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Is Disability Really an Obstacle to Success? Impact of a disability simulation on motivation and performance

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Abstract

In Western societies, statistics on the integration of people with disabilities into the labor market consistently indicate that this category of workers faces serious discrimination. Research has evidenced negative perceptions about their occupational skills, despite positive beliefs about their personal qualities. The main purpose of this study was to show how these subjective beliefs about disability can shape performance (speed and accuracy, Studies 1, 3 and 4) and self-reported motivation (Studies 2, 3 and 4) of able-bodied persons simulating a disability. Participants were 281 French students without disabilities who carried out a task either with or without a simulated disability. This simulated disability constituted an actual handicap to perform the task (Studies 1 and 2) or not (Studies 3 and 4). The first three studies were focused on cognitive abilities, whereas Study 4 introduced a job interview component. Results consistently showed that participants in the simulated disability situation completed the task more accurately than controls, but took more time to do so. Higher degrees of motivation and perseverance are found for participants in the simulated disability situation, except in a job interview setting. These results are important for understanding how subjective beliefs about persons with disabilities can constitute objective barriers to social participation, and more specifically, to access to the labor market.

Keywords: disability simulation, performance, motivation

Impact

- Simulating disability is an effective method for revealing beliefs about disability.
- Simulating a sensory or physical disability increases motivation to perform well.
- Simulating a sensory or physical disability improves accuracy but decreases performance speed.

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3 1 Title: Is Disability Really an Obstacle to Success? Impact of a disability simulation on
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9 3 Drawing on a long tradition of research on the behavioral impact of beliefs about
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11 4 social groups, recent models of social judgment provide valuable tools to understand
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13 5 individuals' perceptions of the social world and of other individuals and groups (Abele &
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15 6 Wojciske, 2018; Yzerbyt, 2018). This paper partakes in this tradition, focusing on the
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17 7 motivational and behavioral impact of beliefs about people with disabilities.
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20 8 Importantly, these models have shown that social impressions about others are rarely
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22 9 limited to a single assessment ranging from bad to good, but combine positive and negative
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24 10 judgments. For example, when it comes to the topic under study here, stereotypical beliefs
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26 11 about people with disabilities are ambivalent: they are perceived as being warmer than other
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28 12 people, but at the same time considered less competent (Fiske, Glick, & Xu, 2002; Rohmer &
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30 13 Louvet, 2018). Such ambivalent impressions are related to ambivalent behaviors: on the one
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32 14 hand, progressive legislation designed to promote social participation of individuals with
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34 15 disabilities has been implemented in a number of countries since the 1990s, but on the other
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36 16 hand, many employers are still reluctant to hire these persons because they are often perceived
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38 17 as less competent and efficient than other people (Clément-Guillotin, Rohmer, Forestier,
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40 18 Guillotin, Deshayes, & d'Arripe-Longueville, 2018; Olkin & Pledger, 2003). In sum, despite
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42 19 some positive perceptions, generally, impressions and subsequent behaviors toward persons
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44 20 with disabilities are often negative, because the insidious association between disability and
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46 21 poor performance may overshadow the personal and/or professional qualities of these
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48 22 persons.
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51 23 The negative social consequences of stereotyping are obvious for the stereotyped
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53 24 groups. Even though members of these groups reject the stereotypical beliefs, they may feel
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55 25 afraid of living up to their bad reputation, especially in evaluative settings (Steele, 1997;
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Wiederkehr, Bonnot, Krauth-Gruber, & Darnon, 2015). There is converging evidence that elderly people (Abrams, Crisp, Marques, Fagg, Bedford, & Provias, 2008; Coudin & Alexopoulos, 2010) as well as people with disabilities (Desombre, Anegmar, & Delelis, 2017; Silverman & Cohen, 2014) are sensitive to the effects of stereotyping. Members of those groups may embrace the negative stereotypical reputation of their group and consequently underperform. To that effect, Robertson, Savva, King-Kallimanis, & Kenny (2015) found that the more elderly people agreed with the stereotype associated with their group, the more they reduced their walking speed. Nevertheless, the conscious endorsement of stereotypes is a sufficient but not a necessary condition to produce behavioral confirmations. Work on stereotype activation has clearly shown that stereotypes may influence behaviors beyond the participants' control and awareness (Bargh, 2006). The automatic effects of stereotype activation have been observed on positive as well as negative beliefs, whether the participants belong to the activated category or not. The best-known example of the effects of stereotypical belief activation on behavior is Bargh, Chen, and Burrows (1996)'s experiment, in which activating the idea of *elderly people* led young participants to reduce their walking speed (Bargh, Chen, & Burrows, 1996). This effect was more recently replicated by Ginsberg and his colleagues (Ginsberg, Rohmer, & Louvet, 2012), who used a manual dexterity task to demonstrate a decrease in motor performance speed after repeated exposure to the *elderly people* label. Interestingly, their results also highlighted the effects of exposure to the *people with disabilities* label, as activation of beliefs on disability reduced participants' performance, especially manual dexterity. The authors suggested that persons with disabilities may be viewed as slow and clumsy – characteristics associated with poor performance. The most common account of the effect of stereotype activation on subsequent behavior is *ideomotor theory* (Dijksterhuis & Bargh, 2001), which holds that the activation of stereotypical beliefs increases the accessibility of traits associated with the relevant stereotype.

1 This contribution focuses on stereotypes towards people with physical disabilities,
2 aiming at further investigating the role of stereotype activation on performance. As noted by
3 Giami, Korpès, and Lavigne (2007) and by Olkin and Pledger (2003), people with physical
4 impairments are subject to a wide range of beliefs and societal problems, not all of which
5 concern physical abilities and thus tangibly affect motor skills and performance. In the same
6 way, we consider that ideomotor theory is not sufficient to account for all the consequences of
7 stereotype activation. Based on empirical evidence, we posit the hypothesis that the activation
8 of physical disability encompasses general beliefs which may in turn have a significant impact
9 on domains that should logically not be affected by the impairment. To be more specific, our
10 hypothesis is that the activation of physical impairment can provide a kind of comprehensive
11 picture of “how to do well if you are disabled”. This implies that disability may be associated
12 with a specific motivation to perform any kind of task. Nonetheless, the type of motivation to
13 perform a task is a well-known determinant of performance. Let us present some arguments
14 supporting this view.

15 As noted above, stereotypes about people with physical disabilities are inherently
16 ambivalent (Clement-Guillotin et al., 2018; Rohmer & Louvet, 2018). It has been shown that
17 people with disabilities describe themselves ambiguously: less competent than warm (Louvet,
18 Rohmer, & Dubois, 2009). This can have a strong impact on performance. Recently, Cohen,
19 Darnon and Mollaret (2017, Study 1) have found that personal qualities related to warmth,
20 honesty and sociability (communal traits) trigger the motivation to achieve mastery goals (i.e.,
21 mastering the content of a task as well as possible) to the detriment of the motivation to
22 achieve performance goals (i.e., performing better than others). These authors asked students
23 without disabilities to sincerely describe themselves with respect to a variety of traits and to
24 then rate their own motivation to achieve mastery and performance goals. Regression analyses
25 showed that communal traits were positively predicted by the pursuit of mastery goals but

1 negatively predicted by the pursuit of performance goals. It is thus reasonable to postulate that
2 the activation of physical disability could have a significant impact on self-reported types of
3 motivation to perform a task. Presumably, a group associated with communal qualities and
4 poor performance will be more easily associated with mastery goals than with performance
5 goals: people with disabilities are seen as more cooperative than competitive, they can be
6 motivated to showcase their best ability but it will be hard to believe that they can do better
7 (or can be motivated to do better) than people without disabilities. An additional supporting
8 argument lies in the negative perception of the ability to perform of persons with disabilities,
9 which seems compensated by an over attribution of other achievement-related qualities. As
10 shown by Louvet and Rohmer (2010) and Rohmer and Louvet, (2011), persons with physical
11 disabilities are often described as being courageous, conscientious and hardworking. These
12 characteristics -called effort traits by these authors- refer to the motivation to make efforts and
13 to expend energy during the realization of a task. Importantly, they refer to other qualities
14 than competence per se. Competence traits (e.g. competent, intelligent, performing, efficient)
15 are ascribed only when people have mastered a task (output) whereas the ability to make
16 efforts (input) does not guarantee that people are able to master a task. Consequently,
17 competence traits are more socially useful and a better guarantee of success than effort traits
18 (Louvet, Cambon, Milhabet, & Rohmer, 2018). Along the same lines, Cohen et al. (2017,
19 Study 1) have shown that effort traits, like communal traits, are associated with mastery goals
20 and unrelated to performance goals. More generally, mastery goals are mainly associated with
21 effort, hard work and perseverance, whereas performance goals are mainly associated with
22 competitiveness, ambition, and leadership. In sum, these arguments suggest that physical
23 disability could be associated with specific motivations, themselves associated with poor
24 performance. In other word, if disability is activated in memory, this specific activation can
25 impact both performance and motivation.

Present research

The purpose of the present research was to experimentally test the effect of asking individuals without disabilities to simulate physical disability on their performance and motivation in a computerized task involving mental ability. The simulation procedure we used differed from the classic priming procedure (see for example Bargh et al., 1996; Ginsberg et al., 2012). Participants were told that the situation in which they would have to complete the task had been designed to faithfully reproduce the situation of a person with disability. This seemed an appropriate procedure for studying both how the simulation affected the participants' motivations and how it shaped the way in which they performed the task. The disability simulation consisted either in making participants wear filtered glasses and believe that they were experiencing the daily perception of a visually impaired person (Studies 1 and 2) or in having participants perform the task seated in a wheelchair (Studies 3 and 4). In the control conditions, participants either wore the glasses but were not told about disability, or performed the task while seated in a regular chair. Participants' performance in the task was measured in terms of response speed and accuracy¹ (Studies 1, 3 and 4). Their motivation was measured in terms of achievement goals (Studies 2 and 3) and related personality traits (Study 4). In line with previous research (Ginsberg et al., 2012), we expected the disability simulation to lower participants' performances, by slowing down their response speed and reducing their accuracy. Somewhat more originally, we predicted that the simulation of a disability would lead participants to enhance their motivation, and more particularly to present themselves as being motivated to do the best they could, in line with the stereotype of persons with disabilities being courageous and persevering (Louvet & Rohmer, 2016). In Study 4, we extended the disability simulation test to an occupational setting, as the task was presented to

¹ We use the term "accuracy" to refer to the qualitative aspect of participants' performance in the proposed tasks, based on a ratio of number of correct answers to total number of responses.

1 participants as a job hiring situation. As such an evaluative context conveys notions of
2 meritocracy (thereby inducing a perceived need to invest effort), especially among low-status
3 students (Wiederkehr, Bonnot, Krauth-Gruber, & Darnon, 2015), this competitive recruitment
4 situation might be seen as threatening by participants simulating a disability, and thus amplify
5 expected results.

6 These studies were performed in conformity with the principles of the Declaration of
7 Helsinki. They are defined as non-interventional research under the French public health
8 code, and did not require any alterations to the medical care received by the patients.

9 Study 1

10 There is a broad consensus in the literature that disability should be conceptualized as
11 resulting from person-environment interactions. According to this approach, disability can be
12 defined as the restriction of an individual's participation in society, resulting not only from
13 physical but also from ideological barriers. Based on this conception, it is possible to place
14 people with no actual impairment in a situation of disability. The aim of the present study was
15 to place individuals without any disability in a situation of real physical impairment (physical
16 barrier) while manipulating the simulation of disability (ideological barrier). To achieve this,
17 all participants had to complete a task while hampered by a sensorimotor limitation. While
18 this physical impairment was held constant, half the participants were told that this
19 disturbance would make them experience the situation of a person with a disability
20 (experimental condition), and half were told that the text could be more or less difficult to
21 read (control condition). We expected that the simulation of disability, in the experimental
22 condition, would influence participants' performance in the task. In line with previous
23 research (Ginsberg et al., 2012), we predicted that participants simulating a disability in the
24 experimental condition would respond more slowly and less accurately than participants in
25 the control condition.

Participants and Procedure

The participants were 100 students (65 women, 35 men) studying a variety of subjects (e.g., literature, law, humanities, biology). They ranged in age from 18 to 51 ($M = 22.45$, $SD = 4.93$). None of them suffered from any disease or disability that might make the experimental tasks objectively difficult. They were recruited on the university campus, and directed to the psychology laboratory. Upon entering the lab, they were randomly assigned to one of the two conditions (experimental vs. control).

The research was presented as a study about vision, with a focus on reading strategies. After being installed in the experimental booth, participants were invited to perform a word stem completion task on a computer. A sentence appeared in the middle of the screen (e.g., “bees forage for...”), with two words below it (Words A and B): one that correctly completed the sentence (e.g. “honey”), and one that was irrelevant (e.g., “homey”). Participants had to indicate on the keyboard which word (A or B) was the right one to complete the sentence. After completing a set of 15 items as a training block, participants were instructed to wear noncorrected glasses with red filters during the real test block. For each sentence, the two words were printed in sequences of two black and two red letters, in order to place participants in a situation of actual visual impairment. This material placed participants in a situation of visual disturbance, as the red filters of the glasses made it almost impossible to identify the red letters. Half the participants were told that the study was about disability, and that the glasses would place them in the situation of a visually impaired person by reproducing blind spots (scotomas), a genuine visual impairment (experimental condition). The other half was told that the glasses were used to read more or less difficult texts (control condition). They were randomly assigned to one of these two conditions. Then, all the participants completed the test block of 18 items. They were instructed to respond as quickly as possible (the response time was limited to 60 seconds), while making as few errors as

possible. Moreover, for three of the 18 sentences, neither of the two words allowed the sentence to be completed correctly (impossible items). Through these three impossible items, we wanted to measure participants' level of perseverance in the search for the correct answer. Finally, participants indicated the extent to which they felt they had been disabled on a 9-point Likert-like scale ranging from 1 (*Not at all*) to 9 (*Completely*), as a manipulation check. Participants were then thanked and debriefed by the experimenter.

Results

Manipulation check.

Feeling of disability.

As expected, participants in the experimental condition felt more disabled ($M = 7.40$, $SD = 1.61$) than those in the control condition ($M = 6.46$, $SD = 2.10$), $F(1, 98) = 6.30$, $p = .014$, $\eta^2 = .06$.

Task performance during training.

Mean response times in the 15 training trials were similar across the two conditions, $F(1, 98) = .60$, $p = .44$ ($M_E = 2355.31$ ms, $SD = 600.51$; $M_C = 2463.38$ ms, $SD = 779.78$), as was accuracy, $F(1, 98) = .49$, $p = .48$ ($M_E = .98$, $SD = .04$; $M_C = .99$, $SD = .03$). This indicates that the two groups were initially equivalent in their ability to solve the task.

Effect of simulation on task performance.

We analyzed two aspects of task performance: response speed (in ms) and accuracy. For response speed, we computed two mean latency scores: (a) averaged latencies for the 15 possible items, and (b) averaged latencies for the three impossible items. For accuracy, we simply counted the number of correct answers and divided it by the total number of answers (15). Gender never interacted with the effect of the disability simulation (all F s < 2.5) and will not be discussed further.

Response speed.

A multivariate analysis of variance (MANOVA) with the disability simulation (experimental vs. control) as a between-participants factor was computed on the two latency scores (possible vs. impossible items; $r = .75, p < .001$). In line with our expectations, Wilks's lambda statistic revealed a significant multivariate effect, $\Lambda = .86, F(2, 97) = 8.05, p < .001, \eta^2 = .14$. Univariate analyses indicated that participants in the experimental condition were slower than those in the control condition, both for the possible items ($M_E = 13335.44$ ms, $SD = 5872.59$; $M_C = 10849.29$ ms, $SD = 4477.08$), $F(1, 98) = 5.67, p = .019, \eta^2 = .05$, and for the impossible items ($M_E = 23649.27$ ms, $SD = 15593.36$; $M_C = 13853.42$ ms, $SD = 7913.42$), $F(1, 98) = 15.69, p < .001, \eta^2 = .14$.

Accuracy.

An ANOVA revealed a main effect of simulation on the number of correct answers, $F(1, 98) = 4.37, p = .04, \eta^2 = .04$. Participants in the experimental condition were more accurate ($M = .81, SD = .14$) than those in the control condition ($M = .75, SD = .17$). As accuracy was positively correlated with latencies for the possible items ($r = .24, p = .02$), we tested the effect of simulation on accuracy, controlling for response speed using an ANCOVA. Results indicated that the main effect of simulation on accuracy collapsed, $F(1, 97) = 2.56, p = .11, \eta^2 = .03$ ($M_E = .80, SD = .02$; $M_C = .75, SD = .32$).

Discussion

In this first experiment, we expected disability to be automatically associated with poor task performance. However, results did not fully support this hypothesis. Placing the participants in a simulated disability situation while asking them to carry out a complex task altered their performances, but not homogeneously so. In line with our expectations, results showed that participants in the experimental condition took more time to complete the task than their counterparts in the control condition. However, the former were more accurate in their responses than the latter. In other words, in contrast to previous findings (Ginsberg et al.,

2012), *simulating* a disability (i.e., making participants believe they experience a disability situation) rather than *priming* disability led participants to shift their focus from the *quantitative* aspect of task performance (response speed) to the *qualitative* aspect (accuracy). It seems plausible that participants in the experimental condition adopted a different strategy, spending more time on the task than participants in the control condition in order to increase their accuracy. In line with this interpretation, it is interesting to note that participants in the experimental condition also spent more time on the impossible items than control participants. Since these items were clearly unresolvable, the increase in response times can be interpreted as an expression of the effort that participants made to complete the task. In line with our theoretical reasoning, the participants would have simulated the visual impairment by displaying a greater degree of cognitive effort during the task. This suggests that they associated the concept of disability with effort. Such association has already been evidenced at an explicit level in previous research studying social judgments on people with disabilities (Louvet & Rohmer, 2016). Interestingly, we also noted that the effect of the disability simulation on accuracy collapsed when controlling for response latencies. This suggests that the higher accuracy of participants simulating disability could be partly explained by a quantity/quality tradeoff. A plausible explanation for such a pattern could be that simulating a disability increased the participant's overall motivation to solve the task properly, resulting from an automatic activation of stereotypically consistent behaviors (Bargh, 1997). We therefore hypothesized that a simulated disability would induce a particular motivational pattern, leading participants to try their best during the task. In order to test this hypothesis, we ran a second study to test for participants' achievement goals during the task, using a similar experimental design.

Study 2

Study 2 was intended to test the idea that simulating a physical disability affects participants' motivation and task goals. Study 1 showed that participants simulating a disability focused on accuracy at the expense of speed. Based on these first results, we predicted that, compared with participants in the control condition, participants in the experimental condition would be more motivated to do the best they could.

Participants and Procedure

The participants were 62 university students (34 women, 28 men) ranging in age from 17 to 34 ($M = 21.47$, $SD = 3.19$). After checking for outliers using Cook's distance, we excluded two participants in the control condition, as they had abnormally long training response times (twice the mean time), bringing the number of participants down to 60 students (32 women, 28 men; $M_{\text{age}} = 21.48$, $SD = 3.23$).

This study partly replicated the design of Study 1, but this time we assessed *motivation* rather than task performance. As in Study 1, all participants were directed to an experimental booth to perform a completion task on a computer. Once more, they were randomly assigned to one of two conditions (experimental vs. control). The training block used in Study 1 was retained for two main reasons. First, we needed to ensure that the two experimental groups were equivalent in terms of ability. Second, this training sequence increased the credibility of our experimental manipulation. After the training block, the study was presented to participants either as a disability study (experimental condition, $n = 31$) or as a vision study (control condition, $n = 29$). Participants were then asked to indicate their motivations by completing an achievement goal questionnaire (Darnon & Butera, 2005) on a 9-point Likert scale ranging from 1 to 9. More specifically, three items measured performance approach goals ($\alpha = .90$; $M = 11.72$, $SD = 6.55$) and three items measured mastery approach goals ($\alpha = .62$; $M = 18.72$, $SD = 4.72$). As in Study 1, participants also noted the extent to which they felt they had been disabled, on a 9-point Likert scale ranging from 1 (*Not at all*) to 9

(*Completely*). Finally, we simulated a technical problem to bring the study to an end, and thanked and debriefed the participants.

Results

Manipulation check.

Feeling of disability.

As expected, the feeling of being disabled was much stronger for participants who simulated a disability ($M = 8.13$, $SD = .99$) than for those in the control group ($M = 6.59$, $SD = 2.67$), $F(1, 58) = 9.05$, $p = .004$, $\eta^2 = .13$.

Task performance during training.

Mean response times to the training trials were similar across the two conditions, $F(1, 58) = 2.62$, $p = .11$ ($M_E = 2555.01$ ms, $SD = 513.04$; $M_C = 2830.02$ ms, $SD = 784.47$), as was accuracy, $F(1, 58) = 1.10$, $p = .30$ ($M_E = .98$, $SD = .03$; $M_C = .99$, $SD = .02$). This indicated that the two groups were initially equivalent in their ability to solve the task.

Effect of simulation on motivation.

We ran a MANOVA to test the effect of simulation (experimental condition vs. control condition) on motivation scores (mastery goals and performance goals, $r = .54$, $p < .001$). A Wilks's lambda statistic indicated a significant multivariate effect of simulation ($\lambda = .83$), $F(2, 57) = 5.69$, $p = .006$, $\eta^2 = .17$. Separate univariate tests indicated that the effect of simulation increased the endorsement of mastery goals ($M_E = 6.71$, $SD = 1.41$; $M_C = 5.74$, $SD = 1.61$), $F(1, 58) = 6.25$, $p = .01$, $\eta^2 = .10$, but did not affect the endorsement of performance goals ($M_E = 3.80$, $SD = 2.34$; $M_C = 4.02$, $SD = 2.04$), $F(1, 58) = 0.16$, $p = .69$. Gender did not influence those results (all $F_s < 1.35$).

Discussion

The aim of Study 2 was to test the hypothesis that simulating a disability affects motivation. Considering the qualities stereotypically ascribed to persons with disabilities,

such as effort and persistence (Louvet & Rohmer, 2016), and their specific link to achievement goals (Cohen et al., 2017), we hypothesized that simulating a disability would enhance the endorsement of mastery goals. Results were consistent with our assumptions. Participants in the experimental condition were more motivated than controls, especially in terms of mastery goals. This specific motivational pattern could explain why, in Study 1, participants in the experimental condition spent more time on the task than participants in the control condition, even when trying to solve impossible items. Disability simulation led participants to try the best they could, and consequently to shift from a quantitative focus (performance speed) to a qualitative one (accuracy). However, this reasoning remains hypothetical because we chose to focus Study 2 only on the motivational consequences of the disability simulation. This step was important to ensure specific effects on motivational process, independently of performance. The main purpose of Study 3 was to further investigate the effect of the disability simulation on both motivation and performance. Furthermore, Study 3 introduced a new procedure to simulate a disability. Participants in Studies 1 and 2 had indeed been objectively handicapped during the task: the red glasses caused real blind spots. Thus, a further step was to investigate the extent to which effects obtained on both motivation and performance can be observed in conditions under which disability is not a tangible barrier to succeed in the task.

Study 3

The aim of Study 3 was to show that the simulation of disability can affect task performance even if participants are not actually impaired during the task. In other words, the goal of the experimental manipulation was to induce participants to simulate the social aspect of disability without actually impairing their ability to perform the task. In line with the results of Study 1, we expected simulating disability to affect task performance, slowing down the response speed of participants but increasing their accuracy compared with controls.

Moreover, we expected simulating a disability to increase participants' motivation to try to do their best. To ensure the external validity of our results, we tested the effects of disability simulation on a more typical measure of cognitive performance: the Multifactorial Aptitude Battery (NV7; Bernaud, Priou, & Simonnet, 1994), which is adapted for measuring students' intellectual abilities.

Participants and Procedure

The participants were 61 social science students aged 18 to 34 (45 women, 16 men; $M_{age} = 20.51$, $SD = 3.08$). None of them had any disease or disability that could increase the objective difficulty of the experimental tasks. They were individually approached at various locations on campus and invited to take part in a study of cognitive abilities. They were randomly assigned to one of the two conditions (experimental vs. control).

Participants were invited to follow the experimenter to the psychology laboratory. They were informed that they would have to complete a task in which they had to solve a series of logic problems. On entering the laboratory, participants were given additional instructions. In the experimental condition ($n = 30$), participants were instructed to imagine that they had a physically disability, as we were interested in the extent to which people can adopt the perspective of a person with a disability. They were seated in a wheelchair and told that this would make the situation more realistic. They were then required to go to the test room, which forced them to use the wheelchair for a distance of about five meters. In the control condition ($n = 31$), participants walked to the test room. Once inside the room, each participant was seated at a desk (participants in the experimental condition remained in the wheelchair, while participants in the control condition sat in an office chair). The experimenter informed them that the whole task would be computerized, that they would start by answering some questions about their motivation, and they would then have to resolve the logic problems. Participants first responded to the nine motivation items used in Study 2.

They then completed the fourth subtest of the NV7 task. This subtest comprises 34 items, each displaying three geometric figures and a fourth missing figure. Participants had to choose the right missing figure among five options. For this, they had to infer the logic rule connecting the first three figures and apply this rule to find the right answer. As in Study 1, we added two impossible items (item featuring five incorrect options) in order to assess participants' perseverance. There was a timeout of 45 seconds for each item. As in the two previous studies, all participants were instructed to respond as quickly as possible, while making as few errors as possible. If no response was given before this timeout expired, the software automatically displayed the next item. At the end of the task, participants rated their subjective feeling of being disabled during the task (on a 9-point Likert scale ranging from 1 to 9). They were then thanked and debriefed by the experimenter.

Results

Manipulation check.

As expected, participants felt more disabled in the experimental condition ($M = 5.00$, $SD = 2.10$) than in the control condition ($M = 2.87$, $SD = 2.09$), $F(1, 59) = 15.71$, $p < .001$, $\eta^2 = .21$, indicating that our experimental manipulation of disability was successful.

Effect of simulation on motivation.

We ran a MANOVA to test the effect of the disability simulation (experimental vs. control) on motivation scores (mastery goals and performance goals, $r = .38$, $p = .003$). A Wilks's lambda statistic revealed a significant multivariate effect of simulation ($\Lambda = .78$), $F(2, 58) = 8.18$, $p < .001$, $\eta^2 = .22$. Separate univariate tests indicated that the effect of simulation significantly increased the endorsement of both mastery ($M_E = 7.00$, $SD = 1.49$; $M_D = 6.10$, $SD = 1.67$), $F(1, 59) = 4.96$, $p = .03$, $\eta^2 = .08$, and performance goals ($M_E = 5.23$, $SD = 2.30$; $M_C = 3.03$, $SD = 2.08$), $F(1, 59) = 15.39$, $p < .001$, $\eta^2 = .21$. Men endorsed mastery goals

more than women ($M = 6.80$ vs. $M = 5.81$, $F(1, 57) = 4.09$, $p = .048$, $\eta^2 = .07$) but gender did not interact with the effect of the disability simulation ($F_s < 2.84$).

Effect of simulation on task performance.

As in Study 1, we analyzed two aspects of task performance: response speed (in ms) and accuracy. For response speed, we computed two mean latency scores: (a) averaged latencies for the 34 original NV7 items, and (b) averaged latencies for the two impossible items we added to the NV7 task. For accuracy, we computed an accuracy score by dividing the correct answers given to the 34 possible items. Men were slower than women both on the possible items ($M = 11145.72$ vs. $M = 8556.65$, $F(1, 57) = 15.83$, $p < .001$, $\eta^2 = .22$) and on the impossible items ($M = 24581.84$ vs. $M = 14433.58$, $F(1, 57) = 27.24$, $p < .001$, $\eta^2 = .32$) but gender never interacted with the effect of the disability simulation (all $F_s < 1.10$).

Response speed.

We computed a MANOVA with simulation (experimental vs. control) as a between-participants factor on the two latency scores (original vs. impossible NV7 items; $r = .72$, $p < .001$). A Wilks's lambda statistic revealed a significant multivariate effect ($\Lambda = .67$), $F(2, 58) = 14.34$, $p < .001$, $\eta^2 = .33$, indicating that disability simulation had an overall effect on latencies. Univariate analyses indicated that the disability simulation increased latencies compared with the control condition, both for the original NV7 items, ($M_E = 11210.97$ ms, $SD = 3085.95$; $M_C = 7324.25$ ms, $SD = 2551.17$), $F(1, 59) = 28.82$, $p < .001$, $\eta^2 = .33$, and for the impossible NV7 items ($M_E = 21335.45$ ms, $SD = 8669.55$; $M_C = 12992.16$ ms, $SD = 8220.97$), $F(1, 59) = 14.88$, $p < .001$, $\eta^2 = .20$.

Accuracy.

An ANOVA revealed a main effect of simulation on the number of correct answers, $F(1, 59) = 9.93$, $p = .003$, $\eta^2 = .14$. Participants in the experimental condition displayed better

accuracy ($M = .79$, $SD = .11$) than those in the control condition ($M = .66$, $SD = .18$). As in Study 1, accuracy was again positively correlated with latencies for both the original ($r = .39$, $p = .002$) and impossible NV7 items ($r = .60$, $p = .002$). We thus tested the effect of simulation on accuracy when controlling for response speed using an ANCOVA. As in Study 1, the main effect of simulation collapsed, $F(1, 58) = 2.54$, $p = .12$, $\eta^2 = .04$ ($M_E = .76$, $SD = .03$; $M_C = .69$, $SD = .03$).

Correlations between motivation and task performance.

Response latencies were positively correlated with the endorsement of performance goals for both the original possible ($r = .32$, $p = .01$) and the added impossible NV7 items ($r = .26$, $p = .05$). In other words, the more participants sought to perform, the more they spent time to resolve the task. Accuracy was not correlated with motivations.

Discussion

Study 3 tested two main hypotheses, with the aim of further exploring and confirming the results yielded by the two previous studies. The first one predicted that simulating a disability would affect participants' motivation. As in Study 2, we expected participants simulating a disability to be more eager to master the task and to do the best they could. Results were broadly consistent with this assumption: as observed in Study 2, experimental simulation of disability again enhanced the endorsement of mastery goals, but this time, and in contrast to our assumptions, simulating disability also enhanced the endorsement of performance goals. Thus, it can be possible that participants simulating disability were overall more motivated and implicated in the task because in this specific experimental context, the impairment did not represent any difficulty neither objectively nor subjectively. The second hypothesis concerned task performance. Based on the results of Study 1, we expected to observe slower response times and greater accuracy for participants in the experimental condition. Results perfectly replicated those of the first study. Moreover, the effect of the

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3 1 disability simulation on accuracy again collapsed when controlling for response speed. This
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5 2 further supports the idea that participants simulating a disability adopted a performance
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7 3 strategy which consisted in taking more time for increased accuracy. Furthermore, we noted
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9 4 that endorsing performance goals was positively associated with taking more time to solve the
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11 5 items. This means that simulating a disability increased the participants' motivation to
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13 6 perform, inducing a particular behavioral pattern which led participants to slow down their
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15 7 response speed in order to maximize their chance of answering correctly.
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19 8 To conclude, the mere simulation of disability (i.e., no actual impairment) increased
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21 9 participants' motivation and led them to be slower and more persevering, characteristics that
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23 10 echo stereotypical beliefs about disability (Ginsberg et al., 2012). Importantly, those results
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25 11 extended those of Study 1, in that here participants were led to simulate a disability without
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27 12 being actually impaired. This allows us to interpret our findings as resulting from the beliefs
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29 13 that participants share about people with disabilities. As those beliefs can be particularly
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31 14 salient and problematic in competitive contexts, the main purpose of Study 4 was to further
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33 15 explore the effects of a disability simulation on motivation and performance in an
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35 16 occupational setting. In such a situation, participants simulating a disability were still
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37 17 expected to display effort at the behavioral level (spending more time than control
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39 18 participants), due to the automatic occurrence of stereotypically consistent behaviors.
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42 19 However, they were also expected to decrease their expression of motivation, especially the
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44 20 adoption of performance goals, because in such competitive contexts, performance goals
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46 21 should be considered incompatible with stereotypical beliefs about disability (Barron et al.,
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48 22 2006; Ginsberg et al., 2012; Rohmer & Louvet, 2018; Sideridis, Stamovlasis, & Antoniou,
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56 24 **Study 4**
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The purpose of this study was to analyze the effect of disability simulation on motivation and task performance in a true-to-life work situation: a job interview. We expected the results of the three previous studies to be replicated or even amplified in this context, which is particularly challenging for persons with disabilities. To strengthen the realism of recruitment conditions, we chose to assess motivation through a pseudo personality test, allowing participants to describe themselves, a standard practice in hiring processes (see for example Whetzel & Wheaton, 2007).

Participants and Procedure

The participants were 58 social science students aged 18 to 36 (28 women, 30 men; $M_{\text{age}} = 22.37$, $SD = 3.03$). None of them had any disease or disability that would make the experimental tasks objectively more difficult. They were individually approached at various locations on campus and invited to take part in a study on job hiring. They were randomly assigned to one of the two conditions (experimental vs. control). The procedure was exactly the same as in Study 3, with the exception of one major parameter: in Study 4, all participants were told that the study dealt with job hiring. Before arriving at the laboratory, they were instructed to imagine that they were applying for a job, and that they were going to participate in a simulated job interview. In the experimental condition ($n = 26$), participants were instructed to imagine they were an applicant with a disability. As in Study 3, participants in the experimental condition used a wheelchair to reach the test room, while those in the control condition ($n = 32$) did not. In order to make the simulation of the job interview as realistic as possible, motivation was assessed by means of a *personality test*, a classic procedure in a recruitment process. Participants were asked to indicate the extent to which they thought they needed to stand out and appear brave, persistent, tenacious and hardworking, as well as display leadership qualities and seem ambitious, competitive, dominant and self-confident in order to succeed. The first five items ($\alpha = .83$) had previously been shown to be related to

mastery goals, and the last five items ($\alpha = .83$) to performance goals (Cohen et al., 2017).

Task performance was measured as in Study 3. Once more, all participants were instructed to respond as quickly as possible, while making as few errors as possible. Both the *personality test* and the NV7 task were presented as tests that are frequently used to measure applicants' motivation and ability in occupational settings. At the end of the study, participants were thanked and debriefed by the experimenter.

Results

Manipulation check.

As expected, participants felt more disabled in the experimental condition ($M = 4.12$, $SD = 2.08$) than in the control condition ($M = 2.22$, $SD = 2.07$), $F(1, 56) = 11.93$, $p = .001$, $\eta^2 = .18$, indicating that our experimental manipulation was once again successful.

Effect of simulation on motivation.

We ran a MANOVA to test the effect of simulation (experimental condition vs. control condition) on motivation (mastery goal-related qualities and performance goal-related qualities, $r = .56$, $p < .001$). A Wilks's lambda statistic revealed a significant multivariate effect of simulation ($\lambda = .88$), $F(2, 55) = 3.75$, $p = .03$, $\eta^2 = .12$. Separated univariate tests indicated that the disability simulation decreased the endorsement of performance goals ($M_E = 5.51$, $SD = 1.77$; $M_C = 6.52$, $SD = 1.40$), $F(1, 56) = 5.91$, $p = .02$, $\eta^2 = .10$. No effect was noted for mastery goals ($M_E = 7.18$, $SD = 1.09$; $M_C = 7.32$, $SD = 1.79$), $F(1, 56) = 0.11$, $p = .74$. Gender did not significantly influence those results ($F_s < 3.15$).

Effect of simulation on task performance.

Task performance was analyzed as in Study 3. Gender never interacted with the effect of the disability simulation ($F_s < .76$).

Response speed.

We computed a MANOVA with simulation (experimental vs. control) as a between-participants factor on the two latency scores (original vs. impossible NV7 items; $r = .71$, $p < .001$). A Wilks's lambda statistic revealed a significant main effect ($\Lambda = .83$), $F(2, 55) = 5.55$, $p = .006$, $\eta^2 = .17$, indicating that disability simulation had an overall effect on latencies. Univariate analyses indicated that the disability simulation increased latencies compared with the control condition, both for the original NV7 items ($M_E = 11103.25$ ms, $SD = 2845.91$; $M_C = 8590.32$ ms, $SD = 2878.95$), $F(1, 56) = 11.04$, $p = .002$, $\eta^2 = .17$, and for the impossible NV7 items, ($M_E = 19325.73$ ms, $SD = 8790.48$; $M_C = 13828.25$ ms, $SD = 8168.44$), $F(1, 56) = 6.07$, $p = .02$, $\eta^2 = .10$.

Accuracy.

An ANOVA revealed a marginal effect of simulation on the number of correct answers, $F(1, 56) = 2.88$, $p = .095$, $\eta^2 = .05$, indicating that participants tended to be more accurate in the experimental condition ($M = .79$, $SD = .13$) than in the control condition ($M = .73$, $SD = .13$). However, this effect failed to reach a conventional level of significance. Accuracy was positively correlated with latencies for the impossible items ($r = .57$, $p < .001$) and marginally with latencies for the original items ($r = .22$, $p = .09$). Consistent with previous studies, the marginal effect of the disability simulation on accuracy totally collapsed when controlling for latencies for the possible items, $F(1, 55) = 1.21$, $p = .28$, $\eta^2 = .02$ ($M_E = .78$, $SD = .03$; $M_C = .74$, $SD = .02$).

Correlations between motivation and task performance.

Contrary to Study 3, latencies for the original NV7 items were negatively correlated with the endorsement of performance goals ($r = -.32$, $p = .01$), so that in Study 4, the more motivated participants were to perform, the faster they were during the NV7 task. Accuracy was again not correlated with motivations.

Discussion

The aim of this study was to analyze the effect of disability simulation on motivation and task performance in a work setting. The questionnaire about professional qualities showed that simulating a disability decreased self-attribution of specific qualities related to performance goals. This pattern of results contrasts with those observed in Studies 2 and 3, and may have resulted from the specific work setting we created. During a job interview, applicants are expected to be competitive and endorse performance goals. However, qualities related to competition and motivation to show one's superiority, such as ambition or self-confidence, go against the stereotypical beliefs about persons with disabilities (Rohmer & Louvet, 2018). Consequently, simulating a disability in a competitive context may decrease the self-attribution of qualities related to performance goals. Concerning task performance, we once again observed a slower response speed in the experimental condition, even though the task did not require any motor skills, and therefore did not pose any problems for a person in a wheelchair. Consistently with these findings, we observed that the less participants expressed the motivation to perform, the more they spent time to solve the task, reversing the correlation observed in Study 3. In other words, whereas in Study 3, simulating a disability enhanced the endorsement of both mastery and performance goals and consequently led participants to slow down their response speed in order to maximize the number of correct answers, in Study 4, simulating a disability decreased the endorsement of performance goals and consequently led participants to be slower without significantly improving their accuracy. It is possible that in a competitive context where *time is money*, performance goals are interpreted in a specific way, in the sense that *performing* means *being fast*. However, this kind of performance is contrary to the stereotype associated with persons with disabilities, explaining why simulating a disability in this context decreased the endorsement of performance goals, and consistently decreased participants' performance speed.

General Discussion and Conclusion

1 In line with a long tradition of work focusing on the motivational and behavioral impact of
2 stereotypes about social groups, the purpose of the present research was to highlight how the
3 simulation of disability can shape participants' performance and motivation. Based on
4 previous research showing that attitudes toward persons with disabilities are difficult to
5 explicitly express but can be understood through behaviors (Clement-Guillotin et al., 2018;
6 Ginsberg et al., 2012, Rohmer & Louvet, 2012, 2018), we devised a design that highlighted
7 beliefs about disability without having to directly question participants. We asked participants
8 without a disability to simulate a visual impairment by wearing special glasses (Studies 1 and
9 2), or a motor impairment by moving around in a wheelchair (Studies 3 and 4). Based on the
10 assumption that simulating impairment activates beliefs about disability, we predicted that the
11 behaviors of participants enrolled in simulations would be consistent with their beliefs about
12 people with disabilities. Previous studies found that priming disability decreased the
13 performance speed and manual dexterity of students without any disability (Ginsberg et al.,
14 2012). In the same vein, simulating blindness caused participants to judge blind individuals as
15 less successful and less autonomous than those in the no simulation condition (Silverman,
16 Gwinn, & Van Boven, 2015). Our results complement these previous studies indicating that
17 simulating disability (a) influences performances and (b) **achievement** motivation. Our results
18 have consistently shown that this simulation increased participants' motivation to perform
19 well, and consequently enhanced their response accuracy. These results closely mirror the
20 stereotype associated with persons with disabilities suggesting that workers or students with
21 disabilities are seen as more courageous, more persevering, more hardworking and more
22 motivated than workers or students without disabilities (Louvet & Rohmer, 2010, 2016).
23 Nevertheless, this positive impact of disability is ambivalent, insofar as participants placed in
24 a disability situation also spent more time performing the tasks, and persisted in trying to find
25 a solution to the unsolvable problems. Furthermore, in a work setting, simulating disability

1 decreased participants' motivation to perform well and be competitive. However, in our
2 Western societies, and especially in a work setting speed and efficiency are seen as important
3 qualities to get ahead in life. Successful individuals are generally described as efficient,
4 ambitious, self-confident or competitive, and are not particularly expected to make efforts
5 (Carrier, Louvet, Chauvin, & Rohmer, 2014; Cohen et al., 2017). These agentic qualities are
6 not compatible with lay representations of people with disabilities. In sum, while the
7 motivation to do a good job generally associated with persons with disabilities is perceived as
8 a positive trait, it is not highly valued in the contemporary workplace. This raises important
9 questions concerning the inclusion of people with disabilities in the workplace. Whereas some
10 qualities stereotypically associated with disability such as making efforts may be appropriate
11 in some situations, they seem to be incompatible with the most prestigious positions in our
12 Western societies. These subjective barriers prevent persons with disabilities from enjoying
13 full social inclusion, but seem to be neglected in the legislation on inclusive policies.

14 Several limitations of the present study merit further comment. First, as in many
15 previous studies, we compared people with (simulated) disabilities with the general
16 population. Although we introduced two types of impairment, there is no evidence that our
17 findings can be generalized to other forms of disability. Further research is needed to ascertain
18 whether other impairments such as mental or psychological disorders lead to similar results.
19 Previous research suggests that expectations toward people with such disabilities are lower
20 (Laberon, 2014; Rüsch, Corrigan, Todd, & Bodenhausen, 2011). Additionally, because our
21 analysis was based on simulations of disability, future investigations should include
22 participants living with real impairments. These limitations notwithstanding, we think that this
23 research highlights the impact of beliefs about people with disabilities. It takes us one step
24 closer to being able to understand representations of disability from a social model
25 perspective (Dirth & Branscombe, 2017). Although this set of studies does not reveal the

behavior of people with genuine disabilities, it does tell us about valid individuals' representations of the disabled, in terms of performance, motivation, and self-description. Worth noting is that disability can be simulated, unlike most other social categories. This provides a clearer picture of how individuals think that people with disabilities perceive themselves and behave in performance tasks, and confirm that they are commonly thought to have little value in the workplace. All this can be set against recent studies indicating that, despite the current policy of fighting discrimination, popular beliefs remain unchanged, constituting an obstacle to the social participation of persons with disabilities (Rohmer & Louvet, 2018). In the future, it could be interesting to investigate how achievement goals directly predict performance. To encourage assertiveness, workers with disabilities could be encouraged to develop specific types of motivation, as has recently been done in a selective academic context (Jury, Darnon, Dompnier, & Butera, 2017).

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