Comparison of Guinea Pigs

to

Group and Marriage Family Theories

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Guinea pigs are social animals that have been researched extensively, and yet there has not been any research done comparing guinea pigs to group or family theories in humans. By comparing Group and Family Therapy theories, to this group of guinea pigs that are part of a family, we can see some interesting similarities and differences between human groups. These guinea pigs observed for this comparison are the herd of Misted Kesselman Forest and Chava Zamora. This herd has been observed since Oct 2019. This report will go over the individual differences of each guinea pig, the history of the domestication of guinea pigs, group dynamics and observations, Yalom's Curative Factors as regards these guinea pigs, compare these guinea pig herd to Bowen's family system theory, lastly recommendations for guineapig-assisted therapy. By comparing guinea pigs and humans in aspects like hierarchy, group dynamics, group cohesion, and personality, it is possible to observe the higher levels of resistance, tolerance, and strengths of guinea pigs compared to human groups.

Key

Abbreviation	Name	Meaning
GP	Guinea Pig	The animal, a guinea pig
herd	herd	A group of guinea pigs that live together are called a herd
MFH	Misted's Herd	The guinea pigs in this case study report are the animal friends of Misted Forest.

There is Guinea Pig Vocalization terminology used in this paper, go to the glossary at the end to learn and hear what the different sounds mean.

Meet the Piggies



Adzuki | Breed: American Short Hair

Age: Oct 2018-current

- -First Alpha
- -Pair with Nabi
- -Curious and Adventurous
- -Used to bully Nabi when they had a small home.

-Got a respiratory illness in March 2019, still alive but chronically sick. She is the oldest gp



Nabi | Breed American Short Hair

Age: Oct 2018-current

- -Stayed small for a long time and gained weight in
- 2022. Misted moved away during this time.
- -She is the most ok with being held.
- -Since Peanut and Paprika started living in the

herd, she is a little more shy.



Buttercup | Breed: Abyssinian

Age: Jan 2019-March 2022

- -Adventurous, didn't like being held unless there
- was a food incentive.
- -Very vocal, often the loudest gp.



Kokopelli Age: Jan 2019-March 2022



<u>Valentine</u> | Breed: American Satin

Age: Jan 2019-present

- -Current Alpha
- -Largest GP by weight
- -Had bad injury Feb 2023, recovered in 3 weeks, no longer

does high jumps since this injury

used to chatter when held but now is calm.



Paprika | Breed: American Satin Age: July 2022-current

Age: July 2022-current

- -Closest to Peanut and Valentine
- -Calm and kind to all the gp's
- -Sometimes plays with Nabi



Peanut | Breed: Abyssinian Age: July 2022-current

- -Despises being picked up
- -Least friendly to humans
- -Most anxious but is starting to warm up to Chava and Misted now, 10 months later.

Group Dynamics

- Nabi spends most of her time alone.
- Adzuki sleeps most of the day. Nabi and Valentine check up on her periodically, Paprika does as well.
- Peanut and Paprika spend most of their time together.
- Valentine observes the whole herd and has two favorite sleeping spots, the hammock on level one and under the ramp at level one. Except when it is sunny, all the guinea pigs enjoy the top floor, where it is the warmest.
- Peanut and Valentine steal food the most, Paprika sometimes, and the food is usually stolen from Nabi and Adzuki, sometimes Paprika.
- It almost seems that these **gp**s have a very small short term memory, when they are excited about food they will pick up the treat and 20 seconds later wander around forgetting where they put said treat.

Brief History Domestic Guinea Pigs

Originally from Peru, guinea pigs were first domesticated in 5,000 B.C. and are now globally distributed as pets and for their meat (Guinea Pig, 2019). The Spanish brought them to Europe in the late 1500s or early 1600s for the exotic pet trade. In the late 1800s, guinea pigs were sadly used in experiments because of their similarities to humans (University of Otago, 2020). Domestic Guinea Pigs are different from their wild counterparts by showing reduced stress responses and more socialization behaviors compared to other domesticated animals (Künzi & Sachser, 1999). Domestic Guinea pigs can live as old as 14 years in human care, but this is rare and often live 5-7 human years old (Pollock DVM, 2018).

Social Structure, Personality, and Environmental Factors

Guinea pigs are happiest in a herd of 3 more guinea pigs. "Guinea pigs are typically considered gregarious, or social, animals. They often huddle for warmth and protection and prefer to be in close contact with other individuals." (Guinea Pig, 2019) When guinea pigs come from the same mother or are raised in the same area, they build a closer relationship than if they are thrown together with guinea pigs from various parents: MGP's herd follows this observation where Nabi and Adzuki are a close pair

Buttercup and Valentine and then Peanut and Paprika. However, each individual guinea pig's personality comes into play as well.

Guinea pigs' personality traits do not match personality theories developed for humans. It is better to look at behaviors such as dominance behavior, stress levels, and epigenetics, such as the housing a pregnant guinea pig is in when giving birth up until their teenage years (Zipser et al., 2013), to know how a guinea pig will generally behave. Once trust is established, it is easier to know a guinea pig's personality, which can take approximately six months when the **gp** becomes an adult. Personality is not fixed; humans' personalities will adjust, and change based on life events and environmental factors (Zipser et al., 2013).

MFHs personalities: Stress is a major factor for instilling or destabilizing personality traits in these guinea pigs.

Stabilizing experiences:

- When Kokopeple died, Buttercup's personality changed, and she gained more tolerance to being held by Misted and Chava and became less assertive toward the other guinea pigs.
- 2. When Peanut and Paprika spread a fungus to the rest of the guinea pigs, the caregivers had to wash everything multiple times. Then, every day for three weeks, they put athletes' foot cream on the infected areas and special medicated drops in their mouths. How often the new guinea pigs had to get picked up for this ordeal reduced their fear of us.

Destabilizing: When a new human is introduced, when any human picks them up too often, when a human chase them, when an alfa guinea pig chases and exhibits dominant behavior to other guinea pigs, and when the gp changes environments too often, it puts unnecessary stress onto the gps. The more stressed a guinea pig is, the harder it is to find stable personality patterns (Zipser et.al. 2013). Although some change in environment is suitable for guinea pigs in general, such as moving their toys around, Misted Forest's guinea pigs were always in a state of shock each time their house dramatically

changed for a few days, either a brand-new enclosure was made, or they were taken somewhere in an emergency, and a temporary enclosure was created.

Hierarchy, and Group Size, the play of Alpha

Having male and female guinea pigs together is only possible if only one male (spayed) and the rest are female: This is because guinea pigs are polygynous: Where males form social hierarchies over food and mates; like lions, there has to be a male alpha in the pack (Guinea Pig, 2019) unless it is an all-female herd. The caregivers of **MFH** have an all-female herd of guinea pigs for this reason.

Regardless of gender, there will be an initiation ceremony of dominance when a new guinea pig is brought into the herd. Pushing, "humping", rumble strutting, and teeth chattering are all normal behaviors for this (thalestral, 2009). However, if there is screeching, crying, or blood, these guinea pigs will not get along, and it is best to give up on introducing this new guinea pig to the herd. Usually, the largest and heaviest guinea pig will be the most dominant but not always.

The hierarchy of MFH started with the first guinea pigs, Nabi and Adzuki, adopted in October 2018. Adzuki exhibited dominant behavior, but since it was just the two of them, it took months until Nabi gave up on winning over Adzuki. A few months later, in February 2019, Valentine and Buttercup were introduced. Now at four guinea pigs, it was a true herd. Adzuki, Valentine, and Buttercup strutted for dominance; four hours later, Buttercup won. Buttercup was pregnant, which might have given her an edge in this competition. A month later, Kokopelli came and went. Griefed by the loss of Kokopelli, there was a decrease in dominance behavior by all the guinea pigs. A few months later, Valentine Challenged for dominance (she weighed 2 lbs more than the other guinea pigs) and won. Next we will talk about Nabi the most subordinate guinea pig.

Nabi's submissive behavior matches what is seen in other rodent's, who are at the bottom of the social pyramid: hiding behavior, more fear, clinging on to a supportive peer or higher up, avoiding conflict, and allowing for bullying (Grant, 11963). It is sad to see, but it is also natural in this hierarchy of animal groups.



Compared to human children, children who are bullied

more often are also withdrawn and feel they are low in social hierarchy in their schools (Orgurlu & Saricam, 2018) Nabi is also more comfortable with being held and picked up by Misted and Chava and shows higher tolerance for being held by strangers, possibly for this reason.

Currently, the herd consists of Adzuki, Valentine, Nabi, Peanut, and Paprika. Valentine is the Alpha of the herd; Nabi is the most subordinate.



Misted's Guinea Pig Herd Culture

Guinea Pigs are unique rodents in that they communicate primarily with vocalizations. There are over 11 different sounds these little animals make to communicate with each other (Jollity, 2021). To hear some of these cute sounds yourself, go

here: https://www.youtube.com/watch?v=BB8j3X3UyZA. MFH culture is based around the talking of these little fur potatoes (a term of endearment used by caretakers). One central herd cultural element we can see with these fur potatoes is *groupthink*: in "quee, quee," wheeking vocalization behaviors.

When there is a sound or smell in the environment that the guinea pigs have classically been conditioned (often unintentionally) to associate with food, they vocalize "quee, quee." These triggers are chopped fruits or vegetables, the refrigerator's opening, the smell of vegetables sauteing, and the crinkle of a plastic bag. If one guinea pig starts wheeking, whether there has been such a sound, all the other guinea pigs will start. It then becomes a cute but loud chorus that does not silence unless they are given food or the caregivers stop talking and ignore them (takes about 5 minutes).

Yalom's Curative Factors

In this section, MFH will be compared to group factors termed by Yalom (2020)

Corrective Recapitulation of Primary Family Group: Buttercup's death left a hole in the herd. Bringing in the new young guinea pigs created a chance for a new beginning and gave Valentine a new role to play: It is as if Valentine became a mother to Paprika and Peanut.

Group Cohesiveness: If there is not a certain amount of group cohesiveness, guinea pigs will fight and be depressed. However, there are a few behaviors that show a group is getting along, such as exploring together, grooming, smelling each other's mouths, not fighting (Fuchs, 1980), can sleep near each other, and more (Little Adventures, 2018) All the guinea pigs in this herd show group cohesiveness by the following observations: All the guinea pigs rotate where they take naps, and sometimes nap next to each other, groom each other, such as licking each other's ears, smell each other's faces and butts. The

guinea pigs learn from each other's behaviors and look up to the most adventurous piggies, such as Adzuki.

Universality: Guinea pigs are known as prey animals. This is because prey animals breed quickly and can

get pregnant at four weeks old (Guinea Lynx, 2023). This is an environmental adaptation to keep the species alive.

When a human has a prey animal as a pet, humans need extra time and attention to earn the animal's trust. MGP herd shows these characteristics of common prey animals: fear of being in large open spaces, running close to and next to each other, sounding alarms, and more (Guinea Pig, 2019). The photo to the right shows an example of this



universal behavior. When the guinea pigs are concerned about open space with nowhere to hide, they will huddle together.

Altruism: Guinea pigs (Misted's herd included) are not known to share regarding food. However, with everything else, they show these behaviors: Taking turns using toys, hides (hideout spaces), and sleeping areas, will wait patiently in line to drink from the water bottle, will lick and grooming each other, and when it appears a guinea pig is in pain, will wait by them as social support. Lastly, when one of the GP are in pain, all the other animals will stop by and sit near them. For example, when Buttercup was about to pass away, each GP came near her as if to say goodbye until she took her last breath.

Imparting of Information: Like most social mammal groups, group members will teach each other new skills by showing them or being observed doing the new behavior. For example, ramps do not usually exist in nature. When Chava and Misted made houses for the guinea pig family with ramps, they all had to learn how to walk up them and hop onto the next floor. With food as motivation, even the most scared guinea pig eventually learned how to use the ramps and is now comfortable enough to run and

hop on them. The most curious guinea pigs are the first to master the ramps, and they show the other, more nervous guinea pigs how to use them. Adzuki, Buttercup, and Peanut are the most adventurous, Nabi is the timidest, Paprika is patient, and Valentine is impatient. So it is usually Adzuki that shows everyone how to do the new behavior first. When Buttercup passed away, that new role went to Valentine.



Comparing MPGH to Group, Marriage and Family Therapy terms, and theories

Compared to the family life cycles theory of chapter 2 in the textbook Family Therapy: An Overview, there are correlations between MGP behavioral changes in human families (Goldenberg, Stanton, & Goldenberg, 2017, 33-38). For example, buttercups dominant behavior changed after her child died; the whole herd's stress responses changed when Buttercup died, and when Paprika and Peanut were brought in, much like a new child or grandchild born into a family, the mood lifted (the guinea pigs slept less, ran more, and chirping for snacks increased), and Nabi, Adzuki and Valentine's behaviors showed greater energy.

Applying Bowen Family Systems to Misted's Guinea Pig Herd

In Bowen's Family System theory, the success or distress of a family and how the anxiety moves through a family (PopPsych, 2019) match closely to what has been observed with these guinea pigs.

Bowen believed that chronic anxiety drives all aspects of the family and can is seen in all animal species

(Goldenberg, Stanton & Goldenberg, 2017, p 193). In Bowen's Family Systems Theory, a family is an emotional unit and the thinking of how the family works in systems. These concepts will be explored next.

There are systems at play in **MFH**: the system of hierarchy, emotional attachments, and the system of innate survival instinct. For example, Nabi is often the scapegoat and may absorb the most system anxiety. Another example is when a **GP** is taken out of the enclosure when the rodent is returned, instinct kicks in, and dominating behavior over that **GP** ensues. Continuing this example with another system, if that same situation happens, but the herd is content, the family's emotional system trumps the instinct system.

Continuing the emotional subsystem, the caretakers affect the herd. The guinea pigs' behavior changed when Misted was not present; for example, Chava noted that when Misted moved away to Colorado from Aug 2021-May 2022, during that time, he said the GPs showed less enthusiasm for food and did less activity during the day. Next, we will explore subgroups.

In Bowen's theory we see family members break off into sub groups called Triangles or triangulation (Goldenberg Stanton, & Goldenberg, 2017, p 192). The most notable triangle in **MFH** is Valentine, Paprika and Peanut. Valentine acts like a mother to these two and when they were brought into the herd, Valentine's personality shifted, from low energy after Buttercup's death, to more interpersonal engagement such as grooming Peanut and Paprika, and sitting back watching them,

intervening when they were lost.



Although Nabi and Adzuki tend to separate themselves from the other three, Nabi has more difficulty being in the group. Nabi shows outsider behavior, as seen with triangulation in Bowen's system theory. She interacts with all the guinea pigs, especially during eating times, but for the most part, she spends time alone, hiding or sleeping by herself. Despite the added stress of being subordinate, she is in excellent health. Subgroups are affected by how these **GPs** were affected by their upbringing. This will be explored through the concept of a multi-generational transmission process..

We can only see the *multi-generational transmission process* in Misted's **GP** herd in how the current GPs act towards each other since knowledge of their parents is unknown. However, when we look at the *conscious teaching* efforts of Valentine to Peanut and Paprika, we can see that the two show a secure attachment. Peanut and Paprika, over time, learned behavior from Valentine, such as sleeping in the hammock or watching the herd from under the ramps. As for *automatic programming*, Paprika learned to be calm when Misted picked her up, but Peanut did not. It is unknown why one guinea pig learned this behavior and the other did not; however, this discrepancy is common in families since the subtleties of how one parent treats one child compared to the other are related to their self-differentiation (Goldenberg, Stanton, & Goldenberg, 2017, 194) and *emotional maturity*. Parents tend to be closer to their children, who match their emotional maturity and display more needs than others (Gibson, 2016).

Guinea Pig-Assisted Therapy

Guinea Pigs have been studied for their stress levels when being in regular contact with various humans in a study done for animal-assisted therapy with guinea pigs. The results of the studies showed an increase in these behaviors when they are stressed: "reduced eating," "increased startle," and "increased freezing." "Petting the guinea pigs was correlated with a rise in the eye temperature and might be a factor that can cause stress. Our results support the suggestion that guinea pigs involved in Animal Assisted Therapy should have a retreat possibility, have access to conspecifics, and be given time to adapt to a new setting. In this way, stress might be reduced". (Wirth, S et al., abstract, 2020) The results of this study and Misted's observations of their animals suggest that Guinea Pig-Assisted therapy can work if the patients do not pick up the guinea pigs or make frequent loud sounds. Misted believes that having these animals in the therapeutic office could be soothing for the clients. It also allows the therapist to notice how their clients observe or feed the guinea pigs, which could bring insight into their minds or mental health condition.

Conclusion

Misted's Guinea Pig Herd shows stability despite various environmental and ingroup changes. The human interactions with the guinea pigs affect the guinea pigs just as much as the latter. Humans could be the highest in the hierarchy of a guinea pig herd unintentionally. The MGP herd has evolved due to changes in members in the herd, the health and sickness of **GPs**, and the size of their enclosure. Although housing guinea pigs can be a big responsibility, they are Misted and Chava family members. Over time, they have more appreciation for how much their presence brings levity and joy into their lives.

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Glossary

Definitions taken from The blog post from Oxbow hay, a premium small animal resources company.

Go to the original link to hear the different sounds: https://oxbowanimalhealth.com/blog/guinea-pig-sounds-and-their-meanings/

wheeking: Sometimes called whistling, this is the classic sound people think of when they think "guinea pig." It can be deciphered as begging—they really want something (and that something is usually food!). The amount of wheeking a guinea pig does really depends on the individual—some guinea pigs wheek incessantly every time they hear a bag crinkle, while other times they may only wheek once or twice a day, when it's time for breakfast or dinner greens.

Chutting

Sometimes referred to as a "clucking" sound (like a mother hen would make), this is a sound of contentment. Guinea pigs may make this sound towards you when you're interacting with them, or toward their cage mates, when they're enjoying the moment. Guinea pigs may also make this sound when they're curious and exploring their surroundings. Guinea pigs that are chutting are loving life!

Bubbling

Compared to the other sounds our piggy pals make, bubbling is a very quiet sound and can be difficult to hear. It is ultimately a sign of happiness. "Pancaking," where your pet lays down flat with their eyes closed and relaxed, frequently accompanies this sound. Many pet owners find that bubbling only occurs between cage mates who deeply enjoy one another's company, or during a particularly cozy lap time.

Listen to clip

There are two types of rumbling that guinea pig parents should be aware of.

One is often accompanied by "rumble strutting," which is a behavior guinea pigs do to display dominance. The guinea pig shifts their weight side-to-side while walking, and sometimes their fur may be a little puffed up to make themselves look larger. It can be interpreted as "I'm the big boss pig." Rumbling accompanied by rumble strutting is not overtly a sign of aggression, but it can bring out disagreements between two pigs if they both believe themselves to be boss and neither will back down. Listen to clip

The second type can be interpreted to mean "Uh-oh!" This type of rumbling is often heard while the guinea pig is also frozen and/or wide-eyed—it's a sign that they're startled. Being a prey species, guinea pigs sometimes panic and run for cover after freezing and rumbling for a moment.

Chattering

AKA "Stop that!"

Chattering is a sound made by guinea pigs when they clack their teeth together. It's generally a sound of annoyance or anxiety. Context is very important with this sound. Sometimes chattering is innocuous—some guinea pigs chatter if they are anxiously awaiting food and growing impatient with their human, who may be giving them attention instead of giving them a meal. In other cases, chattering can be a clue that your pet is seriously irritated and emotionally uncomfortable with the situation they find themselves in. Chattering can sometimes occur during introductions. Chattering that occurs between two guinea pigs (especially during introductions) is a sign that you should be on alert and ready to step in before aggressive behaviors escalate.

Whining

AKA "I don't like this."

Whining is one of the "negative" sounds a guinea pig can make. It can roughly mean "I'm not a fan of what's happening right now!" This audio was captured when an Oxbow employee

picked up their very vocal guinea pig (the guinea pig is perfectly fine—he just protests quite a bit whenever he's being picked up!).

In some cases, a softer variation of this sound can be a sign that your guinea pig is in pain. If you hear your guinea pig whining while they are in their habitat, something may be wrong, including but not limited to bladder sludge or stones.

Chirping

AKA "Something is UP and I don't know what to do about it."

This is one of the more mysterious sounds guinea pigs can make! Not all guinea pigs chirp, so when chirping does occur it can be jarring. True to the name for the sound, chirping sounds more like a vocalization a bird would make than a rodent. Not everyone agrees on the meaning of chirping, but generally it's considered an alert signal—something has caused your guinea pig to be deeply concerned.

Misted's experience with their guinea pigs chirping is usually what appears to be a nightmare. Almost always when this has happened, the guinea pig appears to be sleeping and when gently rocked wakes up and stops the sound.

Shrieking

AKA "This is awful."

This is a very loud sound that can also be considered squealing. It can sometimes be confused with wheeking if body language or context is not apparent, but it truly could not be any more different. It tends to be very loud and less enthusiastic. This sound with the context of body language or surroundings is an unmistakable sign of pain or fear in guinea pigs.

Clicking, Crackling, Wheezing, or Hooting

AKA "I don't feel too great."

If your guinea pig is making a clicking, crackling, wheezing, or "hooting" sound while they take breaths, it is essential to quickly see a exotics veterinarian. None of these sounds are considered normal in guinea pigs. All four of these sounds can be symptoms ranging from respiratory or nasal pathway irritation, to more serious respiratory or cardiac issues.

Purring: there is no clear agreement on what, sounds like a cat purr, means. Some people interpret it to mean a good thing, others that the guinea pig is annoyed. In Misted's experience of it, is seems to be closer to be annoyed.