

# \*Ichthyological psychoanalysis: Foundational learnings from a father-son Betta splendens complex (*B. splendens* and [REDACTED]) dyad

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**ABSTRACT** This research paper presents a case study of a father-son *Betta splendens* complex (*B. splendens* and [REDACTED]) dyad, exploring their behaviors through an ichthyological-psychoanalytical framework. The study aimed to analyze and interpret observed fish behaviors, thereby establishing the value of psychoanalytical methodology when applied to wet-species. The participants, Kazimír and Jorge, were housed in separate tanks, and their behaviors were observed using a comprehensive surveillance system. Data analysis involved reviewing session notes and interpreting fish behaviors qualitatively. Results showed various behaviors, including swimming and sleeping, with Kazimír displaying yearning tendencies while Jorge exhibited aggressive behavior. The study highlights the need for further research in this field or indeed just in anything else at all. Despite wholly insufficient (indeed absent) audio data and highly questionable findings, this research contributes to the understanding and development of ichthyological psychoanalysis in general, and calls for future exploration to be extended to dry-species also.

**INDEX TERMS** psychoanalysis, fish behavior, wet-species, familial relationships, case study.

## I. INTRODUCTION

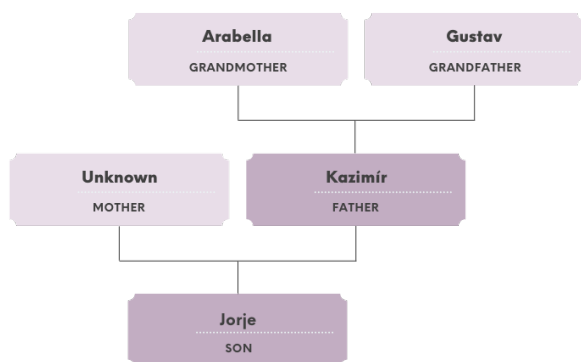
A popular albeit fictitious phrase states that “an Alien Betta is never truly alone” (Unknown, n.d.), and this is perhaps most evident when the fish is viewed through the multiple prisms of early psychoanalytical thought. Indeed, the Freudian tri-recta of id, ego and superego may or may not be applicable to the so-called “wet-species” (incorporating, but not limited to: fish, frogs (including tadpoles), and some newts). Assuming for the present study, however, that the aforementioned theoretical framework is valid when applied thereto (wet-species), the implications are both self-evident and manifold (Hruřková, 1998a, Hruřková et al. 2013, Hruřková, 2018). Owing to the relative monopoly of recent research endeavor in this field, however, more research (ideally by a different author) will be necessary in order to demonstrate this with conviction (Hruřková, 1998b).

The present case study is based upon a single father-son *Betta splendens* complex (*B. splendens* and [REDACTED]) dyad, hereafter referred to by their Christian names: Kazimír (son of Gustav) and Jorge (son of Kazimír) (Figure 1).

Kazimír also had a mother, called Arabella, with whom his relationship is beyond the scope of this and indeed any study. Jorge also had a mother, whose name is unknown (n.d), but who otherwise would have been very much within the scope of this study. Alas, we (A.K., A.B., and C.U. but not Y.Y.T.) have no way of referring to the nameless matriarch and thus—as is far too frequently the fate of the female fish—her story must remain untold (Hruřková et al. 2022).

Jorge, born to Kazimír and the nameless matriarch, has been displaying aggressive behavior for 17.59 months (68.9% of his life to date). Jorge’s unusually callous and malevolent temperament can be traced to an early boyhood episode, during which his father, Kazimír, ate several of Jorge’s siblings when a solitary, soft mauve night light went off. In an attempt to save his fry from the darkness, Kazimír gobbled them up and then, promptly, forgot to spit them back out. With hindsight, this is perhaps attributable to Kazimír’s low premorbid IQ, which has been estimated at 0.2, albeit by a severely incompetent examiner (Y.Y.T.).

In the present study, we do X, Y and Z, where X



**FIGURE 1.** Truncated family tree, illustrating the key relationships peripheral to the father-son dyad studied.

is “conduct an observational case study of the aforementioned father-son fish dyad”, Y is “analyze and interpret the observed (fish) behaviors within a novel ichthyological-psychoanalytical framework”, and Z is “provide suggestions for further research which may facilitate the development and wider propagation thereof”.

## II. METHOD

### A. PARTICIPANTS

This study included two participants: Kazimír and Jorje. Kazimír is a male *Betta splendens* complex (*B. splendens* and [REDACTED]), aged 31.59 months, with 7.23 months of education. His premorbid IQ has been estimated using the National Reading Test (which has not yet been validated for the Czech socio-cultural milieu). Kazimír scored a 0.2. Jorje is also a male *Betta splendens* complex (*B. splendens* and [REDACTED]), aged 25.52 months, with 7.14 months of education and an estimated premorbid IQ of 0.2. Unfortunately, due to an invigilator error, premorbid IQ scores had to be excluded from all analysis.

### B. PROCEDURE

Following Hruška and Hrušková (1995, halcyon days before the divorce), the primary method used was free association, in which the fish were allowed to swim around freely while the researchers observed and interpreted their behavior freely.

Kazimír and Jorje were housed in separate 35l optiwhite tanks. The substrate was ADA Aqua Soil, which we then covered with inert sand for reasons unknown. Plants included *Eleocharis parvulus*, *Hydrocotyle tripartita*, *Anubias nana* petite, and regrettably, duckweed. The tanks were decorated with ampersand-shaped pieces of dragon wood, four pieces of lava rock, a floating betta log, and a weird old plaque reading “Marie... It was all for you, Marie”. Temperature was kept at 26.8C using an Eheim JÄGER 50W heating element. An Eheim professional 4+ 600 external filtration system was used for maintaining water quality. Eheim did not sponsor this study. Ammonia and nitrites were kept near zero, pH ranged between 6.4 and 6.6 (excepting several instances

where the pH dropped lower than this), and nitrates between 10 and 20. The participants were fed twice a day: once at 8:30AM and then again at 4:30PM. Feedings included bloodworms (five worms each, four if long) on Monday mornings, brine shrimp (2ml) on Wednesday nights and Thursday mornings, and Hikari Micro Pellets<sup>1</sup> at all other times (dispensed using an Eheim autofeeder).

To ensure accurate data collection, each fish tank was outfitted with a comprehensive surveillance system consisting of eight individual, corner-mounted Phase One XF IQ4 150MP digital cameras. All cameras were equipped with twin-mounted Sennheiser MKE 600 Shotgun microphones to capture any sounds (N=0) made by the fish. The lower four cameras in each tank were wrapped in clingfilm for reasons of waterproofing.

In addition to the cameras, the researchers (A.K., A.B., and C.U. but not Y.Y.T.) also installed motion sensors around the full perimeter of each tank, in order to detect any movements made by the fish. These sensors were linked to a bespoke alarm system that would alert the researchers (A.K., A.B., and C.U. but not Y.Y.T.) if the fish attempted to escape or engage in any unusual behavior.

The surveillance system was monitored 24 hours a day, seven days a week, by a team of specially trained technicians (not acknowledged) who recorded and transcribed all of the data captured by the cameras and sensors. The technicians were required to wear DuPont Tychem 10000 suits, to ensure that they did not contaminate either tank or otherwise disturb the fish in any way. To further ensure the integrity of the data, each fish tank was located in a secure, climate-controlled room with no windows or other sources of natural light (save for a solitary, soft mauve night light and a series of 55 cm Eheim Classic LED 7.7W lights, which were kept on for 8 hours a day). The room was equipped with fourteen Camfil CC 6000 ProSafe industrial air filtration systems to prevent the introduction of any contaminants.

Finally, the researchers (A.K., A.B., and C.U. but not Y.Y.T.) also implemented a strict access protocol to the fish surveillance room. Only authorized personnel (Y.Y.T.) were allowed to enter the room, and all personnel were required to wear protective suits and undergo thorough decontamination procedures before entering. For the duration of the study, any unauthorized access to the room or either fish tank was strictly prohibited, and punishable by disciplinary action (from Y.Y.T.) in line with faculty policy.

### C. ETHICS

Ethical approval was obtained from the Czech Ichthyological Society (protocol number: 025679x.78). The study fully adhered to the guidelines described in one of the versions of the Declaration of Helsinki (Hruška, 2013 but see also Hrušková, 2014). Written informed consent was not received

<sup>1</sup>AK Fish Flakes were fed on day one, and thereafter were replaced with Hikari Micro Pellets, due to the former brand's *exceptionally* low quality.

from either participant, which we believe is normal within the relatively novel and unique field of piscine psychoanalysis.

#### D. DATA ANALYSIS

The data analysis involved reviewing the notes taken during each free association session (N=many) and interpreting the fishes' behaviors. The researchers (A.K., A.B., and C.U. but not Y.Y.T.) used a combination of their own intuition and the Ichthyological Charter of Doings (ICD-10; Hruška and Hrušková, 1993) to make sense of the fish's actions. The results are reported qualitatively.

### III. RESULTS

Over three (N=8) distinct fish behaviors were observed during the study, including "swimming" and "sleeping" (Figure 2). Both fish displayed each of the coded behaviors on at least one occasion, with the exception of Jorje whose heart is hard and who did not once yearn. Kazimír, on the other hand, yearned often for the kinds of wholesome pleasures befitting any good, God-fearing fish—as described in the fish-adjusted hierarchy of needs: peacefulness, bountiful food, and romantic companionship (Hrušková 2000, but see also Hruška, 2001). Feeding occurred very frequently in each fish (N=790 for both, although this is regrettably misreported, but ultimately not corrected, in Figure 2). Jorje disagreed exactly as many times as he engaged in feeding behavior, although confirmatory factor analysis did not show any relationship between the two behaviors, since it was not performed. Linear regression was likewise not performed: we (A.K., A.B., and C.U. but not Y.Y.T.) felt like we really should have done this one, but *c'est la vie*.

Kazimír disagreed half as often as Jorje, because, in our experience, Kazimír is a suck-up fish who (his spirit tempered by the rough edges of time) believes "what he's told to believe by the world". Kazimír was not always this way (Hrušková et al. 2022), but this is beyond the scope of the present study.

One may wonder how Kazimír and Jorje fought despite being in separate tanks. Consider the following: two ideologically opposed factions locked in a bitter and bloody centuries-long conflict. Do we forget about such differences when we find ourselves enrobed in slightly different (but nearly identical) glass? This is a scenario that barely ever befalls the human (although see Hruška and Hrušková, 1992), but has occasionally happened to wet species, including the brave, brave dyad whom the present study is centered around (Hruška, 2002). All of this is to say that, doubts about the veracity of the reported inter-tank conflict are well-founded. Sometimes, researchers (Y.Y.T.) lie. Interestingly, the ambient pH level in Jorje's tank proved far more volatile than that of his father (Kazimír, also a fish, son of Gustav) and tended towards greater acidity, oscillating somewhere between uniquely alkaline lemon juice (pH 6.4) and slightly more acidic but still inscrutable lemon juice (pH 6.0).

In order to test a hypothesis that shall become evident in the following paragraph, a satellite study (term not known

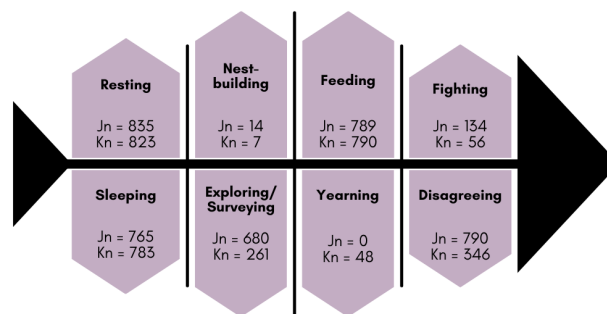


FIGURE 2. Simplified taxonomy of observed fish behaviors. Jn = frequency observed for Jorje, Kn = frequency observed for Kazimír.

meaning of) was conducted twenty minutes after the events described above. In this study, for twenty-four hours the researchers (A.K., A.B., and C.U. but not Y.Y.T.) maintained an equivalent level of being hydrated and refrained from urination (including the mechanical or otherwise release of urea-including liquid). Immediately following the non-urination period, each of the researchers (A.K., A.B., and C.U. but not Y.Y.T.) donated 20mm or thereabouts of urine using three SLS Select centrifuge test tubes and one science funnel. The pH of each sample was assessed immediately using Multi 5 UrineScreen diagnostic strips, following the procedure as outlined by the test manufacturer (excluding the centrifugation, which was deemed necessary for reasons of splendor). A.B. scored a perfect 4.5, A.K. scored an equally perfect 8.0, and C.U. scored an unremarkable 6.0. Naturally, A.B. "won" the satellite study, for reasons that even now remain unclear. In fact, the reasoning behind this decision was sufficiently unclear that it was deemed necessary to conduct a second satellite study.

During satellite study 2, which aimed to explain A.B.'s exceptionally acidic urine, the subject was compared to a specially selected corpus of age and gender matched ichthyologists (N=some), with respect to time spent incarcerated, recreational wrestling interest, martial arts competence, and biffing. A.B. scored at or above the 90<sup>th</sup> percentile on all measures, making him by all accounts an exceptionally well-rounded fighter. Several (three) further satellite studies were carried out in order to corroborate this point but, for brevity and likelihood of being published, cannot be reported here. Suffice to say, Jorje's singularly acidic fish piss constitutes overwhelming, if not conclusive and/or relevant, evidence that, were he to engage in fin-to-fin combat with his admittedly unwilling and separate-tank-dwelling conspecific/father (Kazimír), there could only ever be one victor (Jorje) (Figure 3).





FIGURE 3. What are we alleging happened here?

#### IV. DISCUSSION

This study had several limitations, one of which was Y.Y.T. The results were severely limited by just not being that good. Given the poultry (pun intended but sense not made) funding that we received from the Czech Society for Ichthyology (CSI), we were unable to equip all of our cameras with the twin-mounted Sennheiser MKE 600 Shotgun microphones, and therefore the fish were able to tactically evade the so-called “ears”, leading to a veritable paucity of (fish) audio data. An alternative interpretation is that Kazimír and Jorje remained silent throughout this study but, based on Hrušková (1998c), these exact fish during this exact study probably did make some sounds.

Another limitation of this study is that it only considered wet-species. Future researchers may wish to replicate our limited findings in the so-called “dry-species”, such as sand lizards and slow worms. When dry-species urinate, the pH of their environment remains unaffected (Hruška, 2033 preprint). This applies even to the best of fighters (Hruška, 2035 preprint). To demonstrate this assertion concretely, we conducted an additional satellite study. In satellite study 6, we recruited twelve sand lizards and one owl.

Since this was a cross-sectional study, we cannot infer causality in any one direction, and we are therefore electing to assume causality in both directions. Consider the following: two ideologically opposed factions are locked in a bitter

and bloody, centuries-long conflict. Party A attacks Party B. Party B then attacks Party A. Party A then attacks Party B. Party B then attacks Party A. Party A then attacks Party B. Party B then attacks Party A... And so on, *ad infinitum*. Such is life for Hruška and Hrušková.

Finally, we must acknowledge that the Discussion section of the current study has consisted entirely of limitations, including this one. This has left little room for meaningful reflection upon the study’s results or the placing thereof into a wider psycho-ichthyological context. In particular, we did no psychoanalysis and wish to concede this point now for reasons of using keywords.

#### CONFLICT OF INTEREST STATEMENT

Colin has seen a fish but only once. Eheim did not sponsor this study but provided the research team with numerous pieces of key research apparatus on the condition that we (A.K., A.B., and C.U. but not Y.Y.T.) mention them by name at least four times and each recommend them to one friend.

#### CONTRIBUTION STATEMENT

A.K., A.B., and C.U. designed the study, collected and analyzed the data, and wrote the article. Y.Y.T. contributed several examiner errors, a handful of glaring administrative oversights, a profound lack of proper leadership and, in short, fucked everything up. The first draft of this manuscript has been on Y.Y.T.’s desk since A.B. was a naïve undergraduate who still believed in war. A.B. was born in 1972.

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Her current research interests include wet-species familial interactions, contemporary psychoanalytical and psychiatric perspectives in ichthyology, and the development of standardised behavioural assessment protocols within experimental zoology. Outside of academia, she is a former gymnast of modest renown, and an avid collector of architectural terracotta blocks.