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Is it morally permissible for non-invasive, experimental cognitive research to be carried out with captive-bred chimpanzees?

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DECLARATION OF ORIGINALITY

I hereby declare that this thesis is my own and autonomous work. All sources and aids used have been indicated as such. All texts either quoted directly or paraphrased have been indicated by in-text citations. Full bibliographic details are given in the reference list which also contains internet sources containing URL and access date. This work has not been submitted to any other examination authority.

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ABSTRACT

Chimpanzees have historically been used as subjects in a broad range of research. In recent years, significant changes have been made to the legal permissibility of invasive research. However, many non-invasive research programmes involving captive chimpanzees remain ongoing, including those that investigate subjects' cognitive capacities; such research is generally viewed as being without moral question, despite increasing recognition that chimpanzees are deserving of moral rights. In this thesis, I therefore analyse the moral permissibility of basic cognitive research with captive-bred chimpanzees in a high-welfare research institute that aims to facilitate voluntary participation. First, I present evidence that chimpanzees possess an extensive range of morally salient capacities associated with personhood; I therefore argue that they are nonhuman persons with a fundamental moral right to liberty. Next, I provide an overview of the ethical research framework (based on deontological principles) that governs research with human subjects and protects their fundamental rights. Subsequently, I argue that an equivalent ethical framework should regulate research with chimpanzees, since they too are persons. Moreover, I argue that chimpanzees should be considered vulnerable subjects within this, since they cannot fully engage with an informed consent process. I then argue that cognitive research institutes violate chimpanzees' right to liberty in various ways; specifically, via: captivity; erroneous equation of chimpanzees' compliance with valid consent, without compensatory safeguards to accommodate for vulnerability; unduly influential forces that compromise subjects' compliance; and failure to respect subjects' privacy. I therefore conclude that this type of cognitive research setup is not morally permissible.

ZUSAMMENFASSUNG[1]

Schimpansen werden schon lange als Versuchstiere für eine Vielzahl von Versuchen herangezogen. An der rechtlichen Zulässigkeit invasiver Forschung wurden in den letzten Jahren wesentliche Änderungen vorgenommen. Viele nicht-invasive Forschungsprogramme mit in Gefangenschaft gehaltenen Schimpansen sind jedoch weiterhin im Gange, darunter solche, die die kognitiven Fähigkeiten der Versuchstiere untersuchen; derartige Forschung wird trotz der zunehmenden Berücksichtigung moralischer Rechte von Schimpansen gemeinhin als unbedenklich angesehen. Diese Abhandlung liefert eine Analyse der moralischen Zulässigkeit kognitionsbiologischer Grundlagenforschung an in Gefangenschaft gezüchteten Schimpansen in Forschungseinrichtungen, in denen die Tiere nach hohen Standards artgerecht gehalten werden und eine freiwillige Teilnahme der Tiere an den Versuchen angestrebt wird. Im ersten Schritt werden Belege dafür angeführt, dass Schimpansen ein breites Spektrum an moralisch bedeutsamen Fähigkeiten besitzen, die als Voraussetzung für einen Personstatus gelten; folglich wird argumentiert, dass Schimpansen nichtmenschliche Personen mit einem grundlegenden moralischen Recht auf Freiheit sind. Anschließend folgt ein Überblick über den deontologischen, ethischen Bezugsrahmen, der die Forschung mit Menschen als Versuchspersonen regelt und deren Grundrechte schützt. Im weiteren Verlauf wird argumentiert, dass ein gleichwertiger ethischer Bezugsrahmen die Forschung an Schimpansen regeln sollte, da diese ebenfalls Personen sind. Ferner wird die Auffassung vertreten, dass Schimpansen in diesem Zusammenhang als schutzbedürftige Testpersonen gelten, da sie sich nicht in vollem Umfang an einem Aufklärungsprozess beteiligen und ihre wohlüberlegte Einwilligung zur Teilnahme geben können. Im Anschluss daran wird argumentiert, dass Forschungseinrichtungen das Recht von Schimpansen auf Freiheit auf verschiedene Weise verletzen, insbesondere durch: Gefangenschaft; die fälschliche Gleichsetzung des Sichfügens der Schimpansen mit tatsächlichem Einverständnis, ohne ausgleichende Schutzmaßnahmen der Verletzlichkeit der Tiere; unangemessene Beeinflussung, die die freiwillige Zustimmung der Versuchstiere gefährdet, und die Verletzung der Privatsphäre der Versuchstiere. Aus all dem

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[1] Translated with assistance.

ziehe ich die Schlussfolgerung, dass Kognitionsforschung an Schimpansen unter derartigen Bedingungen moralisch unzulässig ist.

LIST OF ABBREVIATIONS

BPS	British Psychological Society
CFR	Charter of Fundamental Rights of the European Union
EU	European Union
GAP	Great Ape Project
IOM	Institute of Medicine
KUPRI	Kyoto University Primate Research Institute
MCA	Mental Capacity Act
NBAC	National Bioethics Advisory Commission
NhRP	Nonhuman Rights Project
NIH	National Institutes of Health
PRT	Positive Reinforcement Training
REC	Research Ethics Committee
SAGA	Support for African/Asian Great Apes
UDBHR	Universal Declaration on Bioethics and Human Rights
UK	United Kingdom
US	United States
WMA	World Medical Association

CONTENTS

1. INTRODUCTION

Chimpanzees, along with bonobos, have been established as the nonhuman animal species most closely related to humans[2] (The Chimpanzee Sequencing and Analysis Consortium, 2005). In line with this, there is evidence that chimpanzees have an extensive range of cognitive, emotional and social capacities, including self-awareness and autonomy (Andrews et al., 2018a). As such, over recent decades there has been an increased recognition of this species as deserving of moral rights, as well as movements dedicated to securing legal rights for chimpanzees (*e.g.*, Andrews et al., 2018a). The concept of personhood – which can be thought of as defining the subset of living beings who are owed a specific type of moral consideration – has been used to ground chimpanzees' entitlement to such moral (and legal) rights, since it has been argued that chimpanzees meet criteria for most definitions of this concept (*e.g.*, Andrews et al., 2018a).

Chimpanzees have historically been used as subjects in a wide range of research studies. In the last few decades, there have been significant changes made to the legal permissibility of such activities, which reflect our increased understanding of chimpanzees' capacities and the ways in which research participation can adversely impact them. However, such changes have generally been specific to the biomedical field. Worldwide, chimpanzees are still kept captive in various settings, including designated research institutes, where they participate in non-invasive research programmes, a prime example being those that investigate their cognitive capacities. Indeed, the movement to recognise chimpanzees' moral rights – and, as such, to make changes to the ways in which humans are allowed to use chimpanzees – appears to have had little impact to date on the permissibility of research studies that do not infringe upon subjects' bodily integrity (Jayne & See, 2019). Nevertheless, if chimpanzees are now generally recognised as having moral rights, such as that of exercising their autonomy, the question emerges as to whether cognitive research – in particular, with chimpanzees that are kept in captivity specifically for the purpose of participation in this sort of research – is morally permissible. If such research activities are not morally permissible, this has significant implications for cognitive research programmes worldwide. An ethical analysis of this question

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[2] 'Human' will be used throughout to mean 'human animal' (in contrast to 'nonhuman animal').

is therefore very warranted, and yet the morality of cognitive research with captive chimpanzees has hardly been addressed directly in the literature. This thesis will therefore specifically analyse the moral permissibility of non-invasive cognitive research programmes with captive-bred chimpanzees, in designated research institutes, using an ethical research framework appropriate for persons with moral rights.

1.1. International overview of research involving great apes

The use of chimpanzees as research subjects has been a topic of considerable debate and contention over the past few decades, with significant progress made towards increasing protections for this species from overt research harms. Of all the great ape species - chimpanzees, gorillas, bonobos and orangutans - chimpanzees have historically been the most frequently used in research. They have been involved in a wide range of studies, including, for example, infectious disease research, organ transplantation, drug toxicity testing, and investigations into language learning and the effects of social deprivation (*e.g.*, Beran et al., 2000; Davenport, 1979; Nohynek et al., 1979; Sakai et al., 2007), with many animals undeniably incurring significant physical and psychological harm in the process; indeed, such research resulted in many deaths (Bailey et al., 2010; Bradshaw et al., 2008).

The popularity of chimpanzees as research models stemmed in large part from their close similarity to humans; for example, chimpanzees and humans share a high percentage of genetic material (The Chimpanzee Sequencing and Analysis Consortium, 2005), possess a number of the same emotional and cognitive capacities (Andrews et al., 2018a) and have similar asymmetry of key brain structures (Freeman, Cantalupo & Hopkins, 2004). However, such similarity has also generated significant concern for the welfare of chimpanzees involved in research, particularly in the context of a wide discrepancy between the protections in place for human research subjects[3] and, as was previously the case for many years, the widespread and legal usage of captive chimpanzees in a broad array of harmful, biomedical research.

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[3] Throughout this thesis, I will use the term ‘subject(s)’ rather than ‘participant(s)’ to describe humans who take part in research, in order to provide consistency in the terminology used for human and nonhuman research

Today, a number of countries around the world have significant legal or policy-based restrictions in place to prevent chimpanzees – and other great apes – from being used as research subjects, at least in the case of invasive research, which can be defined as that in which there is an infringement of subjects' bodily integrity. Based on the definition of a "procedure" from the European Union (EU) Directive 2010/63/EU (2010, p. 39), this comprises studies in which chimpanzees may experience "a level of pain, suffering, distress or lasting harm equivalent to, or higher than, that caused by the introduction of a needle in accordance with good veterinary practice" (p. 39). One of the first countries to make such a move was New Zealand. In 1999, an amendment to their animal welfare legislation was agreed upon which instated a ban on research using nonhuman hominids (Animal Welfare Act 1999 (New Zealand), s. 85). Exception clauses are in place for research that is in the best interests of either the research subject or of the species more globally, only in cases where the predicted benefits do not outweigh likely harms and the project is approved by the relevant Director-General (Animal Welfare Act 1999 (New Zealand), s. 85). It is of note that New Zealand was not using any great apes for research at the time of the legislative amendment being made, therefore no practical changes to ongoing research work occurred as a result. Instead, the legislation ensured future protections for great ape species, including chimpanzees, and it was also hoped that the principle behind the legislation would convey a "moral message to other nations" (Taylor, 2001, p. 38).

Similarly, in 1997, the United Kingdom (UK) acted to prevent great ape experimentation by placing a ban on any new licences being granted for such research; the ban therefore exists through policy rather than being inscribed in legislation (Thew et al., 2012). The UK home secretary called it an ethical decision and "matter of morality" (Balls, 2012, p. 69), referring to great apes' cognitive capabilities and behavioural characteristics as the basis for this decision (Balls, 2012). Elsewhere in Europe, the EU dictates protections for great apes in member states through Directive 2010/63/EU (2010), which relates to the protection of animals used for scientific purposes. This dictates that great apes should only be used in research procedures in exceptional circumstances – specifically, "where action in relation to a life-threatening,

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subjects. Where quoted sources refer to 'participant(s)', this will be taken to be interchangeable with, and have the same meaning as, 'subject(s)', for the purpose of this thesis.

debilitating condition endangering human beings is warranted and no other alternative method or species would suffice" – or where the research is required for the purpose of preserving great ape species (p. 35). The Directive describes great apes as "the closest species to humans with the most advanced cognitive and behavioural skills", underlining the reasoning behind the prohibition (Directive 2010/63/EU, 2010, p. 35).

Some European countries have put greater restrictions in place than those required by EU legislation. Austria, for example, took protections one step further by instating, from the start of 2006 onwards, a ban on research not only with great apes but additionally with the lesser apes, a grouping that includes all species within the gibbon family (Luy, 2007). Like New Zealand, Austria did not have any ongoing ape experimentation at the time of the ban being established, since the country had retired the last apes from research a number of years prior to this; the Education, Science and Culture minister at that time, Elisabeth Gehrer, said the law therefore acted to ensure "explicit prohibition" in the future as well as to make a statement about the place of nonhuman animals in society (Austria moves towards ban on great ape experiments, 2005, para. 5). In another example of greater protection for great apes in an EU member state, in 2008, the Spanish parliament approved a resolution to afford great apes legal rights to life, liberty and protection from torture (Spain awards apes legal rights, 2008). If made law, this would prohibit all future research that would breach such rights; the basis of great apes' protection thereby resting, significantly, on rights the potential research subjects would possess themselves. Thirteen years later, however, the proposal has yet to be embedded in legislation (Fasel et al., 2016; Spain, n.d.).

In contrast to countries with more established restrictions, the United States (US) only relatively recently made changes to research practices involving any of the great apes; specifically, action was taken to impose significant restrictions on research involving chimpanzees. Prior to changes being instated, the US had one of the most widespread portfolios and extensive histories of biomedical chimpanzee research worldwide (Knight, 2008, p. 4). Indeed, by the time that limitations were imposed, the country was "almost completely isolated internationally" (Knight, 2008, p. 11) in terms of still allowing such research practices. However, in 2011, the National Institutes of Health (NIH) commissioned a committee from the Institute of Medicine (IOM) to review and evaluate the use of chimpanzees as research subjects in both biomedical and behavioural NIH-funded research across the country and thereby determine current and future scientific necessity of such studies (Kahn, 2012). The committee recommended severely limiting biomedical research with chimpanzees to only that which met very stringent criteria – including, for example, there being no other possible model available for the research to occur – and they cited chimpanzees' "genetic proximity to humans" and shared "biological, physiological, behavioral and social characteristics" as the reasoning behind this (Institute of Medicine, 2011, p. 14). Jeffrey Kahn, director of the committee, deemed these criteria "a major change in animal research policy" (2012, p. s30). Additional criteria for determining the acceptability of behavioural research were also established and are discussed further in section 1.2.

As a result, NIH Director Francis Collins accepted the findings and began implementing them (Kahn, 2012); in 2013, the NIH announced that they would be retiring the majority of NIH-owned chimpanzees from research laboratories into sanctuaries (Collins, 2015). Across the country, 50 chimpanzees were allowed to be kept as a 'reserve' or bank of potential subjects, which could be used in exceptional circumstances, such as public health emergencies (Collins, 2015). Two years later, however, all remaining federally-owned chimpanzees were similarly retired from biomedical research; indeed, the NIH announced that they were no longer going to be funding any biomedical research involving chimpanzee subjects and additionally were phasing out support for any non-NIH-owned chimpanzee subjects (Collins, 2015). Around the same time, an additional level of protection against research participation was instated when the US Fish and Wildlife Service (2015) listed captive chimpanzees as having endangered species status. Prior to this, chimpanzees in captivity had not been subject to the same protections as their wild conspecifics under the Endangered Species Act (Fish and Wildlife Service, 2015).

As a consequence of such changes, the US now has a surplus of retired laboratory chimpanzees and a lack of suitable sanctuary accommodation to house them all appropriately in retirement (Grimm, 2017). Japan similarly encountered this problem after they too acted to end invasive experimentation with chimpanzees (Morimuna, Idani & Matsuzawa, 2011). Although no official legislation is in place, Japan has an established agreement to end such experimentation; the ban was originally instigated by Support for African/Asian Great Apes (SAGA) in 1998, and all biomedical research had ended by 2007 (Matsuzawa, 2016; Morimuna, Idani & Matsuzawa, 2011).

Much of the evidence that informed and steered the decision-making process behind national restrictions, such as those outlined above, related to the harms of *invasive* research – for example, studies within the biomedical field. However, as outlined at the outset of this thesis, it is also pertinent to consider the international situation in relation to the significant proportion of research involving captive chimpanzees that is *non-invasive*, given the increasing recognition of chimpanzees' moral rights. When viewed only in the shadow of overtly harmful invasive research, there often appears to be an implicit assumption that non-invasive research comparatively poses little, or no, ethical dilemma, yet little focus has actually been placed on directly analysing the morality of this category of research in and of itself. Examples of non-invasive research include that which investigates chimpanzees' behavioural characteristics or, as will be the focus of this thesis, their cognitive capacities; this latter type of research will be described in the next section.

1.2. International overview of cognitive research with chimpanzees

One category of non-invasive research in which chimpanzees have been widely involved internationally is that which investigates their cognitive capacities; indeed, this thesis will focus specifically on non-invasive cognitive research. As an umbrella term, cognition "refers to the mechanisms by which animals acquire, process, store, and act on information from the environment" (Shettleworth, 2010, p. 4). Cognitive research therefore encompasses a wide range of possible types of study, including those which investigate "perception, learning, memory, (…) decision-making" (Shettleworth, 2010, p. 4.), "navigation, problem solving, social interactions, deceit, language, and thinking in animals" (McFarland, 2006, p. 32, cited in Benz-Schwarzburg & Knight, 2011). Some examples of cognitive studies carried out with chimpanzees include self-recognition tasks involving a mirror or computer screen reflection (*e.g.*, Hirata et al., 2017), collaborative scenarios with unequal rewards between conspecifics to assess perceptions of fairness (*e.g.*, Proctor et al., 2013), gaze- and point-following paradigms to investigate understanding of human communicative gestures (*e.g.*, Kirchhofer et al., 2001), language learning over time via lexigrams (*e.g.*, Beran et al., 2000), and controlled scenarios to induce a false belief in one conspecific in order to assess theory of mind in an observer (*e.g.*, Krupenye et al., 2016). Studies may therefore involve chimpanzees being tested alone or with conspecific(s) or human(s) and may require activities such as working a touch screen or other computer-based equipment, taking part in active or competitive scenarios, or following instructions and problem-solving solutions in human-directed tasks.

Despite the strict restrictions on great ape experimentation that exist in many countries worldwide, many non-invasive cognitive and behavioural research programmes involving great ape species have continued and are still ongoing today, even in countries with particularly strong legislative prohibitions in place (Bennett, 2015). Indeed, although national restrictions are generally unambiguously applicable to invasive research (and there is no doubt that, internationally, such restrictions have protected the vast majority of chimpanzees worldwide from invasive, biomedical research), non-invasive research evades many of the same restrictions and has, in many countries, remained relatively unchanged (Jayne & See, 2019).

Alongside a distinction between invasive and non-invasive research, a distinction can also be made between research that is applied, or predictive – *i.e.*, using nonhuman animals as a model "to predict human response" (Jones & Greek, 2014, p. 482), for example to the effects of a drug – versus that which is deemed pure, or basic – *i.e.*, that which "seeks new knowledge" (Jones & Greek, 2014, p. 482) and is "motivated solely by scientific curiosity" (Jayne & See, 2019, p. 528), regardless of whether any practical implications follow from the findings. Jayne and See (2019) assert that the "majority of behavioral research on chimpanzees in comparative cognition" falls into the second category and "is guided, first and foremost, by this basic desire to know for the sake of knowing" (p. 532).

Similar to the level of invasiveness, this classification can also be important in determining which sorts of research the restrictions apply to. For example, despite being tasked to determine the future of chimpanzee participation in behavioural as well as biomedical NIH-funded research, the IOM committee in the US were not in fact tasked with analysing the use of chimpanzees in basic research (Bennett, 2015). Moreover, their remit did not involve evaluating research participation in all possible settings; research in zoos, for example, escaped evaluation (Bennett, 2015). As with biomedical research, the committee created specific criteria for determining the acceptability of NIH-funded applied behavioural research. Specifically, they recommended that studies provide "otherwise unattainable insight into (…) normal and abnormal behavior, mental health, emotion, or cognition" and that research be "performed on acquiescent animals, using techniques that are minimally invasive, and in a manner that minimizes pain and distress", with the subjects kept "either in ethologically appropriate physical and social environments or in natural habitats" (Kahn, 2012, p. S28). However, they subsequently determined that "a substantial proportion" of active behavioural studies did indeed meet these criteria and therefore were allowed to continue (Kahn, 2012, p. S28). Ultimately, action taken based on the committee's recommendations may have led to NIH-owned chimpanzees being retired from research laboratories, but much cognitive and behavioural research with captive chimpanzees in the US was able to continue.

Indeed, cognitive and behavioural research with chimpanzees occurs internationally in a variety of locations, mostly zoos, sanctuaries and designated research centres, such as the Köhler Primate Research Institute in Leipzig, Germany, which investigates, amongst other things, theory of mind abilities using false belief paradigms (*e.g.*, Krupenye et al., 2016). Moreover, there are sanctuaries around the globe specifically housing retired laboratory chimpanzees that have active and ongoing basic behavioural and cognitive research programmes (Ross & Leinwand, 2020). An example of such a facility is the Kumamoto sanctuary in Japan, which is located in – and staffed by former members of – what was previously a biomedical research laboratory (Ross & Leinwand, 2020). As outlined in section 1.1, Japan's agreement to end chimpanzee experimentation only extends to invasive research; non-invasive experimentation that does not have a significant psychological or behavioural impact on the chimpanzees is permitted (International Bans, 2021).

While national restrictions have generally not (yet) been deemed necessary to prevent captive chimpanzees participating in non-invasive cognitive research, the moral permissibility of this type of research activity is a very valid question, particularly given its ongoing, widespread occurrence. In the next section, I will address how the moral permissibility of such research is justified in the literature.

1.3. The morality of cognitive research with chimpanzees

While the moral permissibility of cognitive research with chimpanzees is a pertinent question, as outlined earlier, ethical analysis specific to this issue is surprisingly under-addressed in the literature. Indeed, despite the possibility that current cognitive research programmes could be in breach of chimpanzees' increasingly-recognised moral rights – for example, by violating captive chimpanzees' right to exercise their autonomy – direct analysis, particularly from a rights-based standpoint, is noticeably lacking.

What does appear to be clear is that a strong discrepancy tends to exist between views on the ethical acceptability of laboratory-based applied research with chimpanzees, such as that in the biomedical field, versus perceptions of non-invasive cognitive and behavioural research, with the latter often deemed to be without harm or moral question. For example, the decision to retire NIH-owned chimpanzees from US laboratories raised some tensions when it emerged that some laboratories that solely carried out non-invasive research would also have to close, with arguments made that, for example, ending such research would prevent the species-level benefits that could have come about from the research findings (Bennett, 2015; de Waal, 2012; Grimm, 2017).

The existence of such a discrepancy illustrates that it is often not the fact of chimpanzees acting as research subjects *per se* that generally sparks moral concern, rather it is the nature of the research itself, and, more specifically, the resulting harm, pain and/or distress to research subjects, or lack thereof, that tends to underlie moral perceptions. Historically, decisions made worldwide around the usage of nonhuman animals in research have been made using some form of utilitarian calculus, weighing up the value of predicted research findings against the impact of participation on the research subjects (*i.e.*, a harm-benefit analysis) (Arnason, 2020). Indeed, the '3R' framework (which incorporates the principles of replacement, reduction and refinement, in relation to animal subjects, and is based on a broadly utilitarian approach) is now very widely implemented to assess the moral permissibility of any given study (Russell and Burch, 1959). This requires that researchers "*replace* animals with alternative methods (or lower species) if possible, (…) *reduce* the number of animals to the minimum required for statistically valid results, and (…) *refine* the use of animals by minimizing their pain and suffering as well as improving husbandry, housing, and welfare" (Arnason, 2020, p. 2281). As such, a common viewpoint regarding non-invasive cognitive and behavioural research is that a perceived lack of any apparent physical and psychological harm from participation renders the research morally permissible, or at least morally neutral, given the potential information gained as a result, whether this be used for application to humans or the nonhuman subject species themselves, or purely for scientific knowledge and progress (Bennett, 2015; de Waal, 2012; Knight, 2008).

Indeed, there are examples in the literature of an implicit assumption being made that cognitive research with chimpanzees is – seemingly without question – morally permissible. For example, Knight (2008, p. 10) states that "according due respect to chimpanzee characteristics and associated bioethical considerations does not require the termination of all chimpanzee research," since "bioethical concerns are minimised within non-invasive observational, behavioural or psychological studies of freeliving or sanctuary populations," which "strike the correct balance between satisfying the interests of chimpanzees, and those of human beings". Similarly, Gagneux (2005, p. 28), in a discussion regarding how to strike an appropriate balance in great ape experimentation, has expressed the belief that we should "encourage funding for expanded programmes focused on understanding cognitive functions in great apes". Interestingly, de Waal's (2012, p. 3) ethical justification of cognitive research with chimpanzees hinges on "the sort of research [he] would not mind doing with human volunteers," stating that "there is a great need for continued cognitive testing" of chimpanzees. He justifies this view by arguing that the data gathered from cognitive research with chimpanzees "add[s] evolutionary context to findings on human behavior" and "helps determine which human capacities likely have a long evolutionary history". Moreover, he deems a number of past discoveries about chimpanzee cognition as central in the development of certain tests and paradigms that are still used in the wider cognitive research field today.

Another factor seemingly contributing to the perception of moral permissibility of cognitive research is a belief that chimpanzees are able to make a free choice about whether or not to participate in such research. Indeed, as already mentioned, the criteria produced by the US IOM committee for applied behavioural research state that studies should be limited to those in which there is acquiescent participation of chimpanzees (Kahn, 2012), thereby including chimpanzee choice in the determination of ethical acceptability. Similarly, de Waal's (2012) belief, quoted previously, that the threshold of ethically acceptable cognitive research is that which he would carry out on human volunteers, may allude to a similar assumption that, like humans, chimpanzees are capable of voluntary choice when it comes to non-invasive research participation.

In contrast to the views above, Jayne and See (2019) argue that, in the case of basic behavioural research with nonhuman primates, including chimpanzees, "physical and psychological suffering may be overlooked" (p. 518). Indeed, they carry out an ethical analysis addressing a similar question to that posed at the outset of this thesis, that of whether non-invasive research with captive chimpanzees is morally permissible when analysed in and of itself. Specifically, they ask "whether scientific curiosity of animal behavior in general provides any justification for carrying out this research in the first place" (p. 518), taking a broader focus than that taken by this thesis by addressing the full spectrum of basic behavioural research – ranging from "'purely-observational' research in the field, to controlled experimental trials (…), [to] 'non-invasive' neural imaging" (p. 530) – that is carried out with any nonhuman primate species in various types of captive setting. The authors posit that this research area has "never been subject to sustained ethical scrutiny" (p. 528) and is "an important, yet critically underdiscussed, challenge for researchers to contend with" (p. 536); one that this thesis also recognises and aims to address. To carry out their analysis, Jayne and See use the traditional utilitarian approach for determining ethical acceptability of nonhuman primate experimentation. Specifically, they argue that if the data that is gained from the research is solely for the purpose of scientific curiosity, then the adverse welfare implications of captive breeding and maintenance of nonhuman primates for this purpose often outweigh any potential benefits; the research therefore becomes "far from easy to justify" (p. 533). They suggest that this is particularly true in the case of research centres, within which they conclude that such research tends to be "unjustified across the board" (p. 537) when taking a utilitarian standpoint. Nevertheless, they recognise that the weightings are very likely to differ based on the type of setting – for example, they acknowledge that such research in zoos may potentially be permissible – depending on the welfare conditions and interests of subjects within that specific setting.

Although Jayne and See (2019) commendably target an under-addressed area of the literature with their analysis, their approach hinges purely on utilitarian weightings and is thus inadequate when the moral rights of chimpanzees are taken into consideration; such an approach can never reach a conclusion that unconditionally guarantees respect for chimpanzees' rights in all relevant situations. Moreover, their lack of acknowledgement of any potential moral rights of nonhuman primate subjects means that they do not analyse aspects of the situation that could be relevant to beings with rights, such as the ethical acceptability of the process by which subjects come to take part in a study and the comparison of this to equivalent consent procedures put in place to respect the rights of human research subjects; an area upon which this thesis will place a significant focus. Furthermore, chimpanzees' welfare in any given research situation is fundamental to Jayne and See's approach, whereas the conclusions of a rights-based analysis – as will be carried out in this thesis – will tend to hinge on more than purely welfare-based concerns.

Given increasing recognition that chimpanzees may be deserving of moral – and legal – rights (*e.g.*, Andrews et al., 2018a), this thesis will argue that what is pertinent is the determination of whether any given research setup breaches these rights; in which case, a utilitarian approach falls short. Indeed, another approach that has been taken in the literature is to recommend that research with chimpanzees be deemed morally permissible only on condition of certain adaptations being made, and principles being sufficiently taken into account, that safeguard chimpanzees' rights during the research experience. For example, Carvalho et al. (2019) suggest that a paradigm shift is required in the consideration of nonhuman primate use in research. They argue that moral permissibility depends on thorough application of "ethical deontological criteria" (p. 11), taking into consideration Beauchamp and Childress' (2001) principles of autonomy, beneficence, non-maleficence and justice. Similarly, Johnson and Barnard (2014) argue that similar protections should be put in place for chimpanzees as would be with vulnerable human subjects, in order to protect chimpanzees' interests. Taking this idea further, Ferdowsian et al. (2020) argue that regulatory guidance based on "human research principles" (p. 22) is required in order to make decisions about the use of nonhuman animal subjects in research and, accordingly, overcome "ethical inconsistencies and inadequacies" (p. 33). Indeed, the application of equivalent ethical principles (as those used in research with human subjects) to cognitive research involving chimpanzees will be a principal focus of the later chapters of this thesis.

Overall, as outlined previously, the question of moral permissibility of captive chimpanzees' participation in cognitive research is pertinent given the potential dissonance between the existence of many such research programmes ongoing today and the increasingly strong evidence that chimpanzees deserve moral rights. This issue deserves a detailed ethical analysis that is grounded in an understanding that moral rights call into question whether such research can happen ethically at all. Given the aforementioned lack of detailed ethical focus on this topic in the literature, this thesis sets out to examine moral permissibility, from a rights-based perspective, of the specific research setup and activities that are framed in the next section.

1.4. Scope of the research addressed in this thesis

As outlined, research participation involving chimpanzees can take many different forms and occur in a variety of settings. The focus of this thesis will be on a particularly popular and prevalent type of non-invasive research: that which investigates subjects' cognitive capacities. Such studies generally involve chimpanzees actively partaking in prescribed tasks or scenarios as part of study paradigms designed by human researchers. This contrasts with behavioural research, which tends to be purely observational and thus typically involves less active participation on the part of the chimpanzees and less disruption to their daily lives. This is not to say that observational research is necessarily without moral question, but this issue is not one that is addressed here.

Moreover, chimpanzees participating in cognitive research within a captive setting may be in captivity for a variety of different reasons. In this thesis, I will assume that the facility in question is that of a research centre or institute, where the chimpanzees are bred and kept in captivity specifically for the purpose of participation in this type of research. However, cognitive research is also carried out internationally with zoo- and sanctuary-based chimpanzees. Although some of my arguments in relation to the activities of research institutes may similarly apply to zoos and sanctuaries, there are important differences to consider between these different environments, such as the reason behind the captivity and the previous life experiences of the chimpanzees. Only the moral permissibility of cognitive research within research institutes will therefore be addressed here, as separate ethical analyses would be required for each of the three types of setting; indeed, in reference to "zoos, laboratories, sanctuaries, and rehabilitation centers" (p. 831), Palmer and Malone (2018) state that "each kind of managed setting presents a unique set of ethical considerations" (p. 838). Moreover, the scope of my analysis is specifically on the morality of the research activities and the captive setting created to facilitate these, rather than incorporating any broader issues around captivity, such as those relating to conservation.

Additionally, the type of captive environment addressed will be one in which chimpanzees live in a naturalistic setting, alongside conspecifics, and are free to engage in species-typical behaviour insofar as is possible while living in captivity; indeed, the research that is being carried out is not of a type that would hamper, in any meaningful way, their ability to engage in such behaviour. I will also assume that the research carried out in such a facility falls under the heading of basic research, *i.e.*, that which is carried out to further scientific knowledge, rather than there being an expectation that the findings will have any practical implications or benefits for human beings, or, necessarily, for chimpanzees. Furthermore, the research setup in question will be one in which no chimpanzee is ever intentionally forced to take part in the research; indeed, the design of such a setup will aim to facilitate voluntary research participation by chimpanzees, insofar as this is possible in such an environment, with an aim of chimpanzees participating in research only when this is of their own accord. My analysis will therefore hold true against the best attempt at implementing a non-coercive, voluntary participation design that is currently in existence within a captive research setting.

An example of the sort of facility that would come close to fitting the above description, and that would therefore be addressed by the scope of this thesis, is the Kyoto University Primate Research Institute (KUPRI) in Japan[4]. Established in 1967 as a centre for nonhuman primate research, the chimpanzees' compound at the KUPRI aims to create an environment that mimics chimpanzees' natural living conditions insofar as is possible for a captive environment (Matsuzawa, 2003, 2006). Residents of the centre (who span three generations) have large outdoor enclosures that contain several hundred trees, tall climbing structures and running water (which "provides a habitat for fish, amphibians and small insects, and has also attracted birds"; Matsuwava, 2006, p. 18); please see Fig. 1 for a photo of KUPRI chimpanzees using an outdoor

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[4] During the writing of this thesis, a decision was made to close the KUPRI "due to organizational restructuring" (History, 2022, para. 2); the institute closed on the 31st March 2022. The following day, the newly-established Human Behavior Evolution Research Center took over a number of the institute's research sections and activities; other lines of research were either moved elsewhere or terminated.

enclosure. Although originally wild-caught, the KUPRI chimpanzees are now bred in captivity and subsequently live out their lives there (Matsuzawa, 2003). The setup is designed to facilitate voluntary participation in research projects, *i.e.*, the aim is for chimpanzees to choose whether or not to engage with any research opportunities that are made available to them (Matsuzawa, 2017). For studies with infants, for example, a researcher "can 'request' that the mother chimpanzee helps him/her to study the chimpanzee infant" (Matsuzawa, 2017, p. 262). This process is facilitated by "the long-standing relationship established between researcher and mother chimpanzee" and by study paradigms that enable the mother to be present in the experimental booth while their infant is being tested (Matsuzawa, 2003, 2017, p. 262). Research tasks mostly take place in designated indoor testing booths that are accessible via walkways from the chimpanzees' environment (Bard et al., 2019; Matsuzawa, 2003). For example, with computer-based tasks, chimpanzees may approach and enter a booth themselves, and face-recognition technology will allow the task to begin when the chimpanzee approaches (Matsuzawa, 2017). Chimpanzees are never deprived of a sufficient daily food intake in order to coerce them into participation (Johnson & Barnard, 2014).

Fig. 1. An outdoor enclosure at the KUPRI showing chimpanzees using climbing structures (Bard et al., 2019).

It is important to establish here that this thesis will not account for the issue of welfare. Specifically, my claim will not be based on any arguments that relate to the welfare standards of the research facility. Instead, it will be assumed that the research setup in question, as described above, adheres to very high welfare standards, for example in relation to the environment, housing and chimpanzees' treatment. My claim, therefore, does not hinge on there being any welfare concerns for the chimpanzees; indeed, my arguments are at odds with approaches that use welfare as a determining factor when assessing the moral permissibility of chimpanzee research participation. As summarised further in section 1.5, I will argue based on the entitlement of chimpanzees to moral rights as opposed to making use of any form of utilitarian calculus.

1.5. Overview of thesis

I will argue that, despite appearances to the contrary, cognitive research carried out with chimpanzees under the conditions outlined in section 1.4 is not morally permissible. The structure of my argument will be as follows. Firstly, in chapter two, I will argue that chimpanzees possess a range of morally relevant capacities that are associated with personhood and, thus, that they should be recognised as nonhuman persons. Subsequently, I will argue that their personhood grounds a fundamental moral right to liberty, which encompasses a right to exercise their autonomy. In chapter three, I will provide an overview of the ethical research framework, based on deontological principles, that governs research involving human subjects in order to respect their personhood and autonomy in the research process. I will explain the requirement for informed consent and introduce the concept of vulnerability, as well as the additional safeguards that are implemented when human subjects are vulnerable.

In chapter four, I will argue that research involving chimpanzees, as nonhuman persons, should similarly be governed by a deontologically-focused ethical research framework that protects their personhood, autonomy and right to liberty. Moreover, I will argue that chimpanzees should be classed as vulnerable subjects within this framework, and, thus, that additional safeguards are required within the research process to accommodate their increased susceptibility to coercive and unduly influential forces. By doing so, I will establish ethical standards by which any given research setup and activities involving chimpanzees can be evaluated so as to determine moral permissibility. Subsequently, in chapter five, I will argue that research with chimpanzees, in the type of research institute outlined in section 1.4, violates chimpanzees' right to liberty in multiple ways, when analysed in the context of an ethically-appropriate framework. Specifically, I will argue that this right is violated by: the captive environment and instrumentalisation of chimpanzees within this for researchers' convenience; the lack of compensatory safeguards in the participation process to accommodate chimpanzees' vulnerability; the unduly influential forces inherent in the setup, environment and dependent human-chimpanzee relationships; and the breach of subjects' privacy in relation to their personal and intellectual data. Finally, I will conclude that cognitive research with captive-bred chimpanzees, in the type of research setup addressed in this thesis, is not moral permissible, in line with my original claim.

2. CHIMPANZEE PERSONHOOD

As outlined in the introduction, my arguments later in this thesis will be based upon a presumption that chimpanzees are entitled to moral rights and that such rights are grounded by the concept of chimpanzee personhood. As such, in this chapter, I will begin by introducing the concept of personhood. I will then argue that there is copious empirical evidence to show that chimpanzees possess an array of morally relevant capacities associated with personhood and thus that they should be recognised as nonhuman persons. Given this, I will then explain how personhood grounds a specific moral right to liberty, and I will also introduce the Nonhuman Rights Project (NhRP) – an organisation that aims to secure a legal right to liberty for chimpanzees.

2.1. Definitions and conceptions of personhood

The concept of personhood has a vast history, with many different definitions and conceptions of the term – and of what it denotes – having been proposed over the years. I will focus on personhood in the *moral* sense here, then, later in this chapter, I will address the implications for *legal* personality that come about as a result of being a moral person. In this thesis, personhood will be understood to denote those who are entitled to a specific type of moral protection in the form of fundamental, inviolable rights, *i.e.*, those "who possess a particular moral status" (Chan & Harris, 2011, p. 304) and are thus owed more than 'mere' moral consideration. This association between personhood and rights will be explored further in section 2.3. The life of a person does not, therefore, exist to be utilised for another person's benefit; it matters in and of itself. Exactly where the threshold of personhood lies, though, has been widely debated; in this thesis, I am arguing that chimpanzees clearly exceed any reasonable threshold and therefore hold high moral standing[5] as persons.

Traditional definitions of personhood provided strict criteria that either focused solely on the inclusion of humans or strongly alluded to humans and persons as interchangeable. For example, Locke (1689/1694, 2.27.29) defined a person as "a thinking intelligent being, that has

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[5] The terms 'moral status' and 'moral standing' will be used interchangeably throughout this thesis.

reason and reflection, and can consider itself as itself, the same thinking thing in different times and places; which it does only by that consciousness which is inseparable from thinking and (…) essential to it". It is of note that such a definition already introduces the association of personhood with possession of a set of capacities; the general link between this concept and a being's capacities will be discussed in more detail throughout the rest of this chapter. Another traditional view is that provided by Kant – a firm proponent of personhood as a central concept in the realm of moral consideration – who made clear his views that personhood was limited to humans – moreover, specifically those humans who are "rational beings", *i.e.*, moral agents – and who therefore exist "as an end in itself" and "*not merely as a means* to be used by this or that will". Non-rational beings, by this definition, have "only a relative worth, as means, and are therefore called *things*" (Kant, 1785/1996, p. 79). The problems associated with placing such narrow limitations on personhood, as these definitions do, will be discussed shortly.

Historically, humans have indeed been deemed the only species that meet criteria for personhood and thus they have tended to be afforded considerably greater moral consideration than nonhuman animal species. More recent viewpoints, however, have called this assumption into question. For example, Regan (2004) argues that the level of moral consideration afforded to persons in the above definitions is in fact owed to all beings that are "subjects-of-a-life", who have equal inherent value and should not "be viewed or treated as mere receptacles" (p. 243). Subjects-of-a-life are characterised by their possession of:

> beliefs and desires; perception, memory, and a sense of the future, including their own future; an emotional life together with feelings of pleasure and pain; preference- and welfare-interests; the ability to initiate action in pursuit of their desire and goals; a psychophysical identity over time; and an individual welfare in the sense that their experiential life fares well or ill for them, logically independent of their utility for others and logically independent of their being the object of anyone else's interests. (p. 243)

Importantly, this conceptualisation of the criteria for moral consideration does not require rational moral agency, nor does it inherently limit membership of the community to only those beings of one species, namely that of human beings. Indeed, there are significant problems that arise when species membership, in and of itself, is used to denote a certain level of moral standing; as such, conceptions of personhood that take this approach have been strongly criticised by a number of authors (*e.g.*, Andrews et al., 2018a; DeGrazia, 2007; Fasel et al., 2016).

For example, in a philosophical evaluation of the plausibility of different conceptions of personhood – in order to defend that two New York-based chimpanzees be recognised as legal persons – Andrews et al. (2018a) denounce the "species membership conception" (p. 13) as "unjustifiable" (p. 116) and "untenable due to its arbitrary character" (p. 13). Specifically, they explain that affording personhood to human beings, but not to nonhuman animal species, does not fit with three overarching principles associated with the gradualism inherent in evolution: the variation among members of the same species, the similarities between members of different species, and the change in characteristics of a species over time. Indeed, in relation to the first of these, definitions that aim to limit personhood to humans – such as that of Kant (1785) – not only exclude any nonhuman animal species but also end up excluding a sizeable proportion of the human population too – often those most vulnerable and most in need of the protection conferred by personhood – due to the wide range of traits and abilities shown by different humans across life stages. For example, Kant's requirement that persons be "rational beings" (p. 79) excludes members of the human species who cannot think or act rationally in the manner required for moral agency, such as infants, young children and adults with significant cognitive impairments or disabilities (Warren, 1997). The idea that these groups of humans do not exist as ends in themselves (Kant, 1785/1996), nor have a high level of moral standing, is at odds with what is deemed morally acceptable in our world today; indeed, such a conception is surely highly unsatisfactory from the majority of perspectives and would likely cause widespread moral outrage.

Related to this, when trying to conceptualise personhood in a way that includes all humans but excludes all nonhumans, a significant problem arises due to the second principle pointed out by Andrews et al. (2018a) – that of similarity between different species. Indeed, there is significant overlap between different species in terms of biology, genetic material, and the possession of cognitive, social and emotional capacities, such that no unified definition of taxonomic species exists that successfully separates all beings into their respective species without encountering problems (Andrews et al., 2018a). Similarly, there is no 'essence' of the human species that is both held uniquely by our species and that has any moral bearing (Andrews et al., 2018a). This is particularly evident when it comes to comparisons of humans and chimpanzees. As mentioned at the outset of this thesis, chimpanzees are one of the two nonhuman animal species most closely related to humans (The Chimpanzee Sequencing and Analysis Consortium, 2005); if any nonhuman animal species has personhood, then it is chimpanzees. Indeed, as well as sharing an estimated 98-99 % of their DNA with us (Richardson, 2013), chimpanzees "are about as closely related to humans as African elephants are to Asian elephants" (Andrews et al., 2018a, p. 33). Moreover, the capacity possession of a typically-developed adult chimpanzee – as summarised later in this chapter – can, in many regards, exceed that of certain groups of cognitively-impaired humans, such as infants (*e.g.*, Beauchamp & Wobber, 2014, p. 126; Anstötz, 1993). As stated by Fasel et al. (2016, p. 7), other than species membership, "there is no characteristic or ability that could form the basis of an anthropological difference between humans and nonhuman primates".

This overlap between the two species therefore starkly highlights the arbitrariness of attempting to determine entry into the community of morally considerable beings solely using "mere species identity" (Fenton, 2014, p. 131). Indeed, this can be seen as unfairly discriminating against nonhuman animals – in particular, very closely related species such as chimpanzees – purely because of their species, *i.e.*, acting in a speciesist manner. Additionally, and importantly, the concept of species is a biological one; why a *biological* categorisation should be afforded the weight of determining *morality* – moreover, why this *particular* biological concept over any other one, such as the taxonomic classification of genus or family, for example, the latter of which would group chimpanzees and humans together – cannot be justified in any sort of meaningful way. As stated by Andrews et al. (2018b, p. 4), "there are no non-arbitrary conceptions of 'personhood' that can include all humans and exclude all nonhuman animals". Similarly, Chan and Harris (2011) explain "that any sensible and non-species-based criteria will either include some nonhumans or exclude some humans" and suggest that, as humans, "we need to be open to the prospect that our idea of 'creatures like us' need not be limited to our own biological species" (p. 322). As such, in combination with the evidence that chimpanzees possess capacities strongly associated with personhood, as will shortly be presented, it will be assumed in this thesis that chimpanzees do indeed fall under the umbrella of personhood, and – as discussed later – are similarly deserving of the rights that this entails.

Indeed, the Great Ape Project (GAP), founded in 1993 by philosophers Paola Cavalieri and Peter Singer[6], was created specifically to argue for inclusion of great apes – including chimpanzees – in the "community of equals" as regards entitlement to the same moral consideration and associated, species-appropriate, fundamental rights (Fasel et al., 2016, p. 4). Moreover, the GAP's arguments are based on the extent of chimpanzees' cognitive capacities and the proximity of these capacities to those of humans, further establishing the link between moral status and capacity possession. Indeed, if *species membership* does not hold up against philosophical scrutiny as a non-arbitrary measure of personhood, then it may instead be the *capacities*, characteristic of a species, that bear moral weight and are thus imperative in determining who is a person. Since it is now widely understood that an array of the cognitive, social and emotional capacities typically possessed by humans are also similarly possessed by many nonhuman animal species, conceptions of personhood based on possession of morally salient capacities therefore allow for the possibility of nonhuman animal personhood, particularly for species whose capacities share a high degree of similarly with those of humans; in which case, chimpanzees are the epitome of nonhuman animal personhood candidates. Indeed, chimpanzees "possess to varying degrees cognitive, psychological, communicative, and social attributes once considered uniquely human, characteristics that have previously served to support the establishment of human rights" (Benz-Schwarzburg & Knight, 2011, p. 22). If such attributes, or capacities, have historically "been considered adequate justification" (Benz-Schwarzburg & Knight, 2011, p. 10) for affording humans a high level of moral status, it is therefore only logical, and just, that evidence of these same morally relevant capacities in chimpanzees then confers similarly high moral status by recognition of their personhood and, accordingly, associated moral rights.

It is of note here that strong moral principles, and personhood, should likely also apply to at least some other nonhuman animal species, as well as chimpanzees, such as the other great ape species; however, where the threshold for personhood lies– moreover, whether the existence of a particular threshold is even an appropriate means of delineation, given the gradation inherent in evolution and thus the difference between species being one of degree rather than kind – is

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[6] See Cavalieri and Singer (1993) for more information.

outside of the scope of this thesis. Instead, I am specifically focusing here on personhood for chimpanzees, and the implications of this for their participation in cognitive research, arguing that they easily surpass any reasonable threshold for entry into this community, since there exists copious evidence that they should be deemed nonhuman animal persons.

In the next section, I will discuss some of the capacities that are thought to be particularly morally significant in the determination of personhood – most prominently that of autonomy – and I will summarise the evidence for these capacities in chimpanzees. I will show that there is copious evidence that chimpanzees are persons when capacities that are widely recognised to be morally significant and relevant to personhood are considered.

2.2. Evidence for capacities associated with personhood

Chimpanzees possess a vast array of sophisticated cognitive, social and emotional capacities, a number of which have moral significance and – as I will argue – ground both their personhood and their subsequent entitlement to fundamental moral rights. Indeed, it has been argued that chimpanzees "share with [humans] fundamental characteristics of personhood" (Benz-Schwarzburg & Knight, 2011, p. 22) and "possess the complex cognitive abilities that are sufficient for common law personhood and the common law right to bodily liberty" (The Nonhuman Rights Project, Inc. ex rel. Hercules and Leo v. Stanley, 2015, p. 6). Examples of capacities possessed by chimpanzees include:

> the possession of an autobiographical self, episodic memory, self-determination, self-consciousness, self-knowing, self-agency, referential and intentional communication, language planning, mental time-travel, numerosity, sequential learning, meditational learning, mental state modelling, visual perspective-taking, understanding the experiences of others, intentional action, planning, imagination, empathy, metacognition, working memory, decision-making, imitation, deferred imitation, emulation, innovation, material, social, and symbolic culture, cross-modal perception, tool-use, tool-making, cause-and-effect. (The Nonhuman Rights Project, Inc. ex rel. Hercules and Leo v. Stanley, 2015, p. 6)

At a fundamental level, a key characteristic – generally deemed necessary for any form of moral status – is that of sentience. This can be "understood either as a specific cognitive capacity or a combination of cognitive capacities underlying awareness and sensation" (Arnason, 2020, p. 2279) and has been defined as "the capacity to experience pain and pleasure" (Arnason, 2020, p. 2279). Although necessary, sentience is not sufficient in and of itself for personhood, since this hinges on the possession of more sophisticated cognitive capacities (as will be discussed shortly). It is relevant to state here, from the outset of this section, that this thesis clearly assumes that chimpanzees are sentient and thus that they easily meet this baseline requirement for consideration of personhood. There is copious evidence for their sentience; in particular, chimpanzees have "highly developed nervous system[s] with brains structurally similar to those of humans" (Fasel et al., 2016, p. 3), comprising "the same neuroanatomical structures and mechanisms as other mammals, including various sensory systems, such as those implicated in the sensory and affective components of pain" (Andrews et al., 2018a, p. 95). Moreover, in addition to the experience of physical sensation, there is ample evidence that chimpanzees have complex emotional lives and the capacity to experience a wide range of emotional states, including happiness, sadness, excitement, anger, fear and empathy (Andrews et al., 2018a; Andrews and Gruen, 2014), the latter of which is thought to be displayed, for example, through consolation behaviour (Romero et al., 2010). As such, they are vulnerable to mental pain and illness, including parallels to depression (which may be grief-induced) and post-traumatic stress disorder (*e.g.*, Anderson Aff. ¶ 19.; Bradshaw et al., 2008; Gilmer & McKinney, 2003). Overall, as stated by Fasel et al. (2016, p. 3), "there is no doubt nowadays that all primates are sentient beings".

A range of other capacities have variously been argued to be morally significant contributors to personhood. Some examples include: emotions (as already summarised above), self-awareness, sociality, language, rationality, reciprocity, narrative self-constitution, morality, meaning-making and, most notably for this thesis, autonomy; it is of note, though, that there is still dispute around the significance and contribution of a number of these (Andrews et al., 2018a; DeGrazia, 2007; Tenofsky, 2018).

One way of delineating how such capacities come to signify personhood has been proposed, and utilised, by the NhRP in their "capacities account" (Andrews et al., 2018b, p. 35). The NhRP – a US civil rights organisation led by Steven Wise, whose work is discussed in more detail in the next section – aims to seek legal recognition of personhood, and accompanying rights, for selected nonhuman animal species, including chimpanzees. In a philosophical evaluation of chimpanzee personhood, carried out to support the NhRP's legislation, Andrews et al. (2018a) explain that there are two ways of using such morally significant capacities to ground personhood – either by viewing them "as *essential* features of persons, or as *clusters* of properties that are variously constitutive of persons" (p. 87). The former approach – relying on a specific set of required capacities to do the moral work – is under-inclusive, as it "denies that some humans are persons"; not all humans would possess all of the necessary traits, therefore such an approach is untenable. However, the latter approach – a cluster conception of personhood – is able to appropriately recognise all humans as persons whilst also allowing for the appropriate inclusion of certain nonhuman animal species into the circle of personhood; this is therefore the approach endorsed by the NhRP. Specifically, this conception deems personhood as dependent on possession of some morally significant capacities, but it does not specify which specific capacities this must be, *i.e.*, which subset of these capacities any given person possesses can vary and "no one of the traits is required" (p. 88). Laudably, this approach "permits different personhood profiles" (p. 88) since "there are different ways of being a person" (p. 85). Given the sophisticated cognitive abilities of chimpanzees, if it can be evidenced that they possess (at least) a subset of morally relevant capacities, then they are in fact persons. There is copious evidence that this is the case and that chimpanzees do indeed possess a range of morally relevant capacities, such as autonomy.

Evidence that chimpanzees possess autonomy is often seen as a key determinant of personhood; indeed, "the philosophical conception of personhood is often framed in terms of autonomy" (Andrews et al., 2018a, p. 88) such that Steven Wise and the NhRP view this as the fundamental characteristic upon which their arguments for chimpanzee personhood are based. They argue that autonomy is sufficient, in and of itself, to show that chimpanzees are indeed persons, although this capacity is not necessarily required, *i.e.*, personhood may still be owed to nonhuman animals without this quality (Andrews et al., 2018a). As such, this thesis will focus on autonomy as a key characteristic grounding chimpanzees' personhood and consequent right to liberty, which, as will be argued later, means that cognitive research with captive-bred chimpanzees is not morally permissible.

Autonomy has been widely and variously defined using more and less demanding conceptions. Broadly, autonomous behaviour is that "which reflects a choice and is not based on reflexes, innate behaviours or on any conventional categories of learning such as conditioning, discrimination learning or concept formation" and instead is directed by the individual "based on some non-observable internal cognitive process" (King Aff. ¶ 11.). In other words, when defined inclusively, it is "the ability to act on behalf of oneself, including exercising executive control over the formation of one's goals and the means for achieving them" (Andrews et al., 2018a). In relation to chimpanzees, Beauchamp and Wobber (2014) put forward an account of autonomy as "a psychological mechanism of decision and action" (p. 118), with autonomous acts being those that are self-initiated by an individual and are "(1) intentional, (2) adequately informed (…), and (3) free of controlling influences" (p. 119). There exist more demanding conceptions of autonomy (*e.g.*, Korsgaard, 2006), such as those that require an individual to "access her own motivations" as well as "reflect on the very reasons that drive her behavior, and ask herself whether these are reasons that are worth pursuing" (Monsó & Andrews, 2022, p. 404), however such definitions result in "many humans, and certainly children" (Andrews et al., 2018a, p. 90) being deemed as lacking this capacity, which doesn't fit with our general understanding of most human behaviour. Moreover, and crucially for the claim of this thesis, it is thought that fulfilling a less demanding conception of autonomy is sufficient for entitlement to moral personhood and corresponding moral rights (Andrews et al., 2018a). Therefore, the only relevant question is whether chimpanzees meet a less complex, more inclusive concept of autonomy, *i.e.*, whether they possess "practical autonomy", as proposed by Wise (2006, p. 32); if so, they are persons.

Significantly, possession of autonomy simultaneously demonstrates possession of a cluster of other capacities that are themselves required for autonomy – for example, sentience, self-awareness, the ability to experience emotions and utilise rational processes (Andrews et al., 2018a), episodic memory and 'mental time travel' (The Nonhuman Rights Project, Inc. ex rel. Hercules and Leo v. Stanley, 2015) – thus meeting the cluster concept criteria for personhood. Evidence for autonomy in chimpanzees would therefore sufficiently demonstrate personhood in and of itself. Indeed, there is copious empirical evidence that chimpanzees possess a range of morally relevant capacities that underlie autonomy; collectively, such evidence strongly suggests possession of the overarching capacity of autonomy. In fact, as stated by Tenofsky

(2018, para. 12), “scientists have shown over and over again that chimpanzees (…) are autonomous individuals”. In addition to evidence from the results of empirical studies, which will be summarised shortly, it is significant that chimpanzees possess brain circuitry that is known to be involved in cognitive processes associated with autonomy in humans, for example brain regions and circuits involved with “communication, language, insight, fore-planning, decision-making, the processing of complex social information, emotional learning, and awareness, as well as highly specific cell types involved in such higher-order thinking and brain functions” (The Nonhuman Rights Project, Inc. ex rel. Hercules and Leo v. Stanley, 2015, ¶ 22.). I will now summarise the empirical evidence for some of the most notable morally significant capacities that are relevant for autonomy and that contribute to conclusions regarding the autonomous behaviour, and thus the personhood, of chimpanzees.

The ability to exhibit some form of self-awareness is generally viewed as a prerequisite for possession of autonomy, as well as being a morally relevant capacity in and of itself. Evidence of self-awareness is therefore central in determining whether chimpanzees are autonomous. The NhRP define self-awareness as “the capacity to recognize yourself as an individual separate from the environment and other individuals” (Frequently asked questions, n.d., para 9). Indeed, there is substantial evidence that chimpanzees are able to pass the mirror test – a well-established indicator of visual self-recognition – thereby demonstrating this form of self-awareness (*e.g.*, Gallup, 1970; Povinelli et al., 1993). Moreover, chimpanzees are similarly able to recognise television screen images of themselves both when presented with live-stream and delayed video footage (Hirata, 2007; Hirata et al., 2017) and have been observed using a flashlight to look inside their own throats in a mirror (The Nonhuman Rights Project, Inc. ex rel. Hercules and Leo v. Stanley, 2015, ¶ 26.). They are also able to recognise when they are being imitated, demonstrating “contingency-checking” by making certain actions to see if the imitator subsequently copies these (The Nonhuman Rights Project, Inc. ex rel. Hercules and Leo v. Stanley, 2015, ¶ 33.). Indeed, overall, Chan and Harris (2011, p. 318) argue that chimpanzees “evince behavior substantially consistent with a near-human level of self-awareness”.

Another important aspect of autonomy is the ability to exercise self-control, which chimpanzees demonstrate in various circumstances. In experimental paradigms, they are able to inhibit their response to an initial offer of a small food reward, in order to receive an alternative larger food reward at a later time. For example, chimpanzees were shown to delay their response to chocolate for up to 180 seconds, until twenty pieces – placed one at a time into a bowl within their reach – had been provided, in a paradigm where no further pieces would be provided if the chimpanzee ate anything before all the pieces had been given out (Beran, 2002, cited by Monsó & Andrews, 2022). Moreover, they are also able to reject a small food reward in favour of a tool, when the tool will later allow them access to a larger piece of food; this is possible even with a novel tool, when they are therefore only guessing the function of it (Osvath Aff. ¶ 14.). Additionally, they have been shown to use self-distraction, as is similarly seen with young children, to cope with controlling their impulses towards the initial reward offer (Osvath Aff. ¶ 14.; Mischel et al., 1989). Equivalent situations involving self-control have been observed in wild environments, with chimpanzees able to delay eating from a discovered food source until a later, safer time when there are no conspecifics around (Byrne & Whiten, 1988, cited by Monsó & Andrews, 2022). Delaying gratification in this way is only possible in beings who have a “sufficiently sophisticated sense of self and autobiographical memory” (Osvath Aff. ¶ 14.); furthermore, predicting the value of a tool in a future situation requires the ability to mentally represent that anticipated situation (Osvath & Osvath, 2008, cited by Osvath Aff. ¶ 14.).

Indeed, chimpanzees possess the capacity for ‘mental time travel’, *i.e.*, the ability to “not only understand they exist through time” but also to “recollect the past and plan for the future” (The Nonhuman Rights Project, Inc. ex rel. Hercules and Leo v. Stanley, 2015, ¶ 27.), which is possible by way of an episodic system, and, like self-control, is similarly thought to be crucial for autonomous behaviour (Osvath Aff. ¶ 16.). This means that chimpanzees suffer the pains of their past and future, as well as that of the present. For example, chimpanzees in captivity can anticipate future confinement in the same situation and thus experience the emotional toll of this (Osvath Aff. ¶ 16.).

Additionally, there is evidence that chimpanzees have a sense of being an independent agent, *i.e.*, that they possess self-agency, required for purposeful behaviour. This is defined as “the ability to distinguish actions and effects caused by oneself from events occurring in the external environment” (Matsuzawa Aff. ¶ 16.). For example, they can distinguish between an object that is being moved by their own actions versus those of a computer algorithm or a recording of the same chimpanzee’s movements on a previous trial (Kaneko & Tomonaga, 2011, cited by Matsuzawa Aff. ¶ 16.).

Moreover, there is evidence that chimpanzees possess metacognitive abilities (*e.g.*, Beran et al., 2013; Call, 2010, cited by Matsuzawa Aff. ¶ 15.), which stem from their self-awareness, *i.e.*, that they “are capable of accessing, evaluating and controlling their cognitive processes” (Monsó & Andrews, 2022, p. 409) and can “think about and reflect upon [their] own thoughts and memories” (Matsuzawa Aff. ¶ 15.). Empirical studies have investigated whether chimpanzees know what information they are missing, and need to seek, in order to complete a task, for example when required to select a location containing food, from a choice of options, in paradigms where the amount of information given to subjects about the food location is varied (Monsó & Andrews, 2022). In such studies, when offered an opportunity to gain additional information by way of a checking or searching action, before making their selection, chimpanzees selectively take up this opportunity depending on what they already know (*e.g.*, Perdue et al., 2018).

Another important capacity, related to autonomy through planning and ‘mental time travel’, is that of numerosity, *i.e.*, “the ability to understand numbers as a sequence of quantities” (Matsuzawa Aff. ¶ 19.). The available empirical evidence of this capacity in chimpanzees simultaneously demonstrates possession of a “sophisticated working memory” (Matsuzawa Aff. ¶ 19.). For example, chimpanzees can understand Arabic symbols (*e.g.*, “1”, “2”) and what these represent, including zero (Biro & Matsuzawa, 2001, cited by Matsuzawa Aff. ¶ 19.); count and sum these symbols (Beran et al., 1998; Beran & Rumbaugh, 1998, cited by Matsuzawa Aff. ¶ 19.); learn a numerical sequence; and memorise the placement of numbers, in order, on a computer screen in a memory task (Inoue & Matsuzawa, 2009, cited by Matsuzawa Aff. ¶ 19.). Chimpanzees demonstrate the latter of these abilities to a considerably higher standard than do human adults (Inoue & Matsuzawa, 2009, cited by Matsuzawa Aff. ¶ 19.); indeed, numerosity is an area in which chimpanzees particularly excel.

Given the wealth of evidence for chimpanzees’ possession of morally relevant capacities, as summarised above, Beauchamp and Wobber (2014) carried out an analysis of autonomy in chimpanzees in relation to the authors’ proposed conception of this capacity, as outlined earlier in this section. They determine that chimpanzees “satisfy the two basic conditions of autonomy”, those of liberty, *i.e.*, “the absence of controlling influences”, and agency, *i.e.*, “self-initiated intentional action” (p. 117). Furthermore, their analysis leads the authors to conclude that chimpanzees can perform deliberate actions and are capable of intentionality “in numerous facets of their daily lives” (p. 120) both environmentally and socially. The analysis also determines that “chimpanzees make choices reflecting a richly information-based and socially sophisticated understanding of the world” (p. 121). Indeed, similarly, Andrews et al. (2018a) also establish that chimpanzees are “cognitively flexible” (p. 91), with individual goals that they can plan for and execute. Overall, Beauchamp and Wobber conclude that “there is no reason to doubt that animals with the capacities for understanding, agency, and control seen in chimpanzees are acting autonomously” (p. 125).[7]

In relation to chimpanzees being properly accorded high moral status, Fenton (2012, p. 73) states: “Barring the requirement that they be human, it is difficult to see what more [they] would have to possess to acquire it”. In a similar vein, given the evidence discussed up until now in this chapter for chimpanzees’ possession of the morally relevant capacities that comprise autonomy, I will assume in what follows that chimpanzees are moral persons. Furthermore, even if there were to be any lingering doubt as to their personhood status – for example, in relation to the appropriate conception of personhood, threshold for membership or morally significant capacities required – it would nevertheless be warranted to take a precautionary stance on the issue and treat chimpanzees as moral persons regardless. As stated by Benz-Schwarzburg and Knight (2011, p. 24), “where reasonable doubt remains about the existence of morally relevant animal characteristics, as ethical actors we should afford such animals the benefit of that doubt”. Indeed, as a theoretical construct, judgements about personhood “will always be subject to review” (Weatherall, 2006, p. 123). The evidence that chimpanzees possess morally relevant capacities has accumulated significantly in recent decades (Beauchamp &

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[7] Further information regarding the capacity possession of chimpanzees, beyond that which can be summarised within the scope of this thesis, can be found in Andrews et al. (2018a), Benz-Schwarzburg (2019) and in The Nonhuman Rights Project, Inc. ex rel. Hercules and Leo v. Stanley (2015) and supporting expert affidavits.

Wobber, 2014). As such, we should recognise the strong likelihood that our knowledge of chimpanzees' psychological and cognitive functioning will advance similarly in future; indeed, Beauchamp and Wobber (2014) believe that "we can expect [this] new knowledge to mount at an unprecedented rate in upcoming years" (p. 129). This is particularly pertinent since "the evidence (…) usually changes to attribute greater and more complex attributes" (Cochrane, 2012, p. 12), therefore potentially reaching a point where personhood is no longer in any doubt. In the meantime, we should recognise the vast body of evidence demonstrating chimpanzees' possession of morally relevant capacities, many of which are shared, and overlap, with humans, and give chimpanzees the benefit of the doubt should any uncertainty still remain.

The same can be said for affording chimpanzees the appropriate moral rights that derive from their personhood, such as a right to liberty. As stated by Cochrane (2012, p. 12), "it would seem only sensible to treat the great apes […] as if they are autonomous agents with an intrinsic interest in liberty". In the following section, I will discuss the implications of chimpanzees' moral personhood for both their legal personality and for our treatment and interaction with this species. Specifically, I will argue that chimpanzees, by way of their personhood – as evidenced in this section – are entitled to a right to liberty that encompasses a right to exercise their autonomy and that we are required to respect.

2.3. Moral rights of chimpanzees

In the previous section, I have presented evidence for morally relevant capacities in chimpanzees, including that of autonomy, and argued that these ground chimpanzees' entitlement to personhood. Given this, what is now imperative is to understand what personhood necessitates, *i.e.*, what being a person means for our treatment of chimpanzees; specifically, what moral – and legal – rights nonhuman persons are entitled to and what these mean for the moral permissibility of cognitive research with captive-bred chimpanzee subjects in a research institute setting with a high-welfare environment.

Sophisticated morally significant capacities, such as autonomy, and the personhood they ground, are widely associated with moral rights (Wise, 2006, p. 32). Indeed, being a person typically grounds a set of inviolable moral rights, for example those of life, bodily liberty, and bodily and mental integrity (Chan & Harris, 2011). If this is the case for humans, then it follows that nonhuman species who similarly possess such capacities, and consequently personhood, such as chimpanzees, are likewise entitled to fundamental, species-appropriate, inviolable moral rights (Benz-Schwarzburg & Knight, 2011). Indeed, the Great Ape Project campaigns for great apes, including chimpanzees, to be granted basic rights “to life, the protection of individual liberty, and the prohibition of torture” as a result of the “moral significance of [their] cognitive abilities” (Benz-Schwarzburg & Knight, 2011, p. 23).

Since such rights as those of life and bodily integrity are not generally threatened, or violated, by the use of chimpanzee subjects in a cognitive research institute of the conditions set out in section 1.4, the right I will be focusing on in this thesis – and that I will argue is being violated – is that of bodily liberty. I will assume that, as a result of their personhood, chimpanzees are entitled to a right to liberty, which is taken as encapsulating both their right to freedom of movement but also their right to exercise their autonomy. This is mirrored by the arguments of the NhRP, who specifically argue that chimpanzees – as “autonomous, self-aware nonhuman” persons – are entitled not only to a moral right to bodily liberty (Frequently asked questions, n.d., para. 9), but additionally for this right to be secured legally.

Indeed, the NhRP is comprised of lawyers who aim to secure personhood in a legal sense for their nonhuman clients, such that their clients become holders of fundamental legal rights and deserving of legal protection (Litigation, n.d.), *i.e.*, for their personhood to thus be “enshrined in law” (Rowlands, 2016, p. 1). Indeed, such ‘legal personality’ represents the ways in which the specific kind of moral protection that is afforded by moral personhood is reflected within the law (Weatherall, 2006). In the eyes of legal systems internationally, every entity falls into one of two categories – either that of person or thing. Unlike persons, “mere things” (Andrews et al., 2018a, p. 7) have no moral standing or legal rights and can be owed as property. Crucially, only persons ‘count’ in the law, in terms of having a value in and of themselves and a right not to be harmed for their own sake, rather than only for the harm that may be impinged upon human persons associated with the client (Andrew et al., 2018; Wise, 2010). Across the world, the vast majority of nonhuman animals are currently classed only as things and therefore hold no rights; in relation to chimpanzees, Andrews et al. (2018a) call such ‘thinghood’ “morally obscene” (p. 7). Through strategic, targeted litigation, the NhRP therefore act on behalf of captive nonhuman clients with an aim of securing habeas corpus hearings in order to have their clients recognised as legal persons, rather than things, and their captivity appropriately recognised as unjust imprisonment (Litigation, n.d.).

It is of note that there have been occasional successful court cases whereby litigation has been brought about on behalf of a captive nonhuman animal in order to argue for their personhood and right to liberty, resulting in their captivity being recognised as unlawful. For example, in 2016, Cecilia, a chimpanzee previously held captive at the Mendoza Zoo in Argentina, was granted nonhuman personhood status and associated "inherent rights" and consequently moved to a sanctuary (Choplin, 2016, para. 1). If Cecilia exists in the world as a chimpanzee who is classed as a legal person with a fundamental right to liberty, based on the extent of, and nature of, her capacities, it seems only logical, and right, that *all* members of the chimpanzee species (or, as a minimum, other typically-developed adults like Cecilia) must similarly meet criteria. To recognise inherent rights only in specific members of a species, purely on the basis of those members having had litigation brought forth on their behalf due to their environmental circumstances, rather than due to any inherent or practical difference in their entitlement to such rights, is arbitrary. Legal recognition of Cecilia's personhood and inherent rights thus strongly supports my argument that chimpanzees generally are entitled to a right to liberty.

Crucially, what rights provide is strong protection alongside guaranteed respect for a person's vital interests. As persons, chimpanzees therefore exist as ends in themselves who cannot be utilised for human purposes in ways that violate their fundamental right to liberty; such practices are therefore inherently wrong. In contrast to the widely-established utilitarian approach of weighing up the costs and benefits for all parties, rights establish certain conditions as fundamentally wrong regardless of who else may benefit; indeed, they are a matter of principle, regardless of the surrounding circumstances (Wise, 2006; Wise, 2010).

Indeed, in the same way that a human person who was, for example, imprisoned in a captive situation for no legally justifiable reason, would have a right to be liberated from this, so too should chimpanzees. Moreover, the welfare quality of the environment and conditions in such a situation cannot negate the inherent wrongness of the captivity; *i.e.*, even the best possible captive situation would generally still violate a being's right to liberty, since it is the fact of the captivity itself that matters. Some exceptions do exist, however, in which it may be sufficiently legally justified to breach a person's fundamental rights; with humans, examples include imprisonment for a criminal offence, “mandatory quarantine, jury service, compulsory military service and compulsory vaccination programmes” (Weatherall, 2006, p. 126), and with nonhuman persons, an equivalent situation may be captivity within a species-appropriate sanctuary for nonhuman animals who are unable to be released into the wild. Indeed, the NhRP advocate for their clients to be moved to sanctuaries due to recognition that they would not be able to survive if fully set free.

It is thus very plausible to assume that chimpanzees’ fundamental right to liberty renders most captive research settings morally impermissible. However, as outlined in section 1.4, I am specifically addressing here the best possible attempt at creating a research environment and setup that adheres to high ethical standards. Indeed, the type of research institute being addressed here is one that aims to provide a naturalistic setting in which chimpanzees’ ability to engage in species-typical behaviour is not hampered. Moreover, this type of research institute purports to have designed, and incorporated, a non-coercive, voluntary participation process for involvement in research, *i.e.*, it is asserted that chimpanzees only take part in research if this is of their own accord and on the basis of their “free will” (Matsuzawa, 2006, p. 45). It is therefore implied that the setup, and research activities, safeguard chimpanzees’ autonomy and personhood, despite their involvement in research. Indeed, there is widespread praise in the literature for this type of setup, such that it is touted as an exemplar of good ethical practice in research with chimpanzees (e.g., Carvalho et al., 2019, p. 4). It is therefore important to analyse whether this type of research setup is indeed morally permissible, as alleged, *i.e.*, whether the chimpanzees’ personhood, autonomy and moral rights are able to be respected and protected within both the setting and the research process. Indeed, having established that chimpanzees are entitled to a fundamental moral right to liberty, which encapsulates their right to exercise their autonomy, the rest of the thesis will be framed in the context of this; *i.e.*, the focus of upcoming chapters will be on the implication of such a right for chimpanzees participating in cognitive research in this type of research institute. Consequently, I will later argue that this type of setup in fact violates chimpanzees’ right to liberty in a number of ways and, thus, that the claim of facilitating voluntary participation is highly flawed.

In order to frame my later arguments, I first need to introduce the ethical research framework, based on deontological principles, that governs research involving human persons so as to protect their autonomy, personhood and fundamental rights. In particular, I will explain how human subjects come to participate in research in an ethical manner within this framework. Specifically, I will address the requirement for informed consent in order to respect subjects' autonomy as persons, and I will introduce the concept of vulnerability – the condition afforded to subjects who are unable to fully engage with a valid informed consent process – and the additional safeguards required in cases of vulnerability to ensure that subjects' rights are still respected. I will do this here because it is relevant, and necessary, to understand the regulation and implementation of research with human persons in order to determine appropriate ethical standards for the regulation of research involving chimpanzees. Indeed, since I have established here that chimpanzees are nonhuman persons, then research with chimpanzee subjects should also be regulated in a way that ensures protection for their personhood and fundamental right to liberty, as is the case in research with human subjects; I will expand upon this argument in chapter four. Moreover, I will later evaluate the moral permissibility of cognitive research with chimpanzees against an equivalent ethical framework to that which governs research with humans, in order to make my arguments.

3. RESEARCH CONSENT WITH HUMAN PERSONS

Having established that chimpanzees are nonhuman persons with a fundamental right to liberty, which encapsulates a right to exercise their autonomy, it is now essential to understand how research is currently ethically regulated and evaluated when subjects are persons with rights, in order to be able to analyse the moral permissibility of cognitive research institutes for chimpanzees. In this section, I will therefore provide an overview of the ethical research framework that currently governs research involving human subjects; specifically, how this is implemented in order to safeguard a subject's personhood, autonomy and fundamental rights during the process by which they come to participate in a study. Firstly, I will introduce the consent process, and discuss the widespread incorporation of this at various levels of research oversight. Subsequently, I will go into detail about the elements of valid 'informed consent'. Finally, I will discuss the concept of vulnerability, the ways in which this links to impaired decisional capacity of subjects and the range of additional safeguards and protections that are put in place when a subject is vulnerable.

3.1. The meaning and importance of an ethical consent process

An integral and well-established element of carrying out a research study with humans today, such as that which investigates cognitive abilities, is the process of obtaining consent from those people who will subsequently participate in the study. Indeed, it is now standard practice for potential subjects to make an "informed and free decision" as to whether or not to take part (ESRC Framework for Research Ethics, 2015, p. 29). Crucially, to achieve valid consent, the decision has to be fully informed, *i.e.*, the potential subjects must make their choice on the basis of comprehensive information regarding various aspects of the study (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979); further details of exactly what this information must consist of will be outlined in the next section. Indeed, with research involving human subjects, 'informed consent' is now "the almost universally respected principle of research ethics" (Weatherall, 2006, p. 129).

The requirement for informed consent, as well as the wider ethical research framework within which this falls, is outlined and regulated at various different levels of research oversight. At the most fundamental level – as cited by Ethics in Social Science and Humanities (2018) –

research must conform to international declarations of human rights (such as the United Nations Declaration of Human Rights [1948] and the United Nations Convention on the Rights of Persons with Disabilities [2006], and, within the EU, the Charter of Fundamental Rights of the EU [CFR; 2012] and the European Convention on Human Rights [1953]). In addition, researchers must also adhere to: cross-national regulations and ethical guidance on research conduct (*e.g.*, Ethics in Social Science and Humanities, 2018, within the EU); relevant national legislation; well-established codes of conduct (such as the Nuremberg Code [Permissible medical experiments, 1946-1949], the World Medical Association [WMA] Declaration of Helsinki [World Medical Association, 2013] and the Belmont Report [National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979], discussed further shortly); ethical codes set out by specific professional bodies (*e.g.*, British Psychological Society, 2021); and institutional guidelines, policies and procedures. Collectively, these set out principles and protections required to safeguard human study subjects.

Established, written declarations of ethical research conduct began with the Nuremberg Code (Permissible medical experiments, 1946-1949), which was created as a result of the Nuremberg War Crime trials of Nazi doctors who conducted "murderous and torturous human experiments" on concentration camp prisoners during the Second World War (Shuster, 1997, p. 1436). This code established basic ethical principles and requirements for biomedical research; the very first of which, set out particularly strongly, is that of consent. Specifically, the code states, from its outset, that "the voluntary consent of the human subject is absolutely essential" (Permissible medical experiments, 1946-1949, p. 181); this requires that the subject has legal capacity to consent, that they are sufficiently informed and that there is no coercion. Moreover, the responsibility to obtain consent which meets this standard rests with the experimenter. Indeed, the Nuremberg Code established "what are now considered to be the basic principles governing the ethical conduct of research involving human participants" internationally (Vulnerable populations background, 2016, p. 16), and the code served as a model for other subsequently-established guidelines for ethical research. Nowadays, the principles of both the Nuremberg Code and other well-recognised ethical research codes that followed it are generally thought of as applying to research much more widely than just that within the biomedical field.

Of the codes that followed, of particular note is the Belmont Report, which was released in 1979 by the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research in the US and which still serves today as a well-recognised and well-established guide to the basic ethical principles that should underlie ethical research with human subjects, alongside their practical applications. The report describes three fundamental principles, or “general prescriptive judgements” (p. 3), that research must adhere to: those of respect for persons (which includes requirements to treat potential subjects as “autonomous agents” (p. 4), *i.e.*, to acknowledge their autonomy, and to “protect those with diminished autonomy” (p. 4)), beneficence (understood as an obligation to maximise benefits and minimise any potential harms that could potentially result from the research), and justice (fairness in relation to those who contribute to research versus those who benefit from the outcome).

Crucially, the Belmont Report declares informed consent as the required practical application of the first of these principles, that of respect for persons. This means that the implementation of an appropriate informed consent process is deemed necessary in order for a research study to both acknowledge and protect subjects’ autonomy and personhood. As stated in the report, “respect for persons requires that subjects, to the degree that they are capable, be given the opportunity to choose what shall or shall not happen to them” and research provides this opportunity “when adequate standards for informed consent are satisfied” (p. 6); moreover, in relation to this, the report declares that “the importance of informed consent is unquestioned” (p. 6).

This association between respect for autonomy and informed consent is similarly established in other widely recognised declarations and guidelines that prescribe ethical research conduct in various fields of study. For example, the European Commission’s guidance for researchers in social sciences and humanities asserts that “respecting individual autonomy and obtaining free and informed consent” is an “overarching ethical principle in the context of EU-funded research” (Ethics in Social Science and Humanities, 2018, p. 5). Indeed, it is now widely accepted as imperative that research with humans, as autonomous beings, involves an ethical consent process.

Acknowledgement of, and respect for, subjects’ autonomy is therefore one of the key principles widely found in declarations of ethical human research conduct. Similarly, other widely agreed-upon overarching principles that should be respected throughout the research process include those of dignity, justice, integrity, privacy, beneficence, and non-maleficence (*e.g.*, Beauchamp and Childress, 2001; Ethics in Social Science and Humanities, 2018; National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979). Although utilitarian considerations can be involved in the application of some of these principles, most notably that of beneficence, human research ethics is situated within a framework that is predominantly based upon deontological principles (Arnason, 2020; Carvalho et al., 2019). Indeed, legislation, regulations and guidelines centre around respect for human persons' fundamental rights and interests, in order to ensure that subjects are never instrumentalised within the research process. For example, the British Psychological Society (BPS) Code of Human Research Ethics (British Psychological Society, 2021) states that researchers will "ensure that people's rights are respected and protected" (p. 8). Indeed, the potential benefits or outcomes of a research project, no matter how large or significant in scope, can never override the fundamental rights of the subjects, including that of exercising their autonomy.

As stated in the WMA Declaration of Helsinki (World Medical Association, 2013), "while the primary purpose of medical research is to generate new knowledge, this goal can never take precedence over the rights and interests of individual research subjects" (p. 2191). This is in contrast to the predominant use of a utilitarian calculus to make decisions on the involvement of *nonhuman* animals in research, as already outlined in the introduction of this thesis. This difference in ethical frameworks for human versus nonhuman research will be discussed further in the next chapter, where I will argue that such a distinction is inappropriate in relation to chimpanzees since they too have the right to have their autonomous capacities acknowledged and respected and, as such, their right to liberty protected. In the remainder of the current chapter, I will firstly describe what a valid informed consent process involves. Subsequently, I will discuss situations in which potential study subjects are unable to fully engage with the requirements of an informed consent process and I will outline how, in spite of this, they may still come to participate in research studies in an ethical manner.

3.2. Informed consent

Generally, informed consent must meet specific requirements in order to be deemed an appropriate safeguard of a subject's right to exercise their autonomy and personhood. The

Belmont Report, for example, suggests that these requirements can be divided into three principal elements, those of "information, comprehension and voluntariness" (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979, p. 6).

In relation to the first of these, it is crucial that the potential subjects of a study are provided with adequate information about a number of different aspects of the research in order to make an informed choice. This includes the nature, aims, purpose and method of the study, what the procedure(s) will involve, the expectations of subjects in relation to their time and effort, the implications of the research and any potential benefits that may result from the outcome, details of any risks that subjects could incur and how these will be addressed, what will happen when the study ends and how subjects will be able to access the results. In addition, contact details of the primary investigator(s) must be provided and it should be made clear that subjects can ask questions or seek any further information or clarification that they require before making their choice (*e.g.*, British Psychological Society, 2021; Ethics in Social Science and Humanities, 2018).

Another crucial aspect of the informative element of the consent process concerns the provision of information relating to privacy and data protection. The collection, processing, usage and storage of subjects' personal data in the course of carrying out a study must adhere to legislative, institutional and ethical requirements, such as Article 8 of the CFR (Charter of Fundamental Rights of the European Union, 2012) and the General Data Protection Regulation (Regulation (EU) 2016/679, 2016). Indeed, within the EU, data protection is a fundamental right that applies to all subjects, regardless of their capacity to engage with the informed consent process. Collection of certain 'special' categories of data results in higher ethical risks, for example, data from those who are vulnerable, including children, or where the content is more sensitive, such as that relating to sexual orientation or religious beliefs (Ethics and Data Protection, 2018). All relevant information regarding the use of subjects' personal data in a study must be clearly communicated during the informed consent process; indeed, as stated in guidance by the European Commission (Ethics and Data Protection, 2018), researchers within the EU must "provide research subjects with detailed information about what will happen to the personal data that they collect" along with assurance that data will be "properly protected, minimised and destroyed when no longer needed" (p. 3). Crucially, researchers must explain how they will respect confidentiality (*e.g.*, de Gucheneire, n.d.; Ethics in Social Science and Humanities, 2018), for example, by anonymisation or pseudonymisation of personal data, such as replacing identifiable information with a number or code (Ethics and Data Protection, 2018). Additionally, it is imperative that researchers only collect personal data that is required for their research and nothing supplementary (Ethics and Data Protection, 2018).

In addition to the provision of information, another key aspect of the informed consent process is that of voluntariness. Indeed, consent is only valid if the subject has made their choice freely, of their own accord, and in full knowledge that participation is optional (British Psychological Society, 2021; National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979). Importantly, it must be made clear to subjects that they are free to change their mind about participation, *i.e.*, to refuse to take part and/or to withdraw their consent, at any time during the study, without any adverse consequences and without them having to provide any reasoning or justification for this (British Psychological Society, 2021; Ethics in Social Science and Humanities, 2018). Indeed, it is essential that informed consent is implemented, and understood, as a *process* that is ongoing throughout the duration of the research activities, rather than only a one-off event that occurs prior to a study starting. The voluntariness of the consent process is breached if any coercion or undue influence takes place; *i.e.*, if "an overt threat of harm" or "an excessive, unwarranted, inappropriate or improper reward or other overture", respectively, is used to encourage participation (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979, p. 7). Notably, the threshold of what constitutes an undue level of influence is lowered in cases of vulnerability, *i.e.*, where potential subjects have an impaired capacity to engage fully with the informed consent process and are thus more 'vulnerable' as regards susceptibility to coercion or undue influence (González-Duarte et al., 2019; Gordon, 2020). Importantly, if someone *does* have the capacity to provide informed consent, any decision about their participation in a study must come only from them; although other people may provide advice, no-one else can make the decision on the subject's behalf. It is of note that this differs, again, when subjects are vulnerable. The concept of vulnerability – and the associated adjustments that can be made to the consent process to account for this – will be discussed in more detail in section 3.3.

The other component of informed consent outlined by the Belmont Report is that of comprehension, since “the manner and context in which information is conveyed is as important as the information itself” (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979, p. 7). Indeed, it is essential that subjects be provided with the relevant information, and allowed to make their voluntary choice, in a manner, format and language that suits their individual needs and that they can understand. Moreover, the responsibility for ensuring that the consent process is comprehensible lies with the researcher (Permissible medical experiments, 1946-1949).

It is common practice for the informative part of the consent process to be presented to potential subjects in written format, for example in the form of a booklet, and, often, for the contents of this to also be verbally explained to ensure understanding. Subsequently, informed consent is formalised with a consent form, on which subjects acknowledge their understanding and awareness of various aspects of the research and sign to officially record their consent (ESRC Framework for Research Ethics, 2015; Ethics and Data Protection, 2018). However, this typical format and process might not be deemed sufficient and/or appropriate. For example, as suggested by the BPS Code of Human Research Ethics, the process “might include oral, pictorial, audio, or video media as well as or instead of a textual information sheet” (British Psychological Society, 2021, p. 12). Indeed, adjustments should be made to make the information more accessible if required. For research with refugees, asylum seekers and migrants, for example, written consent may be perceived as jeopardising anonymity or as “complex and legalistic” (Guidance note, 2020, p. 2). Indeed, there are various situations “in which standard procedures for obtaining written informed consent are culturally or contextually inappropriate to the participants” (Ethics in Social Science and Humanities, 2018, p. 13); in such situations, oral consent may be deemed more appropriate.

It is of note that there are certain exceptional situations where the full scope of informed consent, as summarised here, cannot be gained before a study begins without compromising the nature of the research, for example in the case of research that is covert or that involves deception (British Psychological Society, 2021; Ethics in Social Science and Humanities, 2018, p. 13). However, strong justification is required for this breach in typical ethical research conduct and use of deception “has been subject to controversy and debate” (Ethics in Social

Science and Humanities, 2018, p. 6); moreover, “any study relying on deception must be designed as to protect participants’ dignity and autonomy, despite the method used” (Ethics in Social Science and Humanities, 2018, p. 6). Additionally, as already mentioned, potential subjects themselves may have an impaired capacity to engage with the full demands of an informed consent process; I will now discuss this in further detail.

3.3. Vulnerability and associated safeguards

3.3.1. Overview of vulnerability

As outlined, the informed consent process must conform to certain requirements and, as such, it places a high level of demand on potential subjects. Indeed, for informed consent to be valid, an individual must be able to comprehend, sufficiently weigh up and deliberate over the information that is presented to them about the research as well as understand and foresee the potential consequences and risks that could result from their participation. Additionally, they must be able to do so within a context that is free of any coercion, undue influence or other form of pressure in relation to their decision.

For numerous reasons, a significant proportion of potential research subjects cannot meet such requirements and are therefore deemed ‘vulnerable’ in this regard. Broadly, the term vulnerability is used when the validity of the informed consent process is potentially compromised, *i.e.*, when a potential subject has “a diminished ability to fully safeguard [their] own interests in the context of a specific research project” (Canadian Institutes of Health Research, 2014, p. 197, cited by Van Patter & Blattner, 2020). As such, a vulnerable individual is “more susceptible to coercion or exploitation” (National Bioethics Advisory Commission, 2001b, p. 13) and “has an increased probability of being intentionally or unintentionally harmed” (González-Duarte et al., 2019, p. 1) and “used in ethically inappropriate ways in research” (National Bioethics Advisory Commission, 2001a, p. 85, cited by Gordon, 2020).

The idea of an individual as ‘vulnerable’ in a research context stems back to the Belmont Report, which recommends that a higher level of consideration be put into assessing the risks and benefits of a study that involves “vulnerable populations” (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979, p. 9) and highlights the potential for vulnerable subjects to experience injustice. Nowadays, the concept of vulnerability is very widely used internationally and holds “a central place in research ethics guidance” (Bracken-Roche et al., 2017, p. 1). Indeed, vulnerability has been described as “a cornerstone of the theoretical basis and practical application of ethics in human subjects research” (Gordon, 2020, p. 34).[8]

It is important to specify here that, throughout this thesis, when individuals are referred to as vulnerable, this specifically denotes their position in relation to research participation. The extent to which individuals are vulnerable in other aspects of life does not necessarily correspond exactly to their vulnerability in a research context; for example, there may be minor adjustments that can be made to an informed consent process and study procedure that effectively rescind a potential subject’s vulnerability (*e.g.*, in the case of a visual impairment or language barrier) and thus render any consent that they provide valid in this adjusted context, whereas those adjustments may not be readily available in other aspects of the individual’s day-to-day life (González-Duarte et al., 2019). Moreover, at a fundamental level, all humans (and perhaps all living beings) possess an inherent vulnerability that is an unavoidable part of existence, *i.e.*, that reflects our shared “latent susceptibility to pain, suffering, illness, and disease” (Johnson, 2013, p. 499). The vulnerability that is referred to throughout this thesis therefore reflects that which is “more than ordinary” (Rogers et al., 2012, p. 24), *i.e.*, that which is over and above the inherent vulnerability that any human (or chimpanzee) subject would experience ordinarily in their everyday life.

In relation to research participation, vulnerability is often associated with, and accompanied by, reduced autonomy, whether through an intrinsic reduction (*e.g.*, as a result of cognitive

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[8] Although the concept of vulnerability is widely established in human research ethics, it is not without critique. For example, it has been argued that classifying individuals or groups as vulnerable confers a ‘lesser’ status or value in comparison to those who are not vulnerable; moreover, that “vulnerability is not a desirable quality”, “has negative connotations” and “opens one up to pity and paternalism” (Johnson, 2013, p. 498). Similarly, it has been argued that calling subjects vulnerable “can be both insulting and misleading” when their vulnerability is conferred via the situation, circumstances or context, rather than via their intrinsic qualities (National Bioethics Advisory Commission, 2001a, p. iv). Although analysis of this issue is beyond the scope of this thesis, I acknowledge here the weaknesses of vulnerability as a term, but I refer to this concept throughout the thesis due to the widespread and ongoing usage of this terminology in the human research literature.

impairment) or by way of situational, or circumstantial, factors that compromise an individual's ability to fully exercise their autonomous capacities (Cristina & Cosac, 2017; National Bioethics Advisory Commission, 2001a). Consequently, it is imperative that vulnerability be recognised, planned for and addressed from the outset of the research process (*i.e.*, when the study is initially being designed), as it is typically an important indicator that a person's right to exercise their autonomy, in so far as they are able, is at risk of being violated. Importantly, any reductions in autonomy resulting in vulnerability and, thus, risks to the validity of the informed consent process for that person, can occur "temporarily or permanently"; indeed, "even if a person is considered autonomous, at times they may end up acting without autonomy" due to "mental, emotional and physical alterations" that can compromise this capacity (Cristina & Cosac, 2017, p. 20).

Indeed, vulnerability exists along a broad spectrum, since there are numerous different ways in which an individual can be rendered vulnerable within a research context, and such vulnerabilities can place an individual at "greater or lesser risk of harm"; *i.e.*, vulnerability is not an all-or-nothing concept (Gordon, 2020, p. 35). Broadly, the reasons for vulnerability can be divided into those which are intrinsic and those which are situational, *i.e.*, relating to the individual's circumstances and therefore extrinsic to the individual themselves (Cristina & Cosac, 2017).

Intrinsic vulnerability typically results from impaired or "limited decision-making capacity" (Van Patter & Blattner, 2020, p. 175), for example as a result of the potential subject's developmental stage (*e.g.*, infants and young children) or due to an intellectual disability, cognitive impairment or serious psychiatric disorder, such that the individual cannot fully engage with the requirements of the informed consent process due to their own internal characteristics. Being a member of a particular category of beings may therefore render an individual vulnerable simply by nature of their group membership.

However, vulnerability is conceptualised much more widely than group membership alone. Indeed, it is vital that vulnerability is also seen as a function of the context in which the research is taking place, taking into consideration the situation, environment and relationships involved during the informed consent process for any given individual (Gordon, 2020; National Bioethics Advisory Commission, 2001a). Indeed, "vulnerability is sensitive to context"

(National Bioethics Advisory Commission, 2001a, p. 87) and contextual factors can change the position of an individual on the vulnerability spectrum; in fact, potential research subjects may only become vulnerable in certain situations, or time periods, but not in others. Moreover, conceptualising vulnerability as contextual also allows "for variation in the degree of vulnerability within [a] group based on individual characteristics" (Gordon, 2020, p. 35).

A contextual approach to vulnerability is particularly relevant when considering extrinsic, or situational, factors that have the potential to render a potential research subject vulnerable (Vulnerable populations background, 2016). For example, poverty and low socioeconomic status may make an individual more vulnerable to exploitation "since their decision to join a study may be influenced by the type of financial payments sometimes offered as compensation for participation" (Johnson & Barnard, 2014, p. 134). An important source of contextual vulnerability arises from imbalanced power dynamics in the researcher-subject relationship, *i.e.*, where a subject is in a dependent or unequal relationship with the person (or with the team, organisation or sponsor) responsible for carrying out the research (British Psychological Society, 2021; Ethics in Social Science and Humanities, 2018). Researchers may hold authority over potential subjects and/or be of a (real or perceived) higher status or rank, which can, overtly or covertly, influence a subject's decision to take part in a study. This can occur, for example, in the recruitment of children, students, military personnel, medical patients, refugees, employees (British Psychological Society, 2021; Committee on Ethical Considerations, 2006; Ethics in Social Science and Humanities, 2018; González-Duarte et al., 2019) or those from "politically and economically disadvantaged groups" (Levine et al., 2004, p. 44), or in circumstances of "unequal societal structures [for] those who are from minorities" (Tickle, 2020, para. 5). So-called "subordinate subjects" are vulnerable since "their recruitment may be the result of coercion or undue influence"; for example, in the case or employees or students, "they may feel that not volunteering will negatively affect their performance, evaluations or career advancement" (González-Duarte et al., 2019, p. 220). Similarly, residing in care, prison, hospital or detention centres, for example, can also elicit vulnerability (British Psychological Society, 2021; Committee on Ethical Considerations, 2006; Guidance note, 2020; National Bioethics Advisory Commission, 2001a). For example, in a review of ethical considerations in research with prisoners, an IOM Committee acknowledged that "the prison environment makes it difficult to assure even minimal standards for ethical research such as voluntary informed consent and privacy", with prisoners "particularly vulnerable to exploitation" and "subjected to high levels of coercion (explicit and implicit)" (Committee on Ethical Considerations, 2006, p. 220).

Vulnerability may also result from communicative barriers between the potential subject and the researcher, for example, if the subject speaks a different language from that in which the study is being conducted, or if the subject has a visual impairment that prevents them from being able to receive written information (National Bioethics Advisory Commission, 2001a). It may be possible to resolve such barriers with adjustments to the format of the informed consent process and thus render consent from such individuals as valid, for example, by use of translated information sheets, consent forms and study materials, alongside an interpreter, in the case of a language barrier, or by providing the information in an alternative format if there are sensory impairments (British Psychological Society, 2020; Vulnerable populations background, 2016).

Importantly, any given individual may experience multiple vulnerabilities concurrently. For example, children may be intrinsically vulnerable due to their developmental stage, *i.e.*, they may possess insufficient cognitive capacities for fully autonomous decision-making at the level required by an informed consent process. However, they may additionally experience contextual vulnerabilities such as "a perceived need to defer to adult authority" (Vulnerable populations background, 2016, p. 7) and "potential influence by 'longstanding institutionalized relationships of adult authority and power'" (Safeguarding children, 2013, p. 26, cited by Vulnerable populations background, 2016).

Given the broad scope of vulnerability and the importance of considering contextual influences as well as the potential for multiple vulnerabilities affecting any one individual, an alternative to categorising vulnerability based on group membership and on the intrinsic/extrinsic distinction has been suggested by the National Bioethics Advisory Commission (NBAC; National Bioethics Advisory Commission, 2001a). They suggest that vulnerability can instead be divided into six categories, all of which are "sensitive to context" (p. 87). These are: cognitive or communicative vulnerability ("either due to capacity (…) or circumstances"); institutional vulnerability ("being subject to an authority relationship in a formal hierarchical structure"); deferential vulnerability ("being subject to the authority of others"); medical vulnerability ("having a serious health condition for which there is no satisfactory standard treatment"); economic vulnerability ("being disadvantaged in the distribution of social goods or services"); and social vulnerability ("being a member of an undervalued or disenfranchised social group") (Vulnerable populations background, 2016, pp. 6-7). Later in this thesis, I will argue that a number of different types of contextual vulnerability apply to chimpanzees as research subjects and thus render chimpanzees vulnerable in the context of human-led research activities – especially in captive settings.

Overall, as mentioned previously, it is widely recognised that vulnerable individuals should be protected with additional safeguards during any recruitment and consent process for a research study. This is outlined in the Belmont Report, for example, which declares that "persons with diminished autonomy are entitled to protection" (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979, p. 4). Likewise, the WMA Declaration of Helsinki asserts that "all vulnerable groups and individuals should receive specifically considered protection" (World Medical Association, 2013, p. 2192). Indeed, the validity of the informed consent process is compromised without such additional safeguards in place. How best this is done in practice varies depending on the specific situation and the nature of any vulnerabilities in a given context. As previously outlined, in some cases – particularly where vulnerability stems from communicative barriers – practical changes may be sufficiently able to alter the context such that someone's vulnerability is eliminated. Similarly, if temporal factors are contributing to a potential subject's vulnerability, waiting until a transient period of vulnerability comes to an end before beginning the consent process at a later date may be sufficient.

However, there are many forms of vulnerability that are unchangeable and thus cannot be eliminated by any reasonable practical adjustments or contextual changes such that the individual will ever be able to give valid informed consent for research of their own accord. Indeed, the population targeted by a study may, by their very nature, be vulnerable, for example in the case of a study specifically looking at the cognitive abilities of infants. In order to proceed in these types of circumstances, an important factor to consider from the outset is the level of decisional capacity possessed by the study population within the relevant context. Subsequently, this information can be incorporated into decisions around ethical research participation – whether this is possible at all, and, if so, the adjustments required for this. Indeed, as already mentioned, additional safeguards and compensatory measures are generally required in situations of vulnerability, and I will later summarise these, but, firstly, I will present two alternative, less demanding, levels of decisional capacity that vulnerable individuals may possess when they are unable to provide valid informed consent.

3.3.2. Assent, dissent and compliance

As already outlined, although informed consent is the pinnacle of ethical subject engagement in research and a key safeguard for the protection of subjects' autonomy and personhood, vulnerable subjects cannot meet the requirements of this process, typically due to their level of decisional capacity and/or the circumstances in which the process takes place. In situations where vulnerability stems from an individual's impaired capacity to provide informed consent, for example in the case of young children or adults with intellectual disabilities, it is important to establish the level of decisional capacity that potential subjects *do* possess in relation to research participation, given that this can vary widely across the spectrum of those who are vulnerable in this way.

As summarised by Fenton (2014, p. 132), there are typically understood to be "three basic levels of decisional capacity" which are "discussed in the literature and variously recognized in policies and regulations", particularly in relation to research involving children. The highest level, which will be referred to in this thesis as the first of the three levels of decisional capacity, is that of informed consent, as already outlined. The second level is that of 'assent', which has less demanding requirements in comparison, and the third level relates to a subject's ability to 'dissent' from participation.

In 1976, the American Academy of Pediatrics (Task Force on Pediatric Research, cited by Brown et al., 2017) endorsed the term 'assent' in relation to paediatric research in order to acknowledge the limited capacity of children to provide informed consent yet simultaneously recognise that they should have involvement in decisions about their own participation. They conceptualised assent as involving four components: "(a) knowing what procedures will occur, (b) choosing to participate out of free will, (c) clearly communicating this choice, and (d) having awareness of the ability to withdraw from participation" (Brown et al., 2017). In other words, the subject is required to provide agreement to participate based on developmentally appropriate information provided to them about the study in a way that they can understand, but they are not required to comprehend or weigh up the same level of information as would be provided during an informed consent process. Similarly, as cited by Arnason (2020, p. 2286), Diekema (2006, p. S9) conceptualises assent as that which “requires only that the child possess the capacity to understand that the research is not being done for his or her benefit, to understand what will happen to him or her in the research project, and to agree or disagree regarding participation”. Put another way, “in order to properly assent, the relevant children should be able to appreciate (in some important sense) the nature of the research, its potential benefits for other children, and the risks it poses to them” (Fenton, 2014, p. 133)”.

It is of note that there is no clear, established, international standard for assent, resulting in variation between researchers in how this is defined and achieved in practice and what level of comprehension is required (*e.g.*, Kimberley et al., 2006). For example, there is disagreement surrounding the age threshold at which children are thought to possess capacity for assent (for Diekema [2006], this is seven years old for most children; other authors argue that this should be higher, for example, Wendler [2006] advises using age 14), as well as whether such a threshold should even be based on age at all or instead on developmental stage. Importantly, if a subject *does* have the capacity to assent, then this should be obtained by the researcher as part of the participation process. Additionally, as is the case with informed consent, assent should generally be conceptualised as a process ongoing throughout the duration of the research, rather than a one-off event at the outset (*e.g.*, Dockett & Perry, 2011, cited by Brown et al., 2017).

Assent therefore does still place some demands and requirements on the capacities of subjects; as such, there are potential study subjects who will not possess the capacity for assent, for example, in the case of research with infants or individuals with very significant cognitive impairments. In these cases, subjects may still be able to meet the third level of decisional capacity, that of dissent.

Dissent has been defined as “an expressed objection, either verbal or behavioral, to what an individual is experiencing as a result of a research procedure” (Kantin & Wendler, 2015, p. 461). Brown et al. (2017, p. 3) suggest that this can encompass both an “individual’s prospective refusal to participate before engaging in any research activities” and “an individual’s withdrawal from active participation”. In relation to paediatric research, Fenton (2014, p. 134) suggests that dissent “requires the following capacities: the capacity (1) for distress, pain, or stress; (2) to anticipate the future occurrence of distress, pain, or stress; and (3) to ‘ask’ that it stop or to express that the relevant distress, pain, or stress is unwanted”, however, in contrast to the other levels of decisional capacity, the understanding of stressors here can be fairly superficial (Fenton, 2018). Moreover, subjects are not required to understand the implications of the research for others, nor the potential risks for themselves as a subject (Fenton 2014). Indeed, subjects can dissent “without even understanding that they are involved in research” (Kantin & Wendler, 2015, p. 461). In other words, dissent involves some form of outward appearance or expression of a subject’s objection to participation and a lack of willingness to engage, without there being a requirement for the level of understanding of what is happening as would be required for assent.

In practice, dissent can be expressed in a variety of ways; with children, for example, Diekema (2006) suggests that this might be “expressed in their inconsolable distress when presented with relevant stimuli, their refusal to extend their arm or turn their head, or their refusal to sit still” (Fenton, 2018, p. 481). Alternatively, as suggested by the BPS (British Psychological Society, 2021), there may be more subtle non-verbal signals, such as “looking away, not making eye contact, becoming silent or monosyllabic in replies, withdrawing into self or nervous fidgeting” (p. 16), “perhaps taking longer than expected to answer questions or follow prompts, (…) ‘closed-in’ body posture or looking towards exits or out of windows” (p. 17).

The absence of dissent has been referred to in the literature using a variety of terms, including those of acquiescence, cooperation, willingness and compliance (*e.g.*, Arnason, 2020; Johnson & Barnard, 2014; Kahn, 2012; Van Patter & Blattner, 2020); the last of these will be used throughout this thesis and will be taken to mean that subjects visibly (or verbally) give the appearance of cooperating with research procedures – or, as a minimum, at least do not overtly resist involvement – in the absence of a capacity for assent or informed consent.

It is of note that the concept of assent can sometimes be erroneously confused with that of compliance in the literature, especially in relation to nonhuman animal research. Assent is here often assumed to represent only a lack of dissent which, as already outlined, does not parallel with the concept of assent as typically understood in paediatric research. Furthermore, as clarified by Fenton (2014, pp. 133-134), "though a child's capacity to assent to participation in research implies the capacity to dissent, it need not be the case that a child capable of dissent is capable of assent". Indeed, as already outlined, assent is more cognitively demanding.

These second and third levels of decisional capacity, assent and dissent, respectively, will be discussed again in the next chapter in relation to the level of capacity of chimpanzees to engage with a consent process and the consequent ethical implications of this. Prior to this, in the last section of the current chapter, I will now summarise and discuss some of the additional safeguards and compensatory mechanisms typically afforded to vulnerable human research subjects, including those who only possess the second and third levels of decisional capacity, given that neither assent nor compliance, in and of themselves, are generally considered sufficient for ethical study participation.

3.3.3. Additional protections for vulnerability

As explained previously, when research is being conducted that involves vulnerable subjects, additional protections should be put in place to ensure that their autonomy and personhood can still be fully respected – and that the manner in which they come to participate in the study is ethical – despite the difficulties in gaining valid informed consent directly from the subjects themselves in the given context. What such protections look like and how they are implemented can vary, for example, between the requirements and regulations of different institutional bodies, and depending on the nature of the vulnerability. However, there are some well-established general principles and approaches for safeguarding vulnerability in research that are widely utilised internationally and generally regarded as suitable protections within the context of a deontologically-focused ethical research framework; I will summarise these here.

Firstly, researchers should take all possible steps to "maximise the ability of vulnerable persons to give informed consent" (British Psychological Society, 2021, p. 15), *i.e.*, any feasible alterations and adjustments should be made that could potentially eliminate a subject's vulnerability and allow informed consent to be gained from the subject themselves. Examples of such adjustments include methods to overcome communicative barriers or enhance a subject's decisional capacity insofar as possible, for example: "providing 'accessible' information about the project" (British Psychological Society, 2020, p. 21), for instance through the use of "alterative formats", using "accessible language", "breaking down complicated information into smaller points" and/or using repetition; "providing education about research" more generally, for those with no prior research experience; "altering the timing or location that consent is sought" and "allowing the person time to reach the decision"; carrying out the consent process in stages; and "encouraging discussion with (…) family or friends about the project" (p. 22). Even when such adjustments are unable to facilitate a subject to the level of providing full informed consent, it is important that all subjects be allowed to "give consent to the extent that their capabilities allow" (British Psychological Society, 2021, p. 15). Indeed, "respect [for vulnerable individuals] requires giving them the opportunity to choose to the extent they are able, whether or not to participate in research" (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979, p. 7).

As outlined previously, in situations where vulnerability stems from compromised decisional capacity, subjects may be able to assent or dissent. Crucially, in research with human persons, neither assent nor a lack of dissent are considered sufficient, in and of themselves, for determining study participation. Indeed, assent is often seen as part of a "relational process" in which the assent of a child, for example, is part of a joint decision on participation alongside informed consent from an appropriate adult such as a parent or legal guardian (Dockett & Perry, 2011, p. 231). The involvement of another person, other than the subject, in decisions regarding research participation is a widely-used safeguard in situations of vulnerability and will be discussed in more detail shortly. If a child *declines* to give their assent to participate in a study – assuming that the child does possess the capacity to assent – then it is widely agreed upon that this decision should be respected in order to protect the child's autonomy. As stated by Fenton (2014, p. 132), "it is widely recognised that the willing cooperation of child subjects should be secured" so as to "ensure their safe and respectful treatment in research". Indeed, "best practice is to see the child's wishes as trumping any counter wish on the part of the parent(s) or other responsible person(s) for the child's participation to commence or continue" (British Psychological Society, 2021, p. 16) and "researchers must uphold the ethical principle of respect for persons regardless of age" (Brown et al., 2017, p. 3).

Similarly, if a subject possesses the capacity to dissent, it is generally agreed upon that any signs of dissent should be respected as an indication that the subject does not wish to begin, or to continue, taking part in the study, and that they should therefore be withdrawn. For example, in the case of very young children, both Diekema and Wendler have argued that "sustained dissent (…) in a research setting is a good prima facie reason to exclude them from the relevant study" (Diekema, 2006; Wendler, 2006; cited by Fenton, 2018, p. 479). Indeed, the British Psychological Society (2021, p. 16) advise that "respecting autonomy also means being sensitive to non-verbal signs that a child is unwilling to consent or to continue participation".[9] This approach generally also applies to adults who cannot consent, for example, the UDBHR asserts that "refusal of such persons to take part in research should be respected" (United Nations, 2005, p. 77). However, there are some specific, exceptional circumstances in which it may be possible, or even advisable, for study involvement to continue despite dissent; for example, in the case of biomedical research, when a study provides a child with direct medical or therapeutic benefit that is not available elsewhere, *i.e.*, "if the expectation of direct therapeutic benefit is sufficiently strong, if there are no viable alternative therapeutic options, and if the child research subject will not receive equally attentive care outside of the relevant research context" (Fenton, 2014, p. 134). This is reflected in the Belmont Report, which asserts that "the objections of [subjects who cannot consent] to involvement should be honored, unless the research entails providing them a therapy unavailable elsewhere" (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979, p. 7).

As mentioned previously, if the level of consent that a subject is capable of providing falls below the stringent requirements of full, valid informed consent, then neither assent nor compliance are generally sufficient alone to allow their recruitment into a study. One of the main safeguards utilised in such scenarios is therefore the involvement of another person, *i.e.*, a third party, in the decision-making process, who possesses the level of capacity required for informed consent and who can act, or advise, on behalf of the subject, *i.e.*, can act as a surrogate

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[9] In the case of very young children, it has been argued that overt behavioural or vocal signs that would typically be interpreted as dissent should not necessary be unequivocally respected. For example, Brown et al. (2017) argue that toddlers typically display noncompliant and defiant behaviour in day-to-day life that could, in a research context, be interpreted as dissent (*e.g.*, saying no, throwing a tantrum, ignoring adults); they therefore suggest that such behaviour does not always need to lead to a toddler being withdrawn from a study. Instead, they propose that "the notion of dissent is particularly complicated" (p. 3) with this subject group and that "flexibility and creativity" (p. 1) are required in order to respect toddlers' rights.

or proxy, or as an advocate. The WMA Declaration of Helsinki (World Medical Association, 1964, p. 2) introduced this idea of involving another person in the recruitment of vulnerable subjects by stating, in the 1964 version of the document, that “consent should also be procured from the legal guardian”, in relation to medical research; the updated version from 2013 similarly states that “the physician must seek informed consent from the legally authorised representative” (World Medical Association, 2013, p. 2193). Similarly, in relation to clinical research, the World Health Organisation (2002) advise that it is good practice to “seek permission of a legal guardian or other legally authorized representative when the prospective subject is otherwise substantially unable to give informed consent” (Vulnerable populations background, 2016, p. 20). In relation to research more widely, the Belmont Report also states that, for subjects who cannot provide informed consent, “respect for persons also requires seeking the permission of other parties in order to protect the subjects from harm” (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979, p. 7). Indeed, in relation to potential harm in research with children, Fenton (2014, p. 133) explains that third parties “are needed to protect the interests of the relevant (…) children and the expressed cooperation of such children from the undue influence of parties interested/invested in their participation”. This approach is typically used in conjunction with consent – to the level that it is possible – from the subject themselves; as such, “persons are thus respected both by acknowledging their own wishes and by the use of third parties to protect them from harm” (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979, p. 7).

Importantly, third party representatives should be independent from the institution and team conducting the research and able to act on behalf of the subject’s interests in an unbiased manner, *i.e.*, as stated in the Belmont Report, they should be “those who are most likely to understand the (…) subject's situation” (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979, p. 7). Depending on national legislation and the relevant research ethics guidance, they may be a legally authorised representative or alternatively an authorised third party, and their role in the consent process can vary. For example, representatives may be required to act as “surrogate decisionmakers” (Fenton, 2014, p. 133) and provide full “’surrogate’ or ‘proxy’ [informed] consent” (Gainotti, 2010, p. 2) on behalf of the subject, at the outset; they should then typically also “be given an opportunity to observe the research as it proceeds in order to be able to withdraw the subject from the research, if such action appears in the subject's best interest" (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979, p. 7). Alternatively, a representative may act as a "consultee" to provide advice and guidance on the subject's involvement in the study (British Psychological Society, 2020).

However, prior to reaching the stage of recruiting vulnerable subjects to take part in a study and, thus, gaining consent via the use of safeguards such as a third party representative, there are typically other protections put in place to limit and regulate the type of research that can be carried out at all with these populations. For instance, if a study aims to involve subjects who are likely to lack the ability to provide informed consent, a crucial safeguard, widely implemented internationally, is for the study to be overseen and approved, prior to it starting, by an ethics panel or committee for a "reasonable and proportionate independent ethical review" (School of the Biological Sciences, n.d., para. 3). In fact, for a large proportion of research studies, not only those involving vulnerable subjects, a research ethics committee (REC) from the relevant institution or research centre needs to provide approval if the study in question is, for example, above minimal risk, in any way intrusive, involves human subjects and/or utilises identifiable or personal data. For studies involving vulnerable subjects, the process is often more stringent, such is the level of importance afforded to safeguarding vulnerable subjects from potential research harm. Indeed, researchers must provide due justification as to why the subject group is required for the study. For example, in the UK, approval of studies involving adults who lack capacity to consent must be carried out both by the relevant institution and additionally by one of a subset of specialised, or 'flagged', committees within the National Health Service (British Psychological Society, 2020) where there is "relevant professional, academic and ethical expertise among the committee's membership" (Flagged research ethics committees, 2020, para. 1).

In addition, there are typically strict limitations on the nature of the research that can be carried out with vulnerable groups. For example, legislation and policy may require that studies with individuals who cannot consent must deliver some form of benefit for the subject (for example, application of a treatment or intervention that may improve a subject's health), otherwise greater restrictions have to be in place. Indeed, "'nonbeneficial' research" (Wendler, 2014, p.

158) – *i.e.*, studies which do not offer any direct or indirect benefit to a subject as a result of their taking part – is of particular ethical importance, as it has significant potential to exploit those who are vulnerable “for the benefit of others” (Wendler, 2014, p. 158). This is highlighted in the Belmont Report, which recognises the potential for “vulnerable subjects” to be over-recruited to research for reasons of “administrative convenience” (p. 9) , *i.e.*, due to “their easy availability, their compromised position, or their manipulability” (p. 6), while simultaneously being less likely to recoup the benefits from research findings, thus violating the principle of justice (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979).

At the same time, however, it is important that vulnerable subjects not be automatically excluded from research participation – including that which is classed as ‘nonbeneficial’ – simply because of their vulnerability, for this would amount to discriminating against them and depriving them “of access to the opportunity of active participation” (British Psychological Society, 2020, p. 14); indeed, it could be deemed unjust for both the subjects individually and for the wider vulnerable population. For these reasons, the Mental Capacity Act (MCA; Department for Constitutional Affairs, 2005), for example, does not require that adults lacking capacity in England and Wales be limited only to engaging in research that is predicted to be directly beneficial to them as individuals; nevertheless, it does place tight restrictions on the type of nonbeneficial research that they *can* engage in, as will be summarised shortly.

One approach that is often taken to address this issue of nonbeneficial research participation is to prevent subjects who lack capacity from engaging in a study that will not benefit them unless “it satisfies the additional requirement of being designed to benefit ‘the population represented by the potential subject’” (Wendler, 2014, p. 168), *i.e.*, others with the same condition or type of disability as the subject. For instance, the WMA Declaration of Helsinki restricts nonbeneficial medical research with those who cannot consent to studies “intended to promote the health of the population represented by the potential subject” (Gainotti, 2010, p. 2). Similarly, the UDBHR only permits research that does not have a direct health benefit if it “is expected to contribute to the health benefit of other persons in the same category” (United Nations, 2005, p. 77).

Subjects who cannot consent are also safeguarded through strict limitations on the level of allowable "research-related risk" and burden that they can be exposed to during a study (Vulnerable populations background, 2016, p. 7). When research is likely to be beneficial to the subject, potential risk is weighed up against the likely benefits in order to determine what risk level is proportionate, on balance, and therefore justifiable (British Psychological Society, 2020). For nonbeneficial research, however, the risk and burden involved in participation usually has to be negligible in order for a study to be ethically acceptable; indeed, this 'minimal risk' approach is embedded in many well-established declarations and guidelines (*e.g.*, World Medical Association, 2013; United Nations, 2005).

In order to ensure that vulnerable subjects' fundamental rights are respected, national legislation, policy and research guidelines generally dictate that *multiple* safeguards be in place collectively; indeed, this is usually required in order for a study to gain ethical approval such that researchers can begin recruitment. For example, in a study involving ten year old children, a researcher would typically have to justify and demonstrate the scientific importance of the study to a REC for approval; gain valid informed consent from parents or legal guardians; devise and implement a meaningful, age-appropriate assent process involving age-adjusted information conveyed via appropriate forms of media such as drawings or videos; monitor for signs of dissent during the procedure(s); and ensure that the research-related risk associated with the study fell below any regulated upper threshold.

Similarly, with adults who lack capacity to provide consent, such as those with a significant intellectual disability, the MCA (Department for Constitutional Affairs, 2005) requires that a number of stringent protections be collectively put in place for a study carried out in England or Wales to meet legal requirements. These include: oversight and approval by a 'flagged' REC; appropriate consultation with subjects' trusted relatives or professional consultees; "assurance that the interests of the subject are considered as having greater importance than any potential benefit to others"; and monitoring for any "signs of objection" or dissent from the subject (British Psychological Society, 2020, p. 26). In addition, the study should be "associated with the condition which impairs the participant" (p. 33) – *e.g.*, carried out because of the condition that prevents the subject from being capable of providing consent – or with treatment of this condition. Furthermore, it must not be possible to carry out the study as successfully with individuals who *are* able to consent, and the study must be intended "to provide knowledge about the cause of, or treatment or care of people with, the same [or similar] impairing condition" or, alternatively, likely to have some (direct or indirect) benefit for the subject themselves (Department for Constitutional Affairs, 2005, p. 207). If such benefit is not anticipated, any risk should be "negligible" (p. 207); moreover, and crucially, the MCA also requires that "participation in the project should not interfere with the subject's freedom of action or privacy in a significant way, or be unduly invasive or restrictive" (British Psychological Society, 2020, p. 33), *i.e.*, their rights should be respected.

Additional protections are also advised for situations in which the context, or circumstance, contributes to subjects' vulnerability, rather than intrinsic factors. For example, researchers should take steps to recognise and minimise the potentially influential effects of an unequal or dependent researcher-subject relationship; indeed, they "should realise that they are often in a position of real or perceived authority or influence over participants" and should ensure that such relationships do not "exert pressure on people to take part in or remain in an investigation". Of particular note are situations in which "people in positions of power over potential subjects, for example, school teachers, managers or prison staff, serve as gatekeepers or recruiters for research" (British Psychological Society, 2021, p. 19). In these scenarios, best practice is generally to devise alternative recruitment pathways in which a third party, who is not in such a position of power, promotes the research and conducts the informed consent process, *i.e.*, implementation of an "arms-length" consent procedure (Canadian Paediatric Society, 2008, p. 710). Indeed, the WMA Declaration of Helsinki (World Medical Association, 2013, p. 2193) specifically states that in situations where a "potential subject is in a dependent relationship with the physician" who is carrying out a medical study, "informed consent must [instead] be sought by an appropriately qualified individual who is *completely independent* of this relationship [emphasis added]". Similarly, the European Commission's guidance for research in social science and humanities explicitly states that researchers should "not involve participants who are in any way dependent on [them] or [their] staff" (Ethics in Social Science and Humanities, 2018, p. 12).

This protection can also be applied in specific ways to particular subsets of vulnerable individuals. For example, when working with refugees, it is advisable to consider "including researchers with a refugee or migrant background, or from the same culture" in order to "mitigate potential (…) power differentials" in the researcher-subject relationship (Guidance note, 2020, p. 2). With children and young people, the setting in which the assent or informed consent process is conducted should be carefully considered, since "the school or early years setting is one in which a degree of compliance with adult direction is required and enforced, either subtly and kindly, or more directly" and, "thus, seeking consent from a child in such settings will already result in some degree of influence". Indeed, researchers should "make special efforts to establish the different relation that positions the child as a free agent" (British Psychological Society, 2021, p. 16).

Overall, as outlined throughout this chapter, informed consent, along with appropriate adjustments and additional protections for vulnerability, is therefore essential if research is to protect subjects' autonomy and therefore their personhood. This applies equally to cognitive research. In the next chapter, I will therefore discuss consent in the context of cognitive research involving chimpanzees and I will argue that a similar ethical research framework, based on deontological principles, to that used in research with human persons, should also apply when subjects are *non*human persons. Moreover, I will argue that chimpanzees should be considered as vulnerable within this framework and therefore should be afforded appropriate additional protections in line with those that are so stringently enforced with humans.

4. AN ETHICAL RESEARCH FRAMEWORK FOR CHIMPANZEES

As outlined in the previous chapter, informed consent plays a crucial role in the conduct of research with human subjects. Indeed, consent is firmly established internationally at various levels of research oversight and regulation as a means of acknowledging and respecting human subjects' autonomy and personhood. Moreover, this takes place within the wider context of an ethical research framework that is predominantly focused on deontological concerns, *i.e.*, that protects human subjects' fundamental rights. Indeed, avoiding violations of subjects' rights is of such importance that when potential subjects are unable to fully engage with a valid informed consent process – and, thus, are more susceptible to exploitative, coercive or unduly influential forces that could compromise their autonomy – researchers must ensure that multiple additional protections are put in place.

In contrast, as outlined in the introduction, the ethical acceptability of research with nonhuman animals, including chimpanzees, is determined via an alternative framework in which utilitarian concerns dominate, often involving the '3R' principles. As such, nonhuman animals are able to be instrumentalised for the greater good when the predicted consequences of a study (for either human or nonhuman animals) are deemed significant enough (or the physical and psychological impact on subjects is deemed insignificant enough). The difference between these frameworks is particularly jarring when it comes to the use of chimpanzees as research subjects. As argued previously, chimpanzees, like humans, are autonomous persons with a right to liberty, yet the current framework for making ethical decisions about the involvement of nonhuman animals in research does not recognise or protect any rights that they may hold.

In this chapter, I will therefore argue that an equivalent ethical research framework to that which is used with human subjects should be in place for chimpanzees, otherwise neither their personhood nor their right to liberty are respected. Indeed, there is no non-arbitrary reason why the ethical approaches used to determine research participation should differ between humans and chimpanzees on the basis of species. Moreover, I will defend that chimpanzees are vulnerable subjects within this framework and thus require additional protections. By doing so, I will establish ethical standards against which the participation process and setup of any study involving chimpanzees can be evaluated in order to determine whether or not the research is morally justifiable. Accordingly, in chapter five, I will show that the research setup and activities outlined in section 1.4 violate chimpanzees' right to liberty in various ways when viewed under the umbrella of the ethical research framework established here as appropriate, *i.e.*, one which is based upon deontological principles.

It is important to state here that, in this thesis, I am assuming that informed consent – including the use of the concept of vulnerability in relation to this – and the overarching ethical framework for human research within which it falls, are largely appropriate means of safeguarding subjects and protecting their interests. Whether alternative approaches or frameworks would better serve this purpose cross-culturally – and whether there are limitations to the use of informed consent as the means of respecting and safeguarding subjects' autonomy and personhood – is outside the scope of this thesis. The ethical research framework used to guide research with humans is well-established internationally, with components and principles from the framework widely embedded within legislation, regulations and policy. As such, this approach is currently deemed the most appropriate way to resolve and minimise ethical dilemmas in research with humans. Analysis of the way in which chimpanzee persons come to participate in cognitive research in comparison to the manner in which human persons do, in the context of this framework, is therefore highly relevant since it allows the use and involvement of chimpanzees in research to be considered against the reality of how human research subjects (and their fundamental rights) are treated and safeguarded in the world today.

4.1. Equivalent ethical frameworks for human and chimpanzee persons

As summarised above, there is a fundamental difference between the approaches taken to ethically evaluate and regulate research that involves human and chimpanzee subjects. This discrepancy occurs in spite of the fact that chimpanzees, like humans, ought to be seen as possessing autonomy and personhood, and, as such, a right to liberty (which encompasses their right to exercise their autonomous capacities). When research is carried out with human subjects, their autonomy and personhood are acknowledged and respected in a practical sense through the implementation of an informed consent procedure; indeed, this is deemed central to the research process. Moreover, this occurs within a framework that is predominantly based upon respect for subjects' fundamental rights. When autonomy is diminished, or a potential subject's ability to engage with a valid informed consent process is impaired, additional protections must be put in place in order to ensure that the deontological principles underpinning the regulatory framework are still adhered to.

Although there has been an increase in legislative and policy- or agreement-based protections for chimpanzee research subjects internationally in recent years, for those research activities that are still ongoing, a framework based on utilitarian principles is still used, given that no national legislation regarding research has yet formally recognised chimpanzees as holders of any fundamental rights. Indeed, judgements of ethical approval are based upon "minimizing the burdens and harms of research" (Kantin & Wendler, 2015, p. 459) rather than on setting "limits based on rights or dignity that trump utilitarian considerations of harms and benefits" (Arnason, 2020, p. 2290). A utilitarian approach to the regulation of research involving chimpanzees is therefore morally inadequate as it fails to acknowledge and consistently protect their right to liberty.

Indeed, if humans and chimpanzees are both autonomous persons with a fundamental right to liberty, then it follows that there is no non-arbitrary reason why the same ethical research framework, based upon deontological principles, should not apply to both species. Moreover, the current difference in overarching ethical frameworks is based upon the concept of species; for the reasons outlined in section 2.1, use of "mere species identity" (Fenton, 2014, p. 131) to make such a distinction here is irrelevant and arbitrary since there is nothing morally salient about this concept that could ethically justify the same fundamental right being respected in research with humans but not in research with chimpanzees.

Furthermore, if a deontologically-based ethical framework should be adopted to regulate research with chimpanzees, then an equivalent process to that of informed consent should similarly be in place to respect chimpanzees' autonomy and personhood, given that the principle of autonomy leads to a practical requirement for consent with humans. Indeed, a chimpanzee's right to exercise their autonomy – and, thus, their right to liberty – is violated if this is not the case. Given that there would evidently be barriers to fully engaging chimpanzees in a valid human-led informed consent process (as I will discuss further in the next section), chimpanzees should therefore be considered vulnerable subjects in research and, consequently, afforded appropriate additional protections, equivalent to those that are put in place for vulnerable human subjects; I will expand upon this argument shortly.

However, as it currently stands, chimpanzees are able to be instrumentalised precisely *because* of their vulnerability; more specifically, since they are viewed as having a lesser level of morally significant capacities, and, thus, moral status, in comparison to a typically-developed adult human, a regulatory framework based on utilitarianism is deemed sufficient, and therefore their vulnerability means that they are *less* protected in research. In contrast, under a deontological framework, vulnerability affords subjects *more* protection (than that received by a paradigmatic human); indeed, those most vulnerable are understood to require the staunchest protections and are those for whom firm protection of fundamental rights is most crucial. Therefore, whether we afford those persons who are vulnerable comparably more or less protection in the research process (than would typically be afforded to a subject who could fully engage with an informed consent process) once again depends on their species. As explained previously, this is arbitrary.

The current situation means that research can be carried out with chimpanzee persons that would not be considered ethically acceptable with human persons; *i.e.*, the nature of the research itself, the setup and/or the process by which the subjects come to be involved in the research may be deemed unethical with human subjects yet permissible with chimpanzees. This is the case in spite of there being a very considerable cognitive overlap between human and chimpanzee species, as outlined in chapter two. Indeed, as stated previously, the cognitive capacities of a paradigmatic adult chimpanzee exceed that of certain groups of humans, such as infants (*e.g.*, Beauchamp & Wobber, 2014, p. 126; Anstötz, 1993). Yet, the current distinction between ethical approaches means that, as a research subject, a human infant – with significantly less sophisticated cognition and autonomy than a paradigmatic adult chimpanzee – would have their fundamental rights protected and be afforded multiple safeguards within the research process; crucially, they could never be instrumentalised, regardless of the size or significance of the potential research outcome. In stark contrast, an adult chimpanzee – with the full autonomous capacities that are typical of their species, and with a comparably greater degree of cognition than the infant – would not have any fundamental rights even acknowledged, let alone protected; moreover, notwithstanding the legislative and policy restrictions in existence in a number of countries which limit chimpanzee use, they could also be instrumentalised in permitted types of nonbeneficial research for the greater good (including when that good was purely for humans). There is no non-arbitrary reason why this should be the case when both humans and chimpanzees have autonomy, personhood, and, thus, a right to liberty; such an example illustrates the inadequacy of the situation as it currently stands.

This inadequacy of the current regulatory approach for research involving chimpanzees has been highlighted elsewhere. For example, Arnason (2020, p. 2278) believes that "the concepts and concerns of human research ethics (…) apply to [non human animals with personhood] in the same way as to humans". Similarly, in relation to laboratory research – both biomedical and cognitive – Carvalho et al. (2019, p. 11), as quoted in chapter one, suggest that "something of a paradigm shift" is required and that research involving nonhuman primates such as chimpanzees "should continue only if carried out under the same ethical deontological criteria that guide basic research with human beings". Indeed, research ethics is not static and it is crucial that any ethical approach be malleable in light of new developments and scientific advancements in our knowledge and understanding; for example, the WMA Declaration of Helsinki (World Medical Association, 2013) is updated regularly and viewed as a "living instrument" (Malik & Foster, 2016, p. 184). Furthermore, there is already a precedence for refining and improving ethical standards for the treatment of nonhuman animals in research based on increased scientific knowledge, such as the inclusion in 2010 of "live cephalopods" within the scope of EU legislation on research with nonhuman animal subjects (Smith et al., 2013, p. 31). Indeed, the same legislation states that "the welfare of animals used in scientific procedures" should be improved "by raising the minimum standards for their protection *in line with the latest scientific developments* [emphasis added]" (Directive 2010/63/EU, 2010, p. 33).

There is therefore no non-arbitrary reason why the ethical framework regulating research with chimpanzees should not be updated to one which is deontologically-focused and in line with that which regulates research with humans, given what we now know about chimpanzees' autonomous capacities and personhood; indeed, anything less than this is in violation of their fundamental right to liberty. In the next section, I will expand upon my argument that chimpanzees should be classed as vulnerable subjects within such a framework and discuss the implications of this.

4.2. Chimpanzees as vulnerable subjects

Having established that a deontologically-focused ethical research framework, similar to that used with human subjects, is the appropriate means of regulating research involving chimpanzees, what is now relevant to consider is how such a framework applies to chimpanzees, *i.e.*, where they fall within this, in the context of human-led cognitive research activities. As mentioned in the previous section, I will argue here that chimpanzees should be treated as vulnerable subjects; moreover, that a number of different aspects of vulnerability tend to be applicable, particularly in captive settings, thus rendering them more susceptible to coercion or undue influence within the research process. As outlined in section 3.3.1, there are numerous different ways in which human research subjects can be vulnerable, and these exist along a broad spectrum; similarly, chimpanzees can be vulnerable in a variety of different ways.[10]

Firstly, one could argue that all chimpanzee research subjects can be classed as vulnerable by the very nature of being a chimpanzee in a human-led research context, since they can only ever possess the third level of decisional capacity, *i.e.*, they can only dissent. In other words, they are unable to fully engage with the demands of an informed consent process, making the implementation of additional safeguards necessary if we are to appropriately protect their personhood and autonomy.

As outlined in section 3.2, the informed consent process is very demanding of research subjects, involving the communication and comprehension of large quantities of information related to various aspects of the research. This includes, for example: the nature of any potential risks that could be incurred and how these will be mitigated; the ways in which the researchers will adhere to data protection legislation; and the wider implications of the research findings. In all, there is surely little doubt that the demands of such a process far outweigh what can reasonably be expected of chimpanzees in this context (and, equally, what is possible of human researchers in their ability to design and implement an effective and suitably adapted, valid informed consent process in these circumstances). Indeed, as stated by Arnason (2020, p. 2285), “it is obvious

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[10] As previously explained in section 3.3.1, the vulnerability referred to throughout this section regarding chimpanzees is “more than ordinary” (Rogers et al., 2012, p. 24), *i.e.*, beyond that which is fundamentally inherent in the everyday life of a biological being.

that nonhuman primates (…) generally cannot give informed consent for their participation in research".

Similarly, the process of assent – despite requiring a comparatively lower level of cognitive demand than informed consent – still requires a level of communicative interaction and comprehension that is very unlikely to be possible for chimpanzees, when assent is understood in the same way as it is in paediatric research. As we saw, assent requires, amongst other things, that a subject have "some understanding of the research as well as what her participation in it will involve", as well as the ability to "appreciate (…) the nature of the research, its potential benefits for [others], and the risks it poses to them" (Fenton, 2014, p. 133), along with the ability to convey agreement to participate in a way that suitably confers a subject's understanding of the information provided to them. It is difficult to see how all of these elements could be appropriately satisfied with chimpanzee subjects, leading to Ferdowsian and Gluck's (2015, p. 402) conclusion that "chimpanzees' behaviors do not satisfy criteria for (…) 'assent' as used in human pediatric studies". Indeed, in relation to an understanding of risks, for example, as stated by Mancini (2017, p. 227), "interspecies cognitive differences and communication barriers make conveying the welfare implications of a research procedure to other animals very challenging if not practically impossible". Likewise, Ferdowsian et al. (2020, p. 25) believes "it is unlikely that, even in the best of circumstances, [nonhuman animals] could make an informed decision about the potential risks or benefits of research generated by perceived human needs".[11]

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[11] I acknowledge that there are some authors who claim that chimpanzees are capable of assent. As noted previously, the concept of assent is often confused with that of compliance in the nonhuman animal research literature. I therefore contend that claims of chimpanzee assent are based on definitions that assume assent to involve little more than a lack of dissent, or, at most, still presume assent to be much less cognitively demanding than the way in which assent is generally conceptualised in the paediatric literature. Any reference to assent in this chapter is therefore based upon the concept of assent as previously outlined in section 3.3.2; given this, I assume that chimpanzees are only capable of dissent. I leave open the possibility that scientific advancement in our understanding of, and communication with, chimpanzees in the future may ultimately render chimpanzees capable of some of the elements of the assent process, when adaptations are made, in a human-led research context. For example, Kantin and Wendler (2015, p. 470) suggest that it may be possible to "at least [provide]

The evidence that chimpanzees are able to dissent, *i.e.*, that they do indeed meet the third level of decisional capacity, comes from the copious empirical evidence that chimpanzees have preferences, intentionality, self-agency and the capacity for self-directed and autonomous choice, as well as the ability to plan for the future and to engage in 'mental time travel' (*e.g.*, Beauchamp and Wobber, 2014; Fenton, 2014; The Nonhuman Rights Project, Inc. ex rel. Hercules and Leo v. Stanley, 2015). Indeed, "in free-living social contexts", chimpanzees "are capable of deciding, and do decide, on matters affecting their fundamental interests" (Fenton, 2014, p. 133) and "clearly can choose to cooperate [or] (…) refuse strenuously when they perceive the potential for harm or danger" (Beauchamp & Wobber, 2014, p. 123). Along with copious evidence for sentience, as presented previously, chimpanzees therefore easily meet Fenton's (2014) three conditions of dissent, outlined in section 3.3.2 and based upon the use of dissent in paediatric research. Indeed, in relation to research participation, Fenton (2014) concludes that "what chimpanzees *can* do is dissent [emphasis added]" (p. 134).

Moreover, the criteria produced by the US IOM committee for applied behavioural research imply the capacity for dissent through their recommendation that studies be limited to those in which there is acquiescent participation of chimpanzees; presumably, this compliant behaviour would not be seen as meaningful if chimpanzee subjects did not possess the capacity to make an alternative choice in relation to their research involvement. In fact, any inclusion of chimpanzees in research can only ever be based upon compliance on the part of the subjects; thus, chimpanzees possess only the third level of decisional capacity in a human-led research context and are therefore vulnerable subjects. This means that the use of chimpanzees in a study on the basis of only compliance, *i.e.*, on seemingly willing participation alone, without

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the animal with a general idea of what the research involves", although they acknowledge that this is not the same as "obtaining meaningful assent". Regardless, whether chimpanzees' active participation in a study reflects (full or partial) assent or simply compliance is irrelevant to my arguments, since neither assent nor compliance would be sufficient in and of themselves for ethical research involvement; additional safeguards would be required in both cases.

additional protections, fails to appropriately respect their autonomy and personhood under the umbrella of a deontologically-focused ethical framework.

One concern here with my conferral of vulnerability onto chimpanzee subjects, as a result of their inability to assent or consent in a human-led research context, could be that chimpanzees come to possess only the third level of decisional capacity in a different way from the manner in which humans do. Indeed, with human subjects, vulnerability stemming from impaired decisional capacity generally occurs because they have a diminished level of autonomous capacities in comparison to a paradigmatic adult human, *i.e.*, there is something *intrinsic* to the subject that compromises their autonomy and, thus, their ability to fully engage with an informed consent process, such as a significant cognitive impairment. In contrast, for chimpanzees, even though possession of only the third level of decisional capacity goes hand in hand with being a chimpanzee in a human-led research context, it does not stem from an intrinsic impairment in autonomous capacities; typically, an adult chimpanzee research subject would not possess any lesser degree of autonomy than would a paradigmatic adult chimpanzee outside of a research context. Nevertheless, I contend that this difference is irrelevant here; in both cases, there are significant barriers to fully engaging with the informed consent process, as a result of something characteristic to that individual being who they are in that particular context, with similar implications for their involvement in research.

If chimpanzees therefore do not come to lack the ability to assent or consent via an *intrinsic* impairment in their species-typical autonomy, then it is relevant to further understand and classify the nature of their vulnerability, both to strengthen my argument (that they are vulnerable subjects) and to help understand what additional safeguards and protections they might require in the research process. Indeed, it is possible for a subject's vulnerability status to differ depending on whether they are within or outside of a research context, as mentioned in the previous chapter. For example, in the case of a sensory impairment for a human subject, this might be compensated for within the research process, rescinding any vulnerability in this context, but similar adjustments may not be readily available in various aspects of the subject's everyday life and thus they may possess greater than ordinary vulnerability outside of the research study. In a similar way – but in the opposite direction –this is the case with chimpanzees; aside from the inherent vulnerability that is an unavoidable part of existing in the world as a biological being (as explained earlier), the “more than ordinary” (Rogers et al., 2012, p. 24) vulnerability that chimpanzees face as research subjects does not apply outside of that context when they are in a natural environment alongside conspecifics. In other words, the difficulties that chimpanzees face in exercising their autonomous capacities within a research context – that render them only able to dissent – do not exist when they are outside of this.

Therefore, rather than a chimpanzee’s impaired capacity to engage with the informed consent process being due to an intrinsic reduction in autonomy that exists both within and outside of a research context, their vulnerability can instead be viewed as akin to unresolvable barriers to, and difficulties with, communication and comprehension, between researcher and subject, that consequently compromise the subject’s ability to exercise their species-typical autonomous capacities when they are in a research context. In this way, chimpanzees can be seen as possessing the first type of vulnerability described by the NBAC (National Bioethics Advisory Commission, 2001a): that of ‘cognitive or communicative vulnerability’, specifically due to ‘circumstances’. Furthermore, these communicative barriers can be seen as specifically compromising two of the three elements of the informed consent process described in the Belmont Report: those of ‘information’ and ‘comprehension’ (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979).

However, chimpanzees are generally not only vulnerable as a result of barriers to communication and comprehension in the informed consent process. Situational and contextual factors often confer additional vulnerabilities onto chimpanzee subjects, for example, as a result of any captivity, institutionalisation and dependency that are inherent in the research process. In chapter five, I will discuss contextual vulnerabilities that are conferred upon chimpanzee subjects in a cognitive research institute of the conditions set out in section 1.4. I will argue that these additional vulnerabilities compromise the third element of the informed consent process – that of voluntariness; *i.e.*, they impair chimpanzee subjects’ capacity to dissent from participation in an unbiased manner, in spite of the fact that high-welfare institutes of this type specifically aim to facilitate voluntary research participation.

Nevertheless, the fact that chimpanzees are vulnerable in a research context does not *necessarily* mean that all types of research involving chimpanzees, in all contexts, should be prohibited, since this is not the case with vulnerable human persons. Indeed, it is possible that a blanket exclusion could, in fact, “run counter to the principle of justice” (Van Patter & Blattner, 2020, p. 180); for example, prohibiting research with chimpanzees entirely might prevent scientific progress being made in research areas with potential to benefit the species as a whole. Rather, research should be ethically evaluated against, and regulated within, an appropriate framework based on deontological principles, similar to that which governs research with humans, in order to avoid violating chimpanzees’ fundamental rights. Moreover, within this framework, appropriate safeguards and protections should be in place to accommodate any vulnerabilities and to eliminate the associated heightened susceptibility to exploitation, coercion and undue influence. As stated previously, whether any research with chimpanzees would be deemed ethical within such a framework, and, if so, what the nature of this research would look like, is outside the scope of this thesis. Instead, what is pertinent here is to ethically evaluate the activities of cognitive research institutes of the setup outlined in section 1.4; in the next chapter, I will show that appropriate additional protections to account for, and accommodate, chimpanzees’ multiple vulnerabilities are not in place in this setup. Indeed, I will conclude that this particular type of research setup violates chimpanzees’ right to liberty in various ways and is thus not morally permissible when evaluated against an appropriate ethical framework.

5. THE VIOLATION OF CHIMPANZEES' RIGHT TO LIBERTY

In the previous chapter, I established that chimpanzees are vulnerable subjects within a human-led research context when this is considered within an appropriate ethical framework that respects and protects their personhood, autonomy and right to liberty, *i.e.*, one which focuses on deontological concerns. In other words, there are clear barriers to fully engaging chimpanzees in a valid informed consent process and they therefore have a heightened susceptibility to exploitative, coercive and unduly influential forces unless additional safeguards are put in place. Thus, having established that a deontologically-focused ethical research framework is required for research involving chimpanzees, this can now be used as a guide to ethical acceptability for this sort of research, *i.e.*, the way in which this ethical framework is implemented in research involving human subjects provides a standard by which any research setup involving chimpanzees can be evaluated and assessed. In this chapter, I will therefore use such a framework to analyse the moral permissibility of the type of cognitive research setup and activities outlined in section 1.4, *i.e.*, a high-welfare cognitive research institute carrying out non-invasive, basic research, for the purpose of scientific curiosity and advancement of knowledge, with chimpanzees bred and kept in a naturalistic captive environment specifically for the purpose of research participation (although never *overtly* forced to participate in any given study against their will).

Throughout the rest of this chapter I will argue that there are multiple ways in which this type of research setup fails to respect chimpanzees' personhood and protect their autonomy and, as such, violates their right to liberty. In doing so, I will show that the overt appearance of allowing chimpanzees free choice in participation in this type of setup is only illusory, since there are many unduly influential forces at play that prevent this from being possible. Moreover, I will show that such a setup only sets out to facilitate compliance (rather than true consent), which is not ethically sufficient in and of itself, especially when occurring in this context of undue influence. This is particularly pertinent since, as previously explained, this type of research institute setup claims to incorporate a voluntary participation design, *i.e.*, one in which chimpanzees choose whether or not to participate in any research projects available to them such that their involvement in research is only ever of their own accord. When combined with the high-welfare, naturalistic environment, this design is oft lauded as being a prime example of good practice and, as such, is generally viewed as being without moral question (as already discussed in chapter one). In fact, I will argue that there are multiple reasons why this is not the case. Within this chapter, I will show that all three elements of informed consent (information, comprehension, voluntariness), outlined in the Belmont Report, are compromised in this type of research setup. As already argued in chapter four, the elements of information and comprehension are inevitably compromised in human-led research with chimpanzees as a result of unresolvable barriers to communication and comprehension between researcher and subject; this therefore applies equally to the type of research setup addressed here. I will argue that the circumstances and context of the research occurring in this type of setup additionally compromise the third element of voluntariness, via the conferral of multiple situational and contextual vulnerabilities on chimpanzee subjects without compensatory protections.

Specifically, I will begin by addressing the fact of chimpanzees' captivity; *i.e.*, that captivity is inherent in this setup and thus violates their right to liberty, regardless of the welfare conditions. Related to this, I will further argue that it is ethically unacceptable to keep chimpanzees captive for the purpose of increasing convenience on the part of the researchers. Subsequently, I will show that this research setup fails to make appropriate accommodations (*e.g.*, that of surrogate consent) to the research participation process to account for the fact that chimpanzees can only ever demonstrate compliance (*i.e.*, the third level of decisional capacity) in this context, as established in chapter four. Following this, I will discuss three factors that invalidate any overt compliance that they may demonstrate: (1) situational vulnerability as a result of lifelong institutionalisation; (2) dependent relationships with researchers; and (3) the use of rewards that reinforce participation. Lastly, I will argue that the research activities violate chimpanzees' right to exert their autonomy in relation to their personal and intellectual information by breaching their confidentiality. I will therefore conclude that this type of research setup violates chimpanzees' right to liberty in multiple ways, thus rendering cognitive research with chimpanzees in this setting morally impermissible, in line with my original claim.

5.1. Captivity and convenience

The first, and most obvious, way in which cognitive research with chimpanzees, in a research institute setting, violates their right to liberty is through captivity. Indeed, in the setup addressed here, the chimpanzee subjects are bred and kept in a captive environment for the duration of their lives for the purpose of research participation. As explained in chapter two, it is the captivity *per se* that is the determining factor here rather than the welfare conditions. Indeed, as outlined in section 1.4, I am assuming that the research setup that is being addressed in this thesis is one which adheres to very high welfare standards; regardless, this cannot negate the inherent wrongness of a captive environment for persons with a right to liberty, without morally justifiable reason for their captivity. Moreover, chimpanzees are bred specifically for a life in the research institute, *i.e.*, for their potential to be instrumentalised as research subjects, despite the fact that persons with rights should never be instrumentalised in the research process; indeed, this is the basis of a deontologically-focused ethical framework. With human persons, the inherent wrongness of breeding and keeping people in a captive environment for their potential use as research subjects is obvious, regardless of the welfare conditions, yet, with chimpanzees, we laud this type of high-welfare research environment as being the pinnacle of ethical practice, despite the fact that the subjects, as I have argued, similarly hold personhood status.

The captivity inherent in this type of setup is therefore the first way in which the institute's supposed voluntary participation design is compromised, and, thus, that the 'voluntariness' element of informed consent is invalidated. Indeed, with research involving human persons, a key aspect of the informed consent process is the ability for subjects to withdraw from or refuse participation at any point. For example, the WMA Declaration of Helsinki (World Medical Association, 2013, p. 2193) states that "the potential subject must be informed of the right to refuse to participate in the study or to withdraw consent to participate at any time without reprisal". Indeed, in general, "human subjects retain a right to withdraw their participation at any point in time, and they are never deprived from their liberties and freedom" (Speaking of research, 2012, para. 5); moreover, in relation to liberty, for human subjects who lack capacity to consent, the MCA (Department of Health, 2005, para. 101) specifically states that "research must not interfere with the person's freedom of action (…) in a significant way or be unduly invasive or restrictive", even if other ethical standards are adhered to. If the equivalent of this should therefore be available for chimpanzees, as persons, then they should similarly be allowed to disengage at any time and they should never be unduly restricted. Yet, although this type of institute claims to allow chimpanzees to dissent from participation, in this setting they can only ever choose not to engage *with any given study,* not from the research facility itself, *i.e.*, there is no option of withdrawing from life in a captive setting in which they exist for their potential to be instrumentalised as research subjects, given that this is their permanent home. (Moreover, it is also highly relevant to my claim to analyse whether the compliance and dissent of chimpanzees, as regards participation in any given study, can even be valid in this setting, *i.e.*, whether it is possible for them to truly make a 'choice', to the level that their decisional capacity allows, when – as I will argue – this occurs in a context of undue influence which confers further vulnerability; in section 5.3, I will argue that true compliance and dissent are not possible in this situation).

In addition, as explained previously, the type of research that occurs in this kind of setup is that which is basic, *i.e.*, for the purpose of scientific curiosity and advancement of knowledge rather than that which aims to be directly (or indirectly) beneficial to subjects. When nonbeneficial, basic research is conducted with human persons, there are typically strict limits around the level of research-related risk that is deemed acceptable when subjects are vulnerable. Specifically, the 'minimal risk' concept, introduced in chapter three, tends to be employed; *i.e.*, the risk of participation is capped at that which would ordinarily be encountered in day-to-day life in a safe environment (Ferdowsian et al., 2020) or "is negligible" (Department of Health, 2005, para. 101), or, at most, is that which represents only "a minor increase over minimal risk" (Ferdowsian et al., 2020, p. 30). If chimpanzees are, similarly, persons, with their involvement in research governed by a deontologically-focused ethical research framework, then there is no morally justifiable reason why the equivalent of a minimal risk approach should not similarly apply here, given their vulnerability. Indeed, Wendler (2014, p. 13) concurs with this by suggesting "that we might use the same [contextual risk] level to define acceptable risks for nonbeneficial research with nonhuman primates" as we would in similar research with children. Arguments in favour of cognitive research institutes often highlight the low level of risk associated with the research itself (since this is cognitive and non-invasive) as a reason why such setups should be morally permissible – and, in fact, admirable. Yet, hugely overlooked here is the fact that the subjects are living in captivity for the duration of their existence for their potential use as research subjects, *i.e.*, they dedicate their lives to this captive environment for the purpose of research; moreover, one of their fundamental rights (to liberty) is breached in order for this to happen. I therefore argue here that this is in fact a high price to pay and represents considerable risk, no matter the welfare conditions or low-risk nature of the studies themselves; *i.e.*, that when viewed in context, the risk associated with this type of setup exceeds that which is minimal and is therefore in breach of deontological protections put in place to safeguard vulnerable human persons. Therefore, once again, this research setup fails to respect chimpanzees' autonomy and personhood.

In light of this, it is relevant here to refer back to section 1.3 and the implicit assumptions that have been made in the literature regarding the moral permissibility of cognitive research with chimpanzees, most notably that of de Waal (2012). Indeed, as quoted previously, de Waal believes that cognitive research is ethically justifiable if it is of the sort that he "would not mind doing with human volunteers" (p. 3), by which he clarifies as meaning "all sorts of cognitive research" with captive chimpanzees. He does not clarify where his threshold lies for ethical acceptability in terms of the type of captive environment in which this would take place, save for to encourage a move upwards towards large, naturalistic settings. Clearly, however, there are very significant differences between the contexts in which cognitive research with humans and chimpanzees would take place. Most notably, 'human volunteers' would not be recruited from a captive environment in which they were kept for the duration of their lives for the purpose of research participation; de Waal's comparison – and use of this to justify cognitive research with captive subjects – is therefore highly flawed. Furthermore, human volunteers would either provide full and valid informed consent, or, if unable, have additional safeguards put in place to accommodate this, such as the use of a surrogate decisionmaker – another difference from research with captive chimpanzees and an issue that I will address in the next section.

Another well-recognised ethical issue in research with human persons, introduced in chapter three, concerns the manipulation of recruitment and subject selection processes for the purpose of increasing convenience on the part of the researchers; *i.e.*, facilitating ease of recruitment at the expense of ethical principles such as respect for the subjects' autonomy. For example, it is unethical to recruit subjects from a vulnerable population simply because doing so provides easier access to potential subjects compared to recruiting from a non-vulnerable population. Indeed, the Belmont Report (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979) highlights the importance of ensuring that vulnerable populations are not "being systematically selected [for research participation] simply because of their easy availability, their compromised position, or their manipulability" (p. 6) and asserts that vulnerable subjects must be protected from involvement "solely for administrative convenience" (p. 9).

Furthermore, the Belmont Report specifically highlights "persons confined to institutions" (p. 6) as being an at-risk group for systematic selection or manipulation in this way, "owing to their ready availability in settings where research is conducted" (p. 9). Similarly, the NBAC (National Bioethics Advisory Commission, 2001a) has created a specific category of contextual vulnerability for persons in institutions. Cognitive research institutes, of the type addressed in this thesis, exist due to a similar breach of ethical principles regarding recruitment convenience; specifically, such setups facilitate ease on the part of the researchers by providing easy and convenient access to a bank of potential chimpanzee subjects at the expense of chimpanzees' autonomy. Moreover, such setups allow recruitment of subjects whose readiness to comply has been manipulated by the unduly influential forces that are inherent in this type of setting, as I will discuss further in section 5.3. Indeed, this type of setup can be seen to take advantage of subjects who can legally, but not morally, be held captive for research purposes.

However, as discussed in chapter four, chimpanzees are currently able to be kept in institutions for research purposes, and instrumentalised to fulfil researchers' needs, precisely *because* of their vulnerability, in stark contrast to the way in which vulnerable human persons are afforded a range of additional protections to ensure that their autonomy is protected. The research institute setup addressed here is a very clear example of the outcome of such a discrepancy; a situation that would never be allowed with human persons (vulnerable or otherwise) – and that research legislation, guidance and policy sets out to prevent – is not only permitted but deemed exemplary when the subjects are chimpanzees. In other words, chimpanzees' vulnerability facilitates that which human vulnerability protects against. Yet, as persons, chimpanzees – like humans – should be safeguarded against captivity and manipulation for convenience, regardless of the high-welfare conditions, naturalistic setting and non-invasive nature of the research; otherwise, their right to liberty is violated.

As explained earlier in this thesis, cognitive research institutes, of the type being addressed here, purport to significantly minimise, or indeed eliminate, ethical issues associated with keeping chimpanzees in captivity for research by means of high welfare standards and a purported voluntary participation design. Indeed, through the lens of a utilitarian standpoint, they claim that these environmental factors, in combination with the low risk and lack of invasiveness directly associated with study procedures, result in a setup that is not only ethically justifiable but an exemplar of good ethical practice. In this section, I have demonstrated why this is not the case. Specifically, I have argued that captivity *per se*, regardless of welfare conditions, violates chimpanzees' right to liberty as persons (a right that a utilitarian approach does not even recognise), especially since this occurs to facilitate ease on the part of the researchers at the expense of chimpanzees' autonomy. Throughout the rest of this chapter, I will argue that chimpanzees' right to liberty is further violated by the research participation process that is employed in this type of setup, since true voluntariness is not possible in this context. In the next section, I will argue that research participation is based solely upon chimpanzees' compliance, without suitable additional safeguards in place to compensate for the heightened susceptibility to coercion and undue influence that goes hand-in-hand with their vulnerability.

5.2. Compliance without surrogate consent

Having outlined the ways in which captivity in a research institute setting, regardless of the welfare conditions, violates subjects' right to liberty, I will now turn to the process by which chimpanzees come to participate in studies within this setting, and argue that this too fails to respect their autonomy and thus violates their right to liberty as a result. In this section, I will address a significant way in which the participation and subject selection process for research studies in this type of institute is ethically unjustifiable for chimpanzees as persons; specifically, that the setup only allows for compliance from subjects without suitable additional accommodations to compensate for their vulnerability. (Subsequently, in section 5.3, I will argue that chimpanzees' compliance is in fact invalidated by unduly influential forces inherent in the setup, thus further undermining the integrity of the research participation process.)

As outlined in chapter three, for human persons who are only capable of the second or third level of decisional capacity (*i.e.*, assent or compliance/dissent, respectively) in relation to research participation, additional protections need to be put in place to account for the inability of subjects to engage with a valid informed consent process. The most fundamental and well-established safeguard afforded to subjects with impaired decisional capacity is that of a surrogate decisionmaker who can provide informed consent on the subject's behalf. This is typically a legally-authorised guardian or other suitable third party, and their surrogate consent is then used in conjunction with assent or compliance from the subject themselves. Indeed, it is very widely recognised – and well embedded within research legislation, guidance and policy – that compliance (or assent) alone is not sufficient for determining valid and ethical research participation, without – as a minimum – the addition of surrogate consent. Indeed, basing participation upon compliance alone would represent a clear failure to respect subjects' personhood and autonomy under the umbrella of a deontologically-focused ethical framework.

In chapter four, I demonstrated that cognitive research with chimpanzees can only ever be based upon compliance from the subjects themselves (rather than assent or informed consent), since there are clear and unresolvable barriers to engaging chimpanzees in a valid informed consent process. Such barriers are due to difficulties with communication and comprehension, between researcher and subject, that consequently compromise the subject's ability to exercise their species-typical autonomous capacities within a human-led research context. This is therefore the case in the type of research institute setup that is addressed in this thesis; indeed, participation is determined through overt behavioural signs, such as the subject physically entering, or declining to enter, a testing area. For example, in the KUPRI, for tasks that take place in booths accessible to chimpanzee residents from their compound, it is claimed that subjects are able to "come to the booth to participate in a cognitive task" or, "if they prefer not to participate, they may stay outside"; subsequently, "it is up to them whether to start the first trial of the test session or not" (Matsuzawa, 2006, p. 45). Interpreting such behaviours as indicating willingness, or lack thereof, to participate in any given study therefore represents the use of compliance or dissent, *i.e.*, the third level of decisional capacity, rather than any higher or more sophisticated level of decision-making capacity; as explained, anything higher would be extremely difficult to implement with chimpanzees in a human-led research context.

Given that chimpanzees possess personhood, it is therefore imperative that, at a minimum, an equivalent to surrogate consent be in place to supplement their compliance if their personhood is to be respected, and thus their right to liberty unviolated; yet, this is not the case. Indeed, in this type of setup, overt behavioural signs of compliance and dissent, in relation to any given study or research procedure, are taken as sufficient *in and of themselves* for determining participation. In other words, there is no additional protection in place to compensate for the vulnerability conferred by their contextually-impaired decisional capacity, even though this would be deemed highly unethical if subjects were human. Still, this type of research institute setup is purported to be based upon a voluntary participation design, *i.e.*, the research activities aim to involve only those chimpanzees who have chosen to participate through their "free will" (Matsuzawa, 2006, p. 45). Such claims of voluntary participation are therefore highly flawed; what is classed as 'free will' is merely compliance, which, in and of itself, does not equate to voluntariness. Indeed, compliance has previously been described as "merely impl[ying] some form of initial submission" (Ferdowsian & Gluck, 2015, p. 402) rather than anything more. The praise for research institute setups that incorporate this sort of design comes from the fact that they appear to respect chimpanzees' dissent, given that this is not necessarily the case in other types of research setting. However, although respect for dissent is required as one aspect of voluntariness, it is far from sufficient. Under a deontologically-focused ethical research framework, this participation process therefore clearly falls far short of what is ethically justifiable for subjects who are persons.

An alternative contention to my argument here may be that humans involved in the day-to-day lives of the chimpanzees living in the research institute, such as keepers or research facility staff, could be seen as taking the role of surrogate decisionmakers; *i.e.*, they may act to ensure that chimpanzees' participation in research is in their best interests (as an additional protection on top of the subjects' own compliance). In fact, this is both an ethically inadequate safeguard and also an inaccurate description of what is currently happening in such research institutes, for two reasons. Firstly, in research with human persons, it is imperative that the surrogate be unbiased, *i.e.*, independent from, and unconnected to, the research (*e.g.*, Research with potentially vulnerable people, 2022). This typically means that they "cannot be employed by the research sponsor organisation" nor "a member of the research team, or (…) in a position where they are unduly influenced by the research team", and they must have "no financial or other interest in the outcome of the project" (British Psychological Society, 2020, p. 30). In other words, they must not be "unduly compromised in their capacity to represent the animal's interests by their own personal or professional conflicts of interest" and thus "capable of making an independent, informed decision free of coercion or undue inducement" (Ferdowsian et al., 2020, p. 25). Any humans working in, or associated with, the research institute would therefore clearly not meet such criteria nor be free of any conflict of interest.

Indeed, the humans that the chimpanzees interact with in this sort of setup will likely build up long-term relationships with them and have frequent involvement in their daily lives within the research institute. In fact, this is exactly the premise on which this sort of setup is based and one of the ways in which researchers encourage compliance from the chimpanzees – by developing a trust and dependence that facilitates their cooperation. For example, in a paper from the KUPRI, it is stated that "the close bond established between the human experimenter and the mother – *based on years of experience and daily interaction* – allows us to test the infant chimpanzees [emphasis added]" (Matsuzawa, 2003, p. 208). Although such in-depth human-chimpanzee relationships – whether they be with experimenters or care staff – may indicate that the humans involved in the institute potentially have a high degree of knowledge and familiarity with the chimpanzees, they also evidence the lack of independence from the research facility that such humans have and thus the unsuitability of those involved with the chimpanzees for this surrogate role. Consequently, it is reasonable to assume that the professionals involved in a research facility (even if they are not directly involved with the research) will have a bias towards facilitating the chimpanzees' involvement in research, even if such bias is only at a subconscious level; otherwise, the research facility would not have any purpose. Indeed, it is surely not possible for the institute's staff to be truly objective in this context, such that the chimpanzees' best interests are unequivocally the overriding priority. As stated by Ferdowsian et al. (2020, p. 31), "knowing and understanding an individual's interests, needs, and preferences is necessary *but not sufficient* to represent that individual's best interests [emphasis added]". Indeed, in a research institute setup, regardless of the welfare standards and quality of care, the human-chimpanzee relationships are still, at their core, "shaped by incentives for humans to disregard the interest of animals, regardless of whether or not this is done with malicious intent" (Van Patter & Blattner, 2020, p. 180), given that the very existence of the institute is ultimately based upon the chimpanzees' potential for instrumentalisation as research subjects and therefore would not even exist without this.

The second reason as to why humans associated with, or working within, the research institute cannot be viewed as taking a surrogate role is that the basis of surrogate decision-making centres upon the independent third party providing full and valid informed consent for the subject's participation. Surrogate consent should therefore incorporate all of the elements detailed in section 3.2 (information, comprehension and voluntariness). However, in the research institute setup addressed here, the humans involved in the participation process are instead simply basing any judgements they may (or may not) be making about chimpanzees' participation, and their best interests, on their subjective perception of chimpanzees' behaviour, *i.e.*, the outward appearance of chimpanzees being willing to engage in research tasks determines what is deemed best for them. Indeed, no separate, comprehensive informed consent process is taking place with a surrogate, nor is this even deemed ethically necessary. Moreover, as well as being involved in determining participation at the study outset, surrogate decisionmakers should also be able to oversee the research procedures in order to determine whether research should discontinue at any point; again, this decision should be unbiased and independent. This is also not occurring at present in the type of research institute setup addressed here; typically, only researchers are present when the study is ongoing (and their bias towards participation continuing, once it has begun, is surely clear).

Another potential objection is that the oversight and approval of a REC, or review board, prior to a study being implemented may act as an equivalent to a surrogate decisionmaker to ensure that subjects' best interests are prioritised and that they are protected from harm. However, as with the idea of research institute staff acting as surrogates, this similarly does not stand up to ethical scrutiny. Firstly, when research is carried out with human persons, an individual decision (from the subject and/or surrogate) about participation is still required even when the research is reviewed, and approved, by an ethics board. Therefore, in the case of vulnerable subjects, surrogate consent is required *in addition to* the review board decision, in order for subjects' autonomy to be protected.

Moreover, where vulnerable (*e.g.*, institutionalised) humans are concerned, the REC generally needs to meet special conditions in order to suitably act in the subjects' best interests; this often involves inclusion on the review panel of a representative who holds the same vulnerability as the subjects. For example, in the US, Institutional Review Boards that are overseeing research involving prisoners need to "include at least one member who is a prisoner or prisoner representative", who has a "close working knowledge and understanding and appreciation of prison conditions from the prisoner's perspective” (Wendler, 2014, p. 14). I mportantly, the purpose of including such a representative is to ensure that the panel can appropriately understand and foresee the experience and impact of participation from the point of view of the subjects. Yet, how can a panel overseeing cognitive research with institutionalised chimpanzees ever accurately represent the subject group? Indeed, it has been argued that making a research decision on behalf of a different species raises more difficulties than making the same type of decision for a group of vulnerable humans, since “it is much more difficult for a human to represent the interests of an animal” and to “understand the needs, desires, or interests of other animals as well as (…) other humans” (Ferdowsian et al., 2020, p. 31). Review board oversight, in the case of research with chimpanzees, will therefore inevitably be inadequate.

Therefore, despite appearances to the contrary, the participation process that is employed in this type of research institute is not ethical, given that it does not allow for true voluntariness; instead, compliance alone, with no compensatory safeguard to accommodate for this, is taken as sufficient in and of itself. Neither the humans associated with the institute, nor the RECs that provide approval for studies, can act in a way that provides suitable surrogate protection for chimpanzees’ personhood and autonomy. In what follows, I will argue that the participation process is compromised still further through the nature of the compliance that can be provided by chimpanzees in this setting. Specifically, there are various unduly influential forces that are impacting upon the chimpanzees’ ability to truly comply or dissent in relation to research participation and that, as such, confer additional situational vulnerability onto subjects. Therefore, claims that this type of setup admirably respects dissent from chimpanzees are in fact flawed, since insidious manipulation of chimpanzees’ behaviour is inherent in the setup, which further compromises their autonomy. I will now expand upon this argument, and the impact of unduly influential forces on participation, in the next section.

5.3. Undue influence and training

In chapter five so far, I have argued that both captivity *per se* and a participation process that only facilitates compliance, without appropriate compensatory protections, contribute to the failure of this type of research setup to respect chimpanzees’ autonomy and, thus, amount to a violation of their right to liberty. In addition to this, there are a range of ways in which captive research institutes – including those with high-welfare, naturalistic setups – can confer situational vulnerabilities onto chimpanzee subjects; specifically, through the impact of unduly influential forces that are inherent – and endemic – in this type of setting. These forces influence, and manipulate, chimpanzees' compliance and dissent, which are therefore invalidated as a result of the context in which they occur.

As defined earlier, the Belmont Report (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979, p. 7) describes undue influence as that which "occurs through an offer of an excessive, unwarranted, inappropriate or improper reward or other overture in order to obtain compliance". More generally, undue influence is that which undermines informed consent, such that "a subject vulnerable to (…) undue influence is in danger of participating in research she has not informedly consented to" (Persad, 2015, para. 6). In what follows I assume that undue influence, in the context of chimpanzee cognitive rresearch, describes forms of bias, encouragement or manipulation – including those that are unintentional or subconscious – that exert pressure, in a particular direction, on a subject's decision about participating in research. Undue influence, in turn, can occur directly – for example, through the provision of high-value rewards that can only be accessed via research participation – or insidiously, through the nature of the environment and relationships.

Crucially, as explained earlier, it is widely agreed upon that the threshold of what constitutes an undue level of influence is lowered in cases of vulnerability, *i.e.*, that which "would ordinarily be acceptable may become undu[ly] influenc[ial] if the subject is especially vulnerable" (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979, p. 7). Indeed, there is no clear threshold for where undue influence begins, since this varies depending on the context. Given the vulnerabilities already demonstrated for chimpanzees in a human-led research context, it is reasonable to assume a relatively low threshold at which factors with the potential to have influence do indeed begin to exert an impact on chimpanzees' behaviour. As has been argued elsewhere (*e.g.*, Fenton, 2014; Ferdowsian et al., 2020), chimpanzees are comparatively more vulnerable in research settings than contextually-vulnerable human persons (even if, hypothetically, attempts were made to put in place equivalent safeguards), such that "there are some reasons to think that the limitations on research with nonhuman primates should be stricter than the limitations for human beings who cannot consent" (Wendler, 2014, p. 165).

I will now discuss, in turn, three types of unduly influential forces that can confer situational vulnerability onto the chimpanzees in the type of research institute addressed in this thesis: those relating to (1) lifelong institutionalisation, (2) dependency in human-chimpanzee relationships, and (3) training through reinforcement. I will argue that the impact of these forces on chimpanzees' behavioural choices further compromises the element of voluntariness in the participation process and thus contributes to the failure of this type of setup to appropriately respect and protect subjects' right to liberty.

5.3.1. Situational vulnerability via lifelong captivity

Earlier in this chapter, I explained that living in an institution is widely classed as a form of vulnerability, *i.e.*, institutionalisation is recognised as conferring onto subjects a heightened risk for exploitation, coercion and undue influence in the research participation process. As outlined in chapter three, the second category of contextual vulnerability described by the NBAC is that of "institutional vulnerability", *i.e.*, "being subject to an authority relationship in a formal hierarchical structure" (Vulnerable populations background, 2016, p. 6). Similarly, the Belmont Report classes institutionalised subjects as an at-risk and vulnerable subject group (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979).

Much emphasis has been placed upon the ethical issues associated with the selection, recruitment and inclusion of institutionalised human research subjects, to ensure that their involvement in studies is fair and unbiased. For example, as mentioned earlier, the recruitment of prisoners has engendered much ethical reflection in literature and practice due to the well-recognised potential for coercion and undue influence in research involving this subject group. Indeed, "under prison conditions [prisoners] may be subtly coerced or unduly influenced to engage in research activities for which they would not otherwise volunteer" (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979, p. 4). So high is this potential for manipulation in the participation process that an IOM report on research ethics with prisoners (Committee on Ethical Considerations, 2006, p. *xi*) recommended "expand[ing] the definition of the term *prisoner* to include a much larger population of persons whose liberty is restricted by virtue of sentence, probation, parole, or community placement" when considering the impact of institutionalisation and restricted liberty on vulnerability. In a similar way, the impact of institutionalisation on the validity of chimpanzees' decisions about research participation is relevant to a broad range of captive settings in which subjects' liberty is restricted; *i.e.*, those setups that incorporate naturalistic, high-welfare environments are not exempt from unduly influential forces that compromise the ability of chimpanzees to truly comply with, or dissent from, participation.

Indeed, in addition to the risks of captivity detailed previously in section 5.1, institutionalisation in the type of research setup addressed in this thesis confers situational vulnerability via a number of unduly influential forces. In particular, lifelong captivity in a research facility will tend to embed in a subject's understanding of the world an assumption that research participation is an inherent part of normal daily life, given that they know of no other existence outside of this setting. Constant access to research within their environment, and reward from involvement (as detailed in section 5.3.3), for both themselves and the conspecifics around them, therefore becomes familiar and normalised. The extent to which research is engrained in the lives of chimpanzees raised in this type of research facility is illustrated by studies that involve very young infants. For example, Matsuzawa (2003, 2017) describes how the KUPRI utilise researchers' close relationships with mother chimpanzees to facilitate the involvement of their infants in research, using a paradigm that enables the mother to be present while an infant is being tested. Research is thus part of chimpanzees' early developmental context and they are desensitised to research involvement from a very young age.

For this reason, true and valid compliance, or dissent, is not possible for subjects in this context, since their ability to fully comprehend that research participation is an optional part of life, and to act on this in relation to their decisions about participation, is skewed by the extent to which research is integrated within the only environment and lifestyle they have ever known. Indeed, the insidious influence of widespread and frequent research availability is inherent in the context and thus unavoidable for any chimpanzee residents from an early age, regardless of the welfare standards and quality of the environment. The idea that chimpanzees are able make a choice about participation based upon "free will" (Matsuzawa, 2006, p. 45) is therefore highly flawed and fails to take into consideration, or accommodate, the undue influence that occurs "by merely being in the research environment" (British Psychological Society, 2020, p. 33).

Moreover, the situational vulnerability conferred by institutionalisation, and thus inherent in this type of research setup, is not just a by-product of the chimpanzees' circumstances, but in fact the very reason that such setups can successfully exist and function in the first place. Indeed, as stated by Johnson (2013, p. 501), "it seems the current practice of animal experimentation actually *depends* on the situational vulnerability of nonhuman animals; on their inferior status with respect to humans and their susceptibility to coercion [emphasis added]". This sentiment is equally applicable in the case of undue influence and in relation to research with chimpanzees in the type of setup being addressed here. Specifically, unduly influential forces that arise from lifelong familiarity with research involvement play a crucial part in facilitating the compliance of chimpanzees and, thus, the functioning of the research institute. Yet, this is at the expense of chimpanzees' ability to truly exercise their autonomy and therefore in breach of their right to liberty.

Furthermore, the situational vulnerability experienced by chimpanzees in this setup – and the impact of this on their compliance – extends beyond the effect of institutionalisation on their familiarity with research. Vulnerability is also conferred onto subjects as a result of the undue influence arising from their dependency in human-chimpanzee relationships. In the following section, I will discuss these relationships, and the asymmetrical power dynamics inherent in the research setup. I will argue that unduly influential forces arise from chimpanzees' inferior power status in their relationships with researchers, and that these forces thus further compromise subjects' ability to demonstrate valid compliance and dissent.

5.3.2. Dependent status in human-chimpanzee relationships

As well as being vulnerable through lifelong institutionalisation, chimpanzee subjects in research institutes are also situationally vulnerable due to the level of dependency that is both inherent in their living situation and embedded into their relationships with humans. Indeed, as with institutionalisation, dependency (along with the power inequality that it invokes) is a well-recognised and well-documented source of vulnerability for research subjects. For example, with human persons, the NBAC classes both "being subject to an authority relationship in a formal hierarchical structure" and "being subject to the authority of others" as forms of contextual vulnerability (Vulnerable populations background, 2016, p. 6). Similarly, "individuals in a dependent or unequal relationship" are recognised as a vulnerable group in psychological research (British Psychological Society, 2021, p. 24). As outlined in chapter three, any potential dependency in the relationship between a researcher (or research team / sponsor) and subject is a key ethical consideration that must be recognised and accommodated for in the design and implementation of a study. Thus, for example, the European Commission's guidance for research in social science and humanities directly instructs researchers to "not involve participants who are in any way dependent on [them] or [their] staff" (Ethics in Social Science and Humanities, 2018, p. 12). Dependency is so influential that any potential conflicts of interest must be communicated to subjects as part of the informed consent process; for example, the WMA Declaration of Helsinki (World Medical Association, 2013, p. 2193) declares that subjects must be informed of "any possible conflicts of interest, [and] institutional affiliations of the researcher". In this section, I will demonstrate that research involving chimpanzees, in the type of research institute setup addressed here, fails to appropriately recognise and compensate for the vulnerability conferred on subjects as a result of their dependent status (and lack of power) within both the institutional structure and the human-chimpanzee relationships. Moreover, I will argue that this dependency invokes undue influence that impacts upon the chimpanzees' ability to comply or dissent, thus undermining their ability to exercise their autonomy and, consequently, breaching their right to liberty.

The relationships that the chimpanzees build with people who work in, or are associated with, this type of research facility – whether they be involved in care, or research, or both – are fundamentally imbalanced in relation to the relative power that each party holds in this context, regardless of whether or not there is any intentionality in relation to this in the humans' behaviour. Unavoidably, there is an inherent structural dependency in the setup – regardless of the welfare standards, quality of the environment or attempt at facilitating dissent within the design – given that the facility is fundamentally based upon humans, as researchers, instrumentalising chimpanzees as research subjects, while the chimpanzees are in a captive environment and dependent on humans for survival. Indeed, by the fact of their captivity in a research institute, chimpanzees are highly dependent on humans for their basic needs, including food, care and protection from harm. As stated by Johnson and Barnard (2014, p. 135), "when humans place chimpanzees into captivity or when they breed chimpanzees, they create a dependency in these animals (…) [such that] humans hold considerable power and resources in this dependent situation, [which] renders chimpanzees open to (…) manipulation"; this concern is highly applicable to the research setup addressed in this thesis.

Moreover, with research involving human persons, considerable focus is placed upon the importance of researchers maintaining independence from other parts of subjects' lives, *i.e.*, not holding dual roles (*e.g.*, acting as the subject's clinician, or therapist, in addition to researcher) that may compromise the element of voluntariness in the participation process. Where independence is lacking, the meaning of the researcher in other areas of the subject's life can unduly influence their decisions around participation, particularly when this person is in a position of power. For example, it is generally viewed as ethically inappropriate for a clinician or therapist (who is also a researcher) to recruit their own clinical clients or patients for their own research study (unless, for example, study participation is likely to be directly beneficial for the health of the patient and similar benefit cannot be gained elsewhere). Instead, an independent intermediary or third party, independent of the research and of the researcher-subject relationship, and therefore with no conflict of interest as regards participation, should be responsible for recruitment in order to avoid the bias and influence engendered by both the asymmetrical power relationship and the simultaneous dual role of the researcher in the person's life (Canadian Paediatric Society, 2008).

Yet, in research institute setups involving chimpanzees, researchers may well have dual roles, or at least play a significant part in chimpanzees' lives outside of their direct role within research, such that they lack independence in relation to their ability to influence potential chimpanzee subjects (even if only insidiously). Indeed, as detailed earlier in this chapter, researchers who work in the type of setup addressed here are often heavily involved in chimpanzees' lives, forming long-standing bonds over many years or even from birth. For example, in relation to the KUPRI, Matsuzawa (2003) explains that "the researchers are heavily involved in the daily lives of the chimpanzees by interacting with them directly in their own space" (p. 208) and that "a lot of interaction [takes] place during out-of-test play situations" (p. 204). In fact, for chimpanzees in this type of setup, there is typically very little separation between, on the one hand, the subjects' day-to day lives, home environment and the humans they interact with on an everyday basis, and, on the other hand, their involvement in research and their relationships with researchers; indeed, given the strong overlap in both the environment and people involved, there are many ways in which these two aspects of their lives are, in effect, one and the same, by virtue of living in a research facility that integrates research into the setting. Therefore, given this context, a researcher's ability to maintain independence, such that their relationships with potential subjects do not hold any sway over the chimpanzees' behaviour in relation to research involvement, is highly compromised.

Not only does the participation process in this type of research institute fail to compensate for the dependency that is inherent, and embedded, in the setup and the human-chimpanzee relationships, but, as argued earlier, the closely bonded relationships are in fact the crux of how such institutes function, *i.e.*, how they facilitate compliance. For example, as quoted in section 5.2, Matsuzawa (2003, p. 208) has specifically stated that, in the KUPRI, the "close bond established between the human experimenter and the mother [chimpanzee] – based on years of experience and daily interaction" is a mechanism by which the involvement of infant chimpanzees in research is facilitated; the influence of the researcher-subject relationship on compliance is thus openly acknowledged. This is therefore the exact opposite approach to that which is deemed ethical in research with human persons; dependency and closeness in human researcher-subject relationships are recognised as invoking vulnerability, which must be compensated for in order to eliminate undue influence, otherwise, any consent (or compliance) that is given will be invalid. Indeed, compliance which results from a personal or dependent relationship is exactly what ethical conduct guidelines seek to avoid when subjects are persons, since this fails to respect subjects' personhood and right to exert their autonomy. Yet, in a research institute setup involving chimpanzee subjects, the same vulnerability (*i.e.*, that which results from dependency in the researcher-subject relationship) is built upon and utilised in order to achieve subjects' compliance with research procedures, *i.e.*, in order to facilitate behaviour that meets researchers' needs. Given that chimpanzees are persons, it can thus be argued that the participation process in fact exploits the chimpanzees' trust and dependence in order to manipulate their compliance for the researchers' gain, albeit at the expense of subjects' autonomy.

Dependency is therefore another way in which the purported voluntary participation design of this type of research institute is in fact highly flawed. Indeed, chimpanzees' dependent status – and lesser power – within the institutional structure and in their relationships with staff, as well as the lack of independence of researchers in relation to chimpanzees' everyday lives, invoke implicit unduly influential forces that act upon chimpanzees' compliance (and dissent), thus invalidating their behavioural (and seemingly 'voluntary') choices regarding research participation. Thus, as stated by Ferdowsian et al. (2020, p. 30), their dependence acts as an "external constraint" which prevents research subjects from "act[ing] to protect their own interests" in this context. Therefore, not only is compliance *per se* deemed sufficient for participation without any added safeguards – in breach of subjects' autonomy and personhood, as outlined in section 5.2 – but the compliance itself is in fact invalid due to the unduly influential forces generated by subjects' dependency (and, as previously discussed, institutionalisation); this further compromises chimpanzees' ability to exercise their autonomy and, thus, violates their right to liberty.

Having now addressed the undue influence, and resulting vulnerability, associated with both lifelong institutionalisation and the dependency and power differentials inherent within this kind of research institute setup, in the next section, I will introduce a third way in which this setup arguably confers further undue influence upon the compliance and dissent of chimpanzee subjects: that of training via positive reinforcement with inducements, especially when these are exclusive (either via their nature or in the timing of delivery) to research participation.

5.3.3 Reinforcement and inducements

In research involving human subjects, another area of ethical concern and debate involves the use of rewards, or incentives, to motivate participation. Of concern here is the potential for rewards to influence and manipulate a potential subject's consent at all levels of decisional capacity – *i.e.*, for a potential subject to agree to participation when they otherwise would not have done – thus compromising voluntariness and undermining their ability to exercise their autonomy in a valid way. In research with nonhuman animals, rewards – typically termed 'inducements' – are also commonly used to incentivise and encourage participation in research. Such inducements are often food items that, within the given context, may be high-value and/or exclusive to research participation, *i.e.*, they may not be able to be accessed in any other way. However, the use of inducements in research with nonhuman animals (in contrast to the situation with humans) is often viewed as standard practice and without moral question. In this section, I will argue that, under a deontologically-focused ethical research framework, the use of inducements in research with chimpanzees, as persons, deserves similar ethical consideration – and raises equivalent ethical concerns – to the use of rewards in research with vulnerable human persons, *i.e.*, inducements can unduly influence chimpanzees' compliance (even in a high-welfare, naturalistic setup that aims to facilitate dissent) and, thus, impact upon subjects' ability to exercise their autonomy.

In the case of human subjects, the use of rewards in relation to research participation is an area of longstanding ethical discussion. As previously outlined, under a deontologically-focused ethical research framework, it is generally imperative that research participation occurs voluntarily so as to respect subjects' personhood and right to exercise their autonomy. The use of inducements – either to incentivise participation at the outset, to encourage continued participation or reward task completion, and/or to compensate a subjects' involvement (*e.g.*, their time, effort and/or inconvenience) – has potential to invoke undue influence in relation to the validity of a subjects' consent, assent or compliance, and so runs the risk of compromising voluntariness. A central ethical question therefore concerns the threshold at which inducements become unduly influential, which can be dependent on the type of inducement and the context. Indeed, it is important that any incentives "are not so large that they run the risk of compromising a person's freely made decisions to participate, which would violate the principle of respect for autonomy" (British Psychological Society, 2021, p. 19). In relation to research oversight, there is often a lack of detailed and specific guidance in this area (Largent et al., 2012); consequently, there can be some variation in belief and practice between different research bodies and institutions.

Crucially, inducements tend to sit along "a continuum of increasing ethical concern" (British Psychological Society, 2021, p. 19). Within psychological research, for example, "four constructs" are proposed: those of reimbursement, payment, incentives and coercion, in order of increasing influence as regards the validity of the consent process. At the least ethically problematic end of the spectrum, monetary reimbursement for out-of-pocket expenses, such as travel to the research centre, is generally recognised as ethically appropriate and, in fact, ethically required. Above the level of direct out-of-pocket expenses, however, it starts to become ethically challenging to determine the threshold at which appropriate compensation for expenses turns into an incentive for involvement, and whether such incentives are ethically suitable.

Different strategies can be employed to manage the ethical concern around inducements. For example, institutional limitations may be placed upon the upper level of compensation that can be offered, or on the type or amount of reward that can be used to incentivise participation. Similarly, researchers may be prohibited from advertising the value of any payment that will be offered when they are recruiting subjects, or they may be required to ensure, and justify, that the incentive is proportionate to the burden or inconvenience involved. Furthermore, it may be ethically appropriate to use non-monetary rewards, such as gift vouchers, if these are less likely to invoke undue inducement in relation to consent. This is particularly relevant in the case of children, for whom "small, immediate rewards," such as "praise, stickers, food, bubbles [and] breaks," might be most suitable, (Brown et al 2017, p. 6). However, as discussed previously, the threshold for what constitutes an undue level of influence is typically lowered when subjects are vulnerable. Therefore, the potential for 'small' rewards to be perceived as holding a higher value to children than would be expected by adults is important to consider, given the greater potential for undue influence as a result. Indeed, as advised by the Canadian Paediatric Society (2008, p. 710), we should be "cautious with respect to providing fair and reasonable compensation for participation in research, [due to] the possibility that sums of money or gifts that are relatively insignificant to adults may be highly coercive to children". This also applies across vulnerability more widely, including in the case of nonhuman animal subjects.

The potential for seemingly innocuous inducements to invoke undue influence on vulnerable subjects is highly relevant to the ethical analysis of research with chimpanzees in an institute setting. As argued previously, there are numerous ways in which vulnerability is conferred upon chimpanzee subjects in the type of research institute setup addressed here. Indeed, there is vulnerability inherent in being a chimpanzee in a human-led research context, via significant barriers to communication and comprehension, such that chimpanzees can only ever possess the third level of decisional capacity in this context; moreover, chimpanzees are further contextually vulnerable as a result of the captive environment, lack of compensatory safeguards and unduly influential forces, for example, in the form of power differentials in dependent human-chimpanzee relationships. There is therefore considerable potential for inducements to hold more power in this context than might ordinarily be recognised, *i.e.*, for ‘small’ rewards to unduly influence potential subjects’ compliance, regardless of the welfare standards or attempt at facilitating a naturalistic, non-coercive design. Moreover, the lack of an equivalent to surrogate consent here is an important consideration, since consultation with surrogate decisionmakers is typically advised when determining the suitability of inducements (Van Patter & Blattner, 2020).

Indeed, the use of inducements – usually food – is an extremely common practice in research institutes with chimpanzees (including within setups of the type addressed here) in order to incentivise participation at the outset, motivate continued engagement with research tasks during procedures, and/or reward involvement. It is important to clarify here that a clear difference is made between research setups that withhold food from captive nonhuman animals in order to motivate participation, versus those that continue to provide potential subjects with a normal diet, regardless of their participation or lack thereof, whilst using inducements as either supplementary to their normal daily food intake, or as an alternative way of delivering part of their daily rations, should the chimpanzees take part in any research. The type of setup addressed here is not one in which chimpanzees would ever be deprived of a normal food intake. However, it is important to consider that there may still be inducements used in research institutes that can only be accessed via research participation, *i.e.*, high-value foods offered as incentives that are not part of a chimpanzee’s typical diet and thus unavailable to chimpanzees elsewhere.

Even if this is not the case – for example, the KUPRI states that, with computer-based tasks, chimpanzees are rewarded with a small food token which they would ordinarily be given at some point during the day, even if they did not participate (Matsuzawa, 2006) – then there are other ways in which rewards may differ from their normal diet when this is considered within the relevant context. For example, in a captive environment, chimpanzees are unlikely to have agency around food in relation to the timing of feedings and amount that they are fed (except in relation to food that can foraged from natural vegetation in the environment). As such, even ‘small’, seemingly low-value inducements gained via research involvement may encourage participation (and thus influence compliance) given that they are a way for chimpanzees to access human-provided food on demand, albeit at the cost of task participation, when there may be no other way for them to do this of their own accord. Such inducements, in this context, may therefore have a higher value than would ordinarily be expected; indeed, Matsuzawa et al. (2006, p. 20) acknowledge that, in the KUPRI, “the response-contingent delivery of the food has a special value for the chimpanzee”, given that they have expended effort to earn it.

Furthermore, the basis for using inducements is that of positive reinforcement – the fundamental principle that behaviour that is rewarded will be more likely to re-occur. Thus, in line with basic learning theory, use of inducements in a research setting can also be viewed as training subjects to repeat behaviour that is desired by, and fulfils the needs of, the researchers. In a defence of positive reinforcement training (PRT) for laboratory-based nonhuman animal subjects, Fenton acknowledges that “the importance of PRT for [such] purposes lies in the effort to secure the cooperation of animal research subjects”, thus acknowledging that reinforcement influences subjects’ compliance in a research context. In fact, training via use of inducements actually has the potential to manipulate chimpanzees’ compliance such that it is no longer valid. This is especially the case when there are no compensatory protections in place to safeguard subjects’ vulnerability, given that they do not have the level of decisional capacity necessary to understand what they are being incentivised into. Use of inducements, depending on the nature of these within the relevant context, can therefore be a *direct* form of undue influence in the research participation process.

As with dependency, Ferdowsian et al. (2020, p. 30) describe “the use of (…) inducements to attain compliance or cooperation” as another example of an “external constraint” on a chimpanzee subject’s ability to protect their own interests. Likewise, Beauchamp and Wobber (2014, p. 124) describe “many, but not all, offers of rewards [as] forms of manipulation (…) depend[ing] on the degree of influence exerted”, which can deprive chimpanzees of their autonomy, regardless of whether or not the subject is aware of this influence. Similarly, the use of inducements in the type of research setup addressed here has the potential to compromise subjects’ ability to exercise their autonomy, more so when this is considered in the context of subjects’ multiple vulnerabilities and in conjunction with the other ways in which this type of research institute setup already unduly influences subjects’ compliance.

Overall, I have now argued that there are various sources of undue influence – specifically, those of institutionalisation, dependency within the structure and relationships, and positive reinforcement via inducements – that, collectively, confer additional situational vulnerability onto chimpanzee subjects in this research context. These unduly influential forces therefore further compromise the validity of the institute's purported voluntary participation process, thus contributing to the failure of this type of setup to respect chimpanzees' autonomy and thus constituting a violation of subjects' right to liberty. Indeed, the presence of undue influence within this setup, combined with the use of behavioural compliance alone, with no compensatory safeguard, to determine voluntariness, in the context of a captive research setting that chimpanzees have no option of leaving, altogether provide a strongly contrasting picture to claims in the literature that this type of setup ensures voluntariness and, moreover, can even be praised as an example of ethical practice. For example, in reference to the KUPRI, Carvalho et al. (2019, p. 4) states that "the test apparatus is (...) presented in a way that animals enrol in the experiment of their own volition", and so that it fulfils "the principle of autonomy". When viewed in light of the arguments presented in this chapter so far, such claims are highly flawed.

In the last section of this chapter, I will argue that there is another way in which this type of research setup further compromises chimpanzees' ability to exercise their autonomy and, thus, violates their right to liberty: the breach of confidentiality that occurs in relation to their personal and intellectual information.

5.4. Infringement of privacy

As outlined in chapter three, in research with human persons, a fundamental aspect of any valid informed consent process involves informing potential subjects about privacy and data protection, including how their personal data will be collected, stored, protected, used, shared and, when no longer needed, destroyed. Indeed, data protection requirements are embedded into legislation, policy and guidance at various levels of research oversight and are deemed to be of crucial importance in relation to research ethics. Such requirements are typically even more stringent when subjects are vulnerable, given heightened ethical risks. Yet, when research involves chimpanzees, scant regard is typically paid to privacy concerns, even though they too are persons; in particular, the protection of their personal and intellectual data is an issue which is effectively unaddressed in the nonhuman research ethics literature. In this section, I will therefore argue that research activities, in the type of setup addressed here, infringe upon chimpanzee subjects' ability to exercise their autonomy in relation to their personal and intellectual data. Moreover, they do so by failing to protect subjects' privacy in relation to their data, most notably by breaching confidentiality, such as when publishing the results of studies; consequently, this is another way in which subjects' right to liberty is violated.

Indeed, data protection laws, principles and procedures are staunchly enforced and rigorously adhered to in research with human persons, such that they form an integral part of the research process, from study design, through recruitment, data collection, analysis, publication and beyond. Moreover, many aspects of data protection are enshrined in law (for example, the General Data Protection Regulation; Regulation (EU) 2016/679, 2016), such is the importance of privacy in the protection of subjects' personhood and autonomy. Indeed, data protection has been closely linked to "the principle that everyone should be valued and respected" (Ethics in Social Science and Humanities, 2018, p. 15) through the protection of subjects' autonomy in relation to the use and control of their own data. Furthermore, under a deontologically-focused ethical research framework, the importance of privacy and data protection – in relation to personal and intellectual information – applies equally to subjects who are vulnerable. Indeed, respect for subjects' autonomy in relation their own data is deemed crucial regardless of whether or not the subject has the capacity to make decisions regarding such data; if they do not, safeguards, such as surrogate consent, are employed to accommodate this (as with other elements of the consent process). For example, in the case of children, their "rights as owners of their own data are no different to those of adults, so equal respect should be given to their views and wishes regarding data management, and data destruction where they so wish" (British Psychological Society, 2021, p. 16). However, in cases of vulnerability, there may be even more stringent requirements for data management and protection, such as additional safeguards for the storage of information, given the higher ethical risks.

If data protection is a fundamental element of the informed consent process and closely associated with value and respect for the person, then there is no morally justifiable reason why data protection should not be an equivalently important ethical consideration in research with chimpanzees, given that they too are persons with autonomy. Indeed, if chimpanzees' right to liberty should be protected in relation to other aspects of the research process, then the usage of their personal and intellectual data should also respect this right. Yet, to date, privacy – specifically, in relation to personal and intellectual data – has not been viewed as a notable area of ethical consideration or concern in research with chimpanzees, and, in practice, has generally been disregarded entirely. As such, there is a stark contrast between approaches to data protection in research with humans and chimpanzees, despite both being persons with autonomy and a right to liberty.

Moreover, as explained by Paci et al. (2022, pp. 1-2) in relation to privacy more widely, "the motivation for developing (…) privacy protection mechanisms in animal contexts is still [viewed as] a need to protect data "owned" by humans, rather than a concern for the privacy of the animals themselves". Yet, it is known that privacy is important to chimpanzees living in the wild; indeed, there is evidence that chimpanzees engage in selective information sharing among conspecifics in order to limit the knowledge that others have about them. For example, female chimpanzees vary the information shared about their mating partners and behaviour (such as by modulating mating and copulation calls) depending on the dominance rank of both their mating partner and any females who are nearby (Paci et al., 2022).

Arguably, the aspect of data protection that is of most relevance to chimpanzee subjects in the research setup addressed in this thesis is that of confidentiality or, more specifically, anonymisation of subjects' identities. Indeed, in social science research in the EU with human subjects, "the main risk faced by [research participants] is disclosure of identity and insufficient protection of their private information". As such, it is widely understood that "information obtained from and about a [human] participant during an investigation is confidential unless otherwise agreed in advance." Moreover, "participants in psychological research have a right to expect that information they provide will be treated confidentially and, if published, will not be identifiable as theirs"; if there is any reason that "confidentiality and/or anonymity cannot be guaranteed, the participant must be warned of this in advance" (British Psychological Society, 2021, p. 21).

Indeed, confidentiality is of such paramount importance in research with human persons, that not only should directly identifiable information (*e.g.*, name, age, location) be anonymised, but also that which has the potential to *indirectly* expose a subject's identity (although the nuances of practically carrying out anonymisation with indirect information are of some debate; *e.g.*, Saunders et al., 2014). For example, with qualitative interview transcripts, text that could identify the subject to someone who knows them should be omitted or pseudonymised. For example, in the case of a transcript discussing a primary school child with a named medical condition, who has an identical twin sister and cares for her mum who has a specific disability, even with directly identifiable information removed, the combination of remaining information would still have the potential to expose the child's identity. Furthermore, confidentiality must similarly be respected in the case of a subject with significant vulnerability, even if the extent of this person's vulnerability means that they would never know, or be able to understand, that their confidentiality had been breached. Thus, without explicit surrogate consent, it would generally be deemed highly unethical to conduct research with a vulnerable subject and subsequently publish a paper that, directly or indirectly, identifies who they are, even if that person will never have the capacity to understand that this information has been published; they are still owed protection by virtue of their autonomy and personhood, unless there is an exceptional reason otherwise. For example, Saunders et al. (2014) describe methods used to preserve the confidentiality of very vulnerable people who are "in vegetative and minimally conscious states" when carrying out qualitative research.

In stark contrast to this, published research findings from studies carried out in institutes like the KUPRI openly identify chimpanzee subjects (for example, by providing their name, age and location) and provide details about their intellectual and cognitive abilities (*i.e.*, information regarding their performance on research tasks). For example, in a paper published by Inoue and Matsuzawa (2009) about the working memory capabilities of chimpanzees in the KUPRI, the subjects are named and pictured, with their performance described in the text and their scores on research tasks displayed on graphs; (in contrast, human subjects' data is grouped together into one anonymous category, with no identifiable information provided). Therefore, the chimpanzees are prevented from exercising their autonomy over their personal and intellectual information, since they are not given any control over what happens to their data (for example, through a surrogate decisionmaker, given their impaired decisional capacity). As such, this represents a violation of their right to liberty. In line with data protection principles in research with human persons, it is irrelevant that the chimpanzees will never know about, or be able to comprehend, the publication of their data; it is autonomy-depriving regardless of whether or not there are any adverse consequences as a result. Indeed, in an analysis of privacy for nonhuman animals more generally, Pepper (2020) argues that it does not matter whether nonhuman animals do not know about humans invading their privacy (in relation to covert surveillance), the ethical issue at stake is their interest in having control over information about them and how this is portrayed to others. This similarly applies to a research context in relation to subject's data, in line with ethical practice in research with human subjects.

In this section, I have therefore argued that, under a deontologically-focused ethical research framework, research with chimpanzee subjects should respect their autonomy in relation to their personal and intellectual information. Thus, the failure of research institutes to implement data protection principles and, as such, their disregard for subjects' privacy in relation to the information collected, stored and published about them, is in breach of their right to liberty (given that this incorporates their right to exercise their autonomous capacities).

More generally, within this chapter as a whole, I have argued that research involving chimpanzees – in the type of setup that is being addressed in this thesis – fails to respect subjects' autonomy and, thus, violates their right to liberty in a number of different ways. This analysis is therefore in sharp contrast to claims in the literature that high-welfare, naturalistic research institutes, that carry out non-invasive cognitive research and attempt to facilitate voluntary participation and respect chimpanzees' dissent are an exemplar of good ethical practice and, as such, do not raise any moral concern. In a hypothetically comparable situation with human research subjects, we would never view as morally acceptable a setup in which persons in possession of only the third level of decisional capacity and living in lifelong captivity for the purpose of research participation were accepted into a research study as subjects through behavioural compliance alone, with no supplementary informed consent from an unbiased surrogate decisionmaker, in a situation where both direct and insidious undue influence were unavoidably inherent in the nature of the setup, environment and relationships. The situation would only be deemed worse if, in addition, their personal information – including the extent of their intellectual and cognitive abilities – was subsequently made public knowledge through the publication of the study findings, with no anonymisation, nor any prior attempt to gain consent for this from a surrogate decisionmaker. As I have argued, given that chimpanzees are also persons, we should similarly consider this situation to be morally impermissible when subjects are chimpanzees. In the final chapter of this thesis, I will now summarise my arguments and conclude that cognitive research with captive-bred chimpanzees in a high-welfare, naturalistic research institute setting is morally impermissible.

6. CONCLUSION

In this thesis, I addressed the question of whether it is morally permissible for non-invasive, experimental cognitive research to be carried out with captive-bred chimpanzees. I argued that it is not permissible, since this type of research setup violates chimpanzees' right to liberty in a number of ways. I will now conclude by, firstly, summarising my arguments and, thereafter, addressing some limitations and future implications of my work.

To frame my argument, I first provided an overview of the international situation in relation to research involving chimpanzees. I explained that, in recent years, significant changes have been made to the legal permissibility of invasive research (*i.e.*, that which violates chimpanzees' bodily integrity), with widespread restriction and prohibition of such research in many countries. However, I further explained that these restrictions have typically not been extended to non-invasive research, including that which investigates chimpanzees' cognitive capacities, despite increasing recognition that chimpanzees are entitled to fundamental moral rights. Indeed, I explained that non-invasive cognitive research with captive chimpanzees is often viewed as being without moral question, especially if the setting complies with high welfare standards. I argued that this raises an important ethical question, largely unaddressed in the literature to date, regarding the moral permissibility of non-invasive cognitive research from a rights-based standpoint (given that research with nonhuman animals is typically evaluated using some form of utilitarian calculus). I also outlined the type of research institute setup that I would be addressing: one with a high-welfare, naturalistic environment and a purported voluntary participation design, carrying out basic non-invasive cognitive research for the purpose of scientific curiosity and advancement of knowledge.

Subsequently, I presented evidence to show that chimpanzees possess an extensive range of morally salient capacities that have been associated with personhood, including autonomy, which allowed me to conclude that chimpanzees should be recognised as nonhuman persons. Accordingly, I then argued that their personhood grounds a fundamental moral right to liberty (encapsulating a right to exercise their autonomy) that we are required to respect when conducting research with chimpanzees.

Next, I outlined the ethical research framework that currently governs research with human persons in order to protect their autonomy and personhood, *i.e.*, one which is based upon deontological principles. In particular, I explained the requirement for informed consent (and outlined the elements of this) as a central part of an ethical research process under this framework. I then introduced the concept of vulnerability – *i.e.*, the condition afforded to subjects who cannot fully engage with a valid informed consent process and are thus at higher risk of coercion and undue influence in the research participation process – and I outlined three possible levels of decisional capacity that subjects may hold. Subsequently, I presented various approaches that are taken to safeguard and protect vulnerable human subjects in research in order to ensure that their personhood, autonomy and fundamental rights are respected. The importance for my argument of outlining the regulation of research involving human subjects, at this point of the thesis, was to illustrate the extensive ethical requirements that are put in place to respect personhood in the research process. Accordingly, I therefore proceeded to argue that an equivalent ethical research framework, based on deontological principles, should be in place for research involving chimpanzee subjects in order to similarly respect their personhood (and, thus, protect their autonomy and right to liberty). Moreover, I argued that chimpanzees should be viewed as vulnerable subjects within this framework and that additional safeguards must therefore be employed to accommodate for their vulnerability. By doing so, I established ethical standards by which any given research setup and activities involving chimpanzees, as persons, could be evaluated in order to determine moral permissibility.

Subsequently, I argued that cognitive research – within the type of institute being addressed in this thesis – violates chimpanzees' right to liberty in a variety of ways when evaluated in the context of the ethical research framework that I previously established to be appropriate for persons. Specifically, I argued that this right is violated by: the captive environment *per se*, regardless of the welfare standards, which instrumentalises chimpanzees for researchers' convenience and restricts their liberty; the erroneous equation of chimpanzees' compliance with valid consent, without any compensatory safeguards in the participation process to accommodate for subjects' vulnerability; the unduly influential forces, generated by institutionalisation, dependency and positive reinforcement, that compromise subjects' compliance; and the breach of subjects' privacy in relation to their personal and intellectual data. As a result, I concluded that cognitive research with captive chimpanzees, even in high-welfare research institute, is not morally permissible.

Although I believe I have made strong arguments in line with my claim, my work has some limitations that are important to acknowledge here. Firstly, my arguments hold true in the context of a deontological research framework (incorporating informed consent and the concept of vulnerability) that is widely established and implemented internationally in research with human subjects. As already acknowledged earlier, it is outside of the scope of this thesis to analyse the suitability of this framework, and how it is implemented, in and of itself, for human persons, *i.e.*, whether there exist alternative ethical frameworks or means of implementation, not used currently, that would better protect and safeguard subjects who are persons. Instead, what was relevant to my argument was simply to analyse the moral permissibility of high-welfare cognitive research institutes for chimpanzees against the ethical standards that are currently deemed suitable and sufficient for protection of fundamental rights, when subjects are human (given that both humans and chimpanzees are, similarly, persons). Regardless, given that current research oversight for chimpanzees does not recognise their personhood nor entitlement to fundamental rights, any framework used to regulate research with human persons – whether that be the current framework or, hypothetically, a better alternative – will be more suitable for chimpanzees, given that it will acknowledge their rights and consider subjects to be persons.

Another constraint of this thesis, as detailed in chapter one, is that I set out only to analyse the moral permissibility of cognitive research with chimpanzees within designated research institutes, rather than, for example, zoos or sanctuaries. Indeed, as previously explained, this type of research occurs in a variety of different settings, yet separate ethical analyses would be required for each, given that there are some differences in the relevant ethical considerations (although a number of my arguments would likely still apply). Given that cognitive research programmes are currently integrated into the activities of many zoos and sanctuaries worldwide, evaluation of the moral permissibility of cognitive research in other settings remains an important area for future analysis (and an area that is, as yet, largely unaddressed in the animal rights literature). Furthermore, on a wider scale, cognitive research is also carried out with free-living chimpanzee populations. Given that, in this type of setup, the adverse ethical implications of captivity are eliminated, yet other aspects of my arguments (*e.g.*, in relation to consent and privacy) may well still apply, this is another important and interesting area for future ethical analysis.

Similarly, this thesis focuses specifically on assessing moral permissibility in relation to chimpanzee subjects, rather than making any wider claims in relation to other nonhuman animal species. As explained previously, chimpanzees are one of the two nonhuman animal species most closely related to humans and, thus, are most clearly eligible for personhood status (and, consequently, most clearly at risk of harm from situations that fail to recognise their personhood). Moreover, as outlined in chapter one, chimpanzees have historically had a prevalent role as research subjects. Thus, analysing the moral permissibility of cognitive research activities with this particular species was deemed the highest and most relevant priority. Yet, there is a strong possibility that other species' fundamental rights are being similarly compromised via seemingly innocuous non-invasive research programmes, thus my arguments may apply more widely throughout the nonhuman animal kingdom. This is another future area that is open for analysis and evaluation. Furthermore, the focus in this thesis on cognitive research specifically does not mean that other types of non-invasive research, such as that which is purely observational, are necessarily without moral question.

My arguments were based upon the best possible attempt at creating a voluntary participation design for research involvement with chimpanzees, yet I showed that the idea of true and valid voluntary choice for chimpanzees within this setup is highly flawed. Thus, if cognitive research in high-welfare research institutes that incorporate this type of voluntary participation design is morally impermissible, then this likely has profound implications for many non-invasive cognitive research programmes worldwide, since they may fall even shorter of the ideal of voluntary participation of the research subjects. Moreover, my conclusion regarding the moral impermissibility of this type of setup is in stark contrast to the general consensus in the literature to date that high-welfare, naturalistic, non-invasive cognitive research programmes with chimpanzees are of little, or no, moral concern – and, in fact, should be applauded for their admirable ethical standards. I would therefore hope that this thesis prompts reflection on the clear discrepancy between what we deem ethically appropriate in the case of human subjects versus chimpanzee subjects, and the speciesism inherent in this. We should take time to question the assumptions we make about the involvement of chimpanzees (and other cognitively sophisticated nonhuman species) in research in captive settings, even if the conditions and nature of the research do not appear to cause overt harm.

Moreover, given the extensive history of creating and regulating ethical research standards for vulnerable human persons (including for non-invasive research), I hope that the future will see similar efforts being invested into ethical research standards for *non*human persons that place equivalent emphasis on the recognition and protection of subjects' personhood and fundamental moral rights. (Promisingly, Johnson and Fenton (2022) are currently in the process of creating a new version of the Belmont Report for nonhuman animals based on equivalent ethical principles to those that underpin research with human subjects). Ultimately, this would likely result in significantly more effort (and less convenience) being required on the part of human researchers to devise and implement research programmes that could meet such ethical standards, but this would represent a much-needed shift towards an understanding that our scientific curiosity cannot be satisfied at the expense of nonhuman subjects' fundamental moral rights, *i.e.*, that nonhuman persons are not ours to instrumentalise, even if it is convenient and legally permissible to do so.

More widely, the outcome of my analysis reflects a far greater, overriding issue with the way in which we perceive species other than our own; specifically, the categorical distinction we make between 'human' and 'nonhuman', in research and beyond, such that only the former are afforded any moral rights. I sincerely hope that the longer-term future will see fundamental change at this level, breaking down the arbitrary species divide and extending to nonhuman persons the rights-based protection that they deserve, for who they are in and of themselves rather than only in comparison to us.

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