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The influence of the perceived masculinity of an occupation on risk behavior: the case of firefighters

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Highlights

- Gendered representations of the occupation directly affect risk behavior
 - A strongly masculine perception of the occupation is linked to riskier behavior
 - Risk-taking in driving and physical training allow firefighters to prove their masculinity
 - These collective defense strategies are a response to the new tasks required of their occupation
- The influence of the perceived masculinity of an occupation on risk behavior: the case of firefighters

Abstract

This article discusses the influence of the gendered perception of the firefighting profession as an explanatory factor for workers' risk behaviors. We hypothesize that the masculine perception of the firefighting profession will affect perceptions of risk behaviors, feelings of self-efficacy in driving, and reported risk behaviors in occupation-related risk activities and in driving. Gendered perceptions of the profession, risky behaviors in the context of occupational and non-occupational driving, perceptions of the risks and benefits of risky behaviors in occupational and physical activities and self-efficacy as regards risky behaviors as a driver were measured by an online questionnaire that was administered to 501 firefighters (146 professionals and 355 volunteers) in a Département in South-East France. The results confirmed our hypothesis that risky behaviors when engaged in physical activities, firefighting activities and occupational driving are more prevalent among firefighters, both male and female and of whatever age, who have a masculine perception of their occupation. The results also show that younger, professional, firefighters reported more physical risk behavior. These different practices may show a greater internalization of masculine social norms on the part of firefighters who are professionals or who have less experience.

Keywords: firefighters, masculinity, occupational perception, road risk behaviors

Introduction

Accidents at work are the greatest problem facing workers and their employers. In 2018, there were 3.1 million accidents at work in the EU that resulted in at least 4 days' absence from

work and 3,332 fatal accidents (Eurostat, 2020). In France, the sickness insurance agency reported a slight increase in the number of work-related commuting accidents in 2019 (99,000), the highest level since the 2000's (Fatome & Thiebauld, 2019). These work-related accidents are the result of risky behavior (Prati & Pietrantonio, 2012). Although firefighting is a high-risk occupation (Kanzari, 2008), the accidents firefighters have at work occur more frequently during non-firefighting activities. In France, one-third of firefighters' fatalities occur during road trips and 64% of their work-related accidents occur during physical training (National Data Bank, 2017).

These work-related accidents can be caused by the safety culture of organizations (Lefranc, Guarnieri, Textoris, & Garbolino, 2013), and are determined by interactions between behaviors, psychological factors and organizational safety goals (Cooper, 2018). A safety culture is essential to prevent occupational accidents (Smith, Eldridge & Dejoy, 2016). For example, Stergiou-Kita (2017) shows that a work environment perceived as not placing a high value on workers' safety tends to lead to riskier behaviors. Martinez-Fiestas et al. (2020) have thus shown that changing the perception of risks among firefighters may modify their risk-taking. While Desmond (2006) has shown the specific risk appeal of men becoming firefighters, however, safety cultures do not consider the gendered aspect of risk behavior (Granié, 2013).

Gender is defined by a socially constructed process, where men and women integrate and adapt their attitudes and behaviors according to their gender assignment (Johnson, Greaves & Repta, 2007). In this sense, gender identities are not biological but socially acquired in a given society (Lachenal, 2016). Gender leads to the construction of social sex roles and stereotypes that will define for a given society what is expected of a man, i.e. masculinity, and what is expected of a woman, i.e. femininity (Fiske & Stevens, 1993, Ashmore et al., 1986).

Moreover, the behavior of workers can vary according to their gender but also according to their more or less gendered perception of the occupation. Studies have thus shown that professional identities of risky occupations (Sauvage, 1993, Stergiou-Kita, 2017), such as firefighters (Martinez-Fiestas, Rodríguez-Garzón & Padial, 2020), are based on masculine characteristics (Thurnell-Read & Parker, 2008; Penin, 2006). To go any further than this, it would be necessary to understand the origin of firefighters' specific perception of risks and to explore the effect of their masculine perceptions of the occupation on risk-taking and work-related accidents. Yet, the concept of masculinity is not sufficiently addressed in the study of high-risk occupations, such as firefighters (Stergiou-Kita et al, 2015) and the effects of this masculinity on risk-taking in high-risk occupations have not yet been studied.

1. Literature review

1.1. Perceptions of the occupation of firefighter: the construction of masculinity.

The construction of the perceptions of an occupation lies between lay knowledge (social image) and the technical knowledge individuals possess about their occupation (Blin, 1997). These perceptions help to form the social representation of an occupation by endowing workers with an identity and unique status (Michel-Guillou, 2010). The gendered perception of an occupation is based on two dimensions: an objective dimension concerning the proportion of workers of each gender group and its historical evolution and a subjective dimension, through the qualities and technical and symbolic characteristics, perceived as required by the occupation and naturally associated with one of the two genders (Zolesio, 2009). Thus, in France, historically women were excluded from the firefighting occupation until 1976 and still today make up only 18% of active firefighters. Furthermore, symbolically, firefighter occupation is associated with only one gender by the skills that this occupation requires (strength, courage...) (Duarte & Gernet, 2016).

Social representations of firefighters are associated with symbols of the masculine gender (Michaut-Oswalt, 2005), such as invincibility, bravery and physical strength (Yarnal, Dowler & Hutchinson, 2004; Jacobsson, Backteman Erlanson, Brulin, & Egan Sjolander, 2020), and with the resulting stereotypes of courage, mental strength and self-transcendence (De Oliveira, Dambrun & Guimond, 2008). This categorization of masculinity contributes to the fact that these workers acquire a dimension of virility (Damian-Gaillard, 2019). Their masculinity is constructed as a contrast to the characteristics attributed to the female gender such as gentleness, empathy or listening (Rivoal, 2017).

1.2. Masculinity in occupational socialization

The motto of the Paris Brigade firefighters (“save or perish”) or that of firefighters in the rest of France (“courage and dedication”) are at the origin for a certain attitude that French firefighters are intended to have on the field. These symbols reinforce a masculine perception of the profession, which could influence firefighters' behaviors. The world of firefighters is governed by adherence to a collective norm that generates perceptions, attitudes and behaviors that perpetuate a masculine ideology (Levine & Moreland, 1994), defined as the belief of individuals in characteristics of men that women would not have (Thompson, Pleck, & Ferrera, 1992). To conform to this ideology of masculinity, workers in high-risk occupations (Addis, Reigeluth & Schwab, 2016), and specifically firefighters (Thurnell-Read & Parker, 2008;

Mahalik, Locke, Ludlow, Diemer, Scott, Gottfried, & Freitas, 2003) adopt masculine attitudes and behaviors.

In this context, one can observe the presence of hegemonic masculinity and the birth of a subordinate relationship within groups of men (Connell & Messerschmidt, 2005). This concept involves the systematic search for the masculine ideal in order to bind men closely to masculinity (Ericson, 2016). This may result in a power struggle in which men oppress other men who do not conform to or match a certain type of masculinity (Connell & Messerschmidt, 2005). These expressions of masculine ideology are more observable in occupations where courage in the face of death, strength and violence are legitimized (Terret, 2004). Furthermore, in occupations where skills are linked to physical attributes (Hall, Hockey & Robinson, 2007), physical strength and risk-taking may be a way of visibly demonstrating virility. Thus, risk-taking on the road or during sports training may be an aspect of the demonstration of masculinity (Rivoal, 2017), as can engaging in physical challenges with colleagues (Lash-Gravier, 2002).

1.3. Risk perception in risky occupations

The way in which individuals express their identification with the male gender, in a work environment that values dominant masculinities, may influence risk-taking. Risk perception is defined as awareness that a situation has at least one potentially negative consequence (Sjöberg, Moen & Rundmo, 2004). Risk-taking is the result of voluntary, conscious, behavior in a dangerous situation, and it can also have positive effects for the individual (Assailly, 2010). According to Le Breton (2017), risk is socially constructed and individuals perceive it according to their own perceptions. An individual's judgment can modify the level of risk they perceive in a situation, but also their social representations (Drozda-Senkowska, Caillaud & Bonnot, 2017). For example, some people violate traffic rules because of their sense of self-efficacy and their beliefs about their control of their vehicle (Leplat, 2006). The perception of road risk varies from one individual to another, for example according to age, occupation or gender (Granié, Degraeve & Varet, 2019), and also depends on the perceived costs and benefits of risk-taking (Drozda-Senkowska, Caillaud & Bonnot, 2017). As risk is symbolic, subjective and social, risk-taking can be modified by social interactions, the environment or peer pressure (Penin, 2020). In risky occupations, people may break the rules more easily if they consider that risk-taking is beneficial. For example, breaking the speed limit may be justified in order to arrive more quickly on the scene (Guého, 2015).

According to Bandura's (1980) theory of self-efficacy, individuals act on the production of their behaviors by exercising control over their actions. This notion "refers to individuals'

beliefs about their ability to achieve particular performances" (Bandura, 2002, p.3). Perceived self-efficacy is then defined by the individual's will to succeed in a specific action and thus, by their confidence in their abilities (Meyer & Verliac, 2004). An individual may engage in risky behaviors, not just to take risks, but also to gain possible benefits such as social approval, adrenaline production or self-esteem (Maddux & Gosselin, 2012). Thus, firefighters who believe they have excellent physical and driving abilities may take more risks because they consider that the potential negative consequences of this behavior, such as an accident, are less important than the positive consequences they can gain from doing so which will increase their sense of self-efficacy (Bandura, 2019).

1.4. The demonstration of masculinity among firefighters through risk-taking behavior

Risk-taking is a question of finding an equilibrium between the risks inherent in an action and the perceived benefits that may result from it. For firefighters, one such possible benefit is gaining social prestige by conforming to the image of the occupation (Douesnard & Saint-Arnaud, 2011). Several authors have also shown that drivers or pedestrians who conform to masculine stereotypes report more accident risk behaviors (Granié, 2009; Guého, 2015; Douesnard & Saint-Arnaud, 2011, Ozkan & Lajunen, 2005, see Granié, Degraeve & Varet, 2019, for a review) and that risk-taking is performed in order to show one's abilities and is derived from masculinity.

Thus, risk-taking behaviors may depend on individuals' perceptions of their occupation, especially in skilled high-risk occupations. Risk-taking is associated with the masculine gender, which is expressed in terms of its differences with the feminine gender (Penin, 2006). Traditional masculinity can also be anti-feminine (Mankowski & Smith, 2016), particularly in fire stations, which are conducive to the expression of a masculine order (Pfefferkorn, 2006). This is a way for firefighters to express and emphasize their masculinity in contrast to everything that is feminine (Lachenal, 2016). The social context in which firefighters operate may favor the expression of masculinity when driving, in particular through risky behaviors, in order to conform to what is socially expected of them. In order to conform to what is socially expected of them, the social context in which firefighters operate may favor the expression of masculinity when driving, in particular through risky behaviors, but also through physical challenges between colleagues during sports training (Lash-Gravier, 2002; Guého, 2015).

1.5. Change of professional activity

Although this social image of firefighting occupation as strongly masculine persists in many parts of the world (Thurnell-Read & Parker, 2008), in France, the actual activities of

firefighters have diversified (Kanzari, 2008) and are no longer limited to firefighting but now also include assistance to victims, therefore becoming closer to the 'caring' professions (Memmi, 2017). The 'caring professions' are defined as those that involve 'taking care of others' and they are therefore associated with so-called feminine characteristics such as listening, empathy and sensitivity (Reedberg, 1993). These occupations are given little recognition and assigned a low value by society, as they tend to be done by women as an extension of their social roles (Benelli & Modak, 2010). Thus, as a result of the way the occupation is changing, the image of firefighters is becoming less prestigious and military in nature and closer to that of domestic work, leading to a devaluation of the occupation (Pferffekorn, 2006). This change may affect firefighters' perceptions of their occupation in terms of masculinity and femininity. A dissonance may then be created between the socially expected so-called masculine characteristics and the so-called feminine values they have to espouse on a daily basis, far removed from the heroism they would prefer.

In this context where masculinity is dominant, ideologies and collective defense strategies could emerge (Kolhs, Olschowsky & Ferraz, 2019) to compensate for this change of tasks, as "both a 'response' to the confrontation with reality present in any professional activity, and a 'response' to the social imaginary insofar as it contributes to shaping the image of the profession" (Dejours, 1990 cited in Lhuilier, 2007, p.87, our translation). Historically, these strategies have been observed in high-risk occupational environments where the majority of workers are men (Dashtipour & Vidaillet 2017). They are made up of a set of perceptions, rules and collective attitudes aimed at concealing and despising any feelings of vulnerability in the face of pain and suffering (Debout, 2018), suppressing emotions and neutralizing their potential negative effects (Lhuilier, 2007). Risk-taking behaviors can then be converted into "dangerous games", such as "incomprehensible refusals to follow safety instructions, jokes and stories that mock those who show signs of weakness" (Duarte & Gernet, 2010, p.55). The purpose of these games may be to demonstrate one's masculine abilities to the peer group and to test new members of the group (Duarte & Gent, 2016).

1.6. Objectives of the study

Thus, the literature has shown that the profession of firefighter is perceived socially and by those who practice it as a masculine profession and that a professional environment presenting strong norms of masculinity induces specific behaviors in individuals who want to conform to them. While risk-taking behaviors are inherent to the firefighting profession, the literature shows that risk-taking may be greater if individuals believe that they will benefit from it, such as a confirmation of their masculinity. The masculine perception of the profession could

then influence the workers' risk behaviors, especially in the current situation where the missions of firefighters are evolving towards activities with more feminine characteristics. However, to our knowledge, no study has yet examined gendered perceptions of an occupation as a factor in workers' risk behaviors, particularly in a high-risk occupation such as firefighting, whereas the social context in which firefighters find themselves may promote the expression of masculinity through driving activities and risky behaviors in order to conform to their perception of their profession.

Based on the literature, we hypothesize that a masculine perception of the firefighting profession will lead to more risky perceptions of accidental risk behaviors and more frequent risky behaviors among firefighters. Thus, we hypothesize that a masculine perception of the occupation will be linked to riskier perceptions of the observed activities. Specifically, we hypothesize that more masculine and less feminine perceptions of the occupation will be related to less perception of risk (H1) and more perception of benefits (H2) of occupation-related risky behaviors and more sense of self-efficacy in vehicle control (H3) and driving violation (H4). We also hypothesize that the firefighters' gendered perception of their occupation in terms of masculinity and femininity will directly influence their risk-taking behaviors when engaged in driving or physical activities. Specifically, we hypothesize that a more masculine perception of this profession will lead to riskier behaviors in occupational activities (H5) and driving (H6) and that, conversely, a feminine perception of the profession will tend to inhibit risk-taking behaviors in occupational activities (H7) and driving (H8).

2. Method

2.1. Procedure and participants

A self-administered questionnaire was offered online to all the firefighters in a Département in South-East France. In addition to the variables mentioned in section 2.2., information was also collected for each participant concerning their age (in eight age groups, from 18 to over 55 years), gender (2 groups: man or woman), socio-occupational category (eight groups), possession of a driving license (driving license A, B, C or D), status (professional firefighter or volunteer firefighter) and occupational tenure (7 levels of experience, from 0-4 years to over 30 years).

The sample consisted of 501 firefighters, 146 of whom were professionals and 355 were volunteers (81% men and 19% women). The youngest participants were 18 years of age and the oldest over 55 years of age (mean = 38.68 years, SD=15,34) and they all had a driving license. The occupations of the volunteer firefighters were as follows: farmers (0.3%), artisans,

shopkeepers and entrepreneurs (4.9%), executive and intellectual professions (20.3%), intermediate professions (26.3%), employees (26.0%), workers (12.5%), retirees (2.3%) and unemployed people (7.3%).

2.2. Variables and tools

The variables, the number of items, their format, the reference of the tool used and the aggregated scores calculated are given in Table 1.

Firefighters' perceptions of their occupation in terms of masculine and feminine characteristics was measured using the French version of the short Bem Sex-Role Inventory. This scale, which originally measures individuals' conformity to gender stereotypes, was modified for this study to measure firefighters' perceptions of their profession. Participants were asked, "In your own experience, what qualities do you think are necessary to be a firefighter?". A feminine item of the scale ("Loving children") was replaced with a masculine item ("Enjoying taking risks") to have 8 items for the masculine and the feminine characteristics. Two aggregate scores were calculated, for the masculine perception of the occupation (total score obtained on the masculine items of the scale) and for the feminine perception of the occupation (total score obtained on the feminine items of the scale).

Self-efficacy as regards risky driving (Meesmann, Torfs & Van den Berghe, 2019) measures individuals' perceived propensity to perform risky behaviors as drivers. Self-efficacy is defined as individuals' belief that they are able to perform a particular task (Bandura, 2002). This scale is composed of 2 items related to drinking and driving, 2 to speeding and 2 to telephone use while driving. Two aggregate scores were calculated, for self-efficacy in violation and self-efficacy in vehicle control.

Risk-taking, perceived risks and benefits of risk-taking were measured using the validated French version (Guého, 2015) of the Domain-Specific Risk-Taking (DOSPERT) scale (Weber, Blais & Betz, 2002). For this study, behaviors were chosen in two specific domains in which firefighters might engage in risky behavior: physical activities (3 items; e.g.: "Starting an intense sports session without warming up") and firefighting activities (4 items; e.g.: "Adopting an emergency driving mode for a blocked elevator"). These items were used to estimate the frequency of risk-taking (asking participants how likely they were to adopt these behaviors in each situation), perceived risks (asking participants the level of risk they perceived in each situation) and perceived benefits (asking participants the level of benefits they thought they would gain in each situation). Six aggregate scores were calculated, concerning risk-taking, perceived risks and perceived benefits for firefighting and physical activities.

Self-declared frequency of driving violations among participants was measured using the French version of the Driver Behavior Questionnaire (DBQ) (Guého, Granié & Abric, 2014). Of the 6 dimensions of the original tool, only the items corresponding to ordinary violations (defined as deliberate driving violations without an aggressive purpose; 4 items) and aggressive violations (defined as behaviors that involved confrontation with other road users; 5 items) were used. Participants were asked about the frequency of their violation behaviors during their work-related trips and their personal trips, allowing to calculate 2 aggregate scores.

Item structure was checked for each tool by principal component analysis (PCA) with Oblimin rotation, using IBM SPSS Statistics 26. The Cronbach's alphas are given in Table 1.

Table 1: Summary of the variables, number of items, format, reference of the scale used, aggregate scores calculated and their Cronbach's alpha.

Variable	Items	Format	Reference	Aggregate scores (Cronbach's alpha)
Gendered perceptions of occupation	18	6-point Likert scale (from « not true at all » to « totally true »)	(Fontayne, Sarrazin & Famose, 2000)	Feminine perception (.83) Masculine perception (.72)
Risky driving self-efficacy	6	6-point Likert scale (from « totally disagree » to « totally agree »)	(Meesmann, Torfs & Van den Berghe, 2019)	Self-efficacy in vehicle control (.74) Self-efficacy in violation (.75)
Self-declared risk-taking	7	6-point Likert scale (from « never » to « very often »)	(Guého, 2015; Weber, Blais & Betz, 2002)	Risky firefighting activities (.60) Risky physical activities (.69)
Perceived risk of risk-taking behaviors	7	6-point Likert scale (from “not at all risky » to « extremely risky »)	(Guého, 2015; Weber, Blais & Betz, 2002)	Perceived risks of firefighting activities (.76) Perceived risks of physical activities (.69)
Perceived benefits of risk-taking behaviors	7	6-point Likert scale (from “no benefit” to “a significant benefit”)	(Guého, 2015; Weber, Blais & Betz, 2002)	Perceived benefits of firefighting activities (.70) Perceived benefits of physical activities (.57)
Self-declared driving violations	9	6-point Likert scale (from « never » to « very often »)	(Guého, Granié & Abric, 2014)	Violations in occupational driving (.69) Violations in non-occupational driving (.77)

3. Results

First, we explored the effects of gender, age, status and experience on gendered perceptions of the occupation. Next, we analyzed the relationships between the gendered perceptions of the occupation and the perceptions of risky behavior, controlling for demographic and occupational variables. Finally, we analyzed the effects of gendered perceptions of the occupation on declared risky driving behavior, controlling for demographic and occupational and for variables related to the perception of risks and benefits. IBM SPSS Statistics 26 was used to analyze the data.

3.1. Effect of gender, age, status and experience on perceptions of the occupation of firefighter

Table 2 shows the means and standard deviations of perceptions of the occupation in terms of masculinity and femininity according to gender, age and status.

Concerning gender groups, a t-test comparison of means revealed no statistically significant difference between men and women firefighters as regards the perception of the masculinity of their occupation ($t(499)=1.52$, ns), nor as regards the perception of its femininity ($t(499)=0.165$, ns) see Table 2).

We used ANOVA to test the effect of age (8 groups) on perceptions of the occupation in terms of masculinity and femininity. The results were not significant for masculinity ($F(7,493)=1.48$, ns). For femininity, ANOVA showed a significant main effect of age ($F(7,493)=3.75$, $p=.001$). The Bonferroni post-hoc test showed that firefighters aged 55 or older had more feminine perceptions of the occupation than those aged between 24 and 39 (see Table 2).

Concerning the effect of status, a t-test comparison of means revealed no statistically significant difference between professional and volunteer firefighters concerning the perceived masculinity of their occupation ($t(499)= -0.21$, ns), but a significant difference concerning its perceived femininity ($t(499)= 2.45$, $p=.015$). Volunteer firefighters attributed a higher femininity score to their occupation than professional firefighters (see Table 2).

Table 2: Means and standard deviations of the effect of socio-demographic variables on perceptions of the occupation.

Variable	Perceived masculinity		Perceived femininity	
	Mean	SD	Means	SD
Gender				
Men	35.51	6.00	36.63	7.17
Women	35.41	6.13	36.49	7.46

Age				
18-23	35.23	5.37	38.05	5.94
24-29	35.29	6.85	35.11	7.28
30-34	33.89	6.44	34.36	7.71
35-39	35.14	5.62	35.57	7.18
40-44	35.30	5.85	36.85	7.18
45-49	36.51	5.33	36.51	7.02
50-54	36.85	7.11	37.74	6.72
55 years and older	35.87			
	5.53	40.58	7.68	
Status				
Professional	35.58	5.66	35.38	6.43

3.2. Effect of perceptions of the occupation (masculinity and femininity) on perceptions of risky situations and the sense of self-efficacy

Eight hierarchical regression analyses were performed, with the 4 aggregated scores concerning risk-taking perception (perceptions of the risks and benefits for physical activities and for firefighting activities) and the two aggregate scores concerning self-efficacy (in vehicle control and in violations) as dependent variable. For each regression analysis, the same predictors were used: gender, age, status, level of experience, and perceptions of the masculinity and femininity of the occupation. The full results of these analyses are presented in Table 3.

Concerning physical activities, the regression model concerning the perception of risks explained 20.3% of the total variance ($F(6.494)=22.21$, $p<.0001$). Age, experience and perception of femininity were positively associated with perceived risks in physical activities, while there was a negative association with status. The regression model concerning the perception of the benefits explained 10.4% of the total variance ($F(6.494)=10.69$, $p<.0001$). The perceived masculinity score was positively associated with the perceived benefits of physical activities, while there was a negative association with experience and age.

Concerning firefighting activities, the regression model concerning the perception of risks explained 9% of the total variance ($F(6.494)=9.24$, $p<.0001$). Age and the perception of the occupation as feminine were positively associated with an awareness of risks in firefighting activities, while there was a negative association with masculinity. The regression model on the perception of the benefits explained 4.8% of the total variance ($F(6.494)=5.19$, $p<.0001$). The perception of masculinity was positively associated with the perception of the benefits of firefighting activities, while there was a negative association with the perception of femininity.

Concerning the sense of self-efficacy, the model regression concerning vehicle control explained 4.6% of the total variance ($F(6,494)=5.013$, $p<.0001$). Perceptions of masculinity were positively associated with self-efficacy as regards vehicle control, while there was a negative association with perceived femininity and level of experience. The regression model concerning violation situations explained 4.9% of the total variance ($F(6,494)=5.33$, $p<.0001$). Perceptions of masculinity and status were positively associated with the sense of self-efficacy in violation situations, while there was a negative association with the perception of femininity.

Table 3: Standardized betas of the effect of perceptions of masculinity and femininity on perception of risks and benefits

	Experience	Sex	Age	Status	Feminine perceptions of the occupation	Masculine perceptions of the occupation	Adjusted R ²
<i>Physical activities – risks perceived</i>	0.202**	-0.031	0.248***	-0.166**	0.152***	-0.027	.203***
<i>Physical activities – benefits perceived</i>	-0.221***	-0.073	-0.161*	0.088	-0.057	0.136***	.104***
<i>Risk behaviors in the firefighter profession – risks perceived</i>	0.025	0.071	0.173*	-0.047	0.260***	-0.097*	.090***
<i>Risk behaviors in the firefighter profession – benefits perceived</i>	-0.045	-0.096	-0.069	0.012	-0.196***	0.191**	.048***
<i>sense of self-efficacy – vehicle</i>	-0.114*	-0.081	-0.031	0.047	-0.179***	0.187***	.046***
<i>sense of self-efficacy – violation</i>	-0.091	-0.015	-0.084	0.149**	-0.146***	0.096*	.049***

*** $p<.0001$, ** $p<.001$, * $p<.05$

3.3. The effect of perceptions of masculinity and femininity on risky behaviors

Finally, 4 regression analyses were performed with the 4 aggregate scores concerning self-reported behaviors in physical activities, firefighting activities and occupational and non-occupational driving as dependent variables. For each dependent variable, the predictors were the sociodemographic and occupational variables (sex, age, experience as firefighter and status), the perception of the occupation in terms of masculinity and femininity, and the aggregate scores on the perception of risk-taking for each type of activity. Thus, perceptions about physical activities were used as predictors of reported physical activity risk-taking, perceptions of firefighting activities as predictors of firefighting activity risk-taking, and violation self-efficacy scores as predictors of reported driving violation behaviors. The full results are presented in Table 4.

For reported risky physical behaviors, the model explained 41.1% of the total variance ($F(8,492)=46.14$, $p<.0001$). Being young and a professional firefighter, perceiving more benefits and fewer risks in physical activities as well as having a perception of the occupation as both feminine and masculine are associated with more risky physical behaviors.

For reported risky firefighter behaviors, the model explained 38.2% of the total variance ($F(8,492)=39.61$, $p<.0001$). Being young, perceiving more benefits and fewer risks in firefighting activities and having a masculine perception of the occupation are associated with riskier behaviors in firefighting activities.

For driving behaviors in the non-occupational context, the model explained 42.4% of the total variance ($F(8,492)=47.08$, $p<.0001$). Having a high sense of self-efficacy with regard to vehicle control and violation situations and having a low feminine perception of the occupation are associated with riskier behaviors on the road.

For occupational driving behaviors, the model explained 34.2% of the total variance ($F(8,492)=33.50$, $p<.0001$). Being young, a volunteer firefighter, having a high sense of self-efficacy in vehicle control and violation situations, having high masculine and low feminine perceptions of the occupation of firefighter were associated with more risky occupational driving.

Table 4: Standardized betas of the final hierarchical linear regression model of the 3 types of risky behaviors (physical activities, firefighting behaviors and driving behaviors)

	Physical behaviors	Firefighter behaviors	Non-occupational driving behaviors	Occupational driving behaviors
Experience	-0.087	0.044	0.047	0.050
Sex	-0.028	-0.023	0.034	0.040
Age	-0.169**	-0.203***	-0.083	-0.158**
Status	0.091*	0.019	-0.042	-0.110**
Perceived risks in physical activities	-0.215***			
Perceived benefits in physical activities	0.396***			
Perceived risks in firefighting activities		-0.319***		
Perceived benefits of firefighting activities		0.329***		
Feeling of self-efficacy – vehicle			0.238***	0.235***
Feeling of self-efficacy – violation			0.456***	0.350***
Perceived femininity score	0.106**	-0.025	-0.155***	-0.151***

Perceived masculinity score	0.046	0.094*	0.078	0.141**
Adjusted R ²	0.411	0.382	0.424	0.342

4. Discussion

This study has attempted to show the relationship between firefighters' gendered perceptions of their occupation and their risky behaviors. It has investigated how gendered perceptions of the occupation affect perceptions of other factors such as risk, benefits and self-efficacy, and risky behaviors in the areas of physical activities, firefighting activities and occupational and non-occupational driving. It explores the hypothesis that a perception of the occupation as masculine leads to riskier behaviors and that, on the contrary, a more feminine perception of the occupation inhibits such behaviors among firefighters.

This study first aimed to test the effect of a more masculine and less feminine perception of the profession on the perception of risk (H1) and benefits (H2) of occupation-related risky behaviors. The results show that the perception of risk of physical and firefighting activities is higher in firefighters with a feminine view of their profession and that the perception of benefits is higher in firefighters with a masculine view of their profession. This study also sought to test the effect of more masculine and less feminine perceptions of the occupation on feelings of self-efficacy in violations (H3) and vehicle control (H4). The results show that masculine perception of the occupation reinforced, whereas feminine perception of the occupation inhibited the sense of self-efficacy in vehicle control and violation situations. Thus, perceiving the firefighting profession as strongly related to feminine characteristics reinforces the perception of risks associated with certain occupational activities and lowers feelings of self-efficacy in infringing driving behaviors, whereas perceiving the profession as related to masculine characteristics leads firefighters to perceive more benefits from engaging in risky occupational behaviors and to perceive themselves as effective in infringing driving behaviors. Thus, the results show that gendered perceptions of the occupation affect the perception of risk. A perception of the occupation as masculine leads to a greater perception of the benefits of risk-taking in sporting activities and firefighting activities than a perception of it as feminine. In addition, the feeling of self-efficacy with regard to vehicle control and driving violations was higher among firefighters with a perception of their occupation as highly masculine and slightly feminine. These results may be explained by the desire to conform to the norms of masculinity that prevail among firefighters (Thurnell-Read & Parker, 2008).

We also hypothesized that a strongly masculine perception of the occupation would be associated with more frequent risky behaviors (H5), whereas a strongly feminine perception of

the occupation would be associated with less frequent risky behaviors in occupational activities (H7). The results show that -whether male or female and whatever their age- risky behaviors in firefighting activities (but not in physical activities) are reinforced by a masculine perception of the job, while, contrary to H7, risky behaviors in physical activities (but not in firefighting activities) are reinforced by a feminine perception of the job. We also hypothesized that a strongly masculine perception of the occupation would be associated with more frequent risk behaviors in driving (H6), while a strongly feminine perception of the job would be associated with less frequent risk behaviors in driving (H8). The results show that, whether male or female and whatever their age, and in accordance with H6 and H8, masculine perception of the occupation reinforces, while feminine perception of the occupation inhibits risky occupational driving behaviors, while, in accordance with H8, risky behaviors in non-occupational situations are inhibited by feminine perception of occupation but are not related to masculine perception of occupation. Thus, masculine perception of occupation reinforces risky behaviors in physical activities and occupational driving, whereas feminine perception of occupation inhibits risky behaviors in both occupational and non-occupational driving. Thus, in line with the literature (Granié, 2013), firefighters with a strongly masculine and weakly feminine image of their occupation conform to the masculine stereotypes of their occupation and report riskier behavior in two of the three studied areas. Firefighters, who have an image of themselves as virile and invincible adopt risky behaviors that are categorized as masculine in order to conform to their occupational social identity (Granié, 2012). These results support several studies that have already been conducted on the influence of masculinity in sport and certain occupations in relation to risk (Terret, 2004; Raveneau, 2006; Lash-Gravier, 2002). In this area, it is essential to continue to study the mechanisms of hegemonic masculinity, in order to compensate for the discrimination and risky behaviors that result from it. The results also show that these risky behaviors are related to perceptions of the riskiness of the activities in question. In line with the literature, behaviors in physical and firefighting activities are related to a low perception of the risks and a high perception of the benefits of these behaviors (Irwin, 1990; Guého, 2015), while risky behaviors in driving are related to a high perception of self-efficacy with regard to violation behaviors and vehicle control (Bandura, 2002; Bandura & Locke, 2003).

Thus, results show gendered perceptions of the profession influence the psychological variables that underlie risk behaviors, but also directly influence those risk behaviors. In the context of collective defense strategies (Lhuilier, 2007), firefighters with a masculine perception of their occupation tend, in accordance with traditional masculinity, to see risky behavior as beneficial, and demonstrate their virility through risky behavior on the road and

during physical training. This is particularly true among young professional firefighters. These risky behaviors caused by masculine perceptions of the occupation may be the result of the way it has changed in recent years. As work in the field is becoming more focused on life-saving than firefighting (Koogan, 2008), there is a dissonance between the masculine characteristics expected of them and the feminine values that they need to espouse in everyday working life. In this sense, the results show that the perception of the occupation as feminine increases the risk perception of physical activities while at the same time increasing the declared frequency of these same risky physical activities. These risky behaviors may be adopted as collective defense strategies (Dejours, 1990) to compensate for this perception of the occupation as feminine. Firefighters may compensate for their perception of their occupation as feminine by engaging in physically risky behaviors and challenges characterized as masculine during daily sports training.

The results also show a difference between professional and volunteer firefighters, with professionals reporting more risky physical behaviors. These different practices may show greater internalization of masculine social norms among professional firefighters. The occupational identity of professionals leads to riskier behavior in order to conform to their male environment. Moreover, the selection criteria for professionals encourage masculine views of the occupation but also create a behavioral response to conform to social expectations: “the inculcation of a virile habitus is a constant in this occupational environment which sometimes forces individuals to engage in physical risk-taking that is seen as the prerogative of strong and courageous men” (Pudal, 2016, p.20). Professional firefighters are socialized in a context of virility and permanent competition. This environment leads them to personally integrate risky behaviors that match their new occupational ideology (Granié, 2012; De Visscher, 2016). This difference seems to increase with their length of tenure, as the results show that older and more experienced firefighters have more masculine perceptions of the occupation. These perceptions can be explained by the perpetuation of the masculine ideology, that, as in the past, confine the work of firefighters to firefighting tasks. This seems to be a way for more experienced workers to reaffirm their membership of the virility and peer group (Penin, 2006).

Conclusion

The purpose of this study was to investigate the effect of gendered occupational perceptions on firefighters' risk-taking in their professional occupations and in driving. The results show that a strongly masculine and weakly feminine perception of the firefighting profession leads to a higher frequency of risky behaviors in firefighting and physical activities but also in driving, with risk-taking and perception of the masculinity of the profession being

higher in young professional firefighters. Thus, the high number of work-related accidents observed among firefighters, both in and out of firefighting operations, could be related to a willingness to demonstrate through their behavior their conformity to their masculine perception of their occupation.

This study has some limitations. At the methodological level, whereas the main scores constructed for this study (self-efficacy, driving behavior, perception of the occupation) have acceptable to good reliability, two of the aggregate scores it uses ("risky firefighting activities" and "perceived benefits of physical activities") suffer from poor to questionable reliability. The results for these scores should therefore be interpreted with caution. Furthermore, the study focuses on firefighters from one single French Département. It is possible that the relationships between gendered perception of the occupation and risky behavior are linked to the particular geographical context and professional culture and only apply in the fire and rescue service of this Département. Further studies should therefore be carried out, with larger samples of firefighters.

More generally, the perceptions of masculinity and femininity that are examined in this study are dynamic and therefore neither universal nor timeless. The characteristics that are socially attributed to the femininity or masculinity are geographically situated and subject to change over time. While the influence of firefighters' gender on perceptions of the occupation, perceptions of risks and benefits and individuals' behaviors has been controlled for in the analyses, the conformity of individuals' behaviors to masculine and feminine stereotypes has not been taken into account, its effects on the perception of the occupation have not been explored, and its influence on risk behaviors has not been controlled for (Granié, 2009; Guého, 2015; Douesnard & Saint-Arnaud, 2011, Ozkan & Lajunen, 2005, see Granié, Degraeve & Varet, 2019). Further studies are thus needed to extend the results to other geographical and cultural contexts, taking account of individuals' conformity to gender stereotypes.

In terms of practical interest, the significant emphasis on masculinity among firefighters can lead to a collective silence on the emotions and suffering experienced by individuals. In order to influence behaviors, it is therefore necessary to engage in discussions with firefighters and build appropriate solutions. It is advisable to involve them in the process of supporting behavioral change through a collaborative and reflective approach. Furthermore, the value of all firefighters' skills, not only those founded on masculinity, should be valorized. This could have an impact on the gendered perception of the occupation and therefore on risky behavior.

References

- Addis, M. E., Reigeluth, C. S., & Schwab, J. R. (2016). *Social norms, social construction, and the psychology of men and masculinity*. In Y. J. Wong & S. R. Wester (Eds.), *APA handbook of men and masculinities* (pp. 81–104). American Psychological Association. <https://doi.org/10.1037/14594-004>
- Ashmore, R.D., Del Boca, F.K., & Wohlers, A.J. (1986). *Gender stereotypes*. In: Ashmore, R.D., Del Boca, F.K. eds. *The social psychology of female-male relations: a critical analysis of central concepts*. Academic Press, New York, pp. 69-119.
- Bandura, A., Adams, N.E., Hardy, A.B. et al (1980). *Tests of the generality of self-efficacy theory*. *Cogn Ther Res* 4, 39-66 (1980). <https://doi.org/10.1007/BF01173354>
- Bandura, A. (2002). *Auto-efficacité : Le sentiment d'efficacité personnelle* [Self-efficacy: The exercise of control, 1997]. Liège, De Boeck.
- Bandura, A. (2019). *Auto-efficacité : Comment le sentiment d'efficacité personnelle influence notre qualité de vie*. [Self-efficacy: How feelings of self-efficacy influence our quality of life]. Bruxelles, De Boeck supérieur, 181.
- Banque nationale des données. (2017). *Rapport statistique – Services départementaux d'incendie et de secours (SDIS)* [Statistical report - Departmental fire and rescue services]. Rapport SDIS 2017 - pnrs ensosp <http://pnrs.ensosp.fr>
- Beal, A., Kalampalikis, N., Fieulaine, N. & Haas, V. (2014). *Expériences de justice et représentations sociales : l'exemple du non-recours aux droits* [Experiences of justice and social representations: the example of non-recourse to rights]. *Les Cahiers Internationaux de Psychologie Sociale*, 3(3), 549-573. <https://doi.org/10.3917/cips.103.0549>
- Bem, S. L. (1974). *The measurement of psychological androgyny*. *Journal of consulting and clinical psychology* 42: 155-162.
- Benelli, N. & Modak, M. (2010). *Analyser un objet invisible : le travail de care* [Analysing an invisible object: care work]. *Revue française de sociologie*, vol. 51(1), 39-60. doi:10.3917/rfs.511.0039.
- Blin, J. F. (1997). *Représentations, pratiques et identités professionnelles* [Representations, practices and professional identities]. Paris, L'harmattan.
- Caillaud, S., Kalampalikis, N. & Flick, U. (2010). *Penser la crise écologique : représentations et pratiques franco-allemandes* [Thinking about the ecological crisis: Franco-German representations and practices]. *Les Cahiers Internationaux de Psychologie Sociale*, numéro 87(3), 621-644. doi:10.3917/cips.087.0621
- Connell, R. W., & Messerschmidt, J. W. (2005). *Hegemonic Masculinity: Rethinking the Concept*. *Gender & Society*, 19(6), 829–859. <https://doi.org/10.1177/0891243205278639>
- Cooper M.D. (2018) *The Safety Culture Construct: Theory and Practice*. In: Gilbert C., Journé B., Laroche H., Bieder C. (eds) *Safety Cultures, Safety Models*. Springer Briefs in Applied Sciences and Technology. Springer, Cham. https://doi.org/10.1007/978-3-319-95129-4_5
- Damian-Gaillard, B. (2019). *Sexuality Stereotypes and Fantasies of Consumers of French Male Heterosexual Pornographic Media*. *Sur Le Journalisme, About Journalism, Sobre Jornalismo*, 8(2), 46-61. doi:10.25200/SLJ.v8.n2.2019.401

Dashtipour, P., & Vidaillet, B. (2017). *Work as affective experience: the contribution of Christophe Dejours' 'psychodynamics of work'*. *Organization*, 24(1), 18-35.

Debout, F. (2010). *Stratégies collectives de défense contre la souffrance au travail et famille : origine, pérennisation du genre et émancipation* [Collective defence strategies against suffering at work and family: origin, gender perpetuation and émancipation]. *Cahiers de psychologie clinique*, 51(2), 79-96. doi:10.3917/cpc.051.0079.

Delignières, D. (1993). *Risque préférentiel, risque perçu et prise de risque* [Preferred risk, perceived risk and risk taking]. In J.P. Famose (Ed.), *Cognition et performance* (pp. 79-102). Paris: INSEP.

De Oliveira, P., Dambrun, M. & Guimond, S. (2008). *L'effet de la dominance sociale sur les idéologies de légitimation : le rôle modérateur de l'environnement normatif* [The effect of social dominance on legitimating ideologies: the moderating role of the normative environment]. *Revue internationale de psychologie sociale*, tome 21(4), 115-150. <https://www.cairn.info/revue-internationale-depsychologie-sociale-2008-4-page-115.htm>.

Desmond, M. (2006). *Becoming a firefighter*. *Ethnography*, 7(4), 387–421. <https://doi.org/10.1177/1466138106073142>

De Visscher, H. (2016). *La pression sociale* [The social pressure]. *Les Cahiers Internationaux de Psychologie Sociale*, numéro 112(4), 505-527. doi:10.3917/cips.112.0505.

Doise, W. (1982). *L'explication en psychologie sociale* [The social psychological explanation]. *Sociologies*. Paris, Presses universitaires de France.

Doise, W. (2003). 10. *Attitudes et représentations sociales* [Social attitudes and representations]. In Denise Jodelet éd., *Les représentations sociales* (pp. 240-258). Paris cedex 14, France: Presses Universitaires de France. <https://doi.org/10.3917/puf.jodel.2003.01.0240>

Douesnard, J. & Saint-Arnaud, L. (2011). *Le travail des pompiers : un métier au service de l'autre* [The work of firefighters: a profession at the service of others]. *Travailler*, 26(2), 35-53. doi:10.3917/trav.026.0035.

Drozda-Senkowska, E., Caillaud, S. & Bonnot, V. (2017). *Menaces sociales et environnementales : repenser la société des risques* [Social and environmental threats: rethinking the risk society]. *Psychologies*, 246. 978-2-7535-5264-7.

Duarte, A. & Gernet, I. (2016). *Héroïsme et défenses chez les pisteurs/euses secouristes* [Heroism and defences among rescue workers]. *Travail, genre et sociétés*, 36(2), 97-113. doi:10.3917/tgs.036.0097.

Ericson, M., & Mellström, U. (Eds.). (2016). *Masculinités, égalité des genres et gestion de crise* [Masculinities, gender equality and crisis management]. Routledge.

Eurostat, (2020). *Accident at work statistics*. [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Accidents at work statistics#Number of accidents](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Accidents_at_work_statistics#Number_of_accidents)

Fatome, T., & Thiebeauld, A., (2019). *Rapport annuel 2019, éléments statistiques et financiers* [Annual report 2019, statistical and financial éléments]. *L'assurance Maladie-Risques professionnels*.

Fiske, S. T., & Stevens, L. E. (1993). *What's so special about sex? Gender stereotyping and discrimination*. Sage Publications, Inc.

Fontayne, P., Sarrazin, Ph., & Famose, J.-P. (2000). *The Bem Sex-Role Inventory: Validation of a short-version for French teenagers*. *European Review of Applied Psychology*, 50 (4), 405-416.

Freedberg, S. (1993). *The feminine ethic of care and the professionalization of social work*. *Social Work*, 38(5), 535-540.

Granié, M.-A. (2011). *Différences de sexe et rôle de l'internalisation des règles sur la propension des enfants à prendre des risques à vélo* [Gender differences and role of internalization in children propensity to take risks as cyclist]. *Recherche Transports Sécurité*, 2011(01), 34– 41. doi:10.1007/s13547-010-0002-4

Granié, M.-A. (2012). *Vers un modèle intégratif de la socialisation différenciée dans l'espace routier: Dialectique entre recherche fondamentale et recherche appliquée en psychologie sociale du développement* [Towards an integrative model of differentiated socialization in road space: Dialectic between fundamental and applied research in social developmental psychology]. [Habilitation à Diriger des Recherches]. Université de Toulouse 2 le Mirail.

Granié, M.-A. (2013). *Genre et rapport au risque : de la compréhension au levier pour l'action* [Gender and risk: from understanding to leveraging action]. *Questions vives*, 9 (19), pp 65-67. doi.org/10.4000/questionsvives.1273

Granié, M.-A., Degraeve, B., & Varet, F. (2019). *Les différences de sexe en sécurité routière : accidentalité, comportements à risque, accès au permis de conduire* [Gender differences in road safety: accident rates, risk behaviour, access to driving licences]. In L. Carnis, M.-L. Gallenne, & C. Gabaude (Eds.), *La sécurité routière en France : quand la recherche fait son bilan et trace des perspectives* (pp. 245-268). Paris: L'Harmattan.

Guého, L., Granié, M.-A., Abric, J.C. (2014). *French validation of a new version of the Driver Behavior Questionnaire (DBQ) for drivers of all ages and level of experience*. *Accident Analysis & Prevention*, 63, pp. 41-48 <https://doi.org/10.1016/j.aap.2013.10.024>

Guého, L. (2015). *Approche psychosociale des effets de l'identité sexuée sur les comportements à risque déclarés au volant et dans différents domaines chez les jeunes conducteurs* [A psychosocial approach to the effects of gender identity on self-reported risky driving behaviours and in different domains among young drivers]. Thèse de doctorat en psychologie sociale. Aix Marseille Université, Français.

Hall, A., Hockey, J. et Robinson, V. (2007). *Occupational Cultures and the Embodiment of Masculinity: Hairdressing, Estate Agency and Firefighting*. *Genre, travail et organisation*, 14 : 534-551. <https://doi.org/10.1111/j.1468-0432.2007.00370.x>

Jacobsson, A., Backteman Erlanson, S., Brulin, C., & Egan Sjolander, A. (2020). *Promoting and hindering health and well-being in firefighter discourse*. *SAGE Open*, 10(4), 2158244020979170.

Jodelet, D. (2003). 1. *Représentations sociales : un domaine en expansion* [Social representations: a growing field]. In D. Jodelet (éd.), *Les représentations sociales* (pp. 45-78). Paris cedex 14, France: Presses Universitaires de France. <https://doi-org.bibelec.univ-lyon2.fr/10.3917/puf.jodel.2003.01.0045>

Johnson, J.L., Greaves, L., Repta, R. (2007). *Better Science with Sex and Gender: A Primer for Health Research*. Vancouver, Women's Health Research Network.

Kanzari, R. (2008). *Les sapeurs-pompiers, une identité temporelle de métier* [The Fire Brigade, a temporal identity of profession]. Thèse de doctorat en Sociologie. Université Toulouse le Mirail - Toulouse II. (tel-00467980)

Kogan, A. (2008). *L'ancrage social de la téléassistance pour personnes âgées : des actes de communication à l'information organisationnelle* [The social anchoring of telecare for the elderly: from communication acts to organisational information]. *Les Enjeux de l'information et de la communication*, 2008(1), 31-43. doi:10.3917/enic.008.0300.

Kolhs, M., Olschowsky, A., & Ferraz, L. (2019). *Suffering and defense in work in a mental health care service*. *Revista brasileira de enfermagem*, 72, 903-909.

Lachenal, P. (2016). *Questions de genre: Comprendre pour dépasser les idées reçues* [Gender issues: Understanding to overcome preconceptions.]. Paris: Le Cavalier Bleu. <https://doi-org.bibelec.univ-lyon2.fr/10.3917/lcb.lache.2016.01>

Le Breton, D. (2017). *Sociologie du risque*. [The sociology of risk.] Paris cedex 14: Presses Universitaires de France.

Lefranc, G., Guarnieri, F., Textoris, R., & Garbolino, E. (2013). *Apport de l'analyse de la conformité légale, de l'analyse des risques et du climat de sécurité à la construction de la culture de sécurité* [Contribution of legal compliance analysis, risk analysis and safety climate to the construction of a safety culture]. *Research Report*, 14, hal-00797706.

Leplat, J. (2006). *Risque et perception du risque dans l'activité* [Risk and perception of risk in the activity]. In D. R. Kouabenan, B. Cadet, D. Hermand, & M. T. M. Sastre (Eds), *Psychologie du risque : Identifier, Evaluer, Prévenir* (pp.19-33). Bruxelles : De Boeck.

Levine, J. M. & Moreland, R. L. (1994). *Group socialization: Theory and research*. *European Review of Psychology*, vol 5, pp. 305-336 doi.org/10.1080/14792779543000093

Lhuillier, D. (2005). *Idéologies défensives et imaginaire social* [Defensive ideologies and the social imaginary]. *Revue internationale de psychosociologie*, vol. xi(24), 51-66. doi:10.3917/rips.024.0051.

Maddux, J. E., & Gosselin, J. T. (2012). *Self-efficacy*. The Guilford Press.

Mahalik, J. R., Locke, B. D., Ludlow, L. H., Diemer, M. A., Scott, R. P., Gottfried, M., & Freitas, G. (2003). *Development of the conformity to masculine norms inventory*. *Psychology of men & masculinity*, 4(1), 3.

Mankowski, E. S., Smith, R. M., (2016). *Men's Mental Health and masculinities*. *Encyclopedia of Mental Health (Second Edition)*, pp.66-74 <https://doi.org/10.1016/B978-0-12-397045-9.00182-8>

Martínez-Fiestas, M., Rodríguez-Garzón I., Padial A. (2020). *Firefighter perception of risk: A multinational analysis*. *Safety science*, vol 123, 104-545 <https://doi.org/10.1016/j.ssci.2019.104545>

Meesmann, U., Torfs, K. & Van den Berghe, W. (2019) *ESRA2 methodology. ESRA2 report Nr. 1. ESRA project (E-Survey of Road users' Attitudes)*. Brussels, Belgium: Vias institute.

Memmi, D. (2017). *Care, stigmatisation sociale et femmes: un lien inexorable: Ou: quand le cadavre se dissout dans le « relationnel »* [Care, social stigma and women: an inexorable link: Or: when the dead body dissolves into the 'relational']. *Sociétés contemporaines*, 105(1), 5-29. doi:10.3917/soco.105.0005

Meyer, T. & Verhaci, J. (2004). *Auto-efficacité : quelle contribution aux modèles de prédiction de l'exposition aux risques et de la préservation de la santé ?* [Self-efficacy: what contribution to predictive models of risk exposure and health maintenance.] *Savoirs*, 117-134. <https://doi.org/10.3917/savo.hs01.0117>

Michel-Guillou, E. (2010). *Agriculteur, un métier en mutation : Analyse psychosociale d'une représentation professionnelle* [Farmer, a changing profession : Psychosocial analysis of a professional representation]. *Bulletin de psychologie*, 1(1), 15-27. <https://doi.org/10.3917/bupsy.505.0015>

Molinier, P. (2010). *Souffrance, défenses, reconnaissance. Le point de vue du travail* [Suffering, defences, recognition. The point of view of work]. *Nouvelle revue de psychosociologie*, 10(2), 99-110. doi:10.3917/nrp.010.0099.

Michaut-Oswalt, S. (2005). *La féminisation de professions traditionnellement masculines, l'exemple de la brigade de sapeur-pompier de Paris* [The feminisation of traditionally masculine professions, the example of the Paris Fire Brigade]. *Pratiques psychologiques*, volume 11, 113-127.

Penin, N. (2006). *Le sexe du risque* [The sex of risk]. *Ethnologie française*, 4(4), 651-658. <https://doi.org/10.3917/ethn.064.0651>

Penin, N., (2012). *Les sports à risque. Sociologie du risque, de l'engagement et du genre* [Risk sports. Sociology of risk, commitment and gender]. *Cultures sportives*, Artois Presse Université.

Pfefferkorn, R. (2006). *Des femmes chez les sapeurs-pompiers* [Women in the fire service]. *Cahiers du Genre*, 1(1), 203-230. <https://doi.org/10.3917/cdge.040.0203>

Pudal, R. (2016). *Chapitre 1. Devenir pompier corps et âme* [Chapter 1: Becoming a firefighter in body and soul]. In R. Pudal, *Retour de flammes: Les pompiers, des héros fatigués ?* (pp. 13-33). Paris: La Découverte.

Prati, G., & Pietrantonio, L. (2012). *Predictors of safety behavior among emergency responders on the highways*. *Journal of Risk Research*, 15(4), 405-415. <https://doi.org/10.1080/13669877.2011.634519>

Raveneau, G. (2006). *Prises de risque sportives : représentations et constructions sociales* [Sports risk-taking: representations and social constructions]. *Ethnologie française*, vol. 36(4), 581-590. doi:10.3917/ethn.064.0581.

Rivoal, H. (2017). *Virilité ou masculinité ? L'usage des concepts et leur portée théorique dans les analyses scientifiques des mondes masculins* [Virility or masculinity? The use of concepts and their theoretical scope in scientific analyses of male worlds]. *Travailler*, 38(2), 141-159. doi:10.3917/trav.038.0141

Sauvage, I. (1993). *Demographic influences on risk perceptions*. *Risk analysis*, 13 (4), 413-420.

Sjöberg, L., Moen, B. E., & Rundmo, T. (2004). *Explaining risk perception. An evaluation of the psychometric paradigm in risk perception research*. *Rotunde publikasjoner Rotunde*, 84, 55-76.

Smith, T. D., Eldridge, F., & DeJoy, D. M. (2016). *Safety-specific transformational and passive leadership influences on firefighter safety climate perceptions and safety behavior outcomes*. *Safety science*, 86, 92-97.

Stergiou-Kita, M., Mansfield, E., Bezo, R., Colantonio A., Garritano E., Lafrance, M., Lewko, J., Mantis, S., Moody, J., Power, N., Theberge, N., Westwood, E., & Travers, K. (2015). *Danger zone: Men, masculinity and occupational health and safety in high risk occupations*. *Safety Science*, vol 80, 213-220. <https://doi.org/10.1016/j.ssci.2015.07.029>

Stergiou-Kita, M., Lafrance, M., Pritlove, C., & Power, N. (2017). *Examining theoretical approaches to men and masculinity in the context of high-risk work: applications, benefits and challenges*. *Safety science*, vol 96, 150- 160. <https://doi.org/10.1016/j.ssci.2017.03.014>

Terret, T. (2004). *Sport et masculinité : une revue de questions* [Sport and masculinity: a review of issues]. *Staps*, no66(4), 209-225.87 doi:10.3917/sta.066.0209.

Thompson, E. H., Pleck, J. H., & Ferrera, D. L. (1992). *Men and masculinities: Scales for masculinity ideology and masculinity-related constructs*. *Sex roles*, 27(11), 573-607

Thurnell-Read T. & Parker, A. (2008). *Men, masculinities and firefighting: Occupational identity, shop-floor culture and organisational change*. *Emotion, Space and Society*, vol 1, 127-134. doi.org/10.1016/j.emospa.2009.03.001

Tronto, J. (2012). *La société du risque* [The risk society]. In J. Tronto, *Le risque ou le care* (pp. 13-28). Paris cedex 14, France: Presses Universitaires de France.

Varet, F., Degraeve, B. & Granié, M. (2018). *Comportements dans l'espace routier : le rôle des attentes sociales* [Behavior in road space: the role of social expectations]. *Le Journal des psychologues*, 360(8), 24-29. doi:10.3917/jdp.360.0024.

Weber, E.U., Blais, A.-R. and Betz, N.E. (2002). *A domain-specific risk-attitude scale: measuring risk perceptions and risk behaviors*. *J. Behav. Decis. Making*, 15: 263-290. <https://doi.org/10.1002/bdm.414>

Yarnal, C. M., Dowler, L., & Hutchinson, S. (2004). *Don't Let the Bastards See you Sweat: Masculinity, Public and Private Space, and the Volunteer Firehouse*. *Environment and Planning A: Economy and Space*, 36(4), 685–699. <https://doi.org/10.1068/a35317>

Zolesio, E. (2009). *Des femmes dans un métier d'hommes : l'apprentissage de la chirurgie* [Women in a man's job: learning to be a surgeon]. *Travail, genre et sociétés*, 22, 117-133. <https://doi.org/10.3917/tgs.022.0117>