudier la présence du phénomène de supériorité illusoire. Les vignettes faisaient partie d'une enquête menée auprès d'étudiants de différents programmes en sciences de la santé offerts par divers établissements canadiens au cours de la session d'hiver 2019. L'auto-évaluation du comportement a été examinée à l'aide d'un test de proportion pour échantillon unique. Les données démographiques ont été étudiées à l'aide d'une régression logistique pour identifier les prédicteurs de la supériorité illusoire.

Résultats : L'effet de supériorité illusoire par rapport aux pairs était présent chez les participants en ce qui concerne le comportement qu'on attend d'eux dans des situations en lien avec la conformité et l'obéissance à l'autorité. L'âge, le sexe et l'année de formation ont été repérés comme prédicteurs potentiels de la manifestation de supériorité illusoire.

Conclusions : Cette étude montre que les étudiants en sciences de la santé s'attendent à avoir un comportement supérieur à la moyenne dans les situations où la conformité est en jeu. Ils ne sont pas exempts de ce biais cognitif dans leur auto-évaluation. Les résultats obtenus ont des implications pour l'éducation en matière de conformité, de déviance positive et de sécurité des patients.



Conformity, obedience, and the Better than Average Effect in health professional students

Conformité, obéissance et supériorité illusoire chez les étudiants en sciences de la santé

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Abstract

Background: Compliance, through conformity and obedience to authority, can produce negative outcomes for patient safety, as well as education. To date, educational interventions for dealing with situations of compliance or positive deviance have shown variable results. Part of the challenge for education on compliance may result from disparities between learners' expectations about their potential for engaging in positive deviance and the actual likelihood of engaging in positive deviance. More specifically, students may demonstrate a Better Than Average Effect (BTAE), the tendency for people to believe they are comparatively better than the average across a wide range of behaviours and skills.

Methods: Four vignettes were designed and piloted using cognitive interviews, to investigate the BTAE. Conformity and obedience to authority were each addressed with two vignettes. The vignettes were included in a survey distributed to Canadian health professional students across multiple programs at several different institutions during the Winter 2019 semester. Self-evaluation of behaviour was investigated using a one-sample proportion test. Demographic data were investigated using logistic regression to identify predictors of the BTAE.

Results: Participants demonstrated the BTAE for expected behaviour compared to peers for situations of conformity and obedience to authority. Age, sex, and program year were identified as potential predictors for exhibiting the BTAE.

Conclusions: This study demonstrated that health professional students expect that they will behave better than average in compliance scenarios. Health professional students are not exempt from this cognitive bias in self-assessment. The results have implications for education on compliance, positive deviance, and patient safety.

Résumé

Contexte : La conformité, par le biais du respect des normes et de l'obéissance à l'autorité, peut avoir des effets négatifs tant pour la sécurité des patients que pour l'éducation des médecins. À ce jour, les interventions éducatives portant sur la conformité ou la déviance positive se sont soldées par des résultats mitigés. Une des difficultés auxquelles se heurte l'enseignement de la conformité provient de l'écart entre les attentes des apprenants quant à la possibilité d'appliquer la déviance positive et la probabilité qu'ils adoptent réellement ce comportement. Plus précisément, les étudiants peuvent faire preuve de supériorité illusoire, c'est-à-dire la tendance à se croire supérieur à la moyenne des gens par rapport à un éventail de comportements et d'habiletés.

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Introduction

To uphold professional values and avoid patient harm, it is necessary for a health professional to speak up.¹⁻² Speaking up supports patient safety, yet it is a skill that can be very difficult due to the forces of compliance, namely the related though separate behaviours of conformity and obedience to authority.³ While conformity and obedience to authority are not always detrimental and can be necessary for learning, there can be deleterious outcomes.³ Negative compliance occurs when either conformity or obedience to authority, both prevalent among trainees in the health professions, produces potentially negative outcomes for education and patient safety.¹⁻³ Converse to negative compliance is positive deviance, a behaviour, such as speaking up, that goes against norms or social and personal pressures that undermine professional values and patient safety.³ Interventions to promote positive deviance through speaking up are an area of increasing focus for health professional education.^{4,5} Variable efficacy exists for education for responding to negative compliance scenarios and the benefits of assertiveness training and instruction on methods like the two-challenge rule a method for assertively voicing concern, are inconsistent.^{5,6} To improve education on compliance it is necessary to better understand student beliefs about how conformity and obedience function in the interpersonal contexts of healthcare. It is particularly important to understand how people expect themselves to behave.

People's beliefs and expectations about ability and behaviour, including susceptibility to forces of compliance,⁷⁻⁹ often differ from reality yet strongly influence self-perception.^{10,11} Assessment and prediction of discrepancies between expectations and actual behaviour are important for informing decisions about teaching and learning in terms of content, time, and resources dedicated to compliance and positive deviance (speaking up).¹² The challenge of developing effective education and interventions for positive deviance may in part reside in unidentified incongruities between students' expectations and self-perception about behaviour and actual behaviour. The impact of interventions to improve positive deviance may be diminished, disregarded, taken less seriously or seen as inapplicable if a person does not believe they are susceptible, or are less susceptible than peers, to the forces of compliance. Full credence may not be given to the content e.g. "I wouldn't do that; this doesn't apply to me."

Humans tend to believe that they are comparatively better than the average across a wide range of behaviours and skills including intelligence, ethical behaviour, health, attractiveness, and morality. This is referred to as the Better than Average Effect (BTAE).¹³⁻¹⁷ The BTAE relates to the Dunning-Kruger effect though rather than a perception of performance on a specific objective test, the BTAE relates to more general comparative self-perceptions.^{17,18} The BTAE is an implicit self-evaluation bias combined with unrealistic optimism.^{15,19} People have an unrealistic belief that positive outcomes are more likely to happen, and negative outcomes are less likely to happen when compared to others or objective base rates.²⁰ The unrealistic optimism of the BTAE has self-enhancement properties and is moderately associated with self-esteem ($r = .34$) and life satisfaction ($r = .33$).²⁰ The BTAE is highly robust with very large effect sizes ($d_z = 0.78$, 95% CI [0.71, 0.84]); more so than for most effects in social-personality psychology.¹⁷ Belief in above average behaviour is so strong and prevalent that people who are unlikely to have a disproportionately positive average standing on pro-social characteristics, for example prison inmates, perceive themselves as being better on a range of pro-social characteristics than fellow inmates and members of the general population.²¹

To date, the relationship between the BTAE and compliance, and the BTAE effect in general, has to the authors' knowledge not been examined in health professionals, including students. Given the challenges of positive deviance, particularly for students, and the implications for patient safety, it is necessary to explore potential internal mediating mechanisms, such as the BTAE. It is important to explore the BTAE with health professional students to provide insight into the extent to which healthcare students believe themselves to be susceptible or not susceptible to compliance. If a person does not believe themselves to be susceptible to a certain social force, such as compliance, it will be difficult for the person to identify the influence it might have on them. When an implicit or explicit request is made or there are conformity pressures the person will have underestimated how strongly the situation can influence them and will be less likely to engage in positive deviance.⁸

Based on the prevalence of the BTAE it is unlikely those in the health professions will be exceptional and have accurate self-perceptions and beliefs. To determine if the BTAE is active when health professional students are asked

to think about future behaviour in a compliance scenario two research questions were developed.

Research questions

In pre-licensure health professional students,

1. Will the BTAE be exhibited for hypothetical obedience and conformity scenarios?
2. Will any demographic variables be predictive of the BTAE?

Recent research has found people exhibit the BTAE when thinking about hypothetical compliance scenarios.^{7,8,22,23} The BTAE also tends to be greater when there is a lack of external verification,¹⁶ the situation is personally important,²⁴ and when evaluating a negative trait.²⁵ It is hypothesized participants will demonstrate the BTAE based on the robustness and prevalence of the effect.

Methods

Study design & sampling

Our study was conducted in conjunction with a survey designed to measure students' experiences with compliance behaviours. The results of the survey addressing experiences have been reported elsewhere.³ Four vignettes were constructed to examine how health professions students believed they would behave and how peers would behave in a series of hypothetical real-life scenarios (Table 1). The vignettes were presented before the survey items. Demographic information collected with the survey was used in our study. Data were collected during the 2019 Winter Semester; participants were recruited through departmental listservs and at an interprofessional simulation event. Ethics approval was granted by Research Ethics Board 2 at the University of Alberta, Pro00081948

Two vignettes were constructed for obedience scenarios (vignettes 1 and 4) and two for conformity scenarios (vignettes 2 and 3). The vignettes reflect previous studies that demonstrated conformity and obedience in health professions students and practitioners.²⁶⁻³⁰ The vignettes were tested and modified using cognitive interviews,³¹ a process of questioning for understanding responses process and content to identify sources of confusion in assessment, conducted with practitioners and students from health professions [3], psychology [2], educational psychology [1], and business [1] (for the vignettes with response scales, please see the supplemental material). The researcher recorded participants' responses, using probing questions where necessary. Participants from

outside of healthcare provided insights into aspects of the vignettes not mentioned by the health professionals and those from the health profession gave valuable insight into how certain words and situations may be perceived by those in healthcare. Feedback during the cognitive interviews fell into three categories: technical comments regarding health concepts, comments about wording and formatting, and comments regarding the understanding of others' psychology. The vignettes were modified for language and context to accurately reflect the relevant healthcare settings in the vignettes; clarity and coherence; and to focus less on feelings or perceptions to reduce the need to guess at others' psychology. Ultimately interviewees were confident they understood the vignettes and questions and were certain of their answers. As the non-healthcare interviewees did not have any trouble with comprehension, the vignettes were determined to be applicable across multiple health professions.

Outcome measures

Participant responses to vignettes were coded to create a classification of expected peer behaviour as being "worse than," "the same as," or "better than," the participant. Ratings of peers behaving "better than" participants were combined with ratings of behaving "the same as," as either is counter to the BTAE.

Data analysis

A one-sample proportion test was conducted for each vignette. The proportion test has been used in similar designs examining the BTAE.²¹ Comparing participants' self-evaluation against an objective value to determine accuracy is ideal, however, objective values often do not exist, and when values do exist, people tend to disregard them when making evaluations.³² It was necessary to make assumptions about the proportions of responses.

Rates of behaviour were assumed to follow a normal, Gaussian, distribution (i.e., a bell-shaped, symmetric curve where the mean, median, and mode of rates of behaviour are in the middle of the distribution). Research has reliably found that people consistently rank themselves above the 50th percentile on numerous traits.¹⁷ Based on these findings, investigation of the BTAE has established the properties of the normal distribution, where the midpoint represents the median and average rank (the 50th percentile), as the most unambiguous referent for indication of a self-evaluation bias.¹⁷ Data are emergent on rates of compliance,^{1,2,33} but no consistently known rates in

any specific scenario exist and it is unlikely students have implicit knowledge about the probability of compliance in any of the contexts presented by the vignettes. Based on a normal distribution, a test value was determined for a null hypothesis that participants would not demonstrate the BTAE. Under the assumption of normally distributed behaviour, most people would lay within one standard deviation around the mean of the normal distribution, comprising 68% of the sample. Scores beyond one standard deviation above or below the mean can be considered as better and worse behaviour. One standard deviation (SD) was chosen, as opposed to two or three, to make the necessary assumptions as conservative as possible and give the most lenient parameters for the null hypothesis to be supported, or in other words to make it more challenging to refute the null hypothesis. Two or three SDs would give a more stringent test value requiring the proportion behaving better to be much greater. The one SD represents a range within which behaviour can be considered average. Based on the existing evidence, or lack thereof, the assumptions are likely reasonable. The test value was then set at .16, with the null hypothesis that the number of peers that will behave worse is 16% and the alternative hypothesis that 16% will behave better; therefore: $H_0 \leq .16$ and $H_a > .16$.

To examine if any demographic variable would predict vignette responses, a logistic regression model was estimated for each vignette using behaviour as the dependent variable (1 = better than or same as, 0 = worse than) and demographic variables as predictors. Several models were tested by adding various demographic variables as predictors until no significant model improvement was found. The final model contained age, sex, program year (PY), and an interaction of age and sex.

Results

A total of 102 participants began the survey. Seventy-one participants completed the vignette questions. Not all participants that completed the vignettes completed the survey items related to compliance experiences and some demographic data were missing for these participants. Participants were from four post-secondary institutions and ten programs ranging from certificate to graduate degrees. Table 2 presents a summary of the demographic variables for the final sample. Data were examined for outliers, one influential case from the vignette responses was identified. The case was determined to be careless responding, where the participant used the same response

categories across all survey items and was removed from the dataset. The sample was comprised of substantially more females than males.

Table 1. Vignettes used to examine the Better Than Average Effect

Vignette 1 Tom is taking a workshop about how to treat mild burns. During a portion of the workshop, there is a simulated case study session with a mannequin where an instructor, who is an emergency room doctor, provides one on one advice on how to treat different burn cases. The simulation case Tom has been assigned to is a first aid situation that involves a burn on a person's forearm that has begun to blister. The blister has swollen to a large size and Tom is trying to apply a clean bandage, but the blister is making it difficult to apply the bandage. The instructor watches Tom struggle and then advises him to "break the blister" so that it will be easier to apply the bandage. From the pre-course material that Tom read and from a previous CPR course Tom took he knows that you should never break a blister when providing first aid. Tom responds that he does not think this is correct. The instructor responds in a clear voice that Tom should break the blister. Tom follows the instructor's directions and breaks the blister.
Vignette 2 Steven was with a group of three other students from his class. The group was learning how to take a Resting Pulse and Resting Respiratory Rate from a patient. Before beginning to take measurements, the instructor told the group how important it was to take accurate readings as these would impact the care a patient receives. As each student took turns measuring the Resting Pulse and Resting Respiratory Rate for the patient they were asked to state each measure out loud so their instructor could record the results and verify if they had taken the correct measurements. Nicole went first and read out the resting pulse as 56, and respiratory rate as 22, the instructor marked down the readings. Dallas went second and indicated the resting pulse was 58 and the respiratory rate was 24. Li was third and stated the resting pulse was 58 and the respiratory rate was 22. Steven was last and as he took the readings from the patient, he obtained a resting pulse of 70 and a respiratory rate of 17, unsure of his measurements he took them again and received the same numbers. Steven then stated to the instructor that the resting pulse was 57 and the respiratory rate was 23.
Vignette 3 Jane is in a basic anatomy class. In this class the teacher likes to call on students to provide answers, the teacher will often call a student by name to answer a question. At the beginning of each class the teacher reviews material from the previous class. The previous class was regarding the muscles of the leg. As the teacher is going through the muscles of the leg the teacher asks several students in a row to indicate the proper anatomical structure of a muscle before indicating if the students' answer was correct or not. The teacher asks Brad, Kat, and Jane where the insertion of the biceps femoris is. Brad responds first that it is the head of the <i>tibia</i> , Kat replies next, and with confidence gives the same answer as Brad. To Jane, Brad and Kat's answer does not sound quite right, she is fairly certain the insertion is at the head of the <i>fibula</i> . Jane has paused for a second and the teacher is looking at her, so she gives the same answer as Brad and Kat.
Vignette 4 Natalie is a health sciences student working as a caregiver at an assisted living facility during the summer. When Natalie first started at the assisted living facility, she was mostly helping the residents get around, making sure they were comfortable and ensuring that they received their meals. Since Natalie had shown herself to be very responsible the nurses at the facility have been giving her more and more responsibilities. In the last couple of weeks, she had started administering medication to patients. One day while Natalie was working at the front desk of the nursing home a call came in. The call was from a person identifying themselves as Dr. Campbell, Natalie had never met Dr. Campbell while working at the assisted living facility. Dr. Campbell stated that he was the physician assigned to the facility and he was based at a local clinic. Dr. Campbell stated that it was necessary for one of the patients, Mrs. Boon, to receive 5mg of Risperidone at mealtime and administration should begin that day. At the next mealtime, Natalie gave 5mg of Risperidone to Mrs. Boon.

Table 2. Sample demographic information

Type of Institution	Program	n (% of sample)	Sex	Age Mean (SD)	PY Mean (SD)
University Undergraduate	KSR	7 (10%)	F=5 M=2	21.71 (2.72)	2.57 (1.40)
	Pharmacy	5 (7.4%)	F=2 M=1	22.28 (2.91)	2.00 (1.15)
	Medicine	5 (7.4%)	F=4 M=1	26.31 (3.95)	1.20 (.989)
	ALES	5 (7.4%)	F=4 M=1	21.3 (1.65)	3.50 (.87)
	Nursing	2 (3%)	F=2 M=0	20.5 (0.51)	1.00 (X)
	Social Work	1 (1.4%)	F=1 M=0	24.0 (X)	1.00 (X)
University Graduate	RM	30 (45%)	F=25 M=5	25.2 (2.90)	1.08 (.475)
Polytechnical	RT	6 (9%)	F=5 M=1	22.67 (1.87)	2.5 (.77)
	ACP	1 (1.4%)	F=0 M=1	26.0 (X)	1.00 (X)
College	PharmTech	5 (7.4%)	F=5 M=0	21.01 (1.10)	1.5 (.50)
Total		N = 67	F=55 M=12	23.79 (3.1) Range = 19-33	1.83 (1.20)

KSR = Kinesiology Sport and Recreation, ALES = Agriculture Life and Environmental Sciences, RM = Rehabilitation Medicine, RT = Respiratory Therapy, ACP = Advanced Care Paramedic, PharmTech = Pharmacy Technician. PY = Program Year

Expected behaviour

Evidence for the BTAE is shown in all four vignettes based on the one-sample proportion test (Table 3). In Vignettes 1 and 2 the BTAE is apparent as participants predicted peers would behave worse than themselves at a greater rate than similar or better behaviour. In Vignette 3 and 4 participants predicted peers as behaving the same or better at a greater rate than worse behaviour. However, only a small proportion of peers ($\leq 16\%$) should be predicted to behave worse than participants, the proportion test showed the ratings were significantly different than the expected proportion. Participants most frequently indicated that themselves and their peers *would not behave like or might behave like* the characters in the vignettes (Figure 1). Noticeably for Vignette 1, an obedience scenario, participants were more likely to indicate they and their peers *"would probably behave like"* the character than in other scenarios. No differences across programs were found.

Predictors

In Vignette 1, as age increased females were more likely to predict peer behaviour as being the same or better than themselves. As PY increased, participants were more likely to predict peers as behaving worse than themselves. In Vignette 2, as age increased, males were more likely to predict peers as behaving worse than themselves. In

Vignette 3, as age increased males were more likely to predict peers as behaving worse than themselves. As PY increased, participants were more likely to predict peers as behaving worse than themselves. In Vignette 4, as age increased for males and females, it was more likely participants would predict peers as behaving worse than themselves. As PY increased participants were more likely to predict peers as behaving the same or better than themselves. (Table 4)

Table 3. Results of the proportion test for the BTAE

	Beliefs about Peers Behaviours			Test Statistics
	Worse (n)	Same or Better (n)	Same/Better (n)	z Value (CI)
Vignette 1	42 (60%)	28 (40%)	Same = 20(28.5%) Better = 8(11.4%)	10.11** (.50-1.00)
Vignette 2	38 (54.2%)	32 (45.7%)	Same = 28(40%) Better = 4(5.7%)	8.80** (.438-1.00)
Vignette 3	32 (45.7%)	38 (54.3%)	Same = 35(50%) Better = 3(4.2%)	6.82** (.355-1.00)
Vignette 4	25 (35.2%)	45 (64.8%)	Same = 44(62.8%) Better = 1(1.4%)	4.52** (.262-1.00)

**p < .001; Test Value = .16, H_0 is proportion > 0.16. CI: 95% confidence intervals.

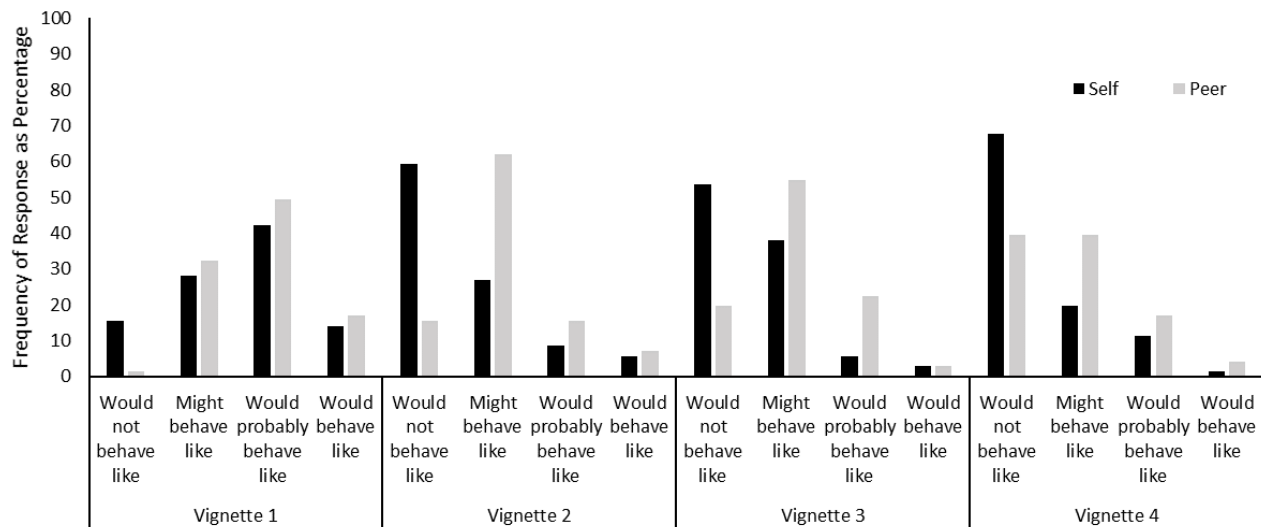


Figure 1. Participants' expected behaviours for four vignettes on the initial response scale

Table 4. Logistic Regression for predictors of vignette responses

			95% CI for Odds Ratio				
Vignette	Significant Predictors	b	Lower	Odds	Upper	Classification Accuracy	
Vignette 1	Age*Sex (F)	-.273*	.631	.761	.918	60%	
	PY	.214**	1.12	1.24	1.37		
	Model	$\chi^2=166.5(6), p < .001$					
	Model Fit	R ² = .09 (H&L) .11 (C&S) .15 (N ²)					
Vignette 2	Age*Sex (M)	.095*	1.01	1.10	1.196	55%	
	Model	$\chi^2=34.34(6), p < .001$					
	Model Fit	R ² = .02 (H&L) .02 (C&S) .03 (N ²)					
Vignette 3	Age*Sex (M)	.136*	1.05	1.15	1.25	64%	
	PY	.101*	1.00	1.11	1.22		
	Model	$\chi^2=154.5(6), p < .001$					
	Model Fit	R ² = .07 (H&L) .10 (C&S) .14 (N ²)					
Vignette 4	Age*Sex (F)	.182*	1.02	1.2	1.42	63%	
	Age*Sex (M)	.187**	1.12	1.21	1.32		
	PY	-.148*	.779	.862	.954		
	Model	$\chi^2=75.34(6), p < .001$					
	Model Fit	R ² = .04 (H&L) .05 (C&S) .07 (N ²)					

Note: Reference category is "worse than". H&L = Hosmer Lemshow, C&S = Cox and Snell, N² = Nagelkerke * $p < .05$; ** $p < .001$

Discussion

The hypothesis that the BTAE would be present with our sample of health professional students is supported. When asked to think hypothetically about compliance scenarios, participants believed they would behave better than peers. Generally, participants did not think they would engage in the compliance behaviour. The strongest expectation of compliance by participants, based on the response categories, was that they *might* demonstrate compliance.

Expected behaviour

Participants generally believed that they would not behave like, or might behave like, the participants in the vignettes. Across all vignettes (Figure 1) higher ratings were given to peers for all response categories except for *would not behave like*. These findings along with the significant results of the proportion tests indicate the BTAE is present and students expect to be less susceptible to forces of compliance than their peers.

The demonstration of the BTAE has implications for education and practice. Previous research indicates

anywhere between 50% - 95% of students will demonstrate conformity or obedience in a situation that can result in patient harm.^{1, 3, 27-29, 33-37} However, based on the results of our study, overall, students believe themselves to be less susceptible to conformity and obedience than peers. Informing students, instructors, and practitioners about the BTAE can potentially increase awareness of personal susceptibility to compliance behaviour and that their own behaviour, knowledge, and skills will likely not be as good as expected. Knowledge of the BTAE could help people avoid overestimating performance, increase personal responsibility for practice outcomes, and foster continued development of knowledge and skills. Informing students that they will likely be compliant may serve as a protective measure against the BTAE by causing students to engage with and reflect on their cognition and behaviour when experiencing compliance situations.³⁸

Self-reports of experiences with obedience and conformity¹⁻³ provide additional evidence for the BTAE. Students rate peers as engaging in conformity and obedience behaviours at a higher rate than themselves. For example, students report that peers more frequently go with the crowd than themselves.³ It is possible more opportunities exist to observe peer behaviour than experience individual instances, however, the measures were norm-referenced rather than a ranking of instances.

Predictors

The logistic regression provides interesting though somewhat conflicting results. In Vignette 1, as age increased females were more likely to believe peers would behave better than themselves. Through experience, older females may recall more situations of obedience that elicited behaviour like the character in the vignette, leading to a belief that peers are better than themselves. This may represent either an availability heuristic or a realistic assessment based on experience.

In Vignettes 2 and 3, conformity scenarios, with an increase in age, males believed themselves to be less likely to conform than peers. Males may be dismissing, forgetting, or disregarding previous conformity,³² or through developing self-assuredness and a subsequent perception of independence do not believe they will be susceptible to conformity.

The results of the obedience scenario in Vignette 4 provide somewhat disparate results. Older males and females expect peers to behave worse than themselves but those in higher PY expect the same or better behaviour.

Participants may better understand practice responsibilities and regulations with increased experience, particularly clinical experience, and identify the inappropriate behaviour as highly apparent and have trouble imagining anyone behaving worse than themselves. Alternatively, the result may be an artifact of the sample. Age and PY will increase concurrently and should show similar results. The disparity may result from the diverse programs sampled and differences in length of programs and the age at which people tend to enter the program. For example, Medicine and Rehabilitation Medicine (RM) have a high mean age (Medicine = 26.31, RM = 25.2) and low PY (Medicine = 1.2, RM = 1.08) relative to the rest of the sample.

While the sample was primarily comprised of females, the majority of healthcare professionals are female, with females comprising nearly 100% of the population in some professions.³⁹⁻⁴²

Implications for measuring the BTAE

Our study incorporated a new method to measure the BTAE. Indirect comparison has been a primary method for measuring the BTAE, where a person is asked to rate how they would perform on a given factor, rate how a peer would perform, and the rankings are then compared. For indirect comparison, a rating scale such as a Likert scale or percentile rating is generally used.¹⁷ We expanded on the indirect method by incorporating vignettes describing behaviour and asking respondents to rate the likelihood of engaging in certain behaviour in a specific situation as opposed to making a decontextualized evaluation such as "how likely are you to conform to other's opinions?" The vignette approach is expected to achieve greater concordance between people's expected beliefs and ability about future behaviour and ultimate behaviour. Further research is necessary, including longitudinally, to determine if these properties exist for the vignette approach.

The four vignettes elicited similar patterns of responding overall, though there were differences (Figure 1). Contextual and situational differences in vignette scenarios likely elicited the variable responding, indicating the vignettes were able to enact different representations of scenarios of conformity and obedience. Further investigation into the construction of vignettes for evaluating conformity and obedience could be useful. An instrument to evaluate perceptions of conformity and obedience could be created from vignettes with known response properties. Systematic evaluation of the

variability of expected behaviour across different scenarios and the development of response norms would lead to the possibility of identifying individuals with a higher or lower likelihood of being unaware of the potential for compliance and possible increased susceptibility.

Though our study is an early foray into understanding the BTAE, it provides insights into health professional students' self-enhancement motivation in relation to compliance with implications for education. The presence of the BTAE could undermine educational efforts to improve positive deviance despite presenting students with data on rates of negative compliance, the need for positive deviance and implications for patient safety. Education on the BTAE could be integrated with existing education focusing on Crew Resource Management, Team STEPPS, Professionalism, Speaking Up, and Teamwork⁶ to enhance the effects of these interventions. Based on the Transtheoretical Model of Change⁴³ there is good reason to expect incorporating the BTAE would enhance these interventions. The self-enhancement motivation of the BTAE will lead students to underestimate the problem or be unaware of the need for personal change and remain in a pre-contemplation stage. An instrument based on the vignette approach that demonstrates predictive validity for ultimate behaviour and susceptibility to compliance forces would have dual didactic implications to move students to the contemplation and preparation stages. First, for contemplation, the assessment could be used to increase student's awareness about susceptibility to compliance leading to more thoughtful consideration of the practical implications for their own behaviour. Second, it would act as an object lesson on the BTAE and susceptibility to compliance that facilitates engagement with discussions about strategies and tools that will prepare students for dealing with conformity and obedience. For some students, this may be sufficient to allow for action to occur, though for other students' further intervention, such as practicing speaking up in simulation, may be necessary to continue through the preparation stage and into action.

Limitations

There were three major limitations to the study.

First, the reader should note that the odds ratios for all effects were small and the classification accuracy of the model was low. The immediate practical significance may not match the statistical significance, but the results are still valuable. The influence of age, sex, and experience should be further investigated to better understand and

predict how different individuals expected behaviour will align with actual behaviour. Continued investigation of these variables is supported by the results of the concurrent survey study³ where participants identified experience as a valuable asset for engaging in positive deviance.

The second limitation was the length of time required to complete the survey, which could have led to respondent fatigue. With the items included from Violato et al,³ on average, it took participants thirty-two minutes to complete the entire survey. The vignette items were placed at the beginning of the survey so that participants would be less fatigued and give greater focus to these items.

The third limitation was the high proportion of students from the faculty of Rehabilitation Medicine and a low number of respondents from other programs such as Nursing and Social Work. While a more balanced sample across professions would be ideal, several professions that have not typically been included were sampled and it can be expected that the results will generalize across programs and professions.³

Conclusions

People rate their behaviour as better than the norm, though it is mathematically impossible for most people to have better-than-median abilities.⁴⁴ The BTAE exists across humans⁴⁴⁻⁴⁷ and health professionals are no exception.

The BTAE may function as a protective mechanism against the rigours of training and concurrent failures, challenges, and missteps, but it can also lead people to inaccurately predict how they will behave. To promote patient safety and uphold professional values through engagement in positive deviance it is necessary to dispel the personal myth of being better than average. Improving knowledge and education by incorporating psychological theory and demonstrations of the BTAE can help everyone move towards becoming better than average.

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References

- Martinez W, Lehmann LS, Thomas EJ et al. Speaking up about traditional and professionalism-related patient safety threats: a national survey of interns and residents. *BMJ Qual Saf*. 2017;26(11):869-80. <https://doi.org/10.1136/bmjqs-2016-006284>
- Schwappach D, Sendhofer G, Kamolz LP, Köle W, Brunner G. Speaking up culture of medical students within an academic teaching hospital: Need of faculty working in patient safety. *PLoS One*. 2019;14(9):1-14. <https://doi.org/10.1371/journal.pone.0222461>
- Violato E, King S, Bulut O. A multi-method exploratory study of health professional students' experiences with compliance behaviours. *BMC Med. Educ*. 20:359, 1-10. <https://doi.org/10.1186/s12909-020-02265-4>
- Kaba A, Wishart I, Fraser K, Coderre S, McLaughlin K. Are we at risk of groupthink in our approach to teamwork interventions in health care? *Med Educ*. 2016;50(4):400-8. <https://doi.org/10.1111/medu.12943>
- Peadar R (Rod), Hurley J, Hutchinson M. Hierarchy and medical error: speaking up when witnessing an error. *Saf Sci* [Internet]. 2020;125(January):104648. <https://doi.org/10.1016/j.ssci.2020.104648>
- O'Donovan R, McAuliffe E. A systematic review exploring the content and outcomes of interventions to improve psychological safety, speaking up and voice behaviour. *BMC Health Serv Res*. 2020 Feb 10;20(1):101 <https://doi.org/10.1186/s12913-020-4931-2>
- Bocchiaro P, Zimbardo PG, van Lange PAM. To defy or not to defy: An experimental study of the dynamics of disobedience and whistle-blowing. *Soc Infl*. 2012;7(1):35-50. <https://doi.org/10.1080/15534510.2011.648421>
- Bocchiaro P, Zimbardo P. On the dynamics of disobedience: experimental investigations of defying unjust authority. *Psychol Res Behav Manag*. 2017;10:219-29. <https://doi.org/10.2147/PRBM.S135094>
- Grzyb T, Dolinski D. Beliefs about obedience levels in studies conducted within the milgram paradigm: Better than average effect and comparisons of typical behaviors by residents of various nations. *Front Psychol*. 2017;8(SEP):1-6. <https://doi.org/10.3389/fpsyg.2017.01632>
- Perugini M, Leone L. Implicit self-concept and moral action. *J Res Pers*. 2009;43(5):747-54. <https://doi.org/10.1016/j.jrp.2009.03.015>
- Zell E, Krizan Z. Do people have insight into their abilities? a metasynthesis. *Perspect Psychol Sci*. 2014;9(2):111-25. <https://doi.org/10.1177/1745691613518075>
- Halpern DF, Butler HA. Assessment in higher education: admissions and outcomes. *APA Handb Test Assess Psychol Vol 3 Test Assess Sch Psychol Educ*. 2013;3:319-36. <https://doi.org/10.1037/14049-015>
- Alicke MD, Govorun O. The better-than-average-effect. In: Alicke MD, Dunning D, Krueger JI, editors. *Studies in Self and Identity*. New York, NY: Psychology Press; 2005. p. 85-106.
- Allison ST, Messick DM, Goethals GR. on being better but not smarter than others: the Muhammad Ali effect. *Soc Cogn*. 1989 Sep;7(3):275-95. <https://doi.org/10.1521/soco.1989.7.3.275>
- Sedikides C, Gregg AP. Self-Enhancement: food for thought. *Perspect Psychol Sci*. 2008 Mar;3(2):102-16. <https://doi.org/10.1111/j.1745-6916.2008.00068.x>
- Van Lange PAM, Sedikides C. Being more honest but not necessarily more intelligent than others: generality and explanations for the Muhammad Ali effect. *Eur J Soc Psychol*. 1998 Jul. 28(4):675-80. [https://doi.org/10.1002/\(SICI\)1099-0992\(199807\)28:4<675::AID-EJSP883>3.0.CO;2-5](https://doi.org/10.1002/(SICI)1099-0992(199807)28:4<675::AID-EJSP883>3.0.CO;2-5)
- Zell E, Strickhouser JE, Sedikides C, Alicke MD. The better-than-average effect in comparative self-evaluation: a comprehensive review and meta-analysis. *Psychol Bull*. 2019; <https://doi.org/10.1037/bul0000218>
- Dunning D. The dunning-kruger effect. On being ignorant of one's own ignorance. 1st ed. Vol. 44, *Adv Exper Soc Psych*. Elsevier Inc.; 2011. 247-296 p. <https://doi.org/10.1016/B978-0-12-385522-0.00005-6>
- Kwan VS, John OP, Kenny DA, Bond MH, Robins RW, Kwan SY. Reconceptualizing individual differences in self-enhancement bias: an interpersonal approach literature on self-enhancement bias: two conceptions how should self-enhancement bias be defined and measured? By definition, self-enhancement bias means that a s. *Psychol Assoc Inc*. 2004;111(1):94-110. <https://doi.org/10.1037/0033-295X.111.1.94>
- Shepperd JA, Klein WMP, Waters EA, Weinstein ND. Taking stock of unrealistic optimism. *Perspect Psychol Sci*. 2013;8(4):395-411. <https://doi.org/10.1177/1745691613485247>
- Sedikides C, Meek R, Alicke MD, Taylor S. Behind bars but above the bar: prisoners consider themselves more prosocial than non-prisoners. *Br J Soc Psychol*. 2014;53(2):396-403. <https://doi.org/10.1111/bjso.12060>
- Doliński D, Grzyb T, Folwarczny M, et al. Would you deliver an electric shock in 2015? Obedience in the experimental paradigm developed by stanley milgram in the 50 years following the original studies. *Soc Psychol Personal Sci*. 2017;8(8):927-33. <https://doi.org/10.1177/1948550617693060>
- Morris AH, Lee KH, Orme J. Illusory superiority: a barrier to reaching clinical practice goals. *Am J Respir Crit Care Med*. 2017;195(A1426).
- Brown JD. Understanding the better than average effect: motives (still) matter. *Personal Soc Psychol Bull*. 2012;38(2):209-19. <https://doi.org/10.1177/0146167211432763>
- Guenther CL, Alicke MD. Deconstructing the better-than-average effect. *J Pers Soc Psychol*. 2010;99(5):755-70. <https://doi.org/10.1037/a0020959>
- Beran T, Drefs M, Kaba A, Al Baz N, Al Harbi N. Conformity of responses among graduate students in an online environment. *Internet High Educ*. 2015;25:63-9. <http://dx.doi.org/10.1016/j.iheduc.2015.01.001>
- Delaloye NJ, Tobler K, O'Neill T, et al. Errors during resuscitation: the impact of perceived authority on delivery of care. *J Patient Saf*. 2017;00(00):1-6. <https://doi.org/10.1097/PTS.0000000000000359>
- Kaba A, Beran TN. Impact of peer pressure on accuracy of reporting vital signs: an interprofessional comparison between

- nursing and medical students. *J Interprof Care*. 2016;30(1):116-22. <https://doi.org/10.3109/13561820.2015.1075967>
29. Hofling CK, Brotzman E, Dalrymple S, Graves N, Pierce C. An experimental study in nurse-physician relationships. *J Nervous Ment Disord*. 1966;143(2):171-80. <https://doi.org/10.1097/00005053-196608000-00008>
 30. McCue D. Support workers doling out pills in nursing homes are under-qualified, some health professionals say. Canadian Broadcasting Corporation. 2018; Available from: <https://www.cbc.ca/radio/checkup/support-workers-doling-out-pills-in-nursing-homes-are-under-qualified-some-health-professionals-say-1.4719689>
 31. Peterson CH, Peterson NA, Powell KG. Cognitive interviewing for item development: validity evidence based on content and response processes. *Meas Eval Couns Dev* 2017;50(4):217-23. <https://doi.org/10.1080/07481756.2017.1339564>
 32. Sedikides C, Green JD, Saunders J, Skowronski JJ, Zengel B. Mnemonic neglect: selective amnesia of one's faults. *Eur Rev Soc Psychol*. 2016;27(1):1-62. <https://doi.org/10.1080/10463283.2016.1183913>
 33. Schwappach D, Sendhofer G. Speaking up about patient safety in perioperative care: differences between academic and nonacademic hospitals in Austria and Switzerland speaking up about patient safety in perioperative care: differences between academic and nonacademic hospitals in Aus. *J Investig Surg*. 2019;33(8):730-8. <https://doi.org/10.1080/08941939.2018.1554016>
 34. Beran TN, McLaughlin K, Al Ansari A, Kassam A. Conformity of behaviors among medical students: impact on performance of knee arthrocentesis in simulation. *Adv Heal Sci Educ*. 2013;18(4):589-96. <https://doi.org/10.1007/s10459-012-9397-5>
 35. Bould MD, Sutherland S, Sydor DT, Naik V, Friedman Z. Residents' reluctance to challenge negative hierarchy in the operating room: a qualitative study. *Can J Anesth Can d'anesthésie*. 2015;62(6):576-86. <https://doi.org/10.1007/s12630-015-0364-5>
 36. Pattni N, Bould MD, Hayter MA, et al. Gender, power and leadership: the effect of a superior's gender on respiratory therapists' ability to challenge leadership during a life-threatening emergency. *Br J Anaesth*. 2017;119(4):697-702. <https://doi.org/10.1093/bja/aex246>
 37. Friedman Z, Hayter MA, Everett TC, Matava CT, Noble LMK, Bould MD. Power and conflict: the effect of a superior's interpersonal behaviour on trainees' ability to challenge authority during a simulated airway emergency. *Anaesthesia*. 2015 Oct 1; 70(10):1119-29. <https://doi.org/10.1111/anae.13191>
 38. Bennett-Levy J, Lee NK. Self-practice and self-reflection in cognitive behaviour therapy training: what factors influence trainees' engagement and experience of benefit? *Behav Cogn Psychother*. 2014;42(2):48-64. <https://doi.org/10.1017/S1352465812000781>
 39. Le Feuvre N. Exploring women's academic careers in cross-national perspective. *Equal Oppor Int*. 2009 Jan 9;28(1):9-23. <https://doi.org/10.1108/02610150910933604>
 40. The Association of Faculties of Medicine of Canada. 2018-2019 Annual Report. 2019. Available from: <https://afmc.ca/en/news-publications/annual-reports>
 41. Phillips SP, Austin EB. The feminization of medicine and population health. *JAMA*. 2009;301(8):863-4. <https://doi.org/10.1001/jama.2009.155>
 42. Canadian Institute for Health Information. *A profile of health care providers in Canada*, 2019. Supply Data on 30 Groups of Health Care Providers.; 2020. <https://www.cihi.ca/en/a-profile-of-health-care-providers-in-canada-2019>.
 43. Clark PG. Toward a transtheoretical model of interprofessional education: stages, processes and forces supporting institutional change. *J Interprof Care*. 2013;27(1):43-49. <https://doi.org/10.3109/13561820.2012.730074>
 44. Kim YH, Kwon H, Chiu CY. The better-than-average effect is observed because "average" is often construed as below-median ability. *Front Psychol*. 2017;8(JUN):1-8. <https://doi.org/10.3389/fpsyg.2017.00898>
 45. Heck PR, Simons DJ, Chabris CF. 65% of Americans believe they are above average in intelligence: results of two nationally representative surveys. *PLoS One*. 2018;13(7):1-11. <https://doi.org/10.1371/journal.pone.0200103>
 46. Sabarwal S, Kacker K, Habyarimana JP. Better than most : teacher beliefs about effort and ability in Uganda. *Policy Res Work Pap Ser*. May 2018. <https://doi.org/10.1596/1813-9450-8440>
 47. Schaffer J, O'Donovan J, Michaelis J, Raglin A, Höllerer T. I can do better than your AI. 2019;240-51. <https://doi.org/10.1145/3301275.3302308>