

Supplemental Material

Experimental evidence for the relationship between perceived likelihood of automation and prestige

We experimentally tested whether people infer a higher likelihood of automation to less prestigious jobs and a lower likelihood of automation to more prestigious jobs. We do so in the context of advising a job and measuring predictions of how likely it is to be automated. We employed a within-participant design with high and low prestige to perform this test by manipulating a prestige cue through the job industry. One job was in the high-prestige industry, and the other was in the low-prestige industry.

Participants ($N = 150$, $M_{age} = 37.78$, Female = 72) were recruited through the Cloud Research platform. Participants were assigned to two within-subject conditions (high prestige vs. low prestige) with repeated measures of the perception of the likelihood of job automation. We also added an attractiveness cue to ensure that the jobs only differ in prestige but not in more general attractiveness. To this aim, we added a low attractiveness cue, such as a low salary increase and a high travel time to a high-prestige industry job and vice versa to a low-prestige industry (see below Pre-test for attractiveness).

Participants were told they would give career advice to their younger relative, who is now in middle school. Then, participants viewed two jobs on the same page side by side. Participants were randomly assigned to one of the three jobs: Auditor, Budget Analyst, and Storage and Distribution Manager. We selected these occupations as they were all perceived to have the same perceived likelihood of job automation from 41 to 52%. Also, these white-collar jobs are estimated to be at a very high risk of job automation in the next decade (Duckworth et al., 2019, Felten, Raj, and Seamans, 2021)). To test the impact of prestige, we aimed to keep other job characteristics as constant as possible. Thus, the jobs were described to be in the same size company, have the same salary, the same level of routine and standardization, and require some level of degree and education. To make the job postings more realistic, we provided a job description for each title. Different levels of prestige (random selection from the three high and the three low-prestige industries see below Pre-test for industry prestige) were randomly assigned to the two job descriptions for each occupation. After participants read job descriptions, they proceeded to evaluate each job on the likelihood of job automation on the following scale: "How likely do you think this job is to be automated in the next 10-15 years? When the job is automated, it is no longer performed by humans but by machines, software, or algorithms" (1 = Extremely unlikely to 7 – Extremely likely).

The repeated measures ANOVA F-test revealed the predicted significant effect of prestige on the perceptions of the likelihood of job automation; participants rated jobs in high prestige ($M = 4.11$, $SD = 1.72$) as less likely to be automated than the jobs with low prestige ($M = 4.69$, $SD = 1.76$, $F(1,149) = 13.04$, $P < 0.001$). As a separate test, we checked whether different jobs or industries had an effect. Still, these variables did not interact significantly with prestige ($F < 1$) on the perceived likelihood of job automation. This study demonstrates that people perceive that a job in a high-prestige industry is less likely to be automated than one in a low-prestige industry.

Pre-test for industry prestige: To identify what industries people find prestigious and what industries people find less prestigious, we conducted a pre-test. We used the sector and industry list from IBISWorld, a comprehensive industry and market research database that provides information and analysis on more than 700 industries worldwide. We identified 50 more familiar industries to the public from six business sectors that are substantially different from each other. Further, we have also changed the definition of occupational prestige since occupational prestige perceptions primarily apply to people and their social standing in society. Thus, we adopted a definition from the Cambridge dictionary: "Prestige: respect and admiration given to someone or something, usually because of a reputation for high quality, success, or social influence." Participants ($N=102$, $M_{age}=36.47$, Female = 41) were hired through the Cloud Research platform. Each participant was instructed to rate 20 industries on the level of prestige. Before rating the industries, participants read the definition of prestige and then were asked an attention check question. We only allowed people who

passed the attention check to proceed to rate the industries. Each participant rated 20 industries on how prestigious they find them; thus, each industry had 50 individual ratings.

As a result, we narrowed the list to the top ten highest-rated industries and ten lowest-rated industries. Out of them, we selected six industries (3 in low prestige and 3 in high prestige) with sectors that vary in activities, such as services, manufacturing, financial sectors, etc. Industries selected for high prestige were Museums, Corporate Law Firms, and Golf Country Clubs, and industries selected for low prestige were Correctional Facilities, Waste and Treatment Manufacturing, and Fast Food Restaurant Chains. We used these industries as prestige cues for our main study.

Pre-test for attractiveness: To avoid people making inferences because of the halo effect of the attractiveness of the more prestigious job, we have conducted a separate test ($N = 180$, Mage = 39.68, Female = 80) in which we lowered the attractiveness of the job by adding less attractive features such as commute time and the annual salary increase. We presented less attractive job features with high industry prestige, such as longer commute time (50 minutes vs. 20 minutes), less annual salary increase (4.3% vs. 4.1%), and vice versa for the low industry prestige job. Both factors also remove the assumption that people are more likely to work in the city and have a higher salary increase in the high-prestige industry. As a result, the job with high prestige was perceived as less attractive ($M = 4.66$, $SD = 2.15$) and in low prestige as more attractive ($M = 3.3$, $SD = 2.09$, $t(83.72) = 2.996$; $p = .004$). While the perceptions of prestige remained ($M_{\text{high}} = 4.21$, $SD_{\text{high}} = 2.13$, $M_{\text{low}} = 3$, $SD_{\text{low}} = 1.91$, $t(85.15) = -2.845$, $P = 0.006$).

Interview transcripts.

Interview 1:

- **About automation in financial sector, and how many people are there, where they are not needed:**

Mid career and, for example, who work let's say in financial sectors where automation is huge and people and less people are needed. So then we look we help them for example to work in energy in the energy transition or in in the building construction work.

It is it, in a way of reeducating or finding jobs.

- **About choosing career in economy even with low prospects**

Because sometimes it's so irrational but still you can see some trends when you look, when you look at the vocational schools. The number of people that chooses for economic. Uh, uh, let's say business and economy, I think. Why? You know why. But somehow they find their way on the labor market, but it's and it's it's so. For example, the number of people that choose for the more technological sectors is declining, and then I thought, why? And it's so well paid and. Uh, you know for sure that for the next 20 years you will have work in energy transition in, in building in, in also in, in artificial intelligence, and now it said transfer some, sometimes it looks very irrational. UM for so, OK, so uh. I think what what drives people is sometimes what what they see around them and what they don't see, they don't use. Or if they don't have an idea how developed, for example certain sectors are or how? Yeah. So, partly there are certain images about sectors on the labour market. I think when you look at the especially they're a little bit higher educated young people and they really look for work that makes it easy to have a good work life balance and where they have autonomy, where they have, where they can do something good for the world, and where they where it's flexible. Yeah. So that's that's one thing. And sometimes it changes during COVID and just after. The number of people that choose for a carrier in care, it went like this. And sort of stabilizing. So sometimes there are temporary. Incentives I think to make a certain choice when you look at vocational schools. And sometimes, for example, there are people who are really interested in let's say IT cloud engineering these kind of studies, but if they have a level like a vocational school level 2. Then there's hardly any demand on the labor market, there is a lot of demand for people who are good at ICT but if you have level 2 there's no demand, you see. So sometimes you need a longer school career. And to find the place on the labor market. So that's where this reeducating employers comes into sight again because what we also see a lot in Rotterdam is that sometimes people need a little bit more time to find their.

- **About jobs that are disappearing**

So it often happens that they go for education and then by the time they acquire their diploma, they can't find any job after graduating because, yeah, something that they chose at the in the start actually doesn't exist anymore. There is no demand for it and they have to reeducate again and again and again. So this is something that is.

- **About negative outdated images of some jobs**

Well, you can choose for building and uh building and construction for example. And then the general image that students have in the beginning is what they see when you look at outside and people are constructing outside and then they see people with the iron and the cement, but a big part of building is automatized there, it's prefabricated it's BIM modeling, so a lot of the new developments in these sectors are not visible. So that makes it difficult to choose. You see what I mean? So that the influences.

Interview 2:

- **About lack of knowledge about occupations**

The education possibilities and the reason is also because of the challenges we face in with themselves. There is a high rate of your youth and unemployment, but also the rate of youngsters here is high. The the population is young. So what we are saying is that if we could show them that there is a lot to gain, if you choose right and if you choose wisely. Of course they can choose whatever they want, but what we see here is that young people often choose what they know. And what they think is the good choice where they can have find jobs to find out that eventually they become unemployed because of the sector they choose. Because here the way you start your vocational education, it's very important to look at the sectors and where there are a job possibilities. Do we try to align the world of the employees with the students more and at the end, of course, the choice is theirs. But you want to do. But we really want them to make the choices wisely and that they know what they can choose and what is out there. And we're trying to teach them.

- **About lack of engagement from parents in career guidance programs. And importance of mentors in schools because parents rely on them to educate children about career opportunities**

That's something that works but also works is if you engage parents. But it's also a challenge because for themselves it's sometimes difficult to. Show parents the way to school. Umm, that only for career guidance for but for anything and that's not because they don't find it important but there is this feeling of ohh school can manage it themselves. I don't have to attend or be there or to know everything and sometimes it's very basic like they have their different struggles so they don't really think about the importance of attending career guidance conflict. So we really try to motivate schools to invest in parents to engagement and and the other hand.

It's also not. There where we wanted to be because it's very difficult to engage the parents because what we are now trying to do in the program is we always go through the doors of the school so we are not in the neighborhoods, we do everything with schools. The career guidance, activities, everything. Now for the first time, we said, OK, we are also approaching other partners in the neighborhood who also he and know these families, so if it's a mosque or another place in the neighborhood we try to the partnership with them to tell them why we are doing the career guidance, why it's important and whether we can work together because they also have meetings with the parents, sometimes about other issues or other topics. But we could also attend those gatherings. So that's the first time, like I said, that we would.

- **About choosing a career in business and economics instead of a career with better prospects**

We did a lot of research. Also they tend to choose for we call it the economic educations. Umm. And they think, well, that's that's their image of it, that that will mean that they will get company car and a suit. But that's the idea. But reality is is not always like that, and we try to show them. You also have charts, which is also important because parents think the same thing. They want their kids to choose because they think, ohh, you know, if he has to work in the technical sector, he will get dirty and it's

very heavy working and we really try to show them through the activities at school and the lessons. That it's not. No times have changed and we also try to show them how much more they can earn they should. They are always surprised that the salaries are way higher and we also try to show them that within these sectors, there's a very good chance of finding a job and also holding that job where is in other sectors you don't know because of a crisis or anything else, not the city and also the salary or the contracts you are. I getting presented or not not always stable. So we really try to inform them about the advantages of the sector.

- **About not knowing about the career opportunities**

Dave and market perspectives into consideration when they chose, they are happier.

At their jobs later on because they chose.

Bell is more balanced because they also took that in consideration and most young people don't do that because they don't know there are not a lot of programs who tell them what these perspectives are. But research shows it later on. They interviewed the group and the, that group said. I wish I knew what my chances were on the labor market.

- **About job images**

I think that also worked with parents who think that way and for a lot of the people who live here in Rotterdam themselves, sometimes they think that a specific sector is a way out. Because of the prestige or status it will acquire, but it's not always correct. It's sometimes a false image they have. We try to explain that. So what you see in movies or? It's it's.

In reality, it's it's not always like that, but we try to do that in a way of getting them to know the world. They they don't really know and we hope that if they see it, they will think about it in there and when they have to make choices, they will take also the other parts that we are showing them throughout the career guidance program that they will take it into consideration. Our main goal is that they choose in a way. That we think. But I think in reality. They are a sponge and whether they will use it now or later is I think it's for us society to show them what the opportunities are and they can for themselves decide.

- **About the necessity to educate mentors about job prospects**

But what? What could also help is that's a that's an issue. We are also trying to tackle, but it's a difficult one. Is the school boards to decide. You know what education there is available.

What we are trying to do with them is, is it possible to make a shift in education where they're emphasize there's more, they emphasize the the shortage sectors more because now?

They market, it's a market, the creative, economic educations, the schools do themselves because they are very popular. There is also an idea within the schools that the more students they acquire, the better, of course. But we think that schools have a responsibility also in their offering of the education to see what they are offering. Do they offer an education? Where they are forehand already know, will actually in within four years because of the automated because of digitalizing of the world, this job will disappear or less available. We think that there there is a responsibility for the school. You look at and I know that they do it. They have commissions. Will do that to look at the. The educations and say, well, you know this training. We have to look at it because there is a very little chance of work. But we really want to do is we think it could go faster and more deep. Try to really analyze the training set they offer. And to make a shift to sectors we already know will enhance the chance of job. They'll be already know that. So and that's something that we are also talking through the schools about yeah, like we have this career guidance program, we have the guarantees etcetera, but we still see that. The young people choose some trainings that you know, we have question marks about. I think they they look at short term more. So right now there is a shortage in every sector. Umm. And they all right, So what they are saying is, well, you know, it doesn't matter at what, what training they are. They can find the job and they are right for for now.

We are looking ahead and also we are looking for sustainability. So how can you make sure that they choose training that's sustainable for not for the long term and we are not aligned with schools in that discussion yet.

Interview 3:

- About gap between supply and demand in labor market

Actually, you know, we we noticed that there was a gap between vocational training, especially education and the labor market so supply and demand, they didn't really connect well and that's a common problem, of course, but it it was manifested in Rotterdam South. Which is considered to be one of the most deprived areas in the Netherlands compared to the UK or the US or France. Well, it's not that bad, but for Dutch standards it's considered to be deprived area so the unemployment is quite high.

For all kinds of reasons and access to the labor market. It's also difficult for the population of the labor force of Rotterdam's South.

- About white and blue collar jobs

And and so that that's also an element which program? Persuades children and their teachers and their parents make excellent choice, because most of the time parents getting out drives areas they want to get out so to say.

And they have a rather limited idea of what's the best mechanism to get out and they all want to be a lawyer, a doctor. All that, she's actually a lawyer or a doctor or an accountant, maybe. Uh, because that's that's. Uh, that's an office job. Nice job, you know it's in respected job. And and working in in the harbor isn't. It's dirty. It's it's. It's tough. And that's not what parents were specially parents don't want for their children. And that's what also third. That there's some sort of intergenerational distribution of the idea that working in the harbor, for example, it is dirty. It was in the 60s when those people came to work. It still was. Well, it was dirty. It was well paid and there were lots of insecurities.

Nowadays because of automation, all the guidelines - it's not the case. You actually have to be pretty well educated in order to get access to those jobs. So that's what we also try to.

- About mismatch between career prospects and offerings in educational programs

But when it comes to school system in the Netherlands. Schools are actually funded. in a different way. Funded in a particular way. They get money for the amount of students they have and they get funded for the amount of students that get a degree. And it doesn't really matter if that degree will give you a job or not as long as you, as long as you get a degree, it's fine. We're just schools. So. Well. What you see is that there's a circular path dependency when it comes to this the availability of certain education. When lots of kids choose for education in economics or administration? I don't know. That's an often used example, you can always go for hairdresser or start a nail salon of course. That's not what we want for the kids because its insecure, it will not guarantee. That much when it comes to uh Decent life, so to say. So we tried to persuade them to choose for not an education for hairdresser, but do something technical manufacturing or something like that, but well, that image is bad. That's not what the kids do. They do choose for hairdresser, and schools are actually funded for the amount of students they have. So it's just supplying the most thing. So many schools start to offer that kind of education. And and when it comes to technical education, it's neglected. So there's no real. What's the words? A real trigger for schools to develop new curricula, new education, which bridges the gap to the labor market.

They just they select education that attracts students. So that's bridge is also about that, you know to try, to students to make the right decisions. We try to make teachers to make the right decisions, we try to persuade employers make the right decision and and give those kids from Rotterdam South chance so to say. And we try to persuade schools to develop curriculum that's well connected to to the needs of the labor markets and just so that what Bridge is about.

- About inability to learn about occupations

I mean, trust is a big issue, of course. And and easy access to information or easy access to experiences, so to say. And when it comes to visiting the ports, for example. It's it's not possible. You know you're not allowed to to visit real sites because they are very well fenced. Smugglers and drug traffickers and people you you can't get in, actually.

So the employers do want to show what they do. But they don't, they they cannot allow you on site. So there there's a special. Experience Center, so to say. But it wasn't in Rotterdam South, so you had to go by bus. And it's all quite old fashioned. So there were old people who used to work in ports. They're nice and they, they explained how port functions 15 years ago. When it comes to, you know, jump opportunities and and Organization and stuff like that. Well, you don't need some old guy telling you about how life was 20 years ago. You need something more energetic. You need something better.

- **About the problem in Rotterdam South**

We try to get the work closer to the people. When the port left. Working in the port wasn't very visible and available anymore in Rotterdam South. Well, that there there was no. Was symbol of course as well. You know, when you needed a job.

You you had a 15 year old, 16 year old son and he needs to get a job. You could send him to the docs, so to say. And well, that's not possible anymore. So where to go? You know? So. So it's very important to to have organized accessible work in the neighborhoods, you know it, it has to be in vicinity otherwise people can't imagine themselves working there, and that that's also big thing I think when it comes to automation. People that otherwise they are where they are, you know, people are conservative. There are not many people that are very adventurous. You know when they don't know what to do?

So you have to you know, you have to organize some sort of tool for factor, right? That should be attractive. They must be able to connect with, the work that has to be done so to say.

- **About how employers try to attract students**

And I actually think that lots of employers nowadays, especially in conservative sectors like in the harbor, you know those employers are very conservative, they don't have a clue why people make decisions they think like when when we pay the bigger salary, we give them a nice car or a nice laptop computer. They will come. And they they don't mean that. It doesn't convince them anymore. I mean, they need. And and so. So that's that's that's that's a big thing and that makes it.

- **About job stereotypes**

Their parents still think of working in the harbor as dirty jobs. You shouldn't do that. That it's bad for your back. You know it. It wears you out that that's that kind of lots and and lots of work is automatic, automated or. Done by robots already, exoskeletons and that kind of stuff. And and they don't know. They just don't know. They just don't and and so so.

And there's actually no. Well, it's changing a bit. But the trigger for employers to open up, you know, is is not very it's not very lively as well. Because, well, it's easy for them if we have a very flexible labor market and then it runs, it's easy for them to hire people, migrants, migrant workers, you know, they will hire them for the job and then they will leave again. Umm, so they don't have an incentive to yeah. No, not really there. There's no real incentive and and. They see their human capital, so their employers well as not not really as an asset mostly as a ghost.

Yeah, when you don't need them anymore, you get rid of them and that's that's best for your shareholder value or something like that, I don't know.

Well, when it comes to those values. That that's also part of the problem. I think when it comes to working in port related activities. And it's very capitalistic, so to say in a liberal way.

Interview 4:

- **About images of the sector**

Yeah, it depends a bit per sector, but the most activities are for creating a better image of the sector because I think that most students and also starters on the labor markets don't have a clue about what work is and what working in some sectors means. Uh, so they have. Yeah. Yeah. The image of the sector doesn't how it should be. So that's a big problem, I think should be tackled.

I think that's also it's not a problem, but I think it doesn't help for the image of some sectors, because most immigrants they left their home country with an image of the sector, but the sector in the

Netherlands is not the same as the sector in their home country, so that doesn't help the image of the parents.

Yeah, but I also think that the like, for example, the technical sector in the Netherlands is pretty innovative and it's not a dirty sector anymore. It's not like a being a. It's not like working as a car mechanic indeed. So it is a. Yeah, it's way more developed than than some parents feel so? Yeah, that's.

Makes a decision a bit harder if you don't have a right image and the right standards for the sector in in your mind.

- About advising to go for economic careers

Uh, yeah, I think that most people are more parents advised to go for some economical backgrounds or like a business manager or something like that. And I think that's not always a good decision.

Yeah, I think it's harder to find that job with their background than than with the more technical backgrounds or for example, also for the health sector. I think the same.

The same image doesn't help. No, it's more uh that I think that. The labor markets is looking for something else, so they are looking for people that are with the technical backgrounds with a health backgrounds and it of course we also still need business managers and people with economic backgrounds but not this much.

- About social status

Yeah, maybe secondary school and it's so I think the decision making on the secondary school that is influenced by the social status of a job or a sector or something.

But I think for later, like for their uh practical studies for for universities or something then people are I think people tend to think about what they want to do and what they want to how they want to impact the rules or something. So I think people are more.

But I think it's also it's not only for the, for how many salary you will get. So it's also social status that is also like the the impact sector made makes on the rules or because people want to make impacts at the moment. So it is social status. But uh working for Shell for example, you can say that it has a social status, but it also has a better influence on your social status because people don't like shell anymore. So that's also a part of the social status. Yeah, I I would hope that they do, but I I still think and I have the feeling at least that the mentors. Uh centerset two people. You are worth more or you can do better. Or something to certain sectors. They understand there. Umm, so yeah, the like, whatever occupations they think are very like they they highly regarded in their in their mind other than you know, so the social status you meant, I think that is more in the mind of the mentors and also maybe in the mind of the parents. But in the mind of the students itself, I think the social a picture that I I just thought, I think that also is a part of the deal.

Interview 5:

- About choosing economic and business degrees

There are many, many children who choose for like the Business School you know. Then they get economics and not technical education.

So it's also a little bit like how attractive can you make your your, your school and how how you will profile it? Yeah, well, I would direct it and also speaks always speaks about the the salad bar and the OR the coquette. You know you and you have to, you have to give them salads.

- About white and blue collar jobs

Umm yeah, I I can only grab some anecdotal stories that I heard. Like parents who have the technical job and they say, OK, this is not for my child, you know, because I want them to wear a white collar. And so I think that's part of it.

Another answer might be that it's it's not modern the way the the sectors or the jobs are perspective like still there has to be a lot lot of the work is like and building. Building or electrical wires or metals

and working with them, especially as young people growing up here, they they don't have. They live in an apartment, so they don't have a garage where their father fixes their bike or something, you know? So they are living in a very city and digital world, I think. And they go to the supermarket and obviously and they maybe they see a neighbor with with a nice car and the and the suit, and that's something well, that's that's attractive and driving 45 minutes to a business in the port might. Yeah. I don't know. They. I don't think it's really in their world if you know what I mean.

- About prestigious jobs

Well, I can only guide the people just wanting to be a dentist or a doctor or or a lawyer. I mean, those are the jobs everybody knows or an airplane pilot.

That you will earn a lot and yeah, and have status from that. Yeah, I think that's, uh, an important reason why people choose for those jobs.