Behavior of the hand-raised white-faced capuchin *(Cebus capuchin)* male Mally at the Serengeti-Park Hodenhagen

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Internship report written by

Franziska Chowanietz

Abstract

White-faced capuchins *(Cebus capucinus)* are highly social and live in multi- male / -female groups. In the wild, the young animals live with their mother and are raised by her. When they reach the age of three months, they slowly start to forage playfully, increase their social play, and rely heavily on social learning from the adults. Mally was separated from his mother at an early age and was hand-raised in human care. In the process, he was exposed to human behaviours and may exhibit atypical behaviours in interaction with his conspecifics, keepers, and visitors. Behavioural observations for normal and atypical patterns following adaptation to a particular environment is helpful towards understanding and improving the welfare of the animal. This study investigated Mally's integration into the white-faced capuchin group 8 years after his arrival at the Serengeti-Park Hodenhagen. Mally's activity budget, consisting of Genus normative behaviours (GNB) and behaviours potentially indicative of stress (BPIS), were studied over a total observation time of 36 hours. Furthermore, male-female social relationships with regards to grooming was observed, as well as the reaction of Mally and the other members of the group to their keepers and the visitors. The females were observed to groom Mally more often than he groomed them. Mally exhibited increased reaction to keepers and visitors relative to the other capuchins in the group. Activity budget of Mally in GNB was dominated by inactivity (34%), energy gain (28%), locomotion (24%), and external social interaction (interaction with keepers and visitors, 9%). Social positive activities, exploration and vigilance were low at 2%, 1% and 0%, respectively. Only about 2% of his activity budget was composed of BPIS. The activity budget of Mally falls within the range of the activity budget observed in wild capuchins (Back et al. 2019). Observed inactivity in all capuchins may be related to receiving human food supplementation. Inactivity of the capuchins can be improved if the range of employment opportunities is expanded. For example, in addition to more climbing opportunities such as ropes, increasing the complexity to attaining food could also be an option. This would require the capuchins to actively search for their food, just like in the wild. A subsequent re-observation of the behaviour could provide insights into whether the expansion of employment opportunities can change Mally's activity budget and increase the capuchins' activity.

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1. Introduction

1.1 Activity budget of Colombian white-faced capuchin *(Cebus capucinus)*

White-faced capuchins *(Cebus capucinus)* belong to the medium-sized New World primates. They are native to Central and South America and prefer close-canopied forests. Male capuchins can reach a weight of about 3.7 kg and, females a weight of about 2.7 kg. Wild capuchins can reach an age of between 24 and 26 years (Fedigan und Jack 2012), while in captivity, they are reported to reach a maximum age of 55 years (Allman et al. 1993). They are known as one of the most intelligent monkey species, exhibiting a diversity of behavioral and cognitive capabilities including tool use and coalitions (Ottoni und Izar 2008; Izar et al. 2006). In the wild, individual activity budget consists of foraging for food (20% to 30%), eating (20% to 30%) and locomotion (20% to 30%), whereas social interactions only comprise less than 10% (Back et al. 2019). However, these are dependent on their environmental conditions. For instance, *Cebus capucinus* living in the Santa Rosa National Park, Costa Rica showed activity budgets for foraging (50%), locomotion (approx. 16%), resting (approx. 18%), observation (approx. 7.5%) and social interaction (approx. 8%) (Rose 1994).

Wild male capuchin monkeys leave their natal group at about 4.5 years of age (Jack et al. 2012), during which time they engage in social learning and observe essential behaviors and skills from adults. They may remain in each new group they encounter for about four years, and then migrate on. Mally, the focal male in our study, was born in America and was confiscated by German customs at Munich airport on 28 March 2013, due to missing documents under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and placed in an animal sanctuary in Munich. This Convention was created to protect against international trade of endangered wild animals (Bundesministerium für Umwelt, Naturschutz, nukleare Sicherheit und Verbraucherschutz). At the time of importation, Mally was only a few weeks old and was already living separately from his mother. Since May 2013, Mally has been living in the Serengeti-Park Hodenhagen. Before he was introduced to his conspecifics, he had to be

quarantined for about 25 days and was raised by an animal keeper before being integrated into the existing capuchin group (Frankfurter Allgemeine 2013).

This project will evaluate the activity budget (which includes Genus normative behaviours (GNB) and behaviours potentially indicative of stress (BPIS) (adapted from Da Silva, 2015)) of Mally, a hand-raised male capuchin *(Cebus capucinus)*. Since he was hand-raised (vs. parent-raised) and arrived at the Serengeti-Park Hodenhagen before puberty, was he young enough to experience and adapt to normal capuchin behavior? What is the degree of normal species behavior compared to the other capuchins in the group? Does he have the tendency to show a typical capuchin behavior? In addition, reactivity of the capuchin group to visitors and keepers, as well as grooming by members of the group will be observed. We test the following predictions:

1. Previous studies show that receiving human food supplementation may cause deviations in activity budgets and social interactions (Back et al. 2019), therefore we expect that Mally´s individual activity budget will be less than the observed budgets for wild capuchins.
2. As enclosure type is an important aspect of animal welfare (Young 2003), we expect that Mally will show less BPIS compared to the reported BPIS of other capuchin groups in captivity, due to size and enrichment of the enclosure.
3. Benefits conferred to members of the opposite sex are largely different, as females are reported to groom males, but males virtually never reciprocate (Perry 1997). We hypothesize that there will be a higher frequency of grooming from the females to Mally as the receiver rather than the giver.
4. Due to being hand-raised, we expect that he will be more reactive than his conspecifics in the group to the visitors and the keepers, and this will be a positive social interaction.

2 Methods

2.1 Animals

There are currently six white-faced capuchins living in the safari park. All the capuchins, except Mally, were born in the safari park and were raised by their parents. The capuchin group consists of a total of three females (Jenny, Molly and Vanessa) and three males (Mally, Paul and Milo). Jenny is the oldest female with 16 years and the oldest animal in the group. Mally is the oldest male with nine years and Milo is the youngest animal of the monkey group with four years. Milo's parents are Mally and Vanessa. The observed group of white-faced Capuchins *(Cebus capucinus)* are listed in Table 1:

Table 1: White-faced capuchin *(Cebus capucinus)* group of the Serengeti-Park Hodenhagen. Name, sex, age, age group (Jack et al. 2014), date of birth, country of birth/birthplace, raising status, and relationship are listed.

Name	Sex	Age	Age group	Date of birth	Country of birth/Birthplace	Raising status	Relationship
Jenny	Female	16	adult	25.01.2006	DE, Hodenhagen	Mother-raised	
Vanessa	Female	14	adult	18.08.2007	DE, Hodenhagen	Mother-raised	Mother of Milo
Mally	Male	9	subordinate adult	01.01.2013	USA, unknown	Hand-raised	Father of Milo
Molly	Female	9	subordinate adult	07.02.2013	DE, Hodenhagen	Mother-raised	
Paul	Male	6	subadult	07.02.2015	DE, Hodenhagen	Mother-raised	
Milo	Male	4	late juvenile	21.04.2018	DE, Hodenhagen	Mother-raised	Son of Mally and Vanessa


A


B


C


D

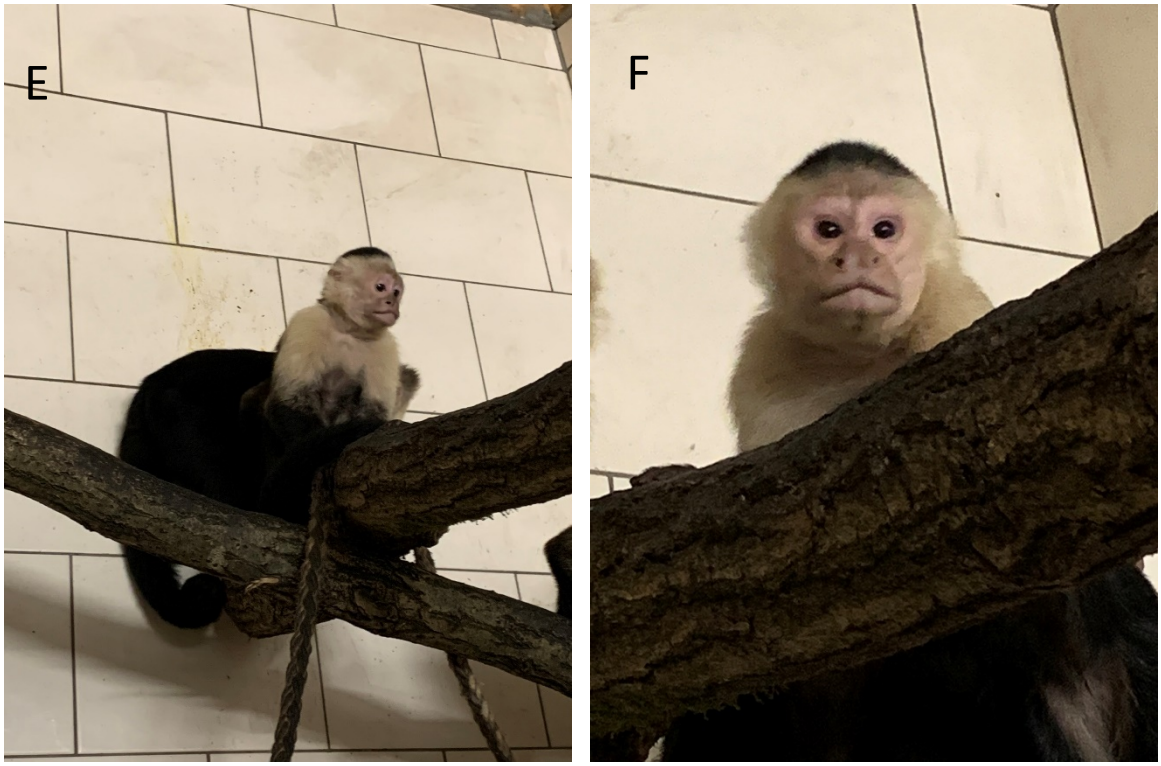


Figure 1: White-faced capuchins *(Cebus capucinus)* in their indoor enclosure at the Serengeti-Park Hodenhagen. **A:** Jenny; **B:** Vanessa; **C:** Mally; **D:** Paul; **E:** Milo; **F:** Molly

2.2 Location

The animals spend their day (between 09:00 and 10:00AM to 06:00PM) in their outdoor enclosure, an island of 550 m^2. Most of the area is visible to the visitors, except for the back part of the island which allows the animals to escape to quieter areas. During the day, the animals are free to roam outside and have no possibility to enter their indoor enclosure. During the night, they are housed in their indoor enclosure. There are trees and bushes outside for climbing and foraging. There are also areas to shelter from the sun and rain. The enclosure is surrounded by a water moat that cannot be crossed by the capuchins or visitors. Close to this water area, the white-shouldered capuchins forage for food, drink and play with the water on warmer days. The first feeding of the monkeys usually takes place around 09:00 or 10:00 AM. It consists mainly of fruits such as avocados, grapes and apples, but also of vegetables such as peppers, tomatoes and parsnips. They also like to eat roots and animal proteins (e.g. eggs and insects).

Figure 2: A- B: The outdoor enclosure of the Capuchins; **C-D:** Indoor enclosure.

2.3 Data collection

The behavioural study was carried out at the Serengeti-Park Hodenhagen. The investigation period startet at the 19 July 2022 and ended on the 29 July 2022. The observation period was from Monday to Friday, from 09:00 AM to 05:00 PM. During this period, all white-shouldered capuchins were in the outdoor area. The macro-categories genus normative behaviours (GNB) and behaviours potentially indicative of stress (BPIS) were observed (See Ethogram in Appendix I).

Focal and continuous animal sampling was used for a sampling length of 10-minute intervals with 5-minute breaks in between. The hand-raised Mally was the focal animal. His activity budget was observed. The frequency of grooming with Mally as the receiver was compared to Mally's reciprocity to groom the females, and interactions of all the capuchins with visitors and keepers were also observed. The total observation time during the two weeks was 36 hours.

Table 2: Observation schedule from Monday to Friday. Observation at every minute at intervals of 10 minutes. Between each observation is a 5-minutes break and between 12:00 PM and 01:00 PM is a 60-minute break.

Monday - Friday				
AM	**Observation times (10-minutes intervals)**		**PM**	**Observation times (10-minutes intervals)**
09:00 AM - 10:00 AM	09:00 AM - 09:10 AM 09:15 AM - 09:25 AM 09:30 AM - 09:40 AM 09:45 AM - 09:55 AM	B R E A K	**01:00 PM -02:00 PM**	01:00 PM - 01:10 PM 01:15 PM - 01:25 PM 01:30 PM - 01:40 PM 01:45 PM - 01:55 PM
10:00 AM - 11:00 AM	10:00 AM - 10:10 AM 10:15 AM - 10:25 AM 10:30 AM - 10:40 AM 10:45 AM - 10:55 AM		**02:00 PM - 03:00 PM**	02:00 PM - 02:10 PM 02:15 PM - 02:25 PM 02:30 PM - 02:40 PM 02:45 PM - 02:55 PM
11:00 AM - 12:00 PM	11:00 AM - 11:10 AM 11:15 AM - 11:25 AM 11:30 AM - 11:40 AM 11:45 AM - 11:55 AM		**03:00 PM - 04:00 PM**	03:00 PM - 03:10 PM 03:15 PM - 03:25 PM 03:30 PM - 03:40 PM 03:45 PM - 03:55 PM

2.4 Data Analyses

Mally's activity budget was calculated according to the formula of Da Silva (2015).

$$T_i = \frac{R_i}{R_t}\ x\ 100$$

T_i is the time each animal spends on the calculated behaviour. R_i is the registered number of individual behaviours. R_t is the total observation time.

No statistical analysis was done for the group in the Serengeti-Park as it was a basic observation for a pilot study.

3 Results

3.1 Activity budget

Figure 3 shows the activity budget from Mally.

The largest proportion of Mally's activity budget in GNB was dominated by inactivity (34%), energy gain (28%), locomotion (24%) and external social interaction (9%). Social positive activities (2%), exploration (1%) and vigilance (0%) were low. The BPIS, on the other hand, took up only 2% of the total activity budget.

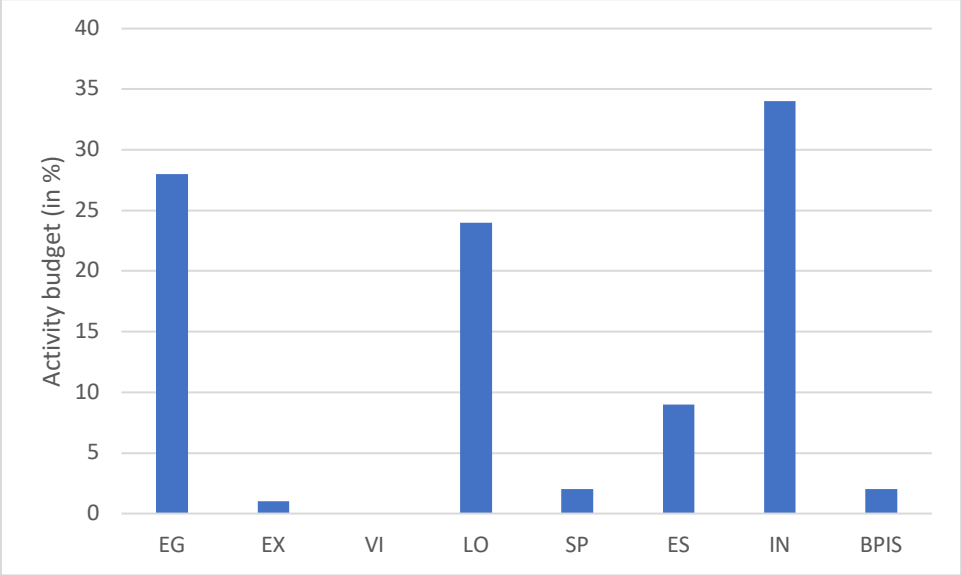
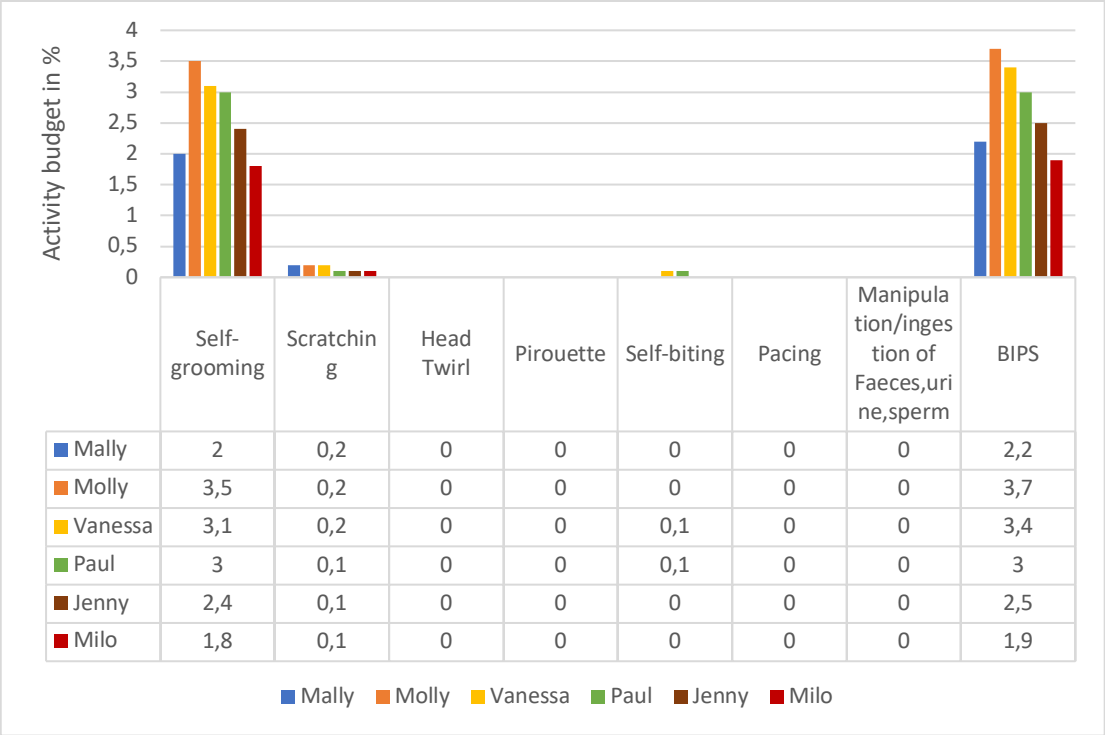


Figure 3: General activity budget of Mally with the macro-categories of GNB and BPIS in percentage. **EG:** Energy gain; **EX:** Exploratory; **VI:** Vigilance; **LO:** Locomotion; **SP:** Social positive activities; **ES:** External social interaction; **IN:** Inactivity; **BPIS:** Behaviours potentially indicative of stress.

3.2 BPIS (Behaviour Potentially Indicative of Stress)

Figure 4 shows the stress-related behaviour of the capuchins.

Behaviours potentially indicative of stress (BPIS) was observed for Mally and the other capuchins in the group. The highest total BPIS of 3.7% was observed by Molly, followed by 3.4% for Vanessa, 3% for Paul, 2.5% for Jenny and 2.2% for Mally. The youngest capuchin Milo exhibited the lowest stress behaviour, with a total of 1.9%. Within BPIS, self-grooming was the dominant behavior (between 1.8% - 3.5%). The behaviour scratching was low at 0.1% - 0.2%, and self-biting could only be observed by Vanessa and Paul at 0.1% each. The behaviours head twirl, pirouette, pacing and manipulation could not be observed during the observation period.



	Self-grooming	Scratching	Head Twirl	Pirouette	Self-biting	Pacing	Manipulation/ingestion of Faeces,urine,sperm	BIPS
Mally	2	0,2	0	0	0	0	0	2,2
Molly	3,5	0,2	0	0	0	0	0	3,7
Vanessa	3,1	0,2	0	0	0,1	0	0	3,4
Paul	3	0,1	0	0	0,1	0	0	3
Jenny	2,4	0,1	0	0	0	0	0	2,5
Milo	1,8	0,1	0	0	0	0	0	1,9

Figure 4: Activity budget (in percent) of the capuchins in the macro-category BPIS. Blue bar: Mally. Orange bar: Molly. Yellow bar: Vanessa. Green bar: Paul. Brown bar: Jenny. Red bar: Milo.

3.3 Frequency of grooming

Figure 5 shows how often Mally grooms females compared to how often the females groom Mally and the other males Milo and Paul.

Female capuchins are reported to groom males more often, while males rarely groom females (Perry 1997). The observations of the capuchins in the Serengeti-Park show that the females groom Mally more often than he grooms them. In total, females groomed Mally for 38 minutes. By contrast, Mally groomed the females for a total of 6 minutes. The females were observed to groom the other males in the group more often than Mally. All females together groomed Milo for a total of 98 minutes and Paul for a total of 41 minutes.

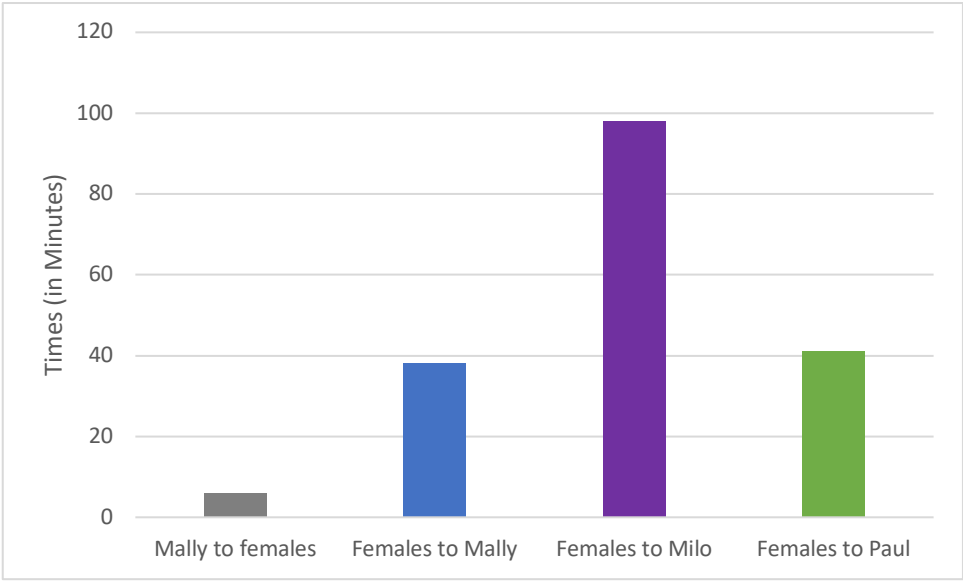


Figure 5: Time spent grooming by the females towards Mally and the other males (Milo and Paul) relative to how long Mally groomed the females. Total time spent by Mally in grooming the females is represented by the grey bar. Total time the females spent in grooming Mally (Blue bar), Milo (Purple bar) and Paul (Green bar) are represented.

3.4 Reaction to keeper and visitor

Figure 6 shows the reaction of Mally compared to the other Capuchins towards the keeper and the visitors.

Assessment of the interaction of each capuchin with the keepers and the visitors revealed that Mally reacted more to the keepers (in a total of 6.3% or 136 minutes) and to the visitors of the park (in a total of 2.6% or 57 minutes) relative to the other capuchins. Interestingly, the males reacted more to the keepers compared to the females.

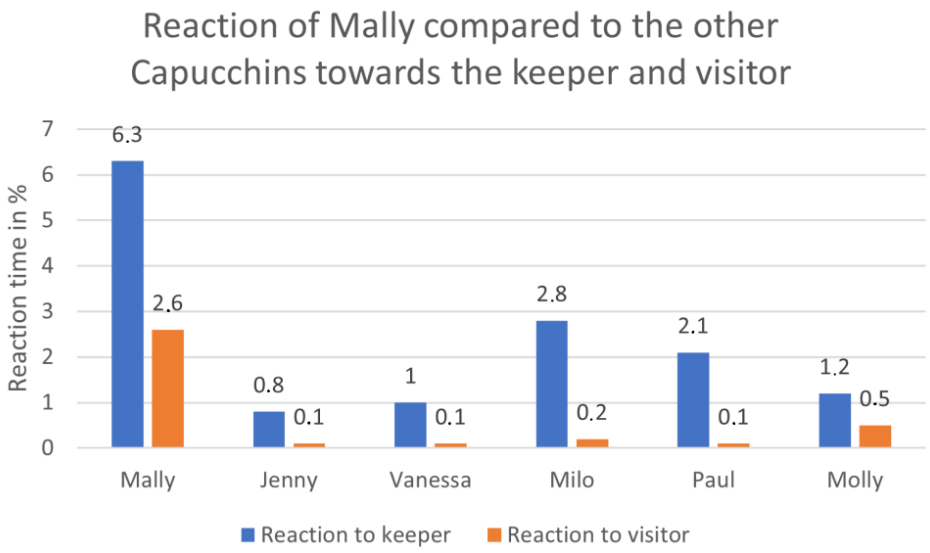


Figure 6: Percent reaction time of capuchins to the keepers (blue bars) and visitors (orange bars).

3.5 Inactivity

Figure 7 shows the percentage of inactivity of the different capuchins in the Serengeti-Park.

During the period of the study, the inactivity of the white-faced capuchins (Cebus capuchin) was also documented. Mally was observed to be the most inactive animal of the group, with 34%. The least inactivity was observed by Milo, the youngest animal of the group and Paul. They were inactive for 7% of the time. Jenny, the oldest animal in the group, was also the most inactive female of the group, with an inactivity of 20%.

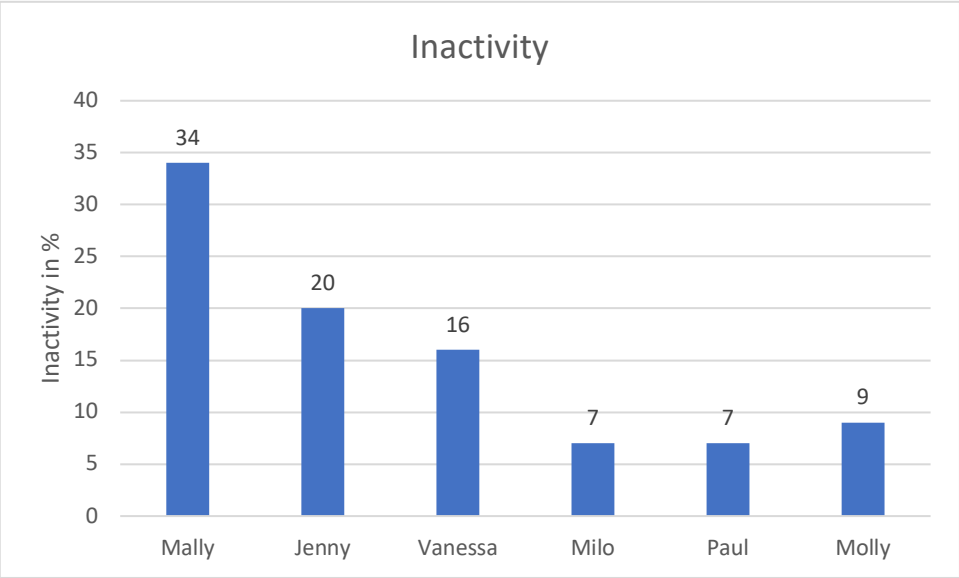


Figure 7: Inactivity of the capuchins in %.

4 Discussion

In this study, the behaviour of 6 capuchins (3 males, 3 females) were observed in the Serengeti-Park Hodenhagen, with the hand-raised male Mally as the focal animal. The macro-categories, genus normative behaviours (GNB) as well as the behaviours potentially indicative of stress (BPIS) were evaluated.

The first hypothesis was that Mally's activity budget will be lower than that of capuchins in the wild. Energy gain can take up to 46% of the activity budget in wild capuchins (Da Silva 2015) or foraging only up to 50% (Rose 1994). Mally's individual activity budget was divided into the categories: inactivity (34%), energy gain (28%),

locomotion (24%), external social interaction (9%), social positive activities (2%), BPIS (2%), exploration (1%), and vigilance (0%). In comparison to individual activity budget in the wild (i.e. foraging for food (20% to 30%), eating (20% to 30%), and locomotion (20% to 30%) (Back et al. 2019)), Mally's levels showed similarities and were within these ranges, except for his high level of inactivity (34% of activity budget). The inactivity of the other white-faced capuchins (Cebus capuchin) was also documented. Observations suggest that older capuchins are more inactive compared to younger capuchins. For example, Jenny, the oldest animal in the group, was also the most inactive female of the group, with an inactivity of 20%. The least inactivity was observed by Milo, the youngest animal of the group and Paul. They were inactive for 7% of the time. Increased inactivity may be due to food supplementation by humans (Back et al., 2019). As a result, capuchins living in captivity invest less time in independent foraging than capuchins living in the wild. In addition, Mally's social interaction with the other capuchins was 2%. Social interactions of captive capuchins are less than 10% of the activity budget of wild capuchins (Back et al. 2019), this reduced social interaction was also observed in Cebus capucinus in Santa Rosa National Park in Costa Rica with levels at 8% (Da Silvia 2015).

The second hypothesis was that Mally will show less BPIS, compared to other capuchin groups in captivity, due to the size and enrichment of the enclosure. Behaviours potentially indicative of stress (BPIS) took up 2.2% of Mally's activity budget, of which only the behaviours self-grooming and scratching could be observed. In comparison, a BPIS of 11% was noted for capuchins in captivity (Da Silva, 2015). The low BPIS from Mally could be due to the different size of the enclosures. The outdoor enclosure at Serengeti Park has a total size of 550m^2, while the enclosures of the different capuchin groups reported by Da Silva (2015) were smaller. For instance, the zoo of the city of Natal (Rio Grande do Norte) had a closed enclosure size of 23m^3 for a total of six Black-striped capuchins (*S. libidinosus*); and the zoo in Salvador (Bahia) housed seven Blond capuchins (*S. flavius*) in two enclosures with a total size of 248m^3, and two groups of Golden-bellied capuchins (*S. xanthosternos*) in an enclosure size of 124m^3 for five adults and 100m^2 for eight adults. As expected, less stress-induced behaviour (BPIS) was observed in Mally

than in other captive capuchin groups and may be due to the size and facilities of the enclosure at Serengeti-Park Hodenhagen.

Studies have shown that the females frequently groom the males of the group while the males almost never groom the females (Perry 1997). The third hypothesis stated that there will be a higher frequency of grooming from the females to Mally as the receiver rather than the giver. All females groomed Mally for a total of 38 minutes, while Mally groomed the females for 6 minutes. A study in the wild reported that female white-faced capuchins (Cebus capucinus) groomed the alpha male of the group more frequently than the other males in the group, which are lower in rank (Perry 1997). This could not be confirmed when observing the group at the Serengeti-Park. The females groomed the two lower ranked males more often than they groomed Mally. Milo was groomed a total of 98 minutes and Paul a total of 41 minutes. As such, differences in social behavior (e.g. grooming) may be related to wild vs. captive conditions.

Lastly, we wanted to observe whether Mally would be more reactive than the other capuchins to the visitors and the keepers, because he is hand-raised, with the supposition that this will be a positive social interaction. External social interactions with visitors and keepers accounted for only 9% of Mally's activity budget. Mally's reaction time to the keepers (6.3%) as well as the visitors (2.6%) was higher than the other members of his group. This may be because Mally was hand-raised, unlike the other white-faced capuchins. As a result, he has developed a different relationship with the keepers, but also a different relationship with people in general, i.e. the visitors. This can be seen as a positive social interaction. Of note, during the observation of Mally's reaction to people, he was particularly reactive to women with dark or black hair. This imprinting is based on the relationship with his keeper, who raised him after his arrival at the Serengeti Park, as she has the external characteristic of dark hair. Overall, the males reacted more to the keepers (also Milo (2.8%) and Paul (2.1%)), whereas the females, on the other hand, rarely responded (0.8% to 1.2%).

5 Conclusion

This study examined the activity budget of the hand-raised white-faced capuchin, Mally, 8 years after his integration in the capuchin group at the Serengeti-Park Hodenhagen.

Findings show that Mally has integrated well into the existing capuchin group in Serengeti-Park. Since Mally came to his conspecifics before the beginning of puberty, he was able to learn the typical behaviour of capuchins despite being hand-raised. However, Mally does show atypical behaviour, such as his high level of interaction with humans compared to other members of his group. This may be due to being hand-raised and the resulting attachment to humans. Findings also show that Mally spends less time on food foraging or generally in the energy gain category. On the other hand, the proportion of inactivity is higher than in other studies and may be due to the captivity aspect and the food supplementation by humans. To reduce inactivity, employment opportunities may be expanded for the capuchins, i.e. adding more dynamic branching (e.g. swinging ropes) to expand range of play, and making access to their normal diet more complicated so that animals spend more time searching for food, otherwise they are deprived of a lot of locomotion and searching effort. A follow-up study is recommended, with an additional understanding of how the animal species should spend their day and increased employment opportunities. This could help to show whether the activity budget of the animals was improved.

6 Outlook

The behavioural study showed that Mally has been well integrated into the group. He showed positive social interactions with his conspecifics in addition to the species-typical behaviour. By observing the individual capuchins, it was also noticeable that Mally spent most of his time alone and often kept his distance from his conspecifics. He was often inactive and looking about his surroundings. To increase the activity budget of Mally and his conspecifics, attaining food should be more complex and the range of play and climbing opportunities could be expanded.

It was observed that visitors spent more time in front of the capuchins' island when they were more active, playing and climbing versus when they were inactive. By increasing the activity of the capuchins, visitors to the park could have a better view of the animals in their natural play. This would probably increase the time visitors spend in front of the capuchins' enclosure and increase their interest in the animals.

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Appendix

I Ethogram

Table 1: Genus normative behavior. Adapted from (Da Silva 2015).

Macrocategory	Behaviour	Definition
Energy Gain (EG)	Foraging	The individual moves around searching for food, but without ingestion at the moment of registration.
	Eating	The animal is stationary and takes food into his mouth, chews and ingests.
	Drinking	Animal is stationary next to a water source taking water into his mouth followed by ingestion.
Exploratory (EX)	Food manipulation	Food is manipulated with apparent aim to ease the ingestion (soften, crack), but without necessary ingestion afterwards.
	Manipulation of environment	The individual touches, moves, licks, rubs or bites objects or part of the environment.
	Play alone	The individual interacts with objects (manipulation of the surrounding environment with no apparent motive). Pushes and pulls ropes, branches, twigs and wires. Swings itself with inferior or superior limbs.
Vigilance (VI)	Alert	The individual turns the eyes and head slowly, looking at least at two different directions. The animal alternates between looking at inside and out of the enclosure, without performing any other behaviour.
	Threat to the observer	The animal threats the observer. (e.g.: shows the teeth, aggressive vocalization)
Locomotion (LO)	Locomotion	Vertical or horizontal locomotion on the enclosure, without manipulation or search for food.
Social positive activities (SP)	Grooming	The act of manipulate hair from others with hands or mouth.
	Social play	Two or more animals interact physically and/or chase each other without aggression involved. There may occur manipulation of the environment
	Sexual behaviours	The individual opens the eyes widely and repeatedly, together with contortion body movements (his behaviour occurs directed to another individual), body rocking from side to side. This usually happens during female oestrous.

	Scrounge	The animal approaches another and feed on scraps that fall from this one`s mouth.
	Mount	Individual mount each other and it may occur contact between genitalia. This usually happens during female oestrous.
External social interaction	Reacting to visitors	Interact with visitors Begging for food Vocalization
	Reacting to keeper	Interact with keepers Running Following keeper`s direction
Inactivity	Inactivity	The individual stays in rest and static. The eyes may be open or closed.

Table 2: Behaviours potentially indicative of stress. Adapted from Da Silva (2015).

Macro-category	**Behaviour**	**Definition**
Active I (AC I)	Head Twirl	Turns the head looking up and side to side.
	Pirouette	Turns on itself without leaving the same spot.
Self- directed (SD)	Scratching	The animal scratches a body part, with his hands or feet, during a brief moment
	Self-grooming	Grooming with hands or mouth, compulsively.
	Self-biting	Bites itself in any body part.
Pacing (PA)	Pacing	Walks or runs repeatedly, without aim, around the same path.
Ingestion (IG)	Manipulation/ ingestion of feces, urine or sperm	Licks or touches urine or sperm. Eating of own or other`s feces, urine or sperm.

II Data collection table

Table 3: Data collection table. Numbers 1-55: Minute observed per hour. Visitor: Number of visitors. Keeper: Number of keepers**.** Weather: Weather at the time of observation.

Time	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	Break (5Min.)
Mally											
Jenny											
Vanessa											
Milo											
Paul											
Molly											
Visitor											
Keeper											
Time	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	Break (5 Min.)
Mally											
Jenny											
Vanessa											
Milo											
Paul											
Molly											
Visitor											
Keeper											
Time	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	Break (5. Min.)
Mally											
Jenny											
Vanessa											
Milo											
Paul											
Molly											
Visitor											
Keeper											
Time	**46**	**47**	**48**	**49**	**50**	**51**	**52**	**53**	**54**	**55**	Break (5 Min.)
Mally											
Jenny											
Vanessa											
Milo											
Paul											
Molly											
Visitor											
Keeper											
Weather											