

# Cinderella...or the Measurement of True Love

## Research Fables from the Sisters Grinn, No. 7

By Jeanne Grace, PhD, RN

**Abstract:** I started writing the fables in 1996, when I took over teaching the undergraduate research course. At first, they were "buried treasures" hidden in the on-line course materials (it was a hybrid course, and we were trying to get the students to develop internet surfing skills) for students to find. Then, as there were more of them, I started explicitly assigning them for student reading. As I've had time, I've written fables for areas where students seem to get "stuck" on basic concepts in research. Two of the fables have "readers' theater" versions that I use in class for traditional students. Casting the parts is always fun. Enjoy!

The entire series of Dr. Grace's research fables are available in this repository. Patrons may access the series by clicking on Dr. Grace's name in the item record.



**C**inderella ... or The **M**easurement of **T** rue **L** ove

**C**once upon a time in the kingdom of Fantasy, lived a lovely young woman. Sadly, her beauty and her character were her only assets: her blended family had become unblended, and she was now living with her harsh, hateful stepmother, Maldemom, and her two grasping, greedy stepsisters, Dreadsis and Emesis. These three women were jealous of her beauty, and forced her to make her bed on the hearth each evening after a day

of the most difficult chores. The step-relatives called her Cinderella, since she was always disheveled and smudged from her cleaning efforts. Ever loyal to the family obligations her late father had created by his unfortunate remarriage, Cinderella remained in the household and accepted her lot and her new name. (A less faithful daughter would have moved out, seeking employment in her chosen field of cybernetic entymology.)

And yet, despite her self-sacrificing and often subdued manner, Cinderella retained a spark of spirit and some durable dreams. She longed to attend lavish social gatherings and network with rich and powerful persons in fairy tale settings (of which there were many in Fantasy). And one day, that dream seemed possible: the snail-mail contained an ivory envelope, with an engraved invitation from [the Charmings](#)<sup>1</sup> to attend a ball in honor of their son, The Noble Formerly Known as Prince (TNFKAP). And the invitation was clearly and explicitly addressed to Maldemom and ALL THREE of the daughters!

Cinderella had, in her happier childhood, often seen TNFKAP out and about in the community, and she immediately asked her step-mother for permission to attend. Maldemom was so pleased to have the opportunity to present her own daughters at the ball, that she thoughtlessly gave Cinderella permission to attend, as well. Immediately, her own daughters assailed her with howls of protest. They feared adverse comparison with Cinderella, asserted high probability that her inclusion in the invitation was a sampling error, and demanded that that Maldemom withdraw her permission. Maldemom's self-image was not consistent with going back on her word, once given, but her passive-aggressive skills were well developed. As the daughters began to discuss their attire for the ball, she said sweetly to Cinderella, "You do realize, of course, that there is no money in the household budget to support your attendance at this event. And when we are dressed for such a grand occasion, the carriage will only carry three. You'll need to seek outside funding if you wish to attend."

Cinderella was disheartened, but not deterred. She drafted a travel funding budget proposal, but Maldemom and the "-sis"es kept her so busy with pre-party chores that she had no time to refine and submit it, or even to identify an appropriate funding source. Dreadsis maliciously gave her a cast-off, truly hideous dress to wear, and Emesis contributed a well-worn and smelly pair of tennis shoes. With great ingenuity, Cinderella created a marginally acceptable, if funky, outfit from the donations. Transportation, however, remained an unsolved problem. And thus it was, that on the afternoon of the ball, Cinderella helped her mothers and stepsisters ready themselves, saw them out the door into the family carriage, and remained behind, defiantly holding back her tears until the carriage was out of sight.

She was stranded and abandoned. The distance was too great to walk, she had no money for cab fare, and the public transportation system of Fantasy was woefully inadequate for evening and weekend travel in general and non-urban trips in particular. She collapsed into desperate sobs as her disappointment at missing this party blended with her grief for her dear, dead father and her distress at her current situation. All sense of family obligation was washed away with her tears. As the initial outrush of emotion lessened, she felt a touch on her shoulder and heard a soft and comforting voice. Drying her eyes, she looked up to find a small, nonthreatening person with a pleasant face, a laptop computer, and a cellular phone.

"Who," asked Cinderella, "are you?"

"I am your fairy grants administrator. The fiscal year is almost over, there's some money left in the Fantasy compassionate travel account, and I'm here to encourage you to submit your proposal electronically for expedited review. There's no time to lose, so run get your budget figures. I think a video clip of the past ten minutes should be adequate for overall summary and budget justification." Like any citizen of Fantasy, Cinderella knew that magic sometimes works. With rising hope, she gathered her rough budget calculations and gave them to the grants administrator, who then sent her off to dress. Cinderella returned to find the administrator hunched over the laptop, peering at figures.

"You've been approved, my dear, but the funding is very tight. I had to get your travel costs out of the agriculture and rodent control travel budgets, so your carriage is a transformed pumpkin and the horses are genetically-enhanced field mice. I can manage a magic upgrade of your dress as performance art under the National Endowment. But every single bit of that funding expires at midnight, tonight, so be sure you're home by then. I found continuing funding for suitable party shoes, but it's in a grant to support novel applications of the interface of magic and ceramic technology." Smiling, the grants administrator waved a magic wand (which did double duty as the cell phone antenna) and Cinderella found herself adorned in an incredibly gorgeous ball gown, wearing glass slippers. "Now go on and have a wonderful time, my dear. But remember: the fiscal year ends at midnight tonight!"

And so, Cinderella went to the Charmings' ball. While the elegance of her carriage and attire initially attracted attention, it was her beauty and wit that sustained it. She spoke knowingly to mainframe and peripherals suppliers. She impressed internet gurus and captains of other industries. In her delighted [animation](#),<sup>2</sup> she was so transformed that not even Maldemom and the "-sis"es recognized her. And most intrigued of all was TNFKAP, the guest of honor. As the evening progressed, he gave his attention almost exclusively to her, and she to him. In Fantasy, love at first sight is frequent, predictable and enduring: by supertime, they found themselves mutually smitten, although TNFKAP had not even asked her name.



Cinderella had planned to make a strategic retreat around 11 p.m., but she was so taken by TNFKAP that she lost track of the time. As she and TNFKAP swept around the ballroom in an elegant waltz, she glanced at the great clock in the hall and was horrified to discover it was five minutes to twelve. "I must leave!" she announced. She stopped dancing so abruptly that she caused a general pile-up of couples on the dance floor. Working her way through the tangle to the door delayed her even more. TNFKAP, startled, was even more delayed in his attempts to follow her. He reached the great entranceway as the clock began to strike the hour, and saw only a coach

speeding from the drive. As the hour tolled, he lost sight of even that. The only sign of his new love was a glass slipper, lying on the staircase where she had lost it in her haste to be away.

Fortunately for Cinderella, the effects of the magic expired somewhat less abruptly than the funding. By the time the carriage redeveloped serious pumpkin characteristics, she was within walking distance of home. Thus, she was in her accustomed place on the hearth, pretending sleep, when Maldemom and the "-sis"es returned, full of chatter about the amazing events of the evening.

Nor was that the only household in which such conversations occurred. At the Charmings,' TNFKAP could speak of nothing else. He was in love, and he wished to marry the object of his affections. But it is difficult to propose marriage to a woman who can be neither located nor identified, and inquiries among the other guests offered no useful leads. The [sole](#)<sup>3</sup> clue was the abandoned glass slipper.

At length, TNFKAP went to his father to ask for assistance. "Father," began TNFKAP, "I wish to conduct a kingdom-wide search for the woman whose foot fits into this shoe."

"Aha!" said his father, "a measurement problem! I'll grant your request, but only if you demonstrate that your measure is reliable."

TNFKAP was an intelligent and organized fellow, and he was more than up to his father's challenge. He recruited his mother, his three sisters, and his five female cousins, and he tried the glass slipper on each of them, in random order, five times. The results were consistent: On every attempt, the footwear was too big for his mother and little sister, too narrow for his oldest sister and two cousins, too wide for his middle sister and one cousin, and too small for the other two cousins. And despite his eagerness to find his beloved, he repeated the measurements three days later, at a different time of day, with identical results. "I have", reported TNFKAP, "demonstrated adequate test-retest reliability."

Because TNFKAP had responsibilities in the family business that would not permit him to pursue his mission personally on a full-time basis, he recruited four chamberlains to canvas the kingdom with the [slipper](#).<sup>4</sup> The long-suffering female relatives were again recruited, and the chamberlains practiced slipper fitting until their individual judgments on the fit for each woman agreed with each other and TNFKAP's measurements 98% of the time. "We have," they reported, "achieved acceptable inter-rater reliability." Each chamberlain wrote down his initial fitting judgments and promised to return to the court to refit the female Charmings every fortnight for comparison. In this way, intra-rater reliability could be maintained.

Presented with these efforts, TNFKAP's father agreed that his stipulation had been satisfied. Because there was only one slipper, he did not require multiple item internal consistency estimates like split-half and coefficient alpha. The chamberlains thus set out on their quest, with great expectations from TNFKAP and widespread publicity from the press. Before long, eager clusters of shoeless young women greeted the chamberlains in every neighborhood, and the cyber chat rooms buzzed with speculations as to the identity of TNFKAP's true love and the efficacy of soaking solutions and powders to increase or decrease foot size.

As the search progressed and most of the women of the kingdom were eliminated, TNFKAP's anxiety and the general excitement increased to a fever pitch. Maldemom and the "-sis"es were obsessed with the search: Chance had decreed that their neighborhood was among the very last to be visited, and they sent Cinderella scurrying for every nostrum rumored to be helpful in right-sizing feet. Maldemom knew, of course, that neither Dreadsis nor Emesis had been TNFKAP's mysterious dance partner, but she was hopeful that shoe size could somehow be converted into marriage prospects, nonetheless.

And finally the day came, when two of the chamberlains, looking dusty and worn, presented themselves at Maldemom's door. The "-sis"es, despite their almost unbearable excitement, managed to wait demurely in the living room. The slipper was presented. Despite heroic contortions, neither Dreadsis nor Emesis could make it fit. One chamberlain retrieved the slipper, while the other busied himself with completing case report forms. They were about to leave when the second chamberlain happened to consult his master list. "Our records indicate that three young women at this address received invitations to the ball. Might we speak to the third one?"

Despite Maldemom's protests that the third young woman had not attended the ball and was too busy with her chores for such trivial trials, the chamberlains persisted. They were unwilling to leave without speaking to Cinderella, and so she was summoned. Given Cinderella's disheveled appearance, the chamberlains gave only perfunctory attention to the slipper fitting, until it slid onto Cinderella's foot a perfect fit. Maldemom was aghast, and the "-sis"es astonished. The chamberlains fumbled through their study manuals to the previously unused section on confirmation of positive slipper fit and paged TNFKAP and his father.

While they waited for the Charmings to appear, Maldemom marshaled her spiteful arguments. "Just look at her! How can anyone think this wretched creature could possibly win the heart of TNFKAP? You're fools for even reporting a possible fit!" The chamberlains were forced to admit that Cinderella did not fit their expectations for a noble-worthy owner of the slipper, and thus the fitting lacked face validity as a measure of true love. And one certainly couldn't argue for discriminant known-groups construct validity, since the slipper had fit Fantasy's most eligible and desirable females no better than it had fit the male sumo wrestlers who turned out on a lark to try it on. Moreover, the Charmings' advisors on happily ever after had been divided on the appropriateness of TNFKAP's plan to find his beloved, so content validity was not assured either.



By the time TNFKAP arrived, accompanied by his father and the press, the chamberlains had become increasingly uneasy. Their anxiety soared when TNFKAP gave no evidence of recognizing Cinderella. Maldemom, sensing the uncertainty, seized the chance to demand refittings of the slipper on Dreadsis and Emesis. Cinderella graciously removed the slipper and offered it to the chamberlains, and again, neither "-sis" managed to get her foot into it. As the chamberlain retrieved the slipper from Emesis, Maldemom, in a frantic final gesture, tripped the chamberlain. The slipper flew out of his hand, fell to the floor and shattered. There was stunned silence, and the color drained from TNFKAP's face. Then, incredibly, TNFKAP heard a much-sought-after voice coming from the tattered and smudged young woman before



him. "It was a lovely party, and I'm sorry I had to leave so abruptly." And there, in her hands, was another glass slipper the obvious mate to the one lying in pieces on the floor. She handed it to TNFKAP.

"Parallel forms reliability!" exulted TNFKAP's father. "Go ahead son, put it on her!" This slipper, too, fit perfectly.

Cinderella excused herself to wash up, and when she returned, her beauty was evident to all, despite her modest attire. TNFKAP now recognized the woman who had so captivated his heart, beyond any doubt.

His father could scarcely contain his excitement as he inspected the glass slipper. "True love is subjective, so the report of the lover is the strongest form of measurement. We have convergent construct validity with a gold standard!" he chortled. Maldemom was still sputtering about the insanity of choosing a life partner according to shoe size. "My dear lady," explained TNFKAP's father, "there is no causal relationship between your step-daughter's feet and my son's love. Slipper fit was merely a reliable predictor that allowed him to re-identify your daughter in the vile circumstances under which you have forced her to exist circumstances which shall change as of this instant!"

With the encouragement of the Charmings, Cinderella moved out and changed her name to The Loved One Formerly Known as Cinderella (TLOFKAC). She works for a software start-up firm that has wildly popular products, and she has an endowed chair at the Charming's family table. Forever isn't over yet, but thus far happiness is as stable as shoe size and true love.

<sup>1</sup> The Charmings, a family of royal descent, had espoused democratic ideals in general, but were still in favor of a good old fashioned regal event here and there. [Back to the story...](#)

<sup>2</sup> Not to be mistaken for Disney animation or any other proprietary representation. [Back to the story...](#)

<sup>3</sup> and heel and vamp and instep ..... [Back to the story...](#)

<sup>4</sup> He had considered having exact copies of the slipper made, so that multiple areas could be searched simultaneously, but a chamberlain named McLeod argued that magic might affect fit, so there can be only one. [Back to the story...](#)