

# Enhancing autonomy in veterinary students: exploring the 'veterinary student team' principle

Master Thesis

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# 1 ABSTRACT

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**Background:** According to the Self-Determination Theory, intrinsic motivation is stimulated when the need for autonomy, relatedness and competence are met. Research has shown that autonomous regulation of behaviour is associated with greater engagement, better performance, higher quality learning and greater psychological well-being. Workplace learning is a form of education with the potential to stimulate the intrinsic motivation of students. In medical 'student-run clinics', undergraduate students work as a team that autonomously runs the clinic and practice their future profession under supervision of a graduated physician. Student-run clinics seem to be a form of education in which autonomy can be stimulated, but there is not much research on this connection. Additionally, medical student-run clinics are set up widely to implement workplace learning into the curriculum, while veterinary student-run clinics have yet to be described.

**Aim:** To explore the definition of 'student teams' in small animal veterinary clinics in the Netherlands and investigate whether these teams are comparable to medical student-run clinics. Furthermore, this study aims to investigate how working in a student team fosters perceived autonomy of veterinary students and which factors are involved.

**Methods:** 15 students and 3 (student) managers of student teams of 4 veterinary clinics participated in this mixed-method study with semi-structured interviews and questionnaires. The interviews were analysed using thematic analysis. With an inductive approach, themes were set-up and described.

**Results:** Student teams are groups of veterinary students working in small-animal veterinary clinics in the Netherlands. In two clinics, the students are allowed to perform consultations on their own. This is comparable to the student-run clinic principle, aside from the fact that the students in these clinics work independently and not in a team of students that autonomously runs a clinic, like in student-run clinics. The work of the students in the other clinics is not comparable to student-run clinics. Their perceived autonomy is positively influenced by goal setting, interpersonal and social relations, the students' own personality and development of competence, while other aspects of their personality, job demands, hierarchy within the clinic and policies negatively influence their perceived autonomy.

**Conclusion:** Student teams in veterinary clinics are not fully comparable to medical student-run clinics. External and internal influences emerged that affect perceived autonomy of students in student teams both negatively and positively. Students who have worked in a student team for a longer period report a certain level autonomy, but due to multiple factors it cannot be said with certainty how exactly this work fosters perceived autonomy of these students.

**Keywords:** perceived autonomy, small-animal veterinary clinic, student-run clinic, veterinary student team, workplace learning

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### 3 INTRODUCTION

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The main goal of the study of Veterinary Medicine is to provide students with knowledge, skills and professional behaviour to make them capable of functioning in the professional work field of veterinary medicine as well as possible (1). To enable students to perform optimally during their studies, motivation and engagement are very important factors according to the Self-Determination Theory (SDT) of Deci & Ryan (Figure 1) (2).

In (veterinary) medical education, the aim is to stimulate these factors by implementing workplace learning in the curriculum. As the name ‘workplace learning’ suggests, students learn while working in a setting similar to that of their future profession (3). This has proven to be a form of education with the potential to increase intrinsic motivation in students (4). However, it has been shown that workplace learning does not always stimulate the intrinsic motivation of students (5), because they are, for example, not always given specific responsibilities (6). This makes them less engaged in and committed to what takes place in the workplace, consequently, the quality (and quantity) of learning might decrease. That is why, in medical curricula, ‘student-run clinics’ are set up to implement workplace learning (7). These student-run clinics are medical clinics, in which undergraduate students perform complete consultations with real patients under direct supervision of clinical specialists (8). This form of workplace learning has proven to foster development of competence, and thus engagement, of students (8). Even though it also seems to be a form of education in which the autonomy of students can be improved, only one study investigating student-run clinics mentions improvement of the autonomy of students who participated in a student-run clinic (9). Thus, the role of autonomy in this form of education is scarcely described in the literature. Moreover, student-run clinics in medical education are widely implemented: according to a study from 2012, already 62% of medical schools in the USA have at least one student-run clinic (10), while veterinary student-run clinics have yet to be described in any country. However, at various veterinary clinics for companion animals in the Netherlands, veterinary students are employed to work there in teams during their study. The work of these students might be comparable to the work of medical students in student-run clinics. However, little is known about the work of these ‘student teams’ in veterinary clinics. Therefore, this research strives to explore the definition of so-called ‘student teams’ in small animal veterinary clinics in the Netherlands and investigate if this concept is comparable to the ‘student-run clinic’ principle. Additionally, this study aims to investigate how working in a student team fosters perceived autonomy of veterinary students and by which factors this is influenced.

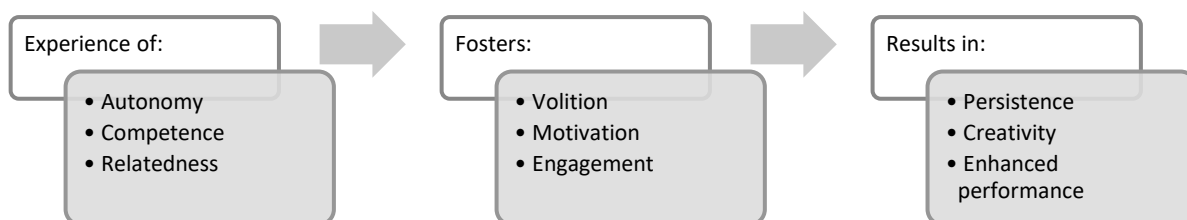


Figure 1 Self-Determination Theory by Deci and Ryan (1985) (2)

### 4 BACKGROUND

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#### 4.1 SELF-DETERMINATION THEORY AND MOTIVATION

The SDT of Deci & Ryan distinguishes between different types of motivation, besides amotivation (unwillingness), based on what fuels the motivation (2,11). The most basic distinction is between intrinsic and extrinsic motivation. When someone is intrinsically motivated, satisfaction is directly derived from the performed activity and not from a reward that follows, whereas extrinsic motivation is regulated by external factors (12). Research has shown that intrinsic motivation is an important aspect of learning and performing, because it results in high-quality learning and creativity (13).

According to the Cognitive Evaluation Theory (CET), a subtheory of the SDT, intrinsic motivation can be stimulated when the following three basic psychological needs are met: autonomy, competence and relatedness (2,11,12,14). When these three needs are met, a person should be able to function and develop optimally (14). A feeling of *competence* is a major aspect of motivation (11). It is important for a person to feel like they possess the correct skills and knowledge to fulfil a specific task. This feeling of competence can be increased by offering optimal circumstances and relevant constructive feedback (11). The second basic psychological need is *relatedness*. The SDT describes relatedness as a sense of belonging and connectedness. This sense of relatedness can be directed towards the people, group or culture a person works with (11). Research has shown that relatedness to teachers and fellow students encourages willingness of students to perform assignments (15). *Autonomy* indicates that a person acts/chooses/works independently of external control or influences (2,16). The influence of autonomy versus control on motivation of students was seen in studies of classroom learning. Students who are overly controlled by their teachers lose initiative and learn less well, whereas autonomy-supportive teachers stimulate intrinsic motivation and curiosity in their students (11,17–20).

## 4.2 AUTONOMY

Extrinsic motivation is not necessarily non-autonomous (2). For example, when students perform certain assignments, because they know it is conducive to their future. In the provided example, students are still extrinsically motivated. However, said students act autonomously, without the influence of a teacher (11). Extensive research on the different types of extrinsic motivation has shown that autonomous regulation of extrinsically motivated behaviours is associated with greater engagement, better performance, higher quality learning and greater psychological well-being (20–23).

It was chosen to use the theory of work autonomy (24) as a theoretical basis for this study and not a model of learner autonomy for two reasons. In the first place, because this study investigates the role of autonomy during the work of students in veterinary clinics and secondly, it is not yet known if this contributes to the education of these students. Several studies have shown that autonomy in the workplace plays a major role: it contributes to work attitudes, work satisfaction, performance of employees and the relationships with employers (25–29). Based on several studies on this issue (30–32), work autonomy was divided into 3 facets: method autonomy, scheduling autonomy and criteria autonomy (24). This means that an employee is said to experience work autonomy when they can decide for themselves which goal he wants to achieve, which method they will use to achieve this goal, according to what time schedule the goals will be achieved and what the criteria are for evaluating their performance (24,32). However, there may be a difference between the degree of autonomy provided by an employer to the employee and the extent to which the employee experiences autonomy (27). Only the extent to which the employee experiences autonomy influences the aspects mentioned before (work attitudes, work satisfaction, performance of employees and relationships with employers), not the extent to which the employer provides autonomy (27,30).

There are 3 important aspects that influence to what extent someone experiences autonomy: authorship/self-congruence, interest-taking and susceptibility to control (33). Autonomy of behaviour increases when someone experiences themselves as the author of this behaviour and the behaviour fits with their values and personal commitments (34,35). Interest-taking means that someone is able to deal with positive and negative effects that a particular behaviour entails and is motivated to learn from these consequences (36,37). In addition to this, a more autonomously functioning person is continuously learning more about themselves (38,39). Conversely, susceptibility to a third party's control has a negative influence on autonomy (33). Research has shown that autonomously regulated behaviour is associated with lower experiences of pressure, whereas behaviour controlled by external factors is associated with high internal pressure (40,41).

### **4.3 WORKPLACE LEARNING**

As mentioned before, context learning or workplace learning is a form of education that can stimulate students' intrinsic motivation (4). Workplace learning is defined as learning in a setting similar to that of the future profession (3). It has already proven to be an important part of medical education (6). When students engage in the actual work of their future profession, they will be significantly more motivated to learn compared to when they carry out an assignment because they are required to by others (42,43). By contributing to patient care, students not only have the opportunity to improve their knowledge and skills, but also develop professionally (44,45). Improving knowledge and skills might also be possible in a classroom, however, outcomes such as positive relationships with colleagues, a sense of professional identity and modification of attitudes, might only be achievable in the workplace (44). Positive relationships within the working team are important for exchanging knowledge, development of the students' identity within the team and social and emotional support (44,45). Furthermore, when students have the opportunity to make mistakes during their work in practice, albeit with the safety net of constant supervision, their professional development is enhanced even more (44). However, it sometimes seems difficult to keep students intrinsically motivated and committed in the (learning) environment of a clinic or hospital, because it has been shown that workplace learning does not necessarily contain specific responsibilities for students (6). Supporting their autonomy might be a good method to achieve this.

#### **4.3.1 Student-run clinics**

In medical curricula, 'student-run clinics' are set up to implement workplace learning. These student-run clinics are medical clinics in which undergraduate students perform consultations with real patients under direct supervision of clinical specialists (8). The main goal of these clinics is to provide health care for people who cannot afford regular health care (7), but they are also a good way to give medical students the opportunity to gain practical work experience (5). Several studies have shown that the quality of patient and health care in these clinics was comparable to or better than the healthcare provided by regular health services (46–48).

In contrast with these student-run clinics focused on providing free health care, an exploratory pilot study was done in 2013 in the Netherlands with a student-run clinic focused on educating students (49). The main goal of this student-run clinic was to train and teach students in a real-life context and provide them with early experience in clinical practice and a high level of responsibility (49). This type of student-run clinic turned out to stimulate a high level of intrinsic motivation in the students and they significantly improved in the CanMEDS (Canadian Medical Education Directives for Specialists) competencies of "Collaborator", "Communicator", "Academic" and "Medical expert" (49).

However, as mentioned before, only one study investigating medical student-run clinics mentioned the influence of participating in a student-run clinic on the autonomy of the students (9). This seems odd, since it seems to be a form of education in which students are given a relatively high level of independence (8) and could therefore be expected to experience a high level of autonomy.

Despite the fact that student-run clinics seem to be an educational method to stimulate intrinsic motivation in students, no student-run clinics have been described for veterinary students. However, at various veterinary clinics for companion animals in the Netherlands, students are employed to work there during their study. Little is known about the work of these students in veterinary clinics. What happens in these clinics? Are these students employed separately or in teams of students that autonomously run a clinic, comparable to student-run clinics? Do learning and working in these clinics contribute to the development of autonomy in veterinary students?

### **4.4 RESEARCH GOAL**

The present research strives to explore the definition of so-called 'student teams' in veterinary clinics in the Netherlands and investigate if this concept is comparable to the 'student-run clinic' principle. In addition to this, this study intends to investigate how working in a student team is conducive to perceived autonomy in veterinary students and by which factors perceived autonomy is influenced.

In order to answer these questions and achieve these goals, this study will first explore the concept of veterinary students working in small animal veterinary clinics in the Netherlands. Secondly, the influence of working in a veterinary clinic on the basic psychological need of autonomy in veterinary students will be investigated.

## **4.5 HYPOTHESIS**

The hypothesis of this study is that the students working in veterinary clinics are not employed in teams of students that autonomously run a clinic, comparable to medical student-run clinics. However, it is expected that working in a student team in a veterinary clinic can certainly be beneficial to the autonomy of veterinary students, provided that method autonomy, scheduling autonomy and criteria autonomy of the students are supported during their work. In addition to this, based on results from previous research (50), it is expected that autonomy support by instructors encourages students to work more autonomously.

# **5 METHODS**

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## **5.1 STUDY DESIGN**

Since little is known about the work of veterinary students in small animal clinics, a mixed method design with an interpretive approach was chosen for this research (51,52). Qualitative research could not be missed to obtain a comprehensive view of the work of veterinary students in veterinary clinics, due to the exploratory nature of this study (51). It was conducted in the form of semi-structured interviews with students. Interviewing was chosen because it is appealing for an exploratory study such as this one, since it is a flexible method to gather data (51). During interviews, follow-up questions could be asked about the answers given by the students, which could result in discussion of matters that the author herself had not thought of, but which are important for answering the research questions (51).

Quantitative research was chosen to support the qualitative data on the autonomy of students during their work in the clinics with quantitative data. Two questionnaires were partially conducted to test the extent to which students experience autonomy during their work (for further explanation, see “5.4 Measurements”).

## **5.2 SELECTION OF PARTICIPANTS**

An appeal was used to contact students who work in small animal veterinary clinics during their studies. This appeal was uploaded on the LinkedIn page of the author and her supervisor and via Facebook groups with veterinary students. No exclusion criteria were defined or applied at this point. The only inclusion criterium in this phase of the study was that appeal was directed to veterinary students who work in veterinary clinics for small animals and employees/employers of veterinary clinics in which students work. The aim of the research was stated in the appeal and a short questionnaire was added to obtain a superficial image of the work of the students in the clinics (see “10 Appendix”). This questionnaire requested information on how the student(s) is/are assigned, to be able to make a distinction between students who work in a clinic for a short period of a few weeks or for a longer period of months or years. Furthermore, the person completing the questionnaire was asked to take part in the next phase of the research, namely interviews. Informed consent was also obtained from the participants in this questionnaire.

Based on the results of this questionnaire, certain clinics were selected for the next phase of the study. Only clinics were selected in which more than 5 students are employed solely to assist and take over tasks of the veterinarian and not as veterinary assistant. The students from such clinics, who had responded to the questionnaire and indicated that they wanted to participate in the next phase of the study, were personally approached by the author to schedule the interviews. Via these students, contact was also made with the coordinators of the student teams.

### **5.3 INTERVIEWS**

The interviews with the students were semi-structured and carried out by the author. It was decided to conduct the interviews in Dutch, the native language of the interviewed students, to make sure the students were not limited by a language barrier in sharing their experiences with their work in the clinics. The interviews consisted of questions to explore the definition of so-called 'student teams'. First, general questions were asked about the students and the student team they are a part of. Secondly, more in-depth questions were asked about the work students do in the clinics. Thirdly (and lastly), questions were asked to investigate how this work fosters the autonomy of these students (for the questions of the interview, see "10 Appendix"). Follow-up questions were asked about the acquired answers to acquire a reliable outline of their student team. In addition to the interview, the students were asked to fill out a questionnaire to investigate their perceived autonomy (for further explanation of this questionnaire, see "5.4 Measurements").

During the same period, the coordinators of these students were also contacted to investigate the vision of the clinic on the work of the students. In this case, general questions were asked about the veterinary clinic. Subsequently, the reason to have students work in this clinic was investigated, asking for characteristics of the clinic and why this set-up was chosen. Then questions were asked about the support of the students' autonomy.

All interviews were audiotaped and transcribed verbatim.

### **5.4 MEASUREMENTS**

Perceived autonomy of the students was measured with two questionnaires. These questionnaires were chosen, because it has been shown that a reliable outline of perceived autonomy can be made with these questionnaires (53–56). The statements on autonomy of the Basic Psychological Need Satisfaction and Frustration Scale (BPNSF) (Work Domain) (54,57) were used to assess autonomy satisfaction and frustration of the students when working at the veterinary clinic. Satisfaction and frustration were separated in this scale, since it has been shown that low need fulfilment does not have the same consequences as need frustration. Low need fulfilment diminishes growth potential of individuals, whereas need frustration causes ill-being and psychopathology (58–61). This scale was validated by Chen et al. (2015) (54), although not in the context of a veterinary clinic. The Perceived Autonomy Support: The Learning Climate Questionnaire (LCQ) was used to assess to which degree students felt that their autonomy was supported by their instructors in the learning climate. (50,55,62,63). In this context, 'instructors' indicated the veterinarians and veterinary technicians and 'learning climate' indicated the veterinary clinic. Participants were asked to rate all items of both questionnaires on a 1 (strongly disagree) to 7 (strongly agree) scale.

### **5.5 DATA ANALYSIS**

The main objective of the analysis was to structure the data in order to illustrate the student teams in veterinary clinics and investigate what influences there are on the role of autonomy during the work of these students. That is why thematic analysis of the qualitative data was opted (64). The qualitative data were analysed using software for qualitative data analysis (NVivo). The first step of analysis was verbatim transcription of the interviews. After that, transcriptions were summarized and participants were requested to comment on the accuracy of a summary of their interview to improve trustworthiness (65). Five students proposed minor corrections. Next, the transcripts and other data were coded with an inductive approach (64). The author used a latent level of thematic data analysis of the transcripts to identify and analyse themes within the data (64). A thematic analysis at the latent level requires interpretation of the data in order to develop themes (64). After initial coding of the complete data set, codes were sorted in potential overarching themes (see Table 1). These themes were then reviewed to check if they matched with the research questions and the entire data set and its codes. Analysis of the data was repeated to refine the themes and their specifics and to code additional data that was missed in the previous coding stage. Thereafter, the themes were reviewed one last time and given names in preparation for write-up of the results. To enhance reliability of the analysis, the overarching themes were also checked by the supervisors of the author.



Table 1 Examples of transcript analysis.

Quote	Initial code	Coding category	Subtheme	Theme
"I notice that if you are more assertive, most veterinarians also become more generous with assigning me interesting tasks."	Assertiveness of students might help in getting to do more interesting tasks.	Influence of personality on range of tasks.	Personality	Internal influences
"If it is very busy in the clinic, you will simply be sent from here to here all day long. Then, you really do not have that much time to make decisions on your own."	Work pressure diminishes the opportunity for students to make their own decisions.	Job demands, e.g. work pressure, influence autonomy.	Job demands	External influences

Means, standard deviations and Cronbach's alpha were calculated from both questionnaires.

## 5.6 ETHICAL CONSIDERATIONS

All participants were informed about the study in advance, participated voluntarily and were assured of confidentiality. Written informed consent was obtained (online) from all participants.

## 6 RESULTS

A total of 49 students and one employee of a veterinary clinic completed the questionnaire attached to the appeal. These 49 students worked at 22 different small animal veterinary clinics. Based on the answers they gave in the questionnaire, it was found that eighteen students worked in a veterinary clinic solely as a veterinary assistant, whereas the other 31 students were part of a team of veterinary students and performed tasks similar to those of the veterinarian. Examples of the tasks mentioned by these students were, clinical assessment of animals in the hospital ward and providing first aid to emergency cases coming into the clinic, with or without supervision of a veterinarian. It was decided to include only these teams of students, because this set-up of students working in a veterinary clinic is most similar to the 'student-run clinic' principle. Based on this criterium, four clinics were included in the next phase of the study. Twenty of the students who worked in these four clinics and completed the questionnaire agreed to participate in the next phase of the study: the interviews. This selection process is visualized in Figure 2. All of the interviewed students were female.

Due to work pressure, two of the managers of the student teams could not make time for an interview, so the questions were sent to them by email and they were asked to answer them as thoroughly as possible. One of these two managers returned the questionnaire with their answers.

The results for the two main questions (What is the definition of so-called 'student teams' in veterinary clinics in the Netherlands? How does working in a student team foster perceived autonomy in veterinary students?) are presented consecutively.

### 6.1 WHAT IS THE DEFINITION OF SO-CALLED 'STUDENT TEAMS' IN VETERINARY CLINICS IN THE NETHERLANDS?

At first, the aspects of student teams that occurred in the interviews with students and managers of the student teams will be described and illustrated with quotes of the managers (M) and students (S).

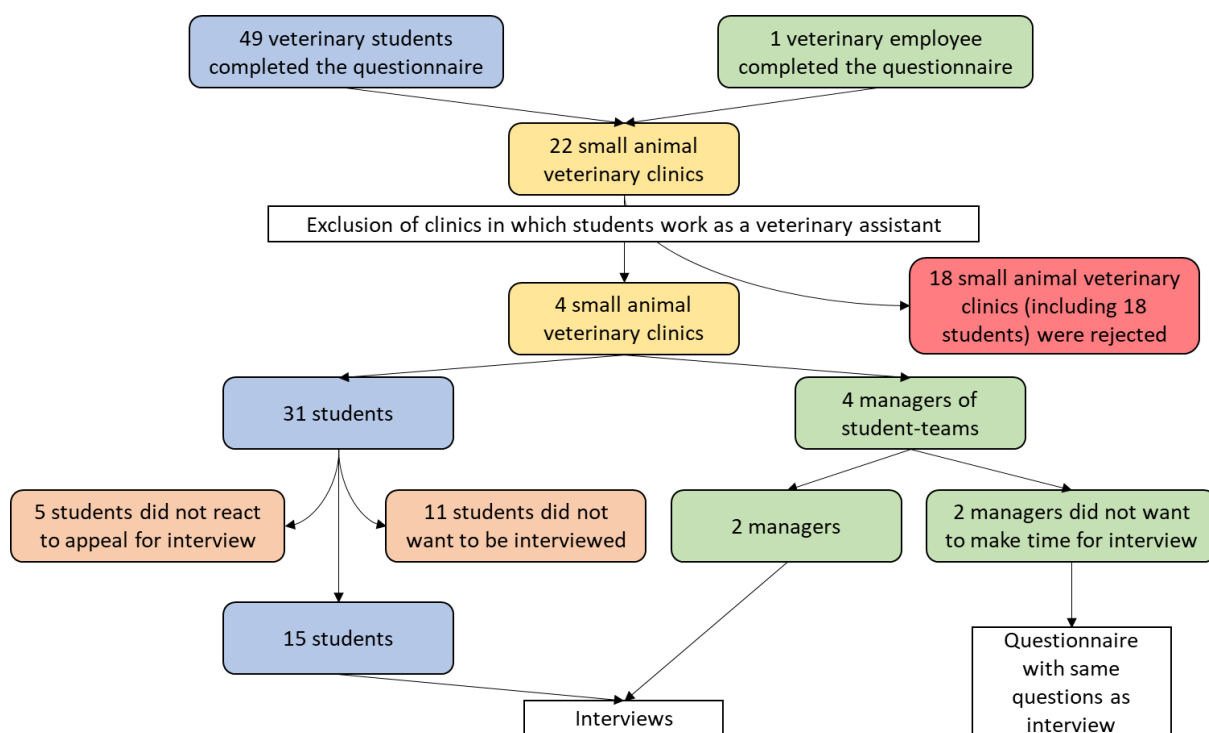


Figure 2 Flow chart of the selection procedure of veterinary clinics and students for interviews, beginning with the questionnaire in an online appeal for participation.

### 6.1.1 Characteristics of clinics and student teams

The basic characteristics of the student teams and the clinics they work at are displayed in Table 2. To ensure anonymity, the numbering of the clinics as in Table 2 will not be continued in the rest of this study. Further description of the clinics is also not in the same order as they are numbered in Table 2.

Table 2 Characteristics of clinics and their student teams.

		Clinic 1*	Clinic 2*	Clinic 3*	Clinic 4*
Characteristics of clinic	Type of clinic	Primary, secondary and emergency clinic	Secondary and emergency clinic	Secondary and emergency clinic	Secondary and emergency clinic
	Other personnel (veterinarians, veterinary assistants and other)	± 10 veterinarians ± 10 veterinary assistants	± 15 veterinarians (including specialists) ± 15 veterinary assistants	± 30 veterinarians ± 45 veterinary assistants ± 10 other	± 15 veterinarians ± 20 veterinary assistants
	Date of establishment	± 2011	2018	July 2016**	March 2018
Characteristics of student team	Number of students in student team	13	6	23	34
	Date of establishment	2011	August 2018	January 2014**	March 2018
Number of students interviewed		3	4	7	1

\* To ensure anonymity, the numbering of the clinics will not be continued in the rest of this study similarly as in this table.

\*\* The clinic in which the student team of clinic 3 is active now was established in 2016, but before this clinic, the student team was active in another clinic that exists longer.

At three clinics, the students are employed with a fixed-term contract, which is automatically extended when the student has not yet graduated and wants to continue working at the clinic. In the other clinic, the students signed an internship contract when they started working for this clinic. The students could not really recall the content of this contract.

The way in which the work of the students is rewarded differed greatly between the clinics. At one clinic, the students receive a compensation of travel- and lunch expenses, and an extra remuneration when they work on holidays. At another clinic, the students receive a fixed amount per shift, regardless of the age of the students. At the other clinics, the students receive the minimum hourly wage.

The shifts that the students work vary in the clinics. At one clinic, the students work day shifts of nine hours on weekend days. In another clinic, students work a shift of 20 hours on the weekends, which includes working hours during the night. During the night hours of this shift, the students are allowed to sleep, after consulting the veterinarian on duty and when the care of the patients in the hospital ward permits them to. In the third clinic, students work a shift of 24 hours, also only at weekends. These shifts start at eight o'clock in the evening and continue until eight o'clock the following evening. For the hours during the night, the same applies as in clinic mentioned before. In the last clinic, the students work shifts during the day, evening and night, on weekdays and at weekends. The length of these shifts varies.

The main reason for clinics to employ veterinary student is to take (part of) the work of veterinarians and veterinary assistants out of their hands:

“I know that the initial motivation was to have an extra helping hand during the weekends. And strengthening ties between almost graduating veterinary students and this clinic also certainly plays a role.” (M)

Besides that, they want to give students the opportunity to gain extra practical experience in their clinic.

In one clinic, students are mostly hired to tag along with and assist veterinarians during their work, while in the other clinics, the students are given more responsibility by letting them perform tasks independently.

### **6.1.2 Tasks of students**

In one clinic, the main task of the students is to assist the veterinarian during their work. This means that they have to assist with consultations or in taking care of and treating animals in the hospital ward. Depending on the experience of the students in the clinic and progression in the study, the veterinarians let them do more tasks under supervision, such as physical examination or taking blood samples. In the other clinics, students work much more independently and take care of the animals in the hospital ward on their own. In two of these three clinics, the students are allowed to perform (the beginning of) consultations and provide emergency care. It has to be mentioned that all of these tasks are performed in consultation with a veterinarian and the veterinarian on duty is always responsible for the actions of the students:

“In the clinic, I am allowed to call a lot of owners myself and perform consultations on my own. Though eventually together with the veterinarian, to whom I report my findings, but the consultations stays mine and I suggest the following steps.” (S)

At one clinic, the students initially answer the phone. At two of the other three clinics, they only answer the phone when the veterinary assistant is busy or cannot answer the phone for another reason.

#### **6.1.2.1 Differences between shifts**

Students work night shifts in three of the clinics. In one of these clinics, they are responsible for taking care of the animals in the hospital ward, warn the (sleeping) veterinarian when it is needed and answer the phone during the night. In the other two clinics, the tasks of the students are the same as in the aforementioned clinic, but the veterinarian answers the phone. Similarly to day shifts, students assist

the veterinarian in emergency consultations or, when the veterinarian allows, start such consultations independently when the veterinarian has not yet arrived at the clinic.

### **6.1.3 Management of the student team**

In one clinic, the student team is managed by a veterinary student who also works as a veterinary assistant in this clinic. The latter job is independent of her tasks regarding the student team. As manager of the student team, this student schedules the shifts of the students, selects students to work at the clinic, maintains the contact between the students and the clinic and solves issues between both sides (i.e. the students and other staff). In this clinic, it was a conscious choice to let a student do this job:

“We have decided to let a student do this job, because for a student it is easier to contact other students than for us as graduated veterinarian. This way, it has always worked well, so there has never been a reason to change it.” (M)

In another clinic, one veterinarian and two veterinary students coordinate the student team, whom are also working in the clinic. The duties of these managers are the same as those of the clinic first mentioned, supplemented organising an annual evaluation moment between students. The clinic decided to have a veterinarian do this job together with two students to give both sides (e.g. the students and other staff) a point of contact. Moreover, the students liked to do it together instead of on their own. In the third clinic, a part of the management tasks of the student team is carried out by a veterinary assistant and a part by an employment agency. The veterinary assistant is responsible for hiring and mentoring the students. The employment agency recruits new students and schedules the student shifts in the clinic. Both the employment agency and the veterinary assistant are a point of contact for the students. The additional role of the employment agency was chosen because it lessens workload for the veterinary assistant. The student team of the last clinic is managed by a veterinary assistant, who also has other management tasks. She schedules the shifts of the students, takes care of their payment and is their point of contact.

### **6.1.4 Selection procedure of students and introduction programme**

Due to the relatively short time of existence of one of the student teams and the only recently solved understaffing, selection of students for this team was not very strict. Students have to apply by providing a curriculum vitae and letter of motivation. If satisfactory, they are invited for a job interview with the manager of the student team and tour around the clinic:

“I had sent an email for application. Then I was invited for an introductory meeting and a tour around the clinic. I immediately signed the contract. It was not really a job application, but more of an introduction to the clinic and its employees.” (S)

After mutual agreement between the student and the manager of the student team, the tasks and responsibilities of the student are explained to them immediately and their first day shift is scheduled. The student team in another clinic has also just been established and, as a consequence, the selection of students to work there was not very strict. After application by providing a curriculum vitae and letter of motivation, the student is invited for a job interview about the expectations on both sides (i.e. student and clinic). After mutual agreement between the student and the manager of the team, the student is accepted and invited to accompany a veterinarian in the clinic for two days. During these two days, the student receives explanation about the daily routine in the clinic and their future tasks. In the third clinic, most of the students came in contact with the coordinator of the student team via an appeal on Facebook via which the clinic was searching for new students to work in this student team. They contact the coordinator via mail with a letter of motivation and are invited to work a trial day in the clinic. During this trial day, the students are given a tour around the clinic and their tasks are explained as far as the work pressure that day allows to. The latter part of their introduction programme continues during their future shifts. In the last clinic, students can apply for a job at the clinic by sending their curriculum vitae and a letter of motivation. The manager of the student team

assesses the letter and CV and, if satisfactory, the student is invited to accompany the veterinarian for one day. After approval by this veterinarian, the student can join the student team. Subsequently, the student works two shifts with a student who has worked in the clinic and their tasks and responsibilities are explained to them. After this introduction programme, the student starts working shifts on their own.

### **6.1.5 Colleagues**

In all clinics, the students work together with veterinarians and veterinary assistants. Only in one of the clinics, the students work together with other students. Even though the veterinarians stay responsible for the work of the students in all clinics, they allow the students to work more independently in accordance with the length of the students' employment by the clinic. Depending on their practical experience in the clinic or progression in the study, in one of the clinics, students are allowed to make decisions about the veterinary care of their patients, provided that they discuss these decisions with a veterinarian before or after (depending on their experience) they make them:

“There is autonomy, but I discuss everything I do with a veterinarian afterwards. Things like that just need to be discussed, otherwise taking care of your patients simply goes wrong. However, I am allowed to do a lot of things on your own.” (S)

During the night shifts, the students work together with one veterinarian, who is asleep most of the night, so the student is responsible for taking care of the patients in the hospital ward. They discuss these patients with the veterinarian in the evening, so they know what their tasks are. In one clinic, the student has to answer the phone, but can consult the veterinarian on duty for advice if needed. In all of the clinics, the veterinarians are involved with the students and try to provide them with knowledge and practical experience, generally speaking. However, according to the students, veterinarians who have less experience themselves find it harder to let the students work more independently, since the work of these students and its consequences remain the responsibility of the veterinarian.

### **6.1.6 Input of students**

Considering input of students, students in general do not feel like they have a say in which diagnostic test or therapeutic option is chosen for a patient, except for in one clinic. Most veterinarians do not ask for suggestions from the students. Despite the fact that some students feel confident enough to share their thoughts on diagnostics or therapeutics, they feel like the veterinarian will still carry out their own plan of action. However, there are differences between veterinarians: some will discuss the ideas of students with them to develop their knowledge, while others do not take the time to do such things. This is different in the clinic where students are allowed to perform clinical examination of patients completely independently and suggest therapeutic options based on their findings. After consultation with and approval of a veterinarian, there is a significant chance that their suggestion is performed on the patient.

Regarding the management of the clinic, the students do not feel like the clinic asks for their opinion, however, this does not bother them, in general. On the contrary, they are allowed to share their opinion on the set-up of their own work in the student team and they feel like their manager takes their ideas seriously and changes are made when necessary:

“If we all would say: ‘This does not work, maybe it is better like this’, then they would discuss it. When we indicated that we were not content with being paid 100% on holidays, our hourly wage was increased with 50% quite easily. So, discussion is always possible, but they would not really make big changes in how they work there.” (S)

In one of the clinics, the students have an assessment interview after their first three day shifts, to evaluate their work in the clinic. During this conversation, the student is asked to share their opinion

on how they do their job and on their work in the student team in general. In another clinic, the students share their opinions during an annual evaluation meeting.

## **6.2 HOW DOES WORKING IN A STUDENT TEAM FOSTER PERCEIVED AUTONOMY IN VETERINARY STUDENTS AND BY WHICH FACTORS IS IT INFLUENCED?**

Based on the interviews, there are many factors that positively or negatively influence the autonomy of students during their work in the veterinary clinic. A distinction was made between external and internal influences. External influences are factors from outside the student, such as job demands and interaction with their colleagues, whereas internal influences are factors from within the students, such as their own personality and development of competence. These influences and their respective subthemes will now be described and illustrated with quotes from the students.

### **6.2.1 External influences**

There are several external influences that affect the extent to which students perceive autonomy. Job demands, such as work pressure, hierarchy within the clinic and policies (e.g. protocols and the law) have a negative influence on the autonomy of students. Interpersonal and social relations with colleagues, conversely, can play a major role in stimulating their autonomy. These factors will now be explained and illustrated with quotes from the students.

#### **6.2.1.1 Job demands**

One of the external aspects mentioned most often by the students is work pressure. They experience a different level of autonomy if they work during a busy day in the clinic, compared to a relatively quiet day.

“If it is very busy in the clinic, you will simply be sent from here to here all day long. Then, you really do not have that much time to make decisions on your own.”

Since, in some clinics, the students are allowed to carry out consultations on their own, their autonomy considering consultations increases when there is more work to do in the clinic. They still have to discuss their preferred diagnostic and therapeutic plans with a veterinarian, but are allowed to clinically examine the patient and propose a plan of action on their own. They also feel free to offer suggestions during busy times, which is, according to the students, appreciated by the veterinarian on duty.

“If an emergency patient comes in and the veterinarian arrives later than them, most of the time, the veterinarian tells me to start the clinical examination and emergency care for this patient. You really are the first-aid provider then.”

“They usually appreciate it when you offer suggestions, because you sometimes have other ideas than they had and yours might be useful. They like it when they notice you take part in the course of events in the clinic. That way you still have that autonomy during busy times.”

#### **6.2.1.2 Interpersonal and social relations**

Relationships with colleagues are important for the autonomy of students. Having worked together more often, thus knowing a veterinarian better, increases the autonomy students are provided by this veterinarian.

“I think it also depends on your relationship with the veterinarian in question, if your autonomy increases. So it depends a lot on how you position yourself and your personal bond with the veterinarian.”

“It was specifically with one veterinarian, who is somewhat chaotic and intense. In those two months I worked more frequently in the clinic, she learned to trust me and now knows that I know how to deal with medication, syringes and things like that. With other students, she would double-check if they do well, but in my case, she does not do that anymore.”

#### 6.2.1.2.1 Didactic skills of the veterinarian

The students report a difference in didactic skills of the veterinarian and how involved they are in trying to educate the students. Some veterinarians really take the time to explain things to the students, such as therapeutic plans of veterinary practical acts, while others perform tasks by themselves without explaining anything.

“I often worked with a veterinarian who expected me to perform certain tasks, but when I pointed out that I did not know how to do it, he just did it himself without explaining me how to do it, so I would have been able to do it myself next time. On the other hand, with another veterinarian, she explained how to do it and I could do it myself the next time.”

Besides involvement of the veterinarians, it differs how much they engage the students in their work. While it is very educational for students to be engaged in the process of treating animals, not all veterinarians try to do this.

“Some veterinarians ask me if I have an opinion on a diagnosis, if they really don’t know it themselves, but I do not give suggestions on my own.”

“I do not think a lot about diagnostics or therapeutic options. Usually, the veterinarian has already concluded the diagnosis and then immediately presents the therapy to the owner.”

In case of the clinic where the students are given more responsibilities, they automatically feel more engaged in the whole process of animal treatment.

“I certainly have input in the treatment of animals. When an emergency patient comes in and the temper and status of the patient allows it, we may often first examine it and acquire the case history. Then, we discuss our findings with a veterinarian, just like here at the faculty. Usually, they ask what we think it is and what our suggestion for treatment is.”

#### 6.2.1.3 *Hierarchy within the clinic*

The students mentioned that the hierarchy within the clinic reduces the opportunity for them to make decisions independently and actively participate in, for example, setting up treatment plans for patients.

“I think that to a certain extent, you are expected to do things yourself, but not thinking about diagnostics or treatment per se. That is simply not a job for the students.”

“You are responsible for the animals in the hospital ward and for deciding whether it is needed to warn a veterinarian or to give it some time. That way you do have some autonomy, but not on decisions concerning diagnostics or treatment of patients. When the veterinarian is busy, the veterinary assistant is responsible for that.”

Recently, after the students heard that some mistakes were made by other students in one of the clinics, they feel like enforcement of the division of tasks has become stricter. While before these mistakes, the students were allowed to, for example, administer medication independently, they now have to let a veterinarian check all the medication before it is administered.

“The clinic has a certain quality of care they want to keep up and I have heard that things were done incorrectly by students, so I do understand that made them more cautious about giving autonomy to the students.”

#### 6.2.1.4 *Goal setting*

Students report that clear goals help them to develop their autonomy. If they know what is expected from them and how they have to do this, they find it easier to take initiative and perform tasks on their own. Students of one of the clinics, which has existed for only a couple of months, mention that in the beginning, it was not clear what the exact role of the students in the clinic would be and which tasks

accompanied this role. Now that that has been determined, they feel more comfortable doing their job, not only while performing their tasks, but also while working with their colleagues.

“In the beginning, because it was a new clinic, they did not really know how everything would work, so it was a little bit trying out for both sides. How much you were allowed to do depended on which veterinarian and veterinary assistant you worked with. After 2 months, it became clearer to the clinic which role they wanted to give the students. Now, it is clear for everyone what our job is and where we can help, so that has improved.”

Goal setting also helps the students to work more autonomously during night shifts. In the evening, they discuss the animals in the hospital ward with the veterinarian and decide with each other what the division of tasks will be. Within these tasks, and when not tied to a schedule of administration, the student is free to decide when and how to perform their tasks.

“If there are critical patients in the hospital ward, you discuss them during the evening before the veterinarian goes to sleep. You discuss which animals you should keep an eye on and when you have to call the veterinarian for help. So, it is not like: ‘Good luck and find out for yourself’, although that also depends on how much you ask about it. In the beginning it is quite difficult, but you get used to it quickly.”

#### **6.2.1.5 Policies**

The law also has an influence on the extent to which students can be given autonomy during their work. According to the Dutch law (66), students are only allowed to perform certain tasks under supervision of a veterinarian. So, as mentioned before, the work of these students and its consequences stays the responsibility of the veterinarian. This makes veterinarians reluctant to let students perform these tasks.

“We are legally not allowed to do some tasks at all, so everything has to be under supervision, which is why I think it is very hard to implement autonomy.”

In addition to the law, there are protocols and rules in the clinics on how certain tasks have to be performed. The students also have to adhere to these protocols and rules, which reduces the opportunity to decide for themselves how they conduct these tasks.

“I think that you can choose for yourself how you do things, but that it is also kind of fixed. You are usually supervised by the veterinarian or veterinary assistant.”

“During the tour, they told me where everything is placed and I received basic instructions on how to clean the cages. Additionally, protocols are placed everywhere in the hospital ward.”

### **6.2.2 Internal influences**

As mentioned before, besides external influences, the students also mentioned influences from within themselves that influenced how much autonomy they experience during their work. These influences are aspects of their own personality, such as assertiveness, curiosity and willingness to learn and development of competence, inter alia in the area of veterinary expertise and professional development. These influences will now be explained and illustrated with quotes.

#### **6.2.2.1 Personality**

Students name their own personality as one of the most important internal influences on the extent to which they perceive autonomy. Several aspects of their personality are mentioned. One of these aspects is assertiveness. A lot of students believe that the veterinarians are providing them with learning opportunities, but they also have to ask if they are allowed to do certain things, when the veterinarian does not think of including them in their tasks. This concerns tasks such as performing clinical examination, taking blood samples or placing patients on a drip. When they are given these



kinds of opportunities because they asked for it, they feel able to perform them independently the next time.

“I notice that if I am more assertive, most veterinarians also become more generous with assigning me interesting tasks.”

“I think in particular, that your autonomy depends on yourself and the extent to which you show commitment and just do things.”

Additionally, curiosity and willingness to learn new things play significant roles in perceived autonomy of the students. Some students mention that they found certain tasks very difficult when they just started working in the clinic, but wanted to learn how to do it. Because of this intrinsic motivation, they informed their colleagues (i.e. veterinarians, veterinary assistants and/or other students) about their ‘weakness’ and willingness to overcome this weakness. With help and tips from their colleagues, they now feel confident enough to perform these tasks on their own and are able to do them without any help.

“In the beginning, I always told the veterinarian I was anxious to answer the phone, because I am not good at gathering information about the problem someone calls for. However, I wanted to learn it and so far every time, the veterinarian has told me to take the phone and just do it. I got a very good tip from one of the veterinarians, so my acquisition of the case history has become much more structured.”

“If you indicate that you want to do something, most veterinarians will be okay with that. They encourage me to tell them when I want to do things, because they are busy doing their own tasks and do therefore not always take us into consideration, but they think it is fine if we just ask for it.”

#### **6.2.2.2 Development of competence**

According to the students, growth in veterinary expertise plays a major role in the development of their autonomy during their work. Because they gain practical experience, both in the clinic and during the clinical internships at the faculty, they find it easier to take the initiative at the clinic and perform tasks independently.

“I notice that I now know where I can find all the tools, what the course of events is, what I have to do when I start working and what they want from me. And I also think that they start to recognize me and know that I know what is expected from me. So that does improve, yes.”

“I think working in a student team really contributes to becoming a veterinarian, on all fronts: communicating with colleagues and owners, teamwork, practice of veterinary medicine, interpreting syndromes, ultrasounds and X-ray images. Really everything passes by, so it is very educational.”

Students also hear opinions from veterinarians about situations, patients and treatments, from which they can learn and use later for their own views on things.

“You learn from the decisions they make and remember them for future reference. You remember it later: in this situation, what would they do and what can I do?”

“You hear a lot of opinions from different veterinarians and veterinary assistants, which makes it easier for me to form my own opinion on how to deal with certain owners. You find yourself in many different situations, which makes it possible to function more independently the next time.”

Personal development is also conducive for the autonomy of students during their work. They gain practical experience, which makes them more confident about their tasks during their work, which makes it easier to, for example, take initiative.

“I developed very much during my work. I am not someone who is instantly very comfortable in new situations, but that changed by working here. I now know where I am able to contribute, whereas in the beginning I was more hesitant and asked questions about everything. Now I pay more attention to how certain things can be done, which signs to look out for and when to warn someone. I really grew in that area by working here.”

“I start to think more about, for example, when a cat with a urethra obstruction has not peed all day, I will check the bladder myself. Whereas in the beginning, I was more cautious and waiting for a veterinarian, now I am thinking more independently, which is nice.”

During their clerkships at the faculty, students say to experience having advantages of their work in the clinic. They believe their work in the clinic and education at the faculty really complement each other.

“I experience having advantages of my work in the clinic, especially in terms of acquired knowledge and practical experience, for example about certain syndromes and their corresponding therapy or practical things like taking blood samples. It is just nice to know that you can do it and it will go well.”

“You feel more confident if you have already seen certain things in the clinic and then see them at the faculty. Or how you can do certain things. That way, it just builds self-confidence.”

### 6.2.3 Questionnaires

Descriptive statistics on the two questionnaires are presented in Table 3. The questionnaires were completed by the same fifteen students that were interviewed. The results of the clinic in which the students solely tag along with the veterinarians are separated from the results of the students that work more independently. The mentioned clinic is clinic 1 in Table 3. This division was made, because it was expected that the students of clinic 1 scored lower on perceived autonomy than students that are allowed to work independently. The scores on all items (range 1-7) were averaged for the students of the other three clinics.

As shown in Table 3 and Figure 3a and 3c, clinic 1 has a lower mean on autonomy satisfaction and the autonomy score on the LCQ than the other clinics, which means the students that work in this clinic are less satisfied about their autonomy and feel like their instructor (i.e. the veterinarian they work with) supports their autonomy less compared to the other clinics. However, as shown in Figure 3b, the students in clinic 1 also showed a lower mean on autonomy frustration, which means they are less frustrated about their perceived autonomy. Nevertheless, the results from the individual students, even in the same clinic, have wide variations (see Figure 3a-c). The scores per student on the different questionnaires were not all consistent: students who scored high on autonomy satisfaction with the BPNSF questionnaire did not by definition also get a high autonomy score on the LCQ, and vice versa.

*Table 3 Descriptives of autonomy according to the two used questionnaires: Basic Psychological Needs Satisfaction and Frustration scale & Perceived Autonomy Support: Learning Climate Questionnaire (1 = strongly disagree, 7 = strongly agree).*

Questionnaire (range)		Number of items	Cronbach's $\alpha$	Mean (SD)	
				Clinic 1*	Clinic 2-4*
Basic Psychological Needs Satisfaction & Frustration (Autonomy statements) (1-7)	Autonomy satisfaction	4	0.80	4.54 (1.25)	5.34 (0.48)
	Autonomy frustration	4	0.63	2.07 (1.11)	2.69 (0.81)
Perceived Autonomy Support: Learning Climate Questionnaire (1-7)		15	0.86	4.87 (0.64)	5.38 (0.62)

\*To ensure anonymity, numbering of the clinics in this table does not correspond with numbering of the clinics in other tables.

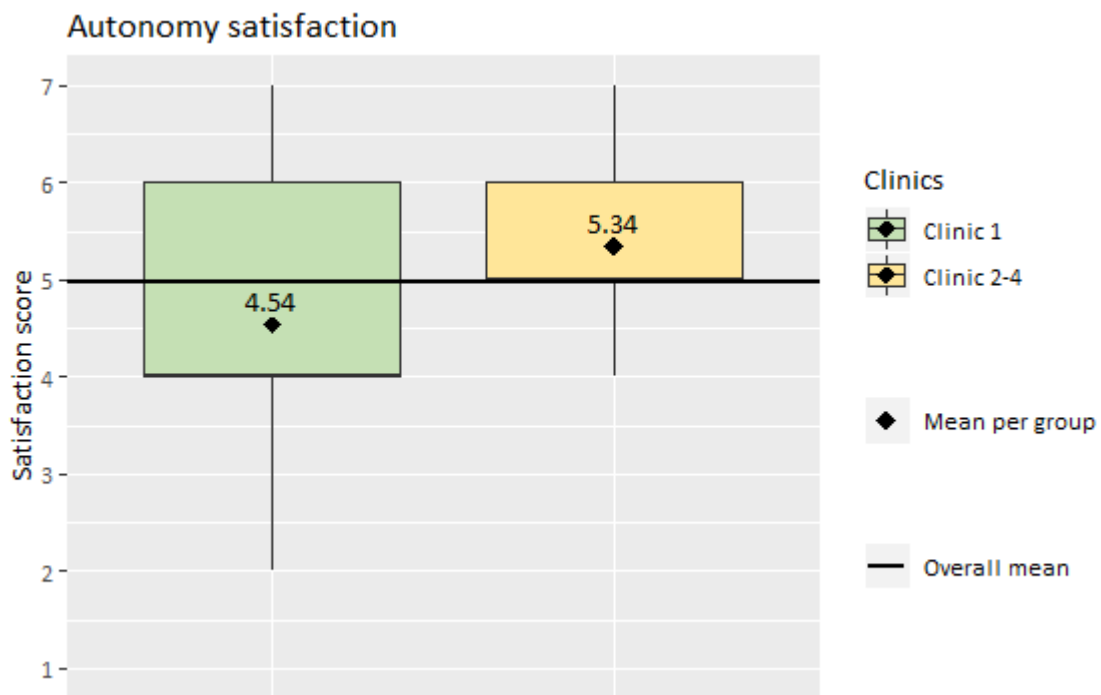


Figure 3a Boxplot of the autonomy satisfaction score of the students in the student team of clinic 1 and clinics 2-4, measured with the Basic Psychological Need Satisfaction and Frustration (Work Domain) scale.

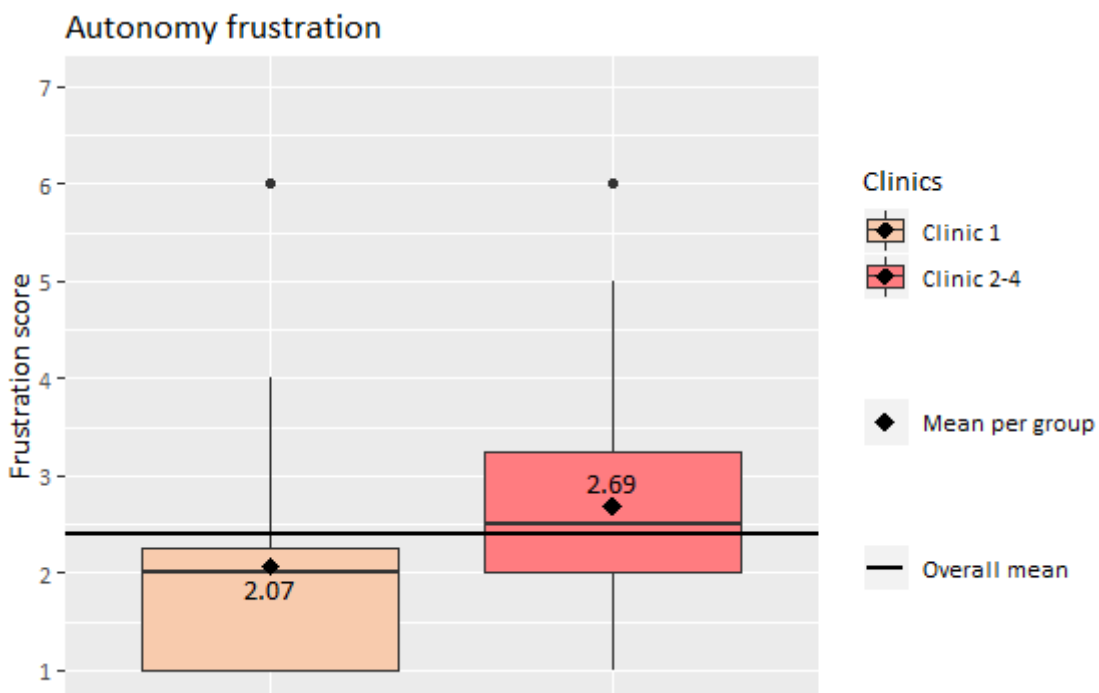


Figure 3b Boxplot of the autonomy frustration score of the students in the student team of clinic 1 and clinics 2-4, as measured with the Basic Psychological Need Satisfaction and Frustration (Work Domain) scale.

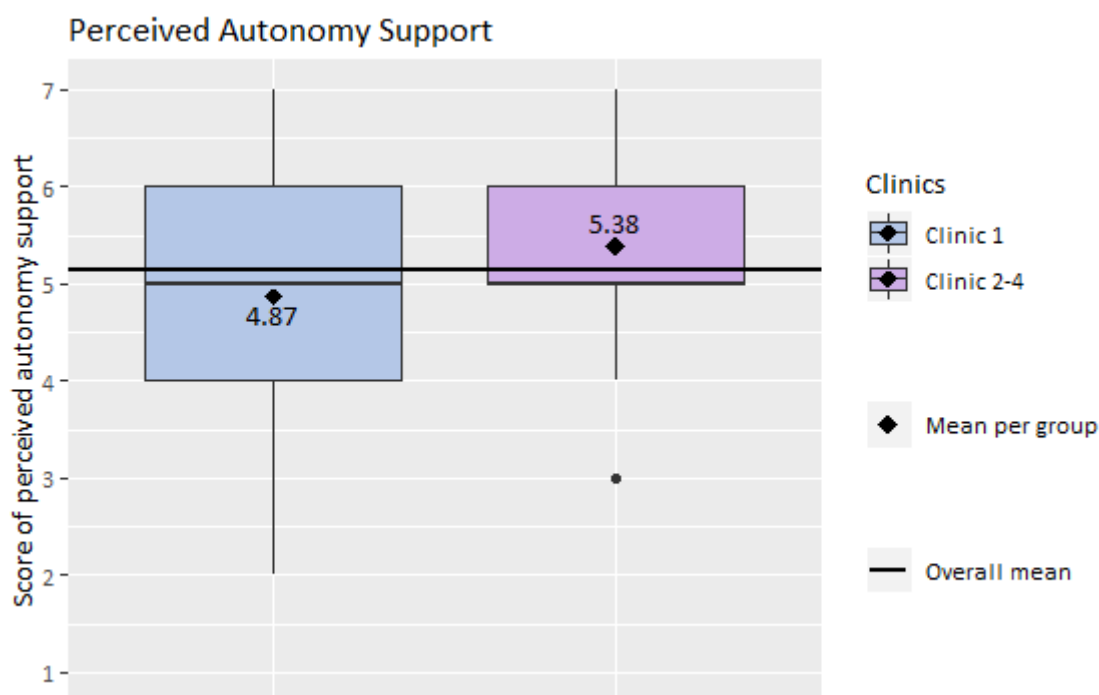


Figure 3c Boxplot of the perceived autonomy support score of the students in the student team of clinic 1 and clinics 2-4, as measured with the Perceived Autonomy Support: Learning Climate Questionnaire. In this context, "learning climate" indicated the veterinary clinic.

## 7 DISCUSSION

A mixed-method study was conducted to explore the definition of teams of veterinary students that work in small animal veterinary clinics in the Netherlands and investigate how this work fosters perceived autonomy of these students. These student teams were studied as a possible veterinary version of medical student-run clinics.

Student teams are groups of veterinary students that are employed independently in veterinary clinics. They do not work by definition as a team and do not have the exact same responsibilities as the students in student-run clinics (8). In two clinics, the work of the students is not at all comparable to student-run clinics, because in one clinic they only assist the veterinarian during their work and work more like veterinary assistant in the other clinic. In the two other clinics, the work of students is more comparable to the work in student-run clinics. When the veterinarian is busy or has not arrived yet, the students from these clinics are allowed to perform consultations on their own and are responsible for the emergency care of the patient. In one of these clinics, their suggestions are asked for diagnostics and therapeutic options. So, in this clinic, the work of students is comparable to that of a single student in a student-run clinic. However, there is not a team of students that autonomously runs the clinic, like in student-run clinics, because only one student at a time works in the clinic and that student works together with a veterinarian (and veterinary assistant).

Perceived autonomy of students is indeed influenced by their work in these clinics, however positively and negatively. Interpersonal and social relations, goal setting, personality of the students and development of competence positively influence their autonomy, while other aspects of the students' personality, job demands, hierarchy within the clinic and policies negatively influence their perceived autonomy. Interpersonal and social relations are associated with instructor autonomy support; students feel like they perceive more autonomy from a veterinarian, when they have a more personal relationship with this veterinarian.

According to the students, method autonomy, scheduling autonomy and criteria autonomy (24) are limitedly supported during this work. According to the students, there are many protocols and rules they have to adhere to, which gives them little opportunity to decide for themselves how they perform their tasks. This is slightly different during their night shifts, when they have more scheduling and

method autonomy. Only one of the clinics has assessment interviews with the students, in which they are asked to evaluate their own performance. Therefore, criteria autonomy seems to be the least supported.

Due to the small study sample (a maximum of 7 students per clinic), no valid judgement could be made about the differences in perceived autonomy between the individual clinics, based on the interviews. In general, students who have worked in the student team for a longer period (i.e. more than a year, in general), report that they start to feel like they know better what their role in the clinic is and what tasks accompany this role, which makes them more comfortable in taking initiative within this role. So the students report a level of autonomy, but because of many other influences, such as differences in need for autonomy or lack of reference material, it is hard to conclude if this work directly fosters perceived autonomy of students. Nevertheless, the clinic in which the students only assist the veterinarian scored lower on autonomy satisfaction and perceived autonomy support, based on the questionnaire. Therefore, it can be concluded that students perceive more autonomy when they are allowed to work more independently.

One of the main findings is that, as mentioned before, the supervising veterinarians students work with play a major role in the students' perceived autonomy. This corresponds with other studies that concluded that autonomy-supportive instructors lead to greater perceived autonomy (50,55). Students also felt more competent and trusted by their colleagues, when their bond strengthened, and relatedness increased, which is also consistent with literature on autonomy-supportive instructors (55). Logically, the link between autonomy, relatedness and competence is what forms intrinsic motivation of students (2), so these 3 needs do indeed influence this kind of work, and vice versa.

Another striking finding is that students report their own personality as a great influence on the extent to which they perceive autonomy. In the same clinic, in which the students in general are given the same amount of autonomy, the opinion on perceived autonomy differs greatly. Some students are content with this amount, because they feel like they do not need much more autonomy, while other students strive to develop their autonomy, but feel restricted to do so during their work. Furthermore, authorship, interest-taking and susceptibility to control (33) were also reported by the students as influence on their perceived autonomy. Based on gained experience and opinions of veterinarians that are shared with them, they feel like they grow personally and professionally. This makes them able to develop their autonomy and make decisions based on their own views and beliefs the next time. Interest-taking is shown by the fact that most students decided to do this kind of work to gain more veterinary practical experience. They do not only want to make money with their job and are not forced to do this work, so this makes them more intrinsically motivated and therefore more willing to learn from their work. Susceptibility to control was not directly mentioned by the students as personality trait, but hierarchical relations were. Most of the students' tasks are conducted under supervision of a veterinarian, which limits the possibility for them to work autonomously.

The reported development of competence in the area of veterinary expertise and personal development are in accordance with two domains of the competency framework of the Veterinary Professional (VetPro) (67). Based on this information, it can be concluded that working in a student team can contribute to becoming a professional veterinarian.

The reported external influences turned out to be comparable to the factors of the Job Demands-Resources (JD-R) model (68–71). This model describes the relation between jobs demands and resources as job characteristics. It states that high job demands can lead to stress and impaired health (72,73), whereas job resources can help in dealing with these demands and lead to job-related learning and work engagement (74,75). Work pressure, policies and hierarchy within the clinics, as mentioned in the interviews of this study, are job characteristics comparable to the job demands of the JD-R model. Interpersonal and social relations, goal setting (role clarity) and participation in decision making are factors comparable to the job resources of the JD-R model.

Unfortunately, it was not possible to compare the perceived autonomy of students with literature about student-run clinics, as only one study mentions the influence of working in a student-run clinic on autonomy, as mentioned before (9). Moreover, this study only reports that the students rated their experience highly, because it provided them with “reasonable autonomy” and no further explanation was given (9).

## **7.1 STRENGTHS AND LIMITATIONS**

The main strength of this study is that it is a first exploration of student teams in small animal veterinary clinics, which is an upcoming form of workplace learning for veterinary students in the Netherlands. These student teams are individually implemented by veterinary clinics and not yet in consultation with the Faculty of Veterinary Medicine, but could develop to be a form of education focused on intrinsically motivating veterinary students and engaging them in veterinary practice. Additionally, this study is the first to investigate any form of workplace learning as a possible veterinary version of medical student-run clinics. With the exploratory approach and thematic analysis of this research, it was possible to give an overview of these student teams in the Netherlands and investigate the influence of this work on perceived autonomy of students. The latter makes this study also a first extended exploration of the influence of this kind of work on the autonomy of veterinary students.

The study was limited since students and clinics were invited to participate in this research and therefore the possibility exists that a number of clinics or students did not participate, while they fit the inclusion criteria. The connections of the author and her supervisor were used to reduce this risk. The practical working experience of the author in one of the studied clinics was not mentioned in the interviews and the full set of questions was asked to fellow students of the author to be able to describe the work of the students in this clinic in the most objective manner possible. With these measures, an attempt was also made to diminish interviewer bias (76). However, it might be possible that during the interviews, the author specifically asked for information about aspects of student teams known to her and thus missed other aspects that are only present in other clinics. As mentioned before, the interview protocol was made to try to prevent this, by making the questions as open as possible and by asking follow-up questions about the answers given by the students.

There was also a self-selection bias. No random sample was taken of student working in a veterinary clinic and all students who wanted to participate were allowed to participate in the research. As a result, the sample may only consist of students who have a strong opinion about their work (positive or negative), students who are in a quiet period of their study (this may vary per year of the program) or any other (unknown) factors that have influenced the result of the study. Secondly, only enthusiastic, possibly more intrinsically motivated students will choose to do a relevant job alongside their studies. This may also have resulted in a selection bias for students who are already more intrinsically motivated and possibly more autonomous. Thirdly, as also mentioned in the results, the personality of the students plays a major role in the extent to which the individual student experiences autonomy. As a consequence, it is nearly impossible to provide an objective review of the perceived autonomy during this work. Additionally, it has to be mentioned that only female students were interviewed. This could have influenced the results, *inter alia* since females might be more likely to share their opinion on certain subjects.

In general, most students were very positive about their work and would recommend it to other students to do the same. However, it is possible that there was a recall bias, when students had a positive or negative experience the last time they worked, which might have influenced their opinion during the interview.

It has to be considered if the conclusion that students perceive more autonomy when they are allowed to work more independently (clinic 1 compared with clinic 2-4 in Table 3 and Figure 3a-c) can be based on the results of the questionnaire, since there was no control group, the sample was too small to compare the clinics individually and the results were not internally consistent. For example, one

student who scored averagely on the questionnaires, had a negative opinion about her autonomy during the interview and another student scored above average on the autonomy satisfaction statements of the Basic Psychological Needs Satisfaction and Frustration Scale, while her score on the Learning Climate Questionnaire was below average. Furthermore, the weighting of the statements in the questions will not all be the same in the assessment of autonomy, which was not considered in this study, due to the small sample.

It turned out that in one of the investigated clinics, the students work more as veterinary assistants than expected based on their answers on the questionnaire in the appeal. This indicates that the exclusion criterium of this study (i.e. exclusion of clinics in which students work as a veterinary assistant) was not applied optimally.

Lastly, this study had a small sample of 15 students and saturation was not reached in data collection, because new codes had to be added in the analysis of the last interview. So a logical following step would be to repeat this research with a greater sample, for example with all of the students working in veterinary student teams, until saturation is reached.

## 7.2 PRACTICAL IMPLICATIONS

Since all of the students were very positive about their work in the clinic, it is recommended to further develop the student teams in clinics where students are not given much autonomy or implement student teams in clinics that do not yet have them. Additionally, the clinical internships at the faculty could be 'upgraded' with aspects of the student teams, for example by giving students the chance to think more thoroughly about therapeutic options for patients. Another practical suggestion for the faculty, offered by the students, was to have more faith in the abilities of the students. They feel like the teachers at the faculty sometimes are too cautious to let students perform tasks independently, while they have to learn all their abilities during the clinical internships.

Based on the positive results of student-run clinics in medical education (8), combined with the enthusiasm of students about their work in student teams, it might be helpful in educating veterinary students to also implement a veterinary student-run clinic at the faculty. However, it would be necessary to think about how exactly to implement a student-run clinic. For example, because when it is compulsory for students to participate in this clinic, their autonomous motivation might be diminished by the greater influence of controlled motivation.

### Tips and tricks for clinics

In the interviews with students a few points emerged that could be used by clinics. These points can either be used to improve the autonomy of students in the current student team or in the implementation of a new student team.

1. A long-term and more personal bond with colleagues contributes to the perceived autonomy of students. If they feel trusted by the veterinarian they work with, they perceive more autonomy, and feel more confident to take initiative and take on tasks independently.
2. Learning is a process of trial and error. This also applies to students working in a student team. They all decide to do this work to gain practical experience, so provide them with that chance. Explain to them how they can do their tasks, provide them with constructive feedback, but also encourage them to think by themselves. This has shown to stimulate their self-confidence and consequently their autonomy.
3. If one of your goals as a clinic is to contribute to the education of veterinary students by letting them work in a student team, invest in the didactic skills of your veterinarians. Students report a significant difference in veterinarians who explain their work and decisions to them and veterinarians who do their job with limited interaction with the students. From the latter, the students do not learn very much, whereas from the former, they gain knowledge, experience and confidence and it contributes to the bond they have with this veterinarian (see also point 1).

### **7.3 FURTHER RESEARCH**

The results of this study suggest several aspects for further research. Firstly, as mentioned before, saturation was not reached in data collection, so the most logical following step would be to repeat this research with a greater sample, for example with all of the students working in veterinary clinics, until saturation is reached. Secondly, a study could be performed to compare perceived autonomy of students during their work in clinics with their autonomy during the clinical internships at the faculty. The goal of such a study could be to investigate if these learning methods (i.e. at a clinic and at the faculty) have aspects that benefit the perceived autonomy of students and that could be implemented in the other learning method to optimise the learning quality of students. In this kind of study, the students who do not work in a clinic beside their study, could be used as a control group. Thirdly, the influence of working in a student team on competence and relatedness could be further investigated to obtain a reliable outline on the influence of working in a student team on all aspects of intrinsic motivation of students. Competence and relatedness were already mentioned by the students during the interviews in this research, but because this study did not focus on these aspects, no further questions were asked about it. An example of such a study could be to compare the influence of working in a student team on the competence of student with the competency framework of the Veterinary Professional (VetPro) (67). Fourthly, a pilot study could be done as design-based research with a veterinary student-run clinic, to investigate if this form of workplace learning could be as beneficial to the education of veterinary students, as medical student-run clinics are beneficial to the education of medical students. Concluding, despite this study gives an extensive first impression of student teams in veterinary clinics, it seems to be a subject very suitable of further investigation.

## **8 CONCLUSION**

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Student teams are groups of veterinary students that work in small-animal veterinary clinics in the Netherlands. These groups of students do not work together as a team of students that autonomously run the clinic, but are employed independently in these clinics. The students assist the veterinarians in the clinic during their work on weekdays and weekends, in day, evening and night shifts. Depending on their practical experience, obtained by working in the clinic or progress in the study, they are allowed to perform more tasks, however under supervision of a veterinarian. In two clinics, the students are allowed to perform consultations on their own, so this is comparable to the medical version of student-run clinics. The work of the students in the other clinics is not. Perceived autonomy of students during their work in a clinic is, in general, positively influenced by interpersonal and social relations, goal setting, aspects of the personality of the students and (development of) competence. It is negatively influenced by other aspects of the personality of the students, job demands, hierarchy within the clinic and policies.

In general, students who have worked in a student team for a longer period report a certain level autonomy. However, due to multiple factors (e.g. personality traits, lack of reference material, small study sample, no control group) it cannot be said with certainty how exactly this work fosters perceived autonomy of these students.

Therefore, further research is needed to be able to make a well-founded statement of the influence of working in a student team on the perceived autonomy of veterinary students.

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# 10 APPENDIX

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## 10.1 APPENDIX 1: QUESTIONNAIRE IN APPEAL

1. In which veterinary clinic do you work?
2. How many veterinary students work in this clinic?
3. What is your role in this clinic?
4. What are, in short, the tasks of the students in this clinic?
5. Do the students work in this clinic for a shorter period (a week/several weeks) or for a longer period (months to years)?

## 10.2 APPENDIX 2: QUESTIONS OF INTERVIEW WITH STUDENTS

1. Why did you choose to work in this veterinary clinic during the study of Veterinary Medicine?
2. Can you tell me about the moment you chose to start working in this clinic and the process that followed?
3. What does a working day for you in the clinic look like?
4. Is there a person that manages the work of the students in this clinic and if yes, what are the tasks of this person?
5. Do you work with a lot of different veterinarians and veterinary assistants and if yes, how does this influence your daily tasks on the job?
6. What is the role of autonomy during your job at the veterinary clinic?
  - a. By which factors is this influenced, according to you?
  - b. Is there a difference in your autonomy now and when you started working at the clinic? If yes, can you describe the difference?
7. Is there a difference in your autonomy during you work in the clinic and your autonomy during the clinical internships at the faculty? If yes, can you describe the difference?
8. To what extent do you have a say in:
  - Therapies and diagnostic methods that are chosen for animals in the clinic?
  - The set-up of your job at the clinic?
  - Business operation of the clinic?
9. What is in general your opinion on your job in this clinic?

## 10.3 APPENDIX 3: QUESTIONS OF INTERVIEW WITH VETERINARY CLINICS

1. Why did you choose to have veterinary students working in this clinic?
2. Why did you choose for this set-up of a student team?
  - a. How this develop in the period that students have been working in this clinic?
3. Are the other personnel (veterinarians and veterinary assistants) instructed how they should work together with the students? If yes, how?
4. To what extent do you (as a clinic) try to teach the students something new?
5. To what extent do the students have a say in:
  - Therapies and diagnostic methods that are chosen for animals in the clinic?
  - The set-up of their job at the clinic?
  - Business operation of the clinic?
6. What would, for you, be the ideal way of employing students in this clinic?

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