An Investigation on the Current State of Disco in Teamfight Tactics

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Contents

1. Introduction

1.1 What is Teamfight Tactics?

Teamfight Tactics is an auto battler, developed by Riot Games. It was first released on PC on June 26, 2019. Teamfight Tactics is considered a spin-off of the game League of Legends, with most of the characters in the game coming from the latter.

The core gameplay revolves around eight players, who build a team based on units offered to them. Players fight one another with the teams until the last one standing. Team variety comes in the form of different items, positioning, traits, units, and others.

Teamfight Tactics rotates different units, items and traits every few months to ensure it remains fresh and interesting to recurring players, released in updates known as Sets, the game being currently on Set 10.

1.2 What is Disco?

Disco is a trait in Set 10, which revolves around positioning your team around a Disco Ball.

1.3 Hypothesis

Disco is one of the weakest traits, especially when played vertically, and requires a buff to incentivise players to play around the trait.

2. Data

2.1 Method of Data Collection

The data for my research mainly comes from statistics from tactics.tools, a website which collects analytical data of Teamfight Tactics matches, ranging from information on items, augments, traits, units, team compositions, and more.

Tactic.tools is a reliable source, as it compiles data from hundreds of thousands of matches played from a variety of skill levels, making it less likely data examined is an outlier and/or not reflective of the performance of a particular article.

2.2 Variables

The main variables in tactics.tools which reflect the current state of an article are:

Trait Number: A value that describes how many unique units of that trait have been played. For example, 5 Disco means there are 5 unique Disco units in play.

Placement: A value ranging from 1 to 8, which shows the average placement rate of a certain article. For example, a team composition with a place of 4.23 means that if a player uses this team composition, on average they place 4.23 out of 8.

Delta: A value that describes the deviation from the mean when a certain decision is made. For example, if Ekko has a delta of -0.3, it means that players who play Ekko place 0.3 better than other players who don't play Ekko.

Playrate: As a percentage, how many players make a certain decision. For example, if Ekko has a playrate of 35% it means 35% of players use him.

3. Methodology

3.1 Hypothesis Testing

I believe that Disco is an underperforming trait because there is little incentive to activate it or play the trait vertically. I propose there are two main reasons for this:

1. Most of the Disco units are low-tier, weak units in their own traits.
2. Disco is too reliant on Ziggs and Illaoi, two 5-cost units which are difficult to obtain early.

So, we have the following hypothesis test defined:

Null Hypothesis: There is no correlation between playing Ziggs and/or Illaoi in a Disco team composition, and placement.

Alternate Hypothesis: Playing Disco vertically is less incentivised without Illaoi and/or Ziggs in play.

So, taking the response as the Placement of Disco Headliner, Twisted Fate carry, and the predictors as the number of Disco units in play, whether Ziggs is in play, and whether Illaoi is in play, we have:

```
Call:
lm(formula = place ~ ., data = disco)

Residuals:
     Min       1Q   Median       3Q      Max
-0.51350 -0.09775  0.05250  0.09650  0.38850

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  6.76150    0.25299  26.727 4.62e-12 ***
disco       -0.22700    0.05164  -4.396 0.000872 ***
ziggs yes   -0.69500    0.11547  -6.019 6.04e-05 ***
illaoi yes  -1.51500    0.11547 -13.120 1.78e-08 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.2309 on 12 degrees of freedom
Multiple R-squared:  0.9499,    Adjusted R-squared:  0.9374
F-statistic:  75.9 on 3 and 12 DF,  p-value: 4.518e-08
```

We see that all of our p-values are less than 0.05, which implies that all three predictors are statistically significant. This is to be expected, as when Illaoi and Ziggs are factors, we should expect that the Disco trait places better when played vertically. However, when we consider interaction, we have:

```
Call:
lm(formula = place ~ ziggs:illaoi:disco, data = disco)

Residuals:
     Min       1Q   Median       3Q      Max
-0.34033 -0.14564 -0.08381  0.11556  0.54398

Coefficients:
                            Estimate Std. Error t value Pr(>|t|)
(Intercept)                 5.656500   0.293144  19.296 7.85e-10 ***
ziggs no:illaoi no:disco   -0.006826   0.068513  -0.100  0.92243
ziggs yes:illaoi no:disco  -0.128919   0.068513  -1.882  0.08659 .
ziggs no:illaoi yes:disco  -0.292058   0.068513  -4.263  0.00134 **
ziggs yes:illaoi yes:disco -0.480198   0.068513  -7.009 2.24e-05 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.2827 on 11 degrees of freedom
Multiple R-squared:  0.9312,    Adjusted R-squared:  0.9062
F-statistic: 37.23 on 4 and 11 DF,  p-value: 2.472e-06
```

The summary tells us that when Illaoi is included, there is a statistical significance from playing more Disco units, as we have a p-value less than 0.05. That is, playing Disco vertically is incentivised with Illaoi. We see that this p-value is even smaller when Ziggs is also included, meaning there is an even stronger correlation between the number of Disco units and placement when both Ziggs and Illaoi are in play.

However, when Illaoi is not included, we see that even with the inclusion of Ziggs, there is no correlation between playing more Disco units and placement. There is an even weaker correlation when we exclude both Ziggs and Illaoi, as we have a p-value well above 0.05.

Essentially, we see that playing more Disco units results in better placement only if Illaoi is included, and this correlation becomes stronger when Ziggs is included.

For integrity, here's a snapshot of the data used, taken directly from tactic.tools using the Advanced Explorer (Yes, I paid money for it for this investigation).

```
"place", "disco", "ziggs", "illaoi"
6.18, 3, no, no
5.34, 4, no, no
5.69, 5, no, no
5.48, 6, no, no
4.44, 3, no, yes
4.25, 4, no, yes
4.50, 5, no, yes
3.98, 6, no, yes
5.55, 3, yes, no
5.20, 4, yes, no
4.92, 5, yes, no
4.78, 6, yes, no
4.04, 3, yes, yes
3.66, 4, yes, yes
3.14, 5, yes, yes
3.01, 6, yes, yes
```

Here are the screenshots of filtering used with the Advanced Explorer on tactics.tools:


Rank
Diamond+
Patch
13.25
Portal
Region
Headliner
Disco
Game Mode
Ranked
Level
Item Count
Last Round
Filters
CLEAR ALL
Twisted Fate
Star Level 2★
Item Count 3
Ziggs
Star Level Any
Item Count Any
Filter #3
Exclude
CLEAR ALL
Illaoi
Star Level Any
Filter #2
Minimum sample size 100
Games: 19k Avg.: 4.91 Top 4: 40.7% Win: 4.59% Avg. Level: 8.46
Disco
UNITS TRAITS ITEMS BUILDS AUGMENTS HEADLINERS ITEMS COUNT
Trait Games Play rate Place Delta Top 4% Win%
3 Disco 909 4.62% 5.55 +0.67 28.5% 2.53%
4 Disco 1.9k 9.63% 5.19 +0.32 35.0% 4.85%
5 Disco 7.8k 39.5% 4.92 +0.01 40.0% 4.77%
6 Disco 9.1k 46.3% 4.78 -0.24 43.8% 4.60%


Rank
Diamond+
Patch
13.25
Portal
Region
Headliner
Disco
Game Mode
Ranked
Level
Item Count
Last Round
Filters
CLEAR ALL
Twisted Fate
Star Level 2★
Item Count 3
Filter #2
Exclude
CLEAR ALL
Illaoi
Star Level Any
Ziggs
Star Level Any
Filter #3
Minimum sample size 100
Games: 23k Avg.: 5.56 Top 4: 27.6% Win: 2.48% Avg. Level: 8.26
Disco
UNITS TRAITS ITEMS BUILDS AUGMENTS HEADLINERS ITEMS COUNT
Trait Games Play rate Place Delta Top 4% Win%
3 Disco 1.9k 7.89% 6.18 +0.67 17.0% 1.55%
4 Disco 4.9k 20.4% 5.33 -0.28 33.5% 4.00%
5 Disco 6.1k 25.5% 5.69 +0.17 24.7% 2.00%
6 Disco 10k 46.2% 5.48 -0.14 28.3% 2.24%

Note that these results were taken from Diamond+, but when taking results for Grandmaster+, it showed that playing Disco vertically was even worse. So, we take the **Alternate Hypothesis**: Vertical Disco is less incentivised when Ziggs/Illaoi are not available to the player.

Naturally, missing Illaoi or Ziggs, two powerful units, tends to decrease a player's placement. However, if Disco is reliant on having 5-cost units, which are difficult to obtain before Level 9, it suggests that the trait itself is underperforming.

We may be able to see why this is by further investigating the Disco units themselves, which I believe are overall worse than units both sharing traits with them and sharing the same cost as them.

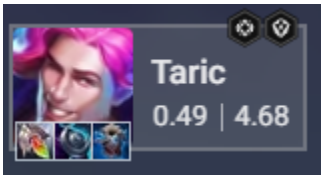
3.2 Direct Comparison

In this section, we will be investigating whether the units sharing the Disco trait are too weak, or if certain Disco units aren't being utilized for their Disco trait.

3.2.1 1-Costs

There are two 1-cost units that are Disco: Nami, a Dazzler/Disco, and Taric, a Guardian/Disco.

<u>Taric</u>



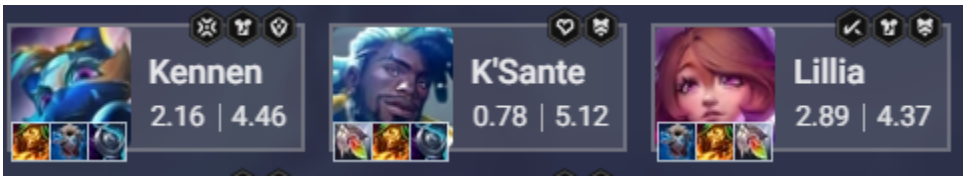
Taric is a Guardian/Disco unit who may be one of, if not the, weakest 1-cost currently in Set 10. This becomes evident when we compare him to units similar to him, such as Kennen and Lillia, who are both defensive 1-cost units. I believe there are two main reasons Taric falls short when compared to them:

1. Taric's ability is very underwhelming compared to Kennen's, which stuns enemies, and Lillia's, which heals her and other teammates.
2. Lillia and Kennen's non-defensive traits, KDA/Superfan and True Damage/Superfan respectively are very strong traits, whereas Taric's non-defensive trait, Disco, as previously mentioned, is underperforming.

Both of these reasons contribute to Taric not only having a pick-rate of only 0.49 (0.49 players out of 8 on average play Taric), compared to Kennen and Lillia's 2.17 and 2.89 respectively, it also results in Taric having a placement 0.3 worse than the other two.

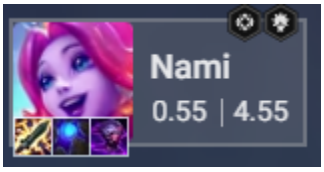
Ideally, I could compare Taric's performance on Stages 2 and 3 compared to the other defensive 1-costs, but I unfortunately do not have access to this data (One of the many limitations of this investigation).

Note that another similar defensive unit, K'Sante, actually has a worse placement than Taric, but that tends to be misleading as K'Sante has the Heartsteel trait, a trait which has very inconsistent placement (Players tend to place either extremely well or extremely poorly with it).



Generally, Taric is being underutilised compared to his other defensive counterparts, and either he or Disco needs a buff to incentivise players to consider picking him.

Nami

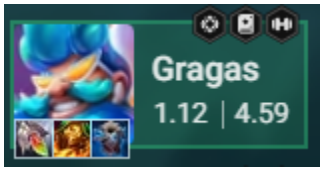


Nami is a 1-cost, Dazzler/Disco unit, with a play-rate of 0.55 and an average placement of 4.55, which is sufficient for a 1-cost. I believe Nami is in a relatively stable state, and does not require any adjustment, as she's not designed to carry.

3.2.2 2-Costs

There is only one 2-cost unit that is Disco: Gragas, a Disco/Spellweaver/Bruiser.

Gragas



Gragas is a unit who is rarely used for his Disco trait, and mainly used for his defensive trait, Bruiser, and his damage trait, Spellweaver. If we look at the statistics for Gragas using the explorer, we see:

Not only do we see that Gragas is generally played for 2 Bruiser or 3 Spellweaver, we see that the Delta of playing the two is better than the Delta of 6 Disco, which is a cause for concern as generally we should expect gold synergies to outperform bronze synergies.

This further suggests to me that Gragas is seeing use not because he's a Disco unit, but because he's a Bruiser/Spellweaver. However, generally I believe Gragas is in a healthy spot and does not need any major adjustments.

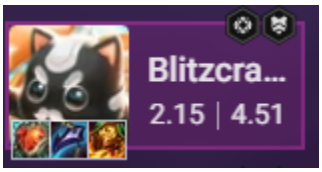
3.2.3 3-Costs

There are no 3-cost Disco units.

3.2.4 4-Costs

There are two 4-cost Disco units: Blitzcrank, a Sentinel/Disco, and Twisted Fate, a Disco/Dazzler.

<u>Blitzcrank</u>

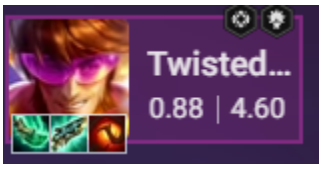


Blitzcrank is a unit I believe, similarly to Gragas, is being used for his Sentinel trait rather than his Disco trait. This is easy to see from the explorer:

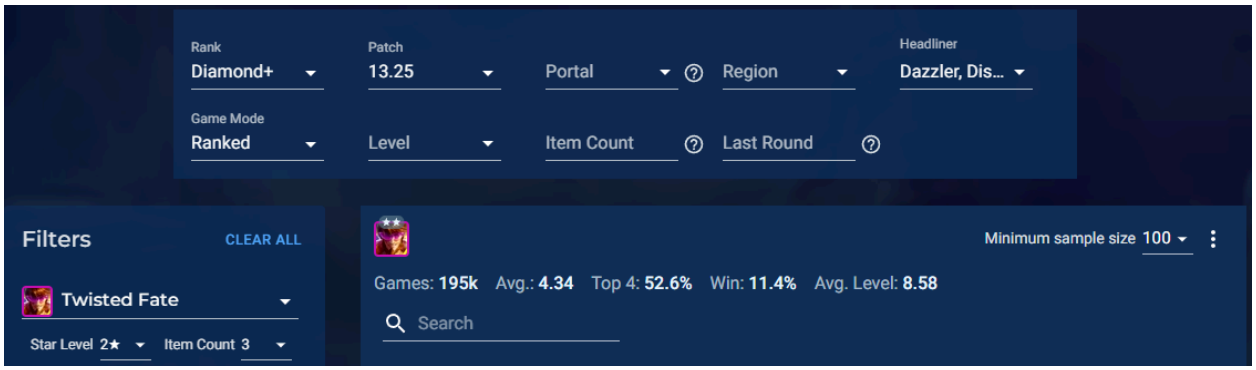
While we see that 5 and 6 Disco outperform 2 and 4 Sentinel, which we expect as it's a gold trait, it's notable that the difference is minimal and the play rate of Disco is significantly lower than Sentinel. Blitzcrank is mainly played for his Sentinel trait with the 4-cost unit Ahri, a KDA/Spellweaver.

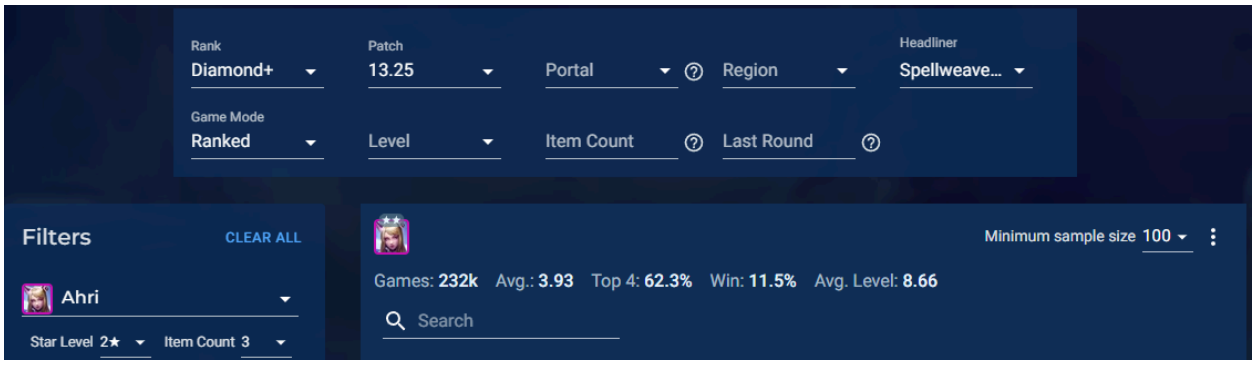
Similarly to Gragas, Blitzcrank is in a healthy spot as a unit, but definitely needs some incentive for players to consider playing him for Disco rather than Sentinel.

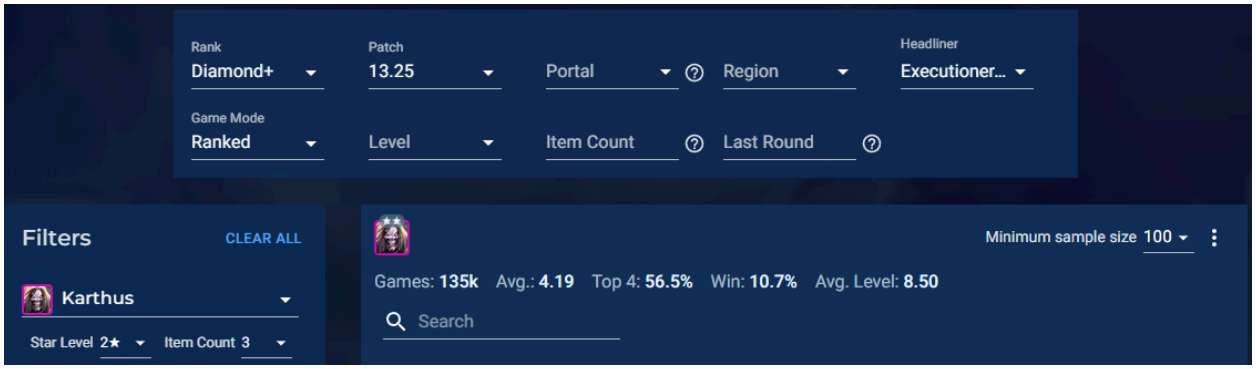
Twisted Fate



Twisted Fate is the primary carry of Disco, and tends to only be used when playing vertical Disco. He is one of three backline, magic damage carry 4-costs, the other two being Ahri and Karthus, a KDA/Spellweaver and Pentakill/Executioner respectively, whom we will compare him to in this section. Using explorer, we can compare the three:



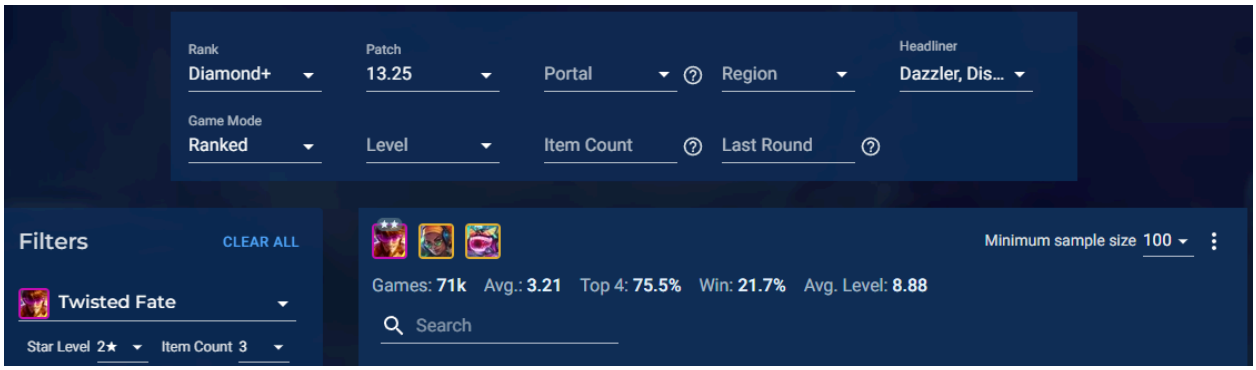


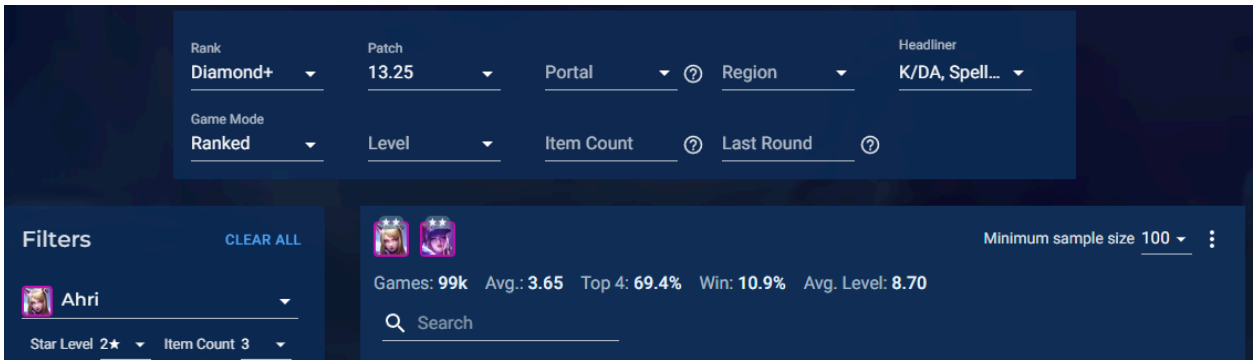


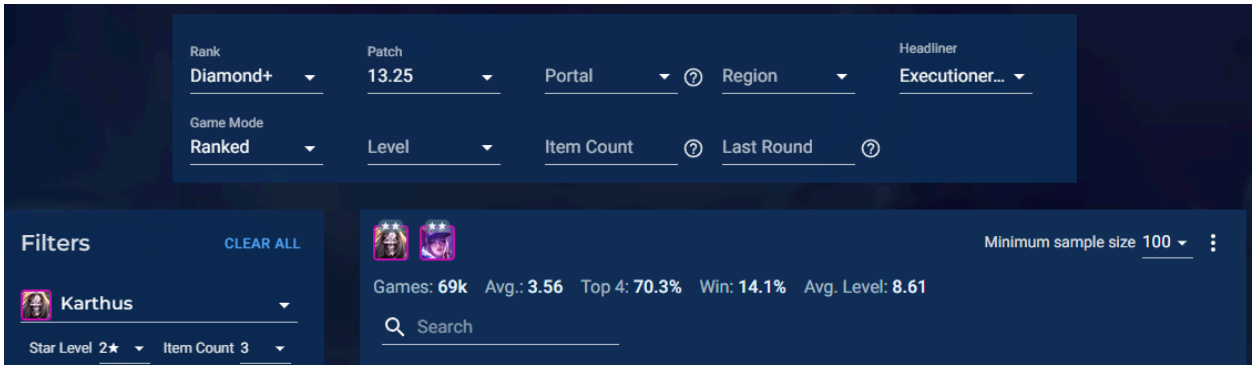
We see that both Ahri and Karthus outperform Twisted Fate as carries. There are two main reasons for this:

1. Both Karthus and Ahri have a secondary carry in their composition: Akali, a 4-cost KDA/Executioner that complements them both.
2. As mentioned before, Twisted Fate is too reliant on Illaoi and Ziggs, two 5-costs, whereas units like Ahri work sufficiently well with Blitzcrank, which is only a 4-cost.

When we add these units to the compositions of these carries, we have:







We actually see that Twisted Fate outperforms both of them, even if they both have a 2-star Akali. However, as previously mentioned, getting a Ziggs and Illaoi is unlikely unless the player is Level 9, whereas Akali is a 4-cost and therefore much easier to not only obtain but also upgrade to 2-star.

Hence, Twisted Fate is too reliant on 5-cost units to be comparable to his magic carry counterparts, and the best way to incentivise players to carry him over Ahri or Karthus is either give him a minor buff and/or buff the Disco trait itself.

4. Conclusion

4.1 Problems with Disco

After investigating both the Disco trait itself by hypothesis testing, and directly comparing the Disco units themselves, there are two main reasons that Disco an underperforming trait, both in playrate and in placement:

1. Some of the Disco units are noticeably weaker than their same-cost counterparts (Taric, Twisted Fate most notably).
2. There is little incentive to use Disco units for their Disco trait, and players tend to use them for their other traits (Gragas and Blitzcrank most notably).

I believe that most of these issues with the Disco trait can be rectified with small changes to some of the units and the trait itself.

4.2 Potential Solutions

In this section, I will mainly give some potential suggestions/solutions to how Teamfight Tactics could shift some more power to both the Disco trait itself and some of the underperforming Disco units, to give players an incentive to play Disco when they're given the opportunity.

Problem 1

For Taric, one of the main issues he has is that he provides very little utility early game. Compared to Kennen and Lillia, who provide stun and healing respectively, Taric only shields himself and makes himself do more damage for his next two attacks, which is underwhelming compared to the other two.

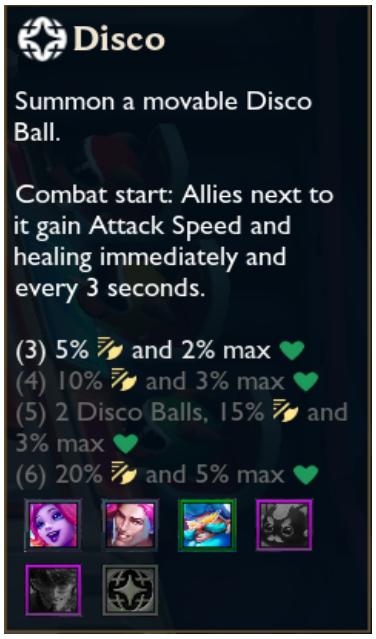
One way to fix this would be either that Taric's shield has better scaling, or that his ability heals him in some way. Although the Disco trait does provide some healing for him, it's very minimal, especially early.

Twisted Fate however is a unit who's in a peculiar position, as he's quite a strong carry, just only when Illaoi and Ziggs are on the board. I believe there shouldn't be any major adjustments to Twisted Fate himself, but maybe buffing the Disco trait would be sufficient to make him strong enough. However, one small change that might be useful is changing it so his ability, which sends out a flurry of cards, does not give units mana on hit.

Normally, when a unit is hit by anything, they gain 1 mana. Each of Twisted Fate's cards hitting a unit will give them mana, which may help the opponent's unit's cast much faster. I believe a helpful change would be so that when the cards from his ability hit, they do not give enemy units the 1 mana, or make it so every few cards hit gives 1 mana.

Problem 2

The main reason that players aren't really incentivised to play the Disco trait, let alone vertically. Looking at the trait,



Not only does it require the player to have a very specific positioning, as units must be in the Disco balls, the benefits given from it are relatively underwhelming. The attack speed tends to only be used by a few select units, namely Twisted Fate and Ziggs, and the healing is too slow. Even then, Twisted Fate tends to have the item Guinsoo's Rageblade, which already gives him attack speed scaling.

One adjustment that could be made is to lower the attack speed given, as it's relatively useless on most of the units, and change the Disco buff to happen every 2 seconds instead. This would give Disco a lot more tankiness and sustain, which would allow Twisted Fate to ramp and scale better.

Another possible way to adjust Disco, although I'm unsure whether this would be the direction/identity Disco would want, would be to make it so Disco units are given specific buffs when on Disco hexes. Generally, emblems of traits are useful as they can be put on a unit so they get the buff of that trait. However, the Disco trait does not give any specific buff for Disco units, so the emblem tends to be useless.

So, one way Disco could be changed is so that if a Disco unit is on a Disco hex, they are given a unique buff. For example, if Taric, a Disco/Guardian unit is on a Disco hex, he gets bonus shielding or healing. I'm unsure if the Teamfight Tactics team wants to give Disco this identity, but it's a potential way to buff Disco without just changing the numbers.

4.3 Conclusion

In conclusion, the Disco trait in Teamfight Tactics is underperforming, especially when played vertically, and requires some adjustment to either the trait or the units to incentivise players to utilise it.

5. Bibliography

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Thank you for reading.